ORDINANCE NO. O2019-21

AN ORDINANCE APPROVING SPECIAL USE PERMITS FOR A PLANNED UNIT DEVELOPMENT FOR THE ENTIRE PROPERTY AND PHASE I AND A FINAL PLAT OF SUBDIVISION FOR THE RIVERVIEW WEST MIXED-USE DEVELOPMENT AT 28301 FERRY ROAD

WHEREAS, Cantera Apartments, LLC, an Illinois limited liability company, was the owner of that certain real property consisting of approximately 32.48 acres on lot C-2 in Cantera Subarea C ("***Lot C-2"***), commonly known as 28301 Ferry Road, Warrenville, Illinois, and legally described in ***Exhibit A*** ("***Owner's Property***"); and

WHEREAS, Cantera Owners Association ("***Association***"), an Illinois not-for-profit corporation, is the owner of that certain real property consisting of 3.95 acres known as Outlot A in Cantera Subarea C, and legally described in ***Exhibit B*** ("***Outlot A***") (collectively, the Owner's Property and Outlot A are referred to as the "***Property***"); and

WHEREAS, on January 25, 1991, the City approved Ordinance No. 1136 ("***PUD Ordinance***"), which approved a planned unit development for approximately 650 acres of real property, which is now commonly known as Cantera ("***Approved PUD"***), and the Property is located within Cantera and subject to the Approved PUD; and

WHEREAS, on February 22, 1994, the City approved Ordinance No. 1295 ("***Cantera Development Regulations Ordinance***"), which approved the Cantera Development Control Regulations ("***Development Control Regulations"***) and Cantera General Site Plan Documents ("***General Site Plan Documents***"), establishing the design and development standards for specific application to Cantera, including the standards and procedures for the approval of preliminary and final planned unit development plans; and

WHEREAS, in October, 1995, the City approved Ordinance No. 1439, which granted preliminary approval of planned unit development plans and a preliminary plat of subdivision for Cantera Subarea C, which approvals have subsequently expired; and

WHEREAS, in 2017, Cantera Apartments, LLC filed an application with the City to develop the Property as a mixed-use planned development consisting of five commercial buildings containing a total of approximately 35,550 square feet of floor area ("***Commercial Buildings"***), a 364-unit apartment building with interior parking garage ("***Apartment Building***"), and 60 three-story townhomes with 240 garage and driveway parking spaces ("***Townhomes***") (collectively, the Commercial Buildings, the Apartment Building, and the Townhomes are the "***Proposed Development***"); and

WHEREAS, on January 15, 2018, the City Council adopted Ordinance No. O2018-01 ("***Preliminary PUD Ordinance***"), which approved a preliminary plat of subdivision ("***Preliminary Plat of Subdivision***") which contemplated the subdivision of Property as follows (i) the Owner's Property into three proposed lots of record: an approximately 4.4-acre commercial area ("***Lot 1***"), an approximately 17.7-acre Apartment Building lot ("***Lot 2***"), and an approximately 3.36-acre Townhomes lot ("***Lot 3***"); (ii) the approximately 3.95-acre stormwater management area ("***Outlot A***"); and (iii) the dedication of a 60-foot-wide public right-of-way connecting the existing Torch Parkway to Ferry Road ("***Torch Parkway Dedication***"); and

WHEREAS, the Preliminary PUD Ordinance also approved: (i) a revised preliminary planned unit development plan for the Proposed Development on the Property; (ii) certain text amendments to the Development Control Regulations and the General Site Plan Documents; (iii) land use redesignations pursuant to Section IV.C of the Development Control Regulations; (iv) major amendments to the Approved PUD to include the Revised Preliminary PUD Plan and associated documents; (v) the use of a private street to provide access to the Apartment Building; (vi) a variation from the Subdivision Control Ordinance; and (vii) various site specific amendments from the Development Control Regulations; and

WHEREAS, Cantera Development Holdings, LLC, an Illinois limited liability company and successor to Cantera Apartments, LLC, ("***Apartment Owner***") is the owner of Lot 2; and

WHEREAS, Kevin Wille, as Trustee of Cydelex Trust under a trust agreement dated August 28, 2009, a successor to Cantera Apartments, LLC, is the owner of Lot 1 and Lot 3 ("***Townhomes and Commercial Owner***") (collectively the Apartment Owner and the Townhomes and Commercial Owner are the "***Owners***"); and

WHEREAS, in December 2018, the City Council adopted Ordinance No. O2018-46, authorizing the issuance of a Quick Start Permit to the Apartment Owner to allow certain work to be performed prior to obtaining final planned unit development and subdivision approvals, including mass grading of the Property and construction of stormwater detention facilities, including retaining walls, erosion control improvements, reconfiguration of existing detention ponds, and associated storm sewer work; and

WHEREAS, in April 2019, the City Council adopted Ordinance No. O2019-20, authorizing the issuance of a Quick Start Permit to the Apartment Owner to allow foundation only work to be performed for the Apartment Building prior to obtaining final planned unit development and subdivision approvals; and

WHEREAS, the Owners propose that the Proposed Development be constructed in three phases as follows: (i) the construction of the proposed public and private roadways, internal drives and pedestrian connections, stormwater management ponds, the Apartment Building, parking lots, and landscaping ("***Phase I***"); (ii) the construction of the Townhomes ("***Phase II***"); and (iii) the construction of the Commercial Area ("***Phase III***"), all in accordance with the Construction Phasing Plan Sheet A-2 of the Architectural Plan Sheets A1-A29, listed on Exhibit C to this Ordinance; and

WHEREAS, the Apartment Owner desires to construct Phase I; and

WHEREAS, Phase II and Phase III may be constructed by a different applicant at a later date; and

WHEREAS, in order to construct Phase I of the Proposed Development on the Property, pursuant to the applicable sections of the Warrenville Zoning Ordinance ("***Zoning Ordinance***"), the Development Control Regulations, and the Subdivision Control Ordinance for the City of Warrenville ("***Subdivision Control Ordinance***"), the Apartment Owner, with consent of the Association and the Townhomes and Commercial Owner, filed an application with the City for approval of: (i) a final planned unit development plan for the entire 32.48-acre Property ("***Final Riverview West PUD Plan***"); (ii) a special use permit for a planned unit development plan for the entire 32.48-acre Property ("***Riverview West Special Use Permit"***); (iii) a final planned unit development plan for Phase I ("***Final Phase I PUD Plan***"); (iv) a special use permit for a planned

unit development for Phase I (***"Phase I Special Use Permit***"); and (v) a final plat of subdivision for the Property ("***Final Plat of Subdivision"***) (collectively, (i) through (v) are the "***Requested Approvals***"); and

WHEREAS, on May 9, 2019, the Plan Commission held a public meeting to consider the Requested Approvals, which was continued to a special meeting on May 13, 2019, at which the Plan Commission considered the Requested Approvals; and

WHEREAS, on May 13, 2019, the Plan Commission adopted Findings of Fact, Project Number 2017-0502, unanimously recommending that the Mayor and the City Council approve the Requested Approvals; and

WHEREAS, the Mayor and the City Council have determined that, subject to and contingent upon the conditions, restrictions, and provisions of this Ordinance, (i) the Final Riverview West PUD Plan and the Final Phase I PUD Plan comply with the required standards for planned unit developments as set forth in Section 8 of the Zoning Ordinance and Section III of the Development Control Regulations; (ii) the applications for the Riverview West Special Use Permit and the Phase I Special Use Permit comply with the required standards for planned unit developments and special use permits as set forth in Sections 7 and 8 of the Zoning Ordinance; and (iii) the Final Plat of Subdivision complies with the required standards for subdivisions as set forth in Article 6 of the Subdivision Control Ordinance; and

WHEREAS, consistent with the Plan Commission recommendation, and pursuant to the City's powers under applicable law, including its home rule powers under the Illinois Constitution of 1970, the Mayor and the City Council have determined that it is in the best interest of the City and the public to approve the Requested Approvals, in accordance with, and subject to and contingent upon, the conditions, restrictions, and provisions of this Ordinance;

NOW, THEREFORE, BE IT ORDAINED BY THE MAYOR AND CITY COUNCIL OF WARRENVILLE, DUPAGE COUNTY, ILLINOIS, AS FOLLOWS:

SECTION 1: Recitals. The recitals listed above are incorporated in this Ordinance as if fully set forth in this Ordinance.

SECTION 2: Approval of Riverview West Special Use Permit. In accordance with Sections 7 and 8 of the Zoning Ordinance and Section III of the Development Control Regulations, and subject to and contingent upon the conditions, restrictions, limitations and provisions set forth in this Ordinance, including specifically, but without limitation, Sections 7, 8, and 9 of this Ordinance, the City Council approves the Riverview West Special Use Permit to allow the Proposed Development on the Property to be developed in three phases: Phase I, Phase II, and Phase III. Each phase shall be approved by individual special use permits authorized by ordinance duly adopted by the City Council.

SECTION 3: Approval of the Final Riverview West PUD Plan. In accordance with Section 8 of the Zoning Ordinance and Section III of the Development Control Regulations, and subject to, and contingent upon, the conditions, restrictions, and provisions set forth in this Ordinance, including specifically, but without limitation, Sections 7, 8, and 9 this Ordinance, the City Council approves the Final Riverview West PUD Plan for the Property, consisting of the Site Plan, consisting of one sheet, prepared by Baranyk Associates, Ltd., and dated April 19, 2019 (***"Final Riverview West PUD Plan"***), attached to and, by this reference, made a part of this Ordinance as ***Exhibit B***.

SECTION 4: Approval of Phase I Special Use Permit. In accordance with Sections 7 and 8 of the Zoning Ordinance and Section III of the Development Control Regulations, and subject to and contingent upon the conditions, restrictions, limitations and provisions set forth in this Ordinance, including specifically, but without limitation, Sections 7, 8, and 9 of this Ordinance, the City Council approves the Phase I Special Use Permit to allow the construction of Phase I of the Proposed Development on the Property.

SECTION 5: Approval of Final Phase I PUD Plan. In accordance with Section 8 of the Zoning Ordinance and Section III of the Development Control Regulations, and subject to, and contingent upon, the conditions, restrictions, and provisions set forth in this Ordinance, including specifically, but without limitation, Sections 7, 8, and 9 of this Ordinance, the City Council approves the Final Phase I PUD Plan for the Property, which consists of the documents referred to collectively as the "***Final Phase I PUD Documents***" and listed on ***Exhibit C*** attached to this Ordinance. The Final Phase I PUD Documents and Exhibit C are, by this reference, made a part of this Ordinance.

SECTION 6: Approval, Execution, and Recordation of the Final Plat of Subdivision.

A. Approval of the Final Plat of Subdivision. Subject to, and contingent upon, the conditions, restrictions, and provisions set forth in this Ordinance, including specifically, but without limitation, Sections 7, 8, and 9 of this Ordinance and in accordance with Article 6 of the Subdivision Control Ordinance, the Final Plat of Subdivision, titled "Final Plat of Subdivision Cantera Subarea "C", Lot 2 Subdivision", consisting of four sheets, prepared by United Survey Service, and dated April 17, 2019, attached to and, by this reference, made a part of this Ordinance as ***Exhibit D***, which contemplates the subdivision of the Property as follows (i) the Owner's Property into three lots of record: an approximately 4.4-acre commercial area ("***Lot 1***"), an approximately 17.7-acre Apartment Building lot ("***Lot 2***"), and an approximately 3.36-acre Townhomes lot ("***Lot 3***"); (ii) the approximately 3.95-acre stormwater management area ("***Outlot A***"); and (iii) the dedication of a 60-foot-wide public right-of-way connecting the existing Torch Parkway to Ferry Road ("***Torch Parkway Dedication***") is hereby approved.

B. Execution of the Final Plat of Subdivision. The City Council hereby authorizes and directs the Mayor, the City Clerk, the Chairman and Secretary of the Plan Commission, and the City Engineer to execute, on behalf of the City, the Final Plat of Subdivision following its execution and delivery to the City Clerk by the Owners, the Association, and all other required parties.

C. Recordation of Final Plat of Subdivision. The City Council directs the City Clerk to record the executed Final Plat of Subdivision with the DuPage County Recorder of Deeds upon satisfactory completion of all administrative details relating thereto.

SECTION 7: Conditions. Notwithstanding any use or development right that may be applicable or available pursuant to the provisions of the City Code, the Zoning Ordinance, or the Subdivision Control Ordinance or any other rights the Owners may have, the approvals granted in Sections 2, 3, 4, 5 and 6 of this Ordinance are hereby expressly subject to and contingent upon the conditions, concepts, restrictions, limitations, and provisions set forth in this Section (collectively, the "***Conditions***").

A. Standard Conditions.

1. Compliance with Regulations. The redevelopment, use, operation, and maintenance of the Property shall comply with all applicable City codes and ordinances

as the same have been or may be amended from time to time, except to the extent specifically provided otherwise in this Ordinance.

2. Compliance with Plans. The redevelopment, use, and maintenance of the Property must be in strict accordance with the Final Riverview West PUD Plan, the Final Phase I PUD Plan, the Final Phase I PUD Documents, and the Final Plat of Subdivision, as each is revised to address the conditions set forth in Subsection B of this Section and except for minor changes and site work approved in accordance with all applicable City ordinances and standards.

B. Other Conditions.

1. Civil Engineer Review. The Apartment Owner shall comply with the review comments and recommendations outlined in the Civil Engineering Review Memo, consisting of seven pages, prepared by Senior Civil Engineer Kristine Hocking and James J. Benes and Associates, and dated May 1, 2019, attached to and, by this reference, made a part of this Ordinance as ***Exhibit E*** ("***Engineering Review Memo***").

2. School District Boundary. Currently, six of the proposed Townhome units are located within School District 203 and the remaining residential units in the Proposed Development are located in School District 200. Prior to the recordation of the Final Plat of Subdivision, the Owners must submit a formal application to school district officials requesting a reconfiguration of the school district boundary line so that all of the residential units located within the Proposed Development are within the School District 200 boundaries, and diligently advocate for approval of such a reconfiguration.

3. Phase III (Commercial Area) Design Requirements. Future development of Phase III of the Proposed Development shall be in accordance with the Riverview West Commercial Area Design Guidelines, consisting of seven pages, prepared by the City of Warrenville Community Development Department, and dated April 24, 2019, attached to and, by this reference, made a part of this Ordinance as ***Exhibit F*** ("***Commercial Area Design Guidelines***").

4. Electric Vehicle Charging Stations. The Apartment Owner shall install five quick electric vehicle charging stations on the first floor of the Apartment Building parking garage simultaneously with building construction. The locations for the electric vehicle charging stations must be shown on the building permit plans.

5. Exterior Building Lights. All exterior building lights shall have full horizontal cutoff optics with flat lenses with no portion of such lens protruding below the housing. All exterior lights not meeting this requirement must be approved by the Plan Commission, as required by the Zoning Ordinance. Detailed cut sheets illustrating all exterior building lights and confirming compliance with this requirement shall be submitted for staff review prior to the issuance of the building permit for Phase I.

6. Ground Sign Lighting. An OSQ LEXC Area/Flood Luminare light is proposed to illuminate the proposed ground signs for Phase I. The Correlated Color Temperature (CCT) of such light shall not exceed 4,000K, and it shall comply with the illumination requirements and restrictions contained in the Warrenville Sign Ordinance.

7. Building Wall Signage. Lot 2 is located in the Cantera Special Development Multifamily Use Area, within which wall signs are not permitted. Any future wall signage proposed to be installed on the Apartment Building will require a separate special approval under the provisions of the Development Control Regulations.

8. Roof Top Equipment. All roof top equipment, including the generator, must be fully screened. The top of parapet walls or roof screens shall be at least as high as all roof top equipment in order to satisfy this requirement. Screens must be consistent with the architecture and color scheme of the building. Details illustrating the locations of roof top equipment, the equipment height, and screening design shall be provided for staff review and approval prior to the issuance of the building permit for Phase I.

9. Building Materials. The exterior building materials shall be consistent with those depicted on Elevations Sheet A-9, consisting of one sheet, prepared by Baranyk Associates, Ltd., and dated April 19, 2019, attached to and, by this reference, made a part of this Ordinance as ***Exhibit G*** ("***Elevations Sheet***"), and the Color Chart Sheet CS-11, consisting of one sheet and dated April 19, 2019, attached to and, by this reference, made a part of this Ordinance as ***Exhibit H*** ("***Color Sheet***"). The exterior building materials shall include full-thickness standard brick, Hardie panels and siding. A minimum of 36% of the exterior building elevations illustrated on Architectural Drawing Sheet A-29, included in the Architectural Plan Sheets listed on Exhibit C attached to this Ordinance, shall be finished with brick.

10. Ferry Road Street Trees. Landscaping along Ferry Road should be consistent with the Cantera parkway landscaping design, which includes a double row of consistent species of shade trees along the entire frontage of the Property, including Outlot A. The Landscape Plan Phase I, listed on Exhibit C attached to this Ordinance, depicts the required double row of parkway trees. The proposed tree species selected for planting along Ferry Road must be reviewed and approved by the City Arborist.

11. Irrigation. A detailed irrigation plan for the Property shall be submitted by the Apartment Owner for review and approval by City staff prior to installation of such irrigation system. Such plan shall specify the proposed irrigation water source.

12. Preliminary PUD Ordinance Conditions. Future development of Phase II and Phase III of the Proposed Development shall be in accordance with the conditions set forth in the Preliminary PUD Ordinance.

13. Warrenville Fire Protection District Review. The Apartment Owner shall address and comply with City Code-supported comments outlined in the Warrenville Fire Protection District's Review Memo, consisting of three sheets, prepared by Fire Marshal Lee Westrom, and dated May 2, 2019.

14. Path Connections. The Owners shall coordinate with and secure the necessary permits from the DuPage Forest Preserve and the DuPage Division of Transportation to construct path connections to the existing River Trail along the West Branch DuPage River and to the existing sidewalk along Ferry Road, as illustrated on the Final Riverview West PUD Plan.

15. Master Declaration. The Apartment Owner shall revise the Master Declaration of Covenants, Conditions, Restrictions and Easements for the Riverview West

Subdivision ("***Master Declaration***") to incorporate and/or update provisions to address the following comments to the satisfaction of City staff and the City Attorney prior to the City recording the Master Declaration:

a. The Declarants' names listed in the proposed Master Declaration shall be consistent with the names of all of the owners of the Property.

b. The date of the Master Declaration must be included and must be signed by all of the owners of the Property.

c. The final Master Declaration must have attached to it all referenced exhibits.

d. Item D in the recital section of the final Master Declaration shall be revised to eliminate reference to dwelling units on the commercial parcel (Lot 1).

e. The final copy of the Master Declaration shall be proof-read and corrected by a professional editor to correct spelling, punctuation, and typographical errors currently found throughout the draft Master Declaration.

f. The amount of commercial space noted in Section 4.6 of the Master Declaration must be revised from 40,000 square feet to 33,950 square feet, as documented on the Final Riverview West PUD Plan.

g. All blank spaces in the document shall be filled in with the appropriate information.

h. The definition of "Maintenance" must be expanded to include landscaping on the Property, with specific areas defined as necessary, irrigation, fencing, private drives and parking lot, parking lot signage, pedestrian walkways and trail connections, emergency access, open space, private utilities, lighting, and snowplowing of parking lots and private drives.

i. An exhibit setting forth the responsibilities of the City and other private parties for the maintenance of the storm sewer must be attached to the Master Declaration. The parties responsible for maintaining sections of storm sewer not owned and maintained by the City must be identified.

j. The Association's responsibility to maintain the turf in the Torch Parkway and Ferry Road areas, including mowing, fertilizing, and irrigation, must be documented.

k. The Landscape Covenant Agreement and Landscape Maintenance Plan must be incorporated into the Master Declaration by reference.

l. An exhibit clearly illustrating which parties are responsible for maintenance for all private common area improvements in Phase I must be attached to the Master Declaration.

m. Provisions must be incorporated into the Master Declaration prohibiting amendments to the Master Declaration without written approval of the

City that would: (i) be inconsistent with the approved Final Phase I PUD Plan or the Final Riverview West PUD Plan and/or applicable City Ordinances; or (ii) materially alter the maintenance responsibilities of private parties.

16. Landscape Covenant Agreement. A Landscape Covenant Agreement satisfying the requirements of Section 11.B.4 of the Zoning Ordinance shall be prepared, executed and recorded with the DuPage County Recorder of Deeds before the City issues the first Certificate of Occupancy for Phase I. The Final PUD Landscape Plan and Long-Term Maintenance Plan, listed on Exhibit C to this Ordinance, shall be referenced in, and become part of, the Landscape Covenant Agreement.

17. Sanitary Sewer. The Apartment Owner must pay the sanitary sewer capacity purchase fee required by the City of Naperville prior to the recordation at the DuPage County Recorder of Deeds of the Final Plat of Subdivision and this Ordinance.

18. Apartment Building Ownership/Management. Lot 2, and the Apartment Building and improvements thereon, as depicted on the Final Riverview West PUD Plan and the Final Plat of Subdivision, shall remain under single ownership or under such unified ownership or control as to ensure that the Apartment Building and other structures and improvements on Lot 2 are developed, operated, and maintained as a unified whole, and managed/operated by a single, experienced multi-family management company. Individual apartment units shall not be held under separate ownership.

19. Maintenance of Future Phases Development Areas (Phase II and Phase III). All future development areas not developed as part of Phase I and not improved with pavement shall be sodded/seeded and maintained by the Townhomes and Commercial Owner until future development occurs.

20. School, Park and Library Contributions. The Apartment Owner shall pay all required school, park and library contributions for Phase I at the time of full building permit issuance.

21. Fees and Security Guaranteeing Completion of Public Improvements. The Apartment Owner shall pay/submit all applicable review and inspection fees and the required security guaranteeing completion of public improvements prior to the recording of this Ordinance.

22. Traffic Enforcement Agreement. A Private Property Traffic Enforcement Agreement, in a form acceptable to the City, shall be submitted by the Apartment Owner for future City Council consideration.

23. DuPage County Traffic Impact Fee. The DuPage County Traffic Impact Fee must be paid prior to the City's issuance of a building permit for any part of Phase I.

24. DuPage DOT Permit. DuPage DOT requires a permit be obtained prior to performing any work within Ferry Road. A copy of the issued DuPage DOT Permit shall be provided to City staff prior to commencement of such work.

SECTION 8. Binding Effect. This Ordinance and the privileges, obligations, and provisions contained herein run with the Property and inure to the benefit of, and are binding

upon, the Owners and their respective successors, and assigns, including, without limitation, subsequent purchasers of Lot 1, Lot 2, and Lot 3.

SECTION 9: Invalidation of Approvals. Upon the failure or refusal of the Owners, or their respective successors or assigns, to comply with any or all of the conditions, restrictions, or provisions of this Ordinance, in addition to all other remedies available to the City, the approvals granted in Sections 2, 3, 4, 5 and 6 of this Ordinance ("***Approvals***") may, at the sole discretion of the City Council, by ordinance duly adopted, be revoked and become null and void; provided, however, that the City Council may not so revoke the Approvals unless it first provides the Owners, or their respective successors or assigns, with two months advance written notice of the reasons for revocation and an opportunity to be heard at a regular meeting of the City Council. In the event of such revocation, the City Administrator and City Attorney are hereby authorized and directed to bring such zoning enforcement action as may be appropriate under the circumstances. The Owners acknowledge that public notices and hearings have been held with respect to the adoption of this Ordinance, have considered the possibility of the revocation provided for in this Section, and agree not to challenge any such revocation on the grounds of any procedural infirmity or any denial of any procedural right, provided that the notice to the Owners, or their respective successors or assigns, successors required by this Section is given.

SECTION 10: Amendments. Any amendment to any provision of this Ordinance may be granted only pursuant to the procedures, and subject to the standards and limitations, provided in the Zoning Ordinance, the Development Control Regulations, and the Subdivision Control Ordinance, as applicable to the affected items of relief.

SECTION 11: Effective Date.

A. This Ordinance will be effective only upon the occurrence of all of the following events:

1. Passage by the City Council by a majority vote and approval in the manner required by law;

2. Publication in pamphlet form in the manner required by law;

3. The filing by the Owners with the City Clerk of an Unconditional Agreement and Consent, in the form of **Exhibit I** attached to and, by this reference, made a part of this Ordinance, to accept and abide by each and all of the terms, conditions, and limitations set forth in this Ordinance and to indemnify the City for any claims that may arise in connection with the approval of this Ordinance; and

4. Recordation of this Ordinance, together with such exhibits as the City Clerk deems appropriate for recordation, with DuPage County Recorder of Deeds.

B. In the event that the Owners do not file with the City Clerk a fully executed copy of the unconditional agreement and consent referenced in Paragraph 11.A.3 of this Ordinance within 90 days after the date of passage of this Ordinance by the Mayor and City Council, the corporate authorities shall have the right, in their sole discretion, to declare this Ordinance null and void and of no force or effect.

[Voting Record and Signature Page Follows]

PASSED THIS ____ day of _____, 2019.

AYES:
NAYS:
ABSENT:
ABSTAIN:

APPROVED THIS ____ day of _____, 2019.

_____
MAYOR

ATTEST:

_____
CITY CLERK

#67655234_v4

EXHIBITS

Exhibit A – Legal Description of the Owner's Property and Outlot A

Exhibit B – Final Riverview West PUD Plan

Exhibit C – Final Phase I PUD Documents

Exhibit D – Final Plat of Subdivision

Exhibit E – Engineering Review Memo

Exhibit F – Commercial Area Design Guidelines

Exhibit G – Elevations Sheet

Exhibit H – Color Sheet

Exhibit I – Unconditional Agreement and Consent

EXHIBIT A

LEGAL DESCRIPTION OF OWNER'S PROPERTY

LOT 2 IN CANTERA SUB-AREA "C" LOTS Cl AND C2, BEING A RESUBDIVISION OF PART OF THE NORTHEAST ¼ OF SECTION 2, TOWNSHIP 38 NORTH, RANGE 9, EAST OF THE THIRD PRINCIPAL MERIDIAN, ACCORDING TO THE PLAT OF SAID CANTERA SUBAREA "C" LOTS Cl AND C2 RECORDED JANUARY 19, 2010 AS DOCUMENT NO. R2010-007747 IN DUPAGE COUNTY, ILLINOIS.

Permanent Index Number: 07-02-206-006

Commonly known as: 28301 Ferry Road, Warrenville, Illinois 60555

LEGAL DESCRIPTION OF OUTLOT A

OUTLOT "A" IN AMOCO BUSINESS CENTER FINAL PLAT OF SUBDIVISION CANTERA SUBAREA "C", BEING A SUBDIVISION OF PART OF LOT 2 IN CANTERA SERVICE STATION NUMBER 1, TOGETHER WITH PART OF THE NORTHEAST ¼ OF SECTION 2, TOWNSHIP 38 NORTH, RANGE 9, EAST OF THE THIRD PRINCIPAL MERIDIAN, ACCORDING TO THE PLAT RECORDED FEBRUARY 7, 1996 AS DOCUMENT R906-020336, IN DUPAGE COUNTY, ILLINOIS.

Permanent Index Number: 07-02-201-016

Commonly known as: 28301 Ferry Road, Warrenville, Illinois 60555

EXHIBIT B

FINAL RIVERVIEW WEST PUD PLAN

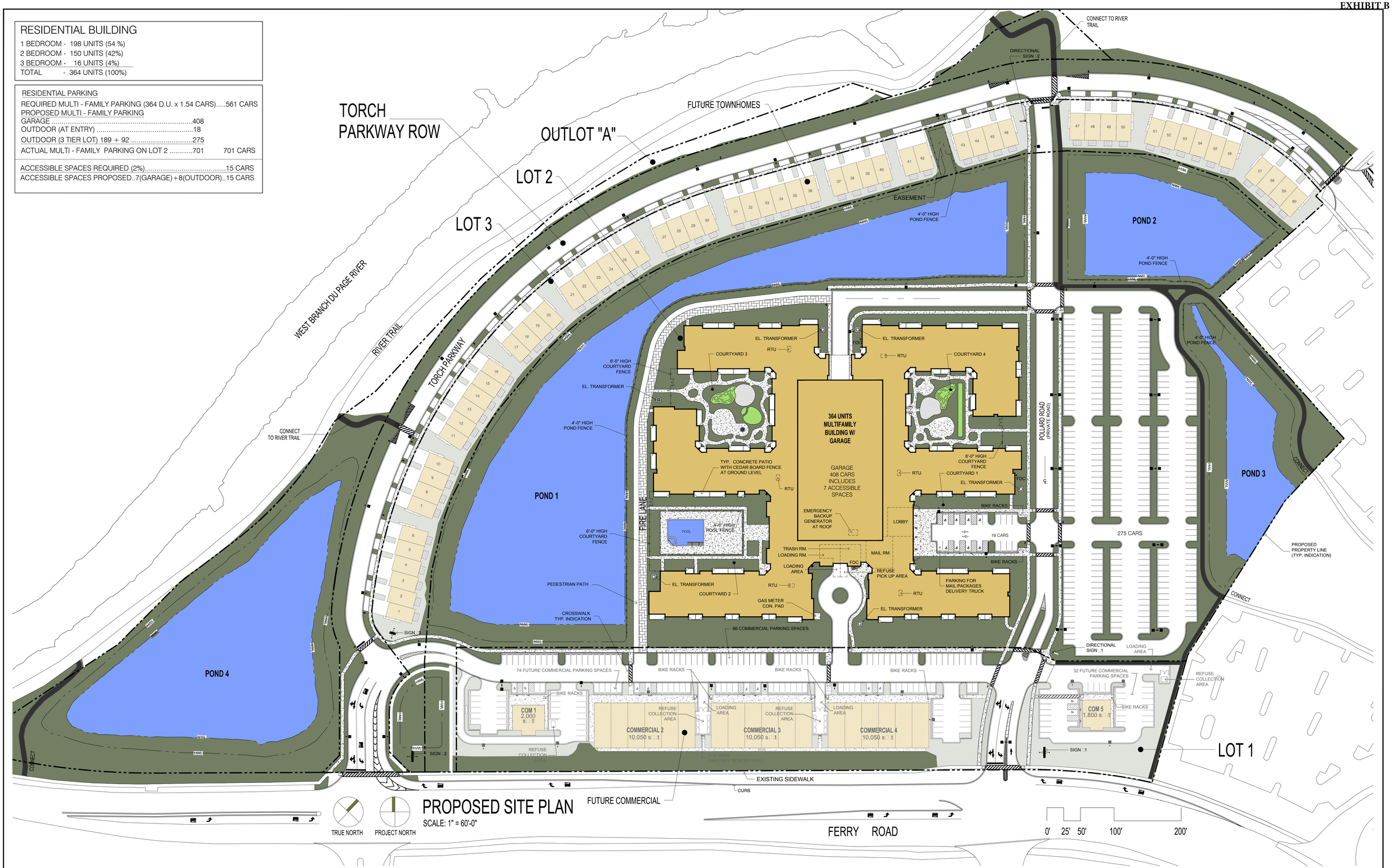
RESIDENTIAL BUILDING

1 BEDROOM - 198 UNITS (54 %)
2 BEDROOM - 150 UNITS (42%)
3 BEDROOM - 16 UNITS (4%)
TOTAL - 364 UNITS (100%)

RESIDENTIAL PARKING

REQUIRED MULTI - FAMILY PARKING (364 D.U. x 1.54 CARS).....561 CARS
PROPOSED MULTI - FAMILY PARKING
GARAGE 408
OUTDOOR (AT ENTRY) 18
OUTDOOR (3 TIER LOT) 189 + 92 275
ACTUAL MULTI - FAMILY PARKING ON LOT 2 .....701 701 CARS

ACCESSIBLE SPACES REQUIRED (2%).....15 CARS
ACCESSIBLE SPACES PROPOSED..7(GARAGE)+8(OUTDOOR)..15 CARS



TRUE NORTH PROJECT NORTH

PROPOSED SITE PLAN

SCALE: 1" = 60'-0"

18 FEB 2019 REVISED:19 APR 2019

CANTERA DEVELOPMENT HOLDINGS, LLC
DEVELOPER
TWO NORTHFIELD PLAZA, SUITE #320 NORTHFIELD, IL 60093

364 D. U.
RIVER VIEW WEST
WARRENVILLE, ILLINOIS

BARANYK ASSOCIATES, LTD.
ARCHITECTS • ENGINEERS • PLANNERS
710 HIGGINS RD. PARK RIDGE, IL. 60068
FAX 847/825-8617 PHONE 847/292-5757

SITE PLAN (COLOR)

SHEET: A-1

EXHIBIT C

FINAL PHASE I PUD DOCUMENTS

1. ***Final Riverview West PUD Plan*** (see Exhibit B).

2. ***Final Plat of Subdivision*** (See Exhibit D).

3. ***General Application,*** consisting of four pages, prepared by John Schiess, and dated May 18, 2018.

4. ***Application Form D***, consisting of five pages, prepared by John Schiess, and dated May 18, 2018.

5. ***Architectural Plan Sheets A1-A29,*** consisting of 29 sheets, prepared by Baranyk Associates, Ltd., and dated April 19, 2019.

6. ***3D Rendering***, consisting of one page, undated, and submitted to the City on April 24, 2019.

7. ***Architect Response to Comments***, consisting of five pages, prepared by Baranyk Associates, Ltd., and dated April 19, 2019.

8. ***Architectural Plan Sheets CS-1 – CS-11,*** consisting of 18 pages, and submitted to the City on April 24, 2019.

9. ***Lighting Plan Sheets LD-1 - LD 6***, consisting of 29 pages, and submitted to the City on April 24, 2019.

10. ***Photometric Plan Sheets PH-1-PH-4,*** consisting of four pages, and submitted to the City on April 24, 2019.

11. ***Details sheet 41,*** consisting of one sheet, prepared by Bollinger, Lach & Associates, Inc., and dated April 19, 2019.

12. ***Details sheet 43,*** consisting of one sheet, prepared by Bollinger, Lach & Associates, Inc., and dated April 19, 2019.

13. ***Engineer Opinion of Probable Cost,*** consisting of two pages, and dated April 19, 2018.

14. ***Proposed Site Improvement Plans,*** consisting of 71 sheets, prepared by Bollinger, Lach & Associates, Inc., and dated April 19, 2019.

15. R***esponse to City Comments,*** consisting of 30 pages, prepared by Bollinger, Lach & Associates, Inc., and dated April 19, 2019.

16. ***Stormwater Report,*** consisting of 557 pages, prepared by Bollinger, Lach & Associates, Inc., and dated April 19, 2019.

17. ***Landscape Plan Phase I,*** consisting of 13 sheets, prepared by Lannert Group, and dated April 16, 2019.

18. ***Response to 4-11-19 Staff Comments,*** consisting of one page, prepared by The Lannert Group, and dated April 16, 2019.

19. ***Response to City Staff Comments,*** consisting of one page, prepared by United Survey Service, and dated April 22, 2019.

20. ***Submittal Letter,*** consisting of one page, prepared by United Survey Service, LLC, dated April 22, 2019.

21. ***Shopping Center Vehicle Trips,*** consisting of three pages, prepared by Institute of Transportation Engineers, submitted April 24, 2019.\

22. ***Sight Distance Exhibit Layout,*** consisting of one sheet, prepared by Bollinger, Lach & Associates, Inc., and dated November 5, 2018.

23. ***Sight Distance Exhibit,*** consisting of one sheet, prepared by Bollinger, Lach & Associates, Inc., and dated November 5, 2018.

24. ***Traffic Impact Study,*** consisting of 241 pages, prepared by Gewalt Hamilton Associates, Inc., and dated December 4, 2017.

25. ***Traffic Comment Response,*** consisting of one page, prepared by Gewalt Hamilton Associates, Inc., and dated April 8, 2019.

26. ***Traffic Impact Responses to DuDOT,*** consisting of two pages, prepared by Gewalt Hamilton Associates, Inc., and dated March 15, 2019.

27. ***Turning, Sight Plan Sheet Layout,*** consisting of one sheet, prepared by Bollinger, Lach & Associates, Inc., and dated February 18, 2019.

28. ***Master Declaration of Covenants,*** consisting of 16 pages, prepared by Nazar Kashuba, LLC, and submitted to the City on April 24, 2019.

29. ***Attachment A Listing of 4-24-19 Submittal,*** consisting of three pages, and dated April 22, 2019.

30. ***School District Status Report,*** consisting of two pages, prepared by JCS Architect, Ltd., and dated April 2, 2019.

31. ***Response to City Staff 2nd Review Comments,*** consisting of eight pages, prepared by JCS Architect, and dated April 24, 2019.

Full-size and complete versions of the Final Phase I PUD Documents are available for review from the City of Warrenville City Clerk's office and Community Development Department. All documents listed in this Exhibit C (regardless of whether the document itself is attached to this Ordinance) shall be deemed incorporated by reference, and made a part of, this Ordinance. All documents listed in this Exhibit C are subject to such further revision as may be required to conform to the conditions stated in Section 7 of this Ordinance.

RESIDENTIAL BUILDING

1 BEDROOM - 198 UNITS (54 %)
2 BEDROOM - 150 UNITS (42%)
3 BEDROOM - 16 UNITS (4%)
TOTAL - 364 UNITS (100%)

RESIDENTIAL PARKING

REQUIRED MULTI - FAMILY PARKING (364 D.U. x 1.54 CARS).....561 CARS
PROPOSED MULTI - FAMILY PARKING
GARAGE 408
OUTDOOR (AT ENTRY) 18
OUTDOOR (3 TIER LOT) 189 + 92 275
ACTUAL MULTI - FAMILY PARKING ON LOT 2 .....701 701 CARS

ACCESSIBLE SPACES REQUIRED (2%).....15 CARS
ACCESSIBLE SPACES PROPOSED..7(GARAGE)+8(OUTDOOR)..15 CARS

TORCH PARKWAY ROW
OUTLOT "A"
LOT 2
LOT 3
FUTURE TOWNHOMES
CONNECT TO RIVER TRAIL
DIRECTIONAL SIGN 2
EASEMENT
4'-0" HIGH POND FENCE
POND 2
WEST BRANCH DU PAGE RIVER
RIVER TRAIL
TORCH PARKWAY
CONNECT TO RIVER TRAIL
POND 1
POND 3
POND 4
FIRE LANE
POLLARD ROAD (PRIVATE ROAD)
364 UNITS MULTIFAMILY BUILDING W/ GARAGE
GARAGE 408 CARS INCLUDES 7 ACCESSIBLE SPACES
COURTYARD 1
COURTYARD 2
COURTYARD 3
COURTYARD 4
6'-0" HIGH COURTYARD FENCE
4'-0" HIGH POOL FENCE
POOL
EL. TRANSFORMER
RTU
FDC
TYP. CONCRETE PATIO WITH CEDAR BOARD FENCE AT GROUND LEVEL
EMERGENCY BACKUP GENERATOR AT ROOF
LOBBY
BIKE RACKS
18 CARS
275 CARS
TRASH RM.
LOADING RM.
MAIL RM.
LOADING AREA
REFUSE PICK UP AREA
PARKING FOR MAIL PACKAGES DELIVERY TRUCK
GAS METER CON. PAD
66 COMMERCIAL PARKING SPACES
PROPOSED PROPERTY LINE (TYP. INDICATION)
PEDESTRIAN PATH
CROSSWALK TYP. INDICATION
SIGN 1
SIGN 2
DIRECTIONAL SIGN 1
74 FUTURE COMMERCIAL PARKING SPACES
32 FUTURE COMMERCIAL PARKING SPACES
COM 1 2,000 s.f.
COM 5 1,800 s.f.
COMMERCIAL 2 10,050 s.f.
COMMERCIAL 3 10,050 s.f.
COMMERCIAL 4 10,050 s.f.
REFUSE COLLECTION AREA
MASONRY SCREEN WALL
EXISTING SIDEWALK
CURB
FUTURE COMMERCIAL
LOT 1
FERRY ROAD
CONNECT
HWL
NWL

PROPOSED SITE PLAN

SCALE: 1" = 60'-0"

TRUE NORTH PROJECT NORTH

0' 25' 50' 100' 200'

18 FEB 2019 REVISED:19 APR 2019

CANTERA DEVELOPMENT HOLDINGS, LLC
DEVELOPER
TWO NORTHFIELD PLAZA, SUITE #320 NORTHFIELD, IL 60093

364 D. U.
RIVER VIEW WEST
WARRENVILLE, ILLINOIS

BARANYK ASSOCIATES, LTD.
ARCHITECTS • ENGINEERS • PLANNERS
710 HIGGINS RD. PARK RIDGE, IL. 60068
FAX 847/825-8617 PHONE 847/292-5757

SITE PLAN (COLOR)

SHEET: A-1

FINAL PLAT OF SUBDIVISION
CANTERA SUB-AREA "C", LOT 2 SUBDIVISION

0'10' 50' 100' 150' 200'

PERMANENT INDEX NUMBERS:
07 - 02 - 206 - 006 (AFFECTS LOT 2)
07 - 02 - 201 - 016 (AFFECTS OUTLOT "A")

BASIS OF BEARINGS:
ASSUMED THE NORTH LINE OF FERRY ROAD TO BE S46°22'27"W

OF PART OF THE NORTHEAST 1/4 OF SECTION 2, TOWNSHIP 38 NORTH, RANGE 9, EAST OF THE THIRD PRINCIPAL MERIDIAN, IN DUPAGE COUNTY, ILLINOIS.

AREA SUMMARY:
COMMERICAL USE AREA
LOT 1 AREA = 191,688 SQ. FT. OR 4.401 ACRES

MULTIFAMILY - APARTMENTS
LOT 2 AREA = 771,258 SQ. FT. OR 17.706 ACRES

MULTIFAMILY - TOWNHOMES
OUTLOT "A" AREA = 172,254 SQ. FT. OR 3.954 ACRES
AREA IN TORCH PARKWAY R.O.W. = 132,897 SQ. FT. OR 3.051 ACRES
LOT 3 AREA = 146,718 SQ. FT. OR 3.368 ACRES

TOTAL SUBDIVISION AREA = 1,414,815 SQ. FT. OR 32.480 ACRES

"FOR APPROVAL OF THIS PLAT SEE ORDINANCE
_____

WINFIELD TOWNSHIP

NAPERVILLE TOWNSHIP

CANTERA VILLAGE CONDO
PER DOCUMENT R99-028856

SOUTH LINE OF SECTION 35 - 39 - 9

NORTH LINE OF SECTION 2 - 38 - 9

N88°35'19"E 23.83'

ARC=217.83' RAD.=472.77' CH.=215.91' N60°33'16"E

ARC=126.48' RAD.=536.99' CH.=126.19' N80°33'39"E

ARC=245.48' RAD.=532.77' CH.=243.31' N60°33'16"E

ARC=109.89' RAD.=300.00' CH.=109.27' N84°14'51"E

80' R.O.W. HERETOFORE DEDICATED AS FOR PUBLIC STREET PURPOSES
TORCH PARKWAY
RECORDED FEBRUARY 7, 1996
PER DOCUMENT R96-020336

S00°28'26"W 69.77'

22.32' S85°15'33"E

10.21' S00°28'26"W

68.22'

20' PUBLIC UTILITY EASEMENT PER DOCUMENT R96-020336

ARC=16.19' RAD.=453.00' CH.=16.19' S89°09'25"E

S84°15'32"W 22.44'

S88°07'05" W 103.54'

OUTLOT "A"

N89°51'35"E 119.66'

N23°09'01"E 95.65'

77.71' N47°21'46"E

S49°04'44"W 116.75'

S56°43'47"W 26.74'

S65°47'16"W 97.99'

142.21'

S04°47'16"W 210.43'

S85°12'44"E 280.85'

S00°00'05"W 128.27'

N05°26'25"E 77.99'

S30°42'55"W 110.75' ARC=104.55' RAD.=360.00' CH.=104.18' S39°02'05"W

ARC=87.12' RAD.=300.00' CH.=86.82' N39°02'05"E

63.62' S42°38'49"W

N13°09'26"E 64.59'

N30°42'55"E 41.60'

N64°58'59"E 62.12'

STORMWATER MANAGEMENT EASEMENT HEREBY GRANTED

STORMWATER MANAGEMENT EASEMENT HEREBY GRANTED

STORMWATER MANAGEMENT EASEMENT PER DOCUMENT R2010-007747

WEST BRANCH OF DUPAGE RIVER

N27°10'52"E 326.54'

S30°42'55"W 271.24'

N30°42'55"E 423.58'

S30°42'55"W 388.67'

60' R.O.W. HEREBY DEDICATED AS FOR PUBLIC STREET PURPOSES
TORCH PARKWAY

N30°42'55"E

LOT 3

LOT 2

S11°13'04"E 271.32'

LOT 1

PLAT OF RESUBDIVISION OF CANTERA SUB-AREA "C" LOTS C1 AMD C2
RECORDED JANUARY 19, 2010 AS DOCUMENT R2010-007747

S27°46'11"E 9.28'

S27°46'11"E 187.46'

CROSS-ACCESS EASEMENT HEREBY GRANTED

N15°09'01"E 148.07'

60.00'

S24°23'15"W 26.91'

S28°45'13"W 77.99'

S30°26'52"W 29.38'

S13°24'33"W 26.55'

S18°54'54"W 99.99'

S7°54'11"W

N05°09'01"E 158.64'

LOT 2

PLAT OF RESUBDIVISION OF CANTERA SUB-AREA "C" LOTS C1 AMD C2
RECORDED JANUARY 19, 2010 AS DOCUMENT R2010-007747

194.07' S46°35'25"W

46.14' S72°11'35"W

ARC=903.60' RAD.=795.12' CH.=855.76' N01°51'00"W

ARC=835.25' RAD.=735.12' CH.=791.10' N01°50'37"W

S2°24'33"W 26.20'

S04°02'18"E 121.99'

S10°28'33"E 25.90'

S19°54'48"E 71.69'

S23°20'49"E 25.86'

S29°55'05"E 84.38'

N00°20'59"W 229.78'

N10°30'35"E 74.87'

59.40' S12°45'22"E

ARC=164.97' RAD.=484.76' CH.=164.18' N01°00'07"W

ARC=0.33' RAD.=34.46' CH.=0.33' S34°35'45"E

ARC=47.30' RAD.=808.60' CH.=47.30' S36°27'15"E

50.42' S09°10'36"W

ARC=59.36' RAD.=108.26' CH.=58.62' S55°09'58"E

N09°36'58"E 61.96'

OUTLOT "A"

AMOCO BUSINESS CENTER
FINAL PLAT OF SUBDIVISION
CANTERA SUBAREA "C"
RECORDED FEBRUARY 7, 1996
PER DOCUMENT R96-020336

STORMWATER MANAGEMENT EASEMENT

N01°34'09"E 131.14'

N13°11'18"E 194.73'

N11°36'53"E 82.27'

ARC=300.27' RAD.=1085.92' CH.=2299.31' S53°40'51"W

ARC=34.47' RAD.=48.48' CH.=33.75' N60°47'07"W

N38°24'58"W CH.=43.24' RAD.=54.66' ARC=43.25'

S38°55'13" 135.13'

76.78' N80°29'14"W

S43°24'35"E 184.56'

S43°35'26"E 164.11'

ARC=66.19' RAD.=808.60' CH.=66.17' N41°33'29"W

N43°37'24"W 60.10'

N43°13'38"W 162.24'

129.62'

46.96

22.01'

N01°23'54"E 35.37'

42.42' N88°37'34"W

60.00'

60.00'

S46°22'27"W 237.89'

S46°22'27"W 852.50'

S46°22'27"W 1288.98'

850.94' S46°35'25"W

10.00'

176.07'

70.00'

ROAD

FERRY

10' SIDEWALK EASEMENT
RECORDED JANUARY 19, 2010
PER DOCUMENT R2010-007747

WHEATON-WARRENVILLE COMMUNITY UNIT SCHOOL DISTRICT 200

APPROXIMATE LOCATION OF SCHOOL DISTRICT BOUNDARY LINE

NAPERVILLE COMMUNITY UNIT SCHOOL DISTRICT 203

R.O.W.- VARIES HERETOFORE DEDICATED AS FOR PUBLIC STREET PURPOSES RECORDED MARCH 21, 1995 PER DOCUMENT R95-032985

NOTE: MONUMENTS HAVE BEEN PLACED AT ALL CORNERS, AT EACH END OF ALL CURVES, AT THE POINT WHERE A CURVE CHANGES ITS RADIUS, AT ALL ANGLE POINTS IN ANY LINE AND AT ALL ANGLE POINTS ALONG A MEANDER LINE.

PROJECT No.:	2017-24719-1
ISSUE DATE:	12/4/17
SCALE:	1"=80'
SHEET NUMBER	1 OF 4

PETITIONER:
CANTERA DEVELOPMENT HOLDINGS LLC
TWO NORTHFIELD PLAZA,
SUITE # 320
NORTHFIELD, IL 60093

PLAT PREPARED BY:
UNITED SURVEY SERVICE, LLC
CONSTRUCTION AND LAND SURVEYORS
7710 CENTRAL AVENUE, RIVER FOREST, IL 60305
TEL.: (847) 299 - 1010 FAX : (847) 299 - 5887
E-MAIL: USURVEY@USANDCS.COM

NO.	REVISIONS	DATE
1	REVISED PER COMMENTS	12/20/17
2	REVISED LOTS AND AREAS	01/05/18
3	REVISED PER COMMENTS	01/08/18
4	ADDED CERTIFICATES & NOTE	05/21/18
5	REVISED	06/22/18
6	REVISED PER COMMENTS	1/22/19
7	REVISED	02/12/19
8	REVISED PER COMMENTS	04/17/19

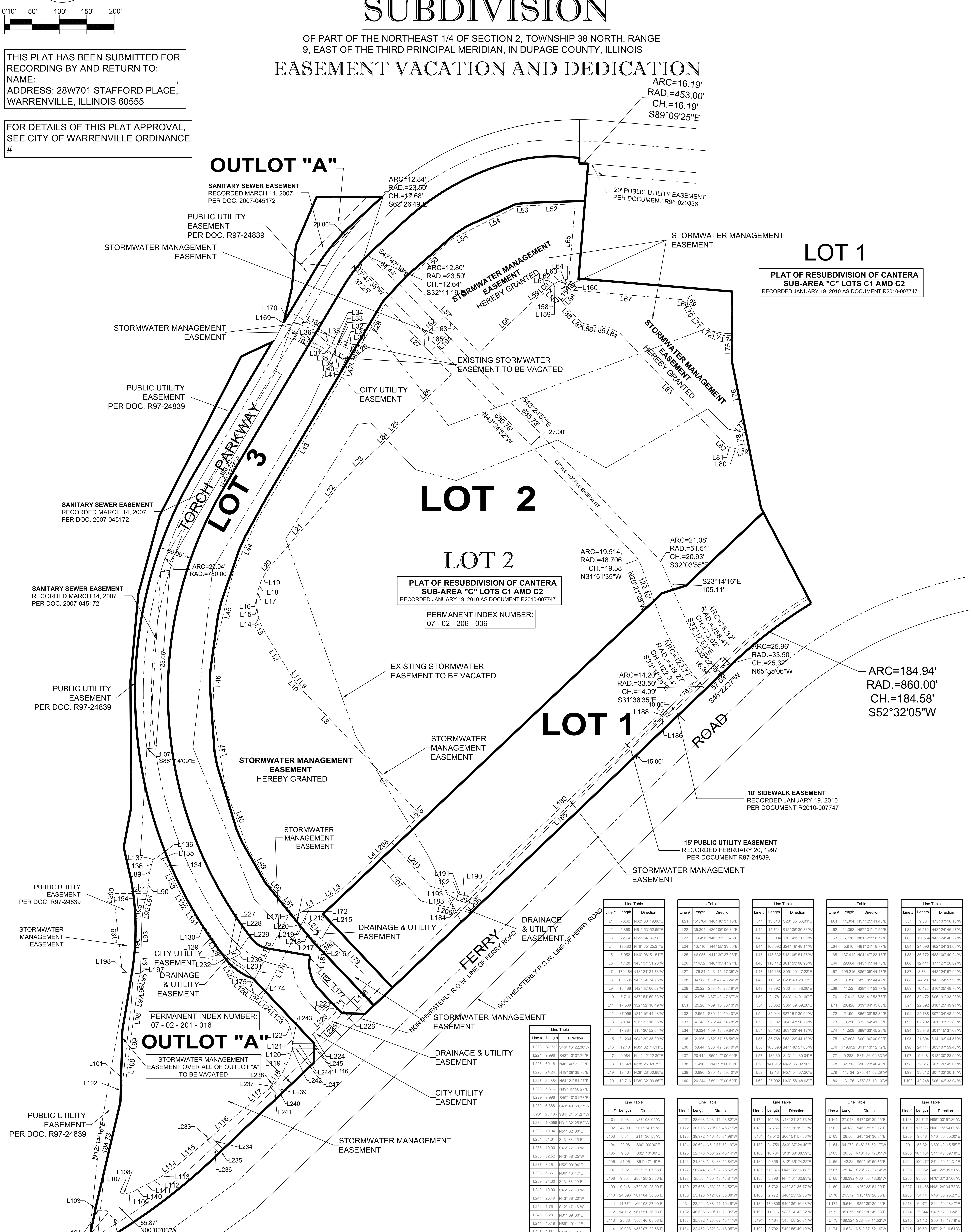
FINAL PLAT OF SUBDIVISION
CANTERA SUB-AREA "C", LOT 2 SUBDIVISION

OF PART OF THE NORTHEAST 1/4 OF SECTION 2, TOWNSHIP 38 NORTH, RANGE 9, EAST OF THE THIRD PRINCIPAL MERIDIAN, IN DUPAGE COUNTY, ILLINOIS

EASEMENT VACATION AND DEDICATION

THIS PLAT HAS BEEN SUBMITTED FOR RECORDING BY AND RETURN TO:
NAME: ____________________________,
ADDRESS: 28W701 STAFFORD PLACE,
WARRENVILLE, ILLINOIS 60555

FOR DETAILS OF THIS PLAT APPROVAL, SEE CITY OF WARRENVILLE ORDINANCE #______________________________



Line #	Length	Direction
L223	57.732	S46° 46' 22.30"W
L224	9.996	S43° 13' 37.70"E
L225	60.18	N46° 46' 22.30"E
L226	24.24	N19° 08' 38.73"E
L227	22.884	N64° 21' 51.27"E
L228	5.616	N49° 49' 58.27"E
L229	9.996	S40° 10' 01.73"E
L230	6.888	S49° 49' 58.27"W
L231	23.136	S64° 21' 51.27"W
L232	10.056	N31° 32' 25.52"W
L233	10.04	N51° 32' 00"E
L234	31.61	S43° 38' 25"E
L235	10.00	S46° 22' 10"W
L236	32.52	N43° 38' 25"W
L237	3.26	N52° 09' 04"E
L238	6.85	N36° 46' 47"E
L239	24.30	S43° 38' 20"E
L240	10.00	S46° 22' 10"W
L241	23.49	N43° 38' 20"W
L242	1.76	S12° 17' 18"W
L243	8.28	N01° 09' 30"E
L244	40.19	N89° 49' 41"E
L245	0.56	S43° 47' 24"E
L246	9.60	S01° 29' 07"W
L247	40.53	S89° 49' 41"W

Line #	Length	Direction
L1	73.62	N62° 30' 49.88"E
L2	5.868	N61° 53' 52.69"E
L3	22.74	N55° 54' 37.58"E
L4	190.80	N46° 35' 25.27"E
L5	5.052	N40° 06' 51.51"E
L6	4.428	N43° 37' 51.28"W
L7	170.184	N43° 24' 34.73"W
L8	139.536	N43° 24' 34.73"W
L9	10.488	N42° 15' 00.07"W
L10	7.716	N37° 54' 50.83"W
L11	17.568	N32° 52' 10.49"W
L12	87.996	N31° 16' 44.28"W
L13	20.34	N26° 32' 16.33"W
L14	17.784	N15° 36' 52.64"W
L15	21.204	N04° 29' 35.90"W
L16	12.18	N05° 02' 14.11"E
L17	9.984	N11° 12' 22.30"E
L18	15.648	N18° 25' 48.79"E
L19	19.464	N28° 28' 30.88"E
L20	19.716	N38° 32' 03.66"E

Line #	Length	Direction
L21	151.764	N40° 48' 37.13"E
L22	35.304	N36° 06' 06.34"E
L23	110.496	N46° 33' 22.43"E
L24	13.716	N44° 55' 33.35"E
L25	46.956	N41° 39' 37.98"E
L26	116.52	N46° 35' 47.91"E
L27	176.34	N43° 15' 17.35"W
L28	84.588	S30° 47' 46.24"W
L29	20.22	S53° 40' 28.19"W
L30	2.976	N87° 42' 47.67"W
L31	25.26	N59° 10' 58.13"W
L32	2.964	S30° 42' 59.40"W
L33	4.248	S75° 44' 54.78"W
L34	16.224	N59° 13' 09.84"W
L35	2.196	N62° 57' 56.58"W
L36	5.844	S30° 42' 59.40"W
L37	20.412	S59° 17' 00.60"E
L38	1.416	S14° 17' 00.60"E
L39	0.996	S30° 42' 59.40"W
L40	20.244	S59° 17' 00.60"E

Line #	Length	Direction
L41	13.548	S23° 05' 56.31"E
L42	14.724	S12° 36' 30.36"W
L43	320.004	S30° 41' 21.00"W
L44	103.092	S24° 18' 48.11"W
L45	145.332	S13° 05' 51.85"W
L46	110.412	S01° 53' 06.95"W
L47	145.668	S09° 20' 47.23"E
L48	110.82	S20° 40' 28.73"E
L49	79.392	S30° 04' 38.26"E
L50	21.78	S43° 14' 01.60"E
L51	50.652	S35° 39' 39.26"E
L52	85.944	S87° 51' 39.00"W
L53	21.132	S84° 47' 56.29"W
L54	96.192	S63° 23' 44.12"W
L55	36.768	S63° 23' 44.12"W
L56	105.096	S47° 46' 57.06"W
L57	186.60	S43° 24' 30.04"E
L58	141.912	N46° 35' 02.10"E
L59	12.18	N57° 54' 37.20"E
L60	25.992	N46° 58' 48.93"E

Line #	Length	Direction
L61	11.304	N57° 25' 41.48"E
L62	11.352	N67° 31' 17.55"E
L63	5.736	N81° 21' 18.77"E
L64	5.916	N81° 21' 18.77"E
L65	137.412	N04° 47' 23.15"E
L66	29.664	N43° 45' 44.75"E
L67	195.216	S85° 05' 44.47"E
L68	13.356	S85° 05' 44.47"E
L69	11.52	S28° 41' 53.77"E
L70	17.412	S28° 41' 53.77"E
L71	28.428	S39° 04' 43.80"E
L72	21.90	S56° 38' 58.82"E
L73	18.216	S72° 54' 41.30"E
L74	14.508	S89° 33' 45.20"E
L75	47.808	S00° 00' 00.00"E
L76	119.652	S11° 13' 12.72"E
L77	9.288	S37° 26' 09.63"W
L78	32.712	S10° 23' 40.40"E
L79	11.124	S75° 44' 52.29"W
L80	13.176	N75° 37' 10.10"W

Line #	Length	Direction
L81	9.30	N75° 37' 10.10"W
L82	16.572	N43° 24' 46.27"W
L83	267.564	N43° 24' 46.27"W
L84	24.096	N62° 24' 31.65"W
L85	36.372	N83° 00' 40.24"W
L86	12.444	N77° 27' 20.82"W
L87	8.784	N43° 24' 57.90"W
L88	44.28	N43° 24' 57.90"W
L89	16.428	S10° 25' 48.78"W
L90	32.472	S06° 31' 33.28"W
L91	22.392	S16° 25' 49.91"W
L92	25.788	S07° 04' 48.29"W
L93	62.292	S01° 32' 22.80"W
L94	33.948	S01° 15' 37.03"W
L95	21.804	S14° 03' 04.57"W
L96	24.144	S03° 07' 59.48"W
L97	9.648	S13° 30' 28.94"W
L98	58.26	S07° 26' 45.05"W
L99	33.612	S07° 22' 20.15"W
L100	49.248	S06° 42' 33.04"W

Line #	Length	Direction
L101	9.08	N87° 08' 05"W
L102	42.09	S01° 34' 09"W
L103	8.04	S11° 36' 53"W
L104	20.98	S90° 00' 00"E
L105	9.80	S32° 10' 06"E
L106	21.96	S51° 47' 15"E
L107	5.02	S53° 25' 07.65"E
L108	9.804	S88° 28' 25.56"E
L109	9.048	N79° 20' 23.90"E
L110	24.396	N61° 04' 58.56"E
L111	14.772	N66° 03' 27.09"E
L112	14.112	N61° 51' 36.03"E
L113	20.88	N56° 40' 08.08"E
L114	19.908	N55° 07' 22.68"E
L115	72.024	N50° 15' 05.10"E
L116	87.24	N49° 08' 27.79"E
L117	70.284	N51° 55' 27.33"E
L118	31.668	N35° 45' 00.01"E
L119	29.856	N25° 19' 18.70"E
L120	17.664	N15° 25' 25.52"E

Line #	Length	Direction
L121	28.668	N03° 11' 43.82"W
L122	20.076	N20° 06' 45.71"W
L123	39.972	N46° 48' 01.99"W
L124	30.624	N51° 37' 52.19"W
L125	22.776	N58° 22' 46.14"W
L126	21.348	N48° 33' 51.84"W
L127	56.844	N31° 32' 25.52"W
L128	25.86	N30° 43' 48.81"W
L129	27.636	N33° 23' 04.52"W
L130	23.196	N42° 02' 06.08"W
L131	23.244	N38° 41' 10.49"W
L132	46.608	N30° 11' 21.05"W
L133	35.892	N23° 02' 48.11"W
L134	22.452	N32° 24' 18.95"W
L135	11.028	N59° 48' 43.50"W
L136	7.62	S80° 23' 20.80"W
L137	5.868	S32° 41' 26.57"W
L138	11.64	S17° 51' 58.00"W
L177	52.812	S43° 37' 24.49"E
L178	62.112	N46° 35' 25.27"E

Line #	Length	Direction
L179	104.58	N43° 24' 34.73"W
L180	24.756	S57° 21' 19.61"W
L181	49.512	S06° 51' 57.56"W
L182	24.756	S43° 37' 24.49"E
L183	16.704	S13° 38' 08.59"E
L184	5.856	S12° 35' 24.22"E
L185	519.876	N46° 35' 16.68"E
L186	3.396	N41° 31' 32.93"E
L187	6.732	N48° 32' 36.77"W
L188	2.772	S46° 25' 32.83"W
L189	479.808	S46° 35' 16.68"W
L190	11.316	N88° 24' 43.32"W
L191	4.164	N45° 58' 26.31"W
L192	3.792	S49° 55' 49.19"W
L193	16.812	S47° 02' 41.76"W
L156	26.124	S43° 45' 44.75"W
L157	34.464	N47° 22' 48.31"W
L158	7.656	N46° 58' 48.93"E
L159	11.304	N57° 25' 41.48"E
L160	8.472	N67° 31' 17.55"E

Line #	Length	Direction
L161	27.948	S47° 06' 29.45"E
L162	64.188	N46° 35' 52.17"E
L163	28.50	S43° 24' 30.04"E
L164	64.272	S46° 35' 52.17"W
L165	28.50	N43° 15' 17.35"W
L166	142.32	S59° 16' 59.75"E
L167	25.14	S28° 27' 08.14"W
L168	136.392	N60° 05' 18.35"W
L169	6.684	N26° 33' 54.00"E
L170	21.372	N13° 09' 26.06"E
L171	9.516	S35° 39' 39.26"E
L172	35.076	N62° 30' 49.88"E
L173	189.324	S28° 09' 11.53"W
L174	6.624	N51° 37' 52.19"W
L175	21.864	N58° 22' 46.14"W
L176	162.072	N28° 09' 11.53"E
L194	22.392	S16° 25' 49.91"W
L195	25.788	S07° 04' 48.29"W
L196	96.24	S01° 26' 28.02"W
L197	2.70	S14° 03' 04.57"W

Line #	Length	Direction
L198	32.712	N86° 00' 57.86"W
L199	135.36	N06° 15' 54.00"W
L200	9.648	N10° 30' 35.00"E
L201	58.32	N89° 42' 15.55"E
L203	107.184	S41° 46' 59.18"E
L204	100.272	S74° 49' 51.31"E
L205	32.052	S46° 22' 35.51"W
L206	93.684	N76° 37' 37.60"W
L207	114.456	N43° 24' 34.73"W
L208	34.14	N46° 35' 25.27"E
L213	6.972	S61° 50' 48.47"E
L214	29.844	S41° 52' 30.24"E
L215	21.12	S50° 18' 47.18"E
L216	10.50	S57° 21' 19.61"W
L217	18.672	N50° 18' 47.18"W
L218	28.812	N41° 52' 30.24"W
L219	5.208	N61° 50' 48.47"W
L220	9.996	N28° 09' 11.53"E
L221	11.244	N43° 37' 24.49"W
L222	26.928	S19° 08' 38.73"W

LEGEND
- LOT BOUNDARY LINE
- EASEMENT LINE
- CENTER LINE
- EASEMENT TO BE VACATED

LEGEND
- LOT # EXISTING LOT NUMBER
- **LOT #** PROPOSED LOT NUMBER

BASIS OF BEARINGS:
ASSUMED THE NORTH LINE OF FERRY ROAD TO BE S46°22'27"W

PROJECT No.: 2017-24719-1
ISSUE DATE: 12/4/17
SCALE: 1"=80'
SHEET NUMBER 2 OF 4

PETITIONER:
CANTERA DEVELOPMENT HOLDINGS LLC
TWO NORTHFIELD PLAZA,
SUITE # 320
NORTHFIELD, IL 60093

PLAT PREPARED BY:
UNITED SURVEY SERVICE, LLC
CONSTRUCTION AND LAND SURVEYORS
7710 CENTRAL AVENUE, RIVER FOREST, IL 60305
TEL.: (847) 299 - 1010 FAX : (847) 299 - 5887
E-MAIL: USURVEY@USANDCS.COM

NO.	REVISIONS	DATE
1	REVISED PER COMMENTS	12/20/17
2	REVISED LOTS AND AREAS	01/05/18
3	REVISED PER COMMENTS	01/08/18
4	ADDED CERTIFICATES & NOTE	05/21/18
5	REVISED	06/22/18
6	REVISED PER COMMENTS	1/22/19
7	REVISED	02/12/19
8	REVISED PER COMMENTS	04/17/19

SEND TAX BILL TO:
CANTERA APARTMENTS, LLC
550 FRONTAGE ROAD, SUITE # 3700
NORTHFIELD, IL 60093

CANTERA OWNERS ASSOCIATION
4320 WINFIELD ROAD
WARRENVILLE, IL 60555

FINAL PLAT OF SUBDIVISION
CANTERA SUB-AREA "C", LOT 2
SUBDIVISION

OF PART OF THE NORTHEAST 1/4 OF SECTION 2, TOWNSHIP 38 NORTH, RANGE 9, EAST OF THE THIRD PRINCIPAL MERIDIAN, IN DUPAGE COUNTY, ILLINOIS

OWNER'S CERTIFICATE (LOT 1):

STATE OF ILLINOIS)
) SS
COUNTY OF DUPAGE)

THIS IS TO CERTIFY THAT **CYDELEX TRUST** IS THE RECORD OWNER OF THE PROPERTY DESCRIBED IN THE SURVEYOR'S CERTIFICATE AFFIXED HEREON, AND DOES HEREBY CONSENT TO THE SUBDIVISION OF SAID PROPERTY, AND THE VARIOUS DEDICATIONS, GRANTS AND RESERVATIONS OF EASEMENT AND RIGHT-OF-WAY DEPICTED HEREON.

DATED THIS _____ DAY OF _____, A.D., 20_____.

_____
SIGNATURE
PLEASE TYPE/PRINT THE AUTHORIZED INDIVIDUAL'S NAME, TITLE

CORPORATION/COMPANY NAME, AND ADDRESS:
CYDELEX TRUST
TWO NORTHFIELD PLAZA SUITE 320,
NORTHFIELD, IL 60093

AFFIX CORPORATE SEAL IF APPROPRIATE

NOTARY CERTIFICATE:

STATE OF ILLINOIS)
) SS
COUNTY OF _____)

I, THE UNDERSIGNED, A NOTARY PUBLIC IN AND FOR THE AFORESAID COUNTY AND STATE, DO HEREBY CERTIFY THAT THE FOREGOING SIGNATOR OF THE OWNER'S CERTIFICATE IS PERSONALLY KNOWN TO ME TO BE THE SAME PERSON WHOSE NAME IS SUBSCRIBED TO THE FOREGOING INSTRUMENT, AND THAT SAID INDIVIDUAL APPEARED AND DELIVERED SAID INSTRUMENT AS A FREE AND VOLUNTARY ACT OF THE CORPORATION AND THAT SAID INDIVIDUAL DID ALSO THEN AND THERE ACKNOWLEDGE THAT HE OR SHE IS A CUSTODIAN OF THE CORPORATE SEAL OF SAID CORPORATION AND DID AFFIX SAID SEAL OF SAID CORPORATION TO SAID INSTRUMENT AS HIS OR HER OWN FREE AND VOLUNTARY ACT AND AS THE FREE AND VOLUNTARY ACT OF SAID CORPORATION, AS OWNER, FOR THE USES AND PURPOSES THEREIN SET FORTH IN THE AFORESAID INSTRUMENT.

GIVEN UNDER MY HAND AND NOTARIAL SEAL THIS_____DAY OF _____, A.D. 20____.

BY:_____
NOTARY PUBLIC

COMMISSION EXPIRES_____

SCHOOL DISTRICT BOUNDARY STATEMENT

THE UNDERSIGNED, BEING DULY SWORN, UPON HIS/HER OATH DEPOSES AND STATES AS FOLLOWS:

THAT **CYDELEX TRUST** IS THE OWNER OF THE PROPERTY LEGALLY DESCRIBED ON A PROPOSED PLAT OF SUBDIVISION SUBMITTED TO THE CITY FOR APPROVAL, WHICH LEGAL DESCRIPTION IS ATTACHED HERETO AND INCORPORATED BY REFERENCE HEREIN;

AND TO THE BEST OF THE OF OWNER'S KNOWLEDGE AND BELIEF, SAID SUBDIVISION IS PARTIALLY LOCATED WITHIN THE BOUNDARIES OF THE WHEATON-WARRENVILLE COMMUNITY UNIT SCHOOL DISTRICT NO. 200, AND PARTIALLY LOCATED WITHIN THE NAPERVILLE COMMUNITY UNIT SCHOOL DISTRICT NO. 203.

DATED THIS _____ DAY OF _____, A.D., 20_____.

_____
OWNER

OWNER'S CERTIFICATE (OUTLOT "A"):

STATE OF ILLINOIS)
) SS
COUNTY OF DUPAGE)

THIS IS TO CERTIFY THAT **CANTERA OWNERS ASSOCIATION** IS THE RECORD OWNER OF THE PROPERTY DESCRIBED IN THE SURVEYOR'S CERTIFICATE AFFIXED HEREON, AND DOES HEREBY CONSENT TO THE SUBDIVISION OF SAID PROPERTY, AND THE VARIOUS DEDICATIONS, GRANTS AND RESERVATIONS OF EASEMENT AND RIGHT-OF-WAY DEPICTED HEREON.

DATED THIS _____ DAY OF _____, A.D., 20_____.

_____
SIGNATURE
PLEASE TYPE/PRINT THE AUTHORIZED INDIVIDUAL'S NAME, TITLE

CORPORATION/COMPANY NAME, AND ADDRESS:
CANTERA OWNERS ASSOCIATION
4320 WINFIELD ROAD
WARRENVILLE, IL 60555

AFFIX CORPORATE SEAL IF APPROPRIATE

NOTARY CERTIFICATE:

STATE OF ILLINOIS)
) SS
COUNTY OF _____)

I, THE UNDERSIGNED, A NOTARY PUBLIC IN AND FOR THE AFORESAID COUNTY AND STATE, DO HEREBY CERTIFY THAT THE FOREGOING SIGNATOR OF THE OWNER'S CERTIFICATE IS PERSONALLY KNOWN TO ME TO BE THE SAME PERSON WHOSE NAME IS SUBSCRIBED TO THE FOREGOING INSTRUMENT, AND THAT SAID INDIVIDUAL APPEARED AND DELIVERED SAID INSTRUMENT AS A FREE AND VOLUNTARY ACT OF THE CORPORATION AND THAT SAID INDIVIDUAL DID ALSO THEN AND THERE ACKNOWLEDGE THAT HE OR SHE IS A CUSTODIAN OF THE CORPORATE SEAL OF SAID CORPORATION AND DID AFFIX SAID SEAL OF SAID CORPORATION TO SAID INSTRUMENT AS HIS OR HER OWN FREE AND VOLUNTARY ACT AND AS THE FREE AND VOLUNTARY ACT OF SAID CORPORATION, AS OWNER, FOR THE USES AND PURPOSES THEREIN SET FORTH IN THE AFORESAID INSTRUMENT.

GIVEN UNDER MY HAND AND NOTARIAL SEAL THIS_____DAY OF _____, A.D. 20____.

BY:_____
NOTARY PUBLIC

COMMISSION EXPIRES_____

SCHOOL DISTRICT BOUNDARY STATEMENT

THE UNDERSIGNED, BEING DULY SWORN, UPON HIS/HER OATH DEPOSES AND STATES AS FOLLOWS: THAT **CANTERA OWNERS ASSOCIATION** IS THE OWNER OF THE PROPERTY LEGALLY DESCRIBED ON A PROPOSED PLAT OF SUBDIVISION SUBMITTED TO THE CITY FOR APPROVAL, WHICH LEGAL DESCRIPTION IS ATTACHED HERETO AND INCORPORATED BY REFERENCE HEREIN; AND TO THE BEST OF THE OF OWNER'S KNOWLEDGE AND BELIEF, SAID SUBDIVISION IS PARTIALLY LOCATED WITHIN THE BOUNDARIES OF THE WHEATON-WARRENVILLE COMMUNITY UNIT SCHOOL DISTRICT NO. 200, AND PARTIALLY LOCATED WITHIN THE NAPERVILLE COMMUNITY UNIT SCHOOL DISTRICT NO. 203.

DATED THIS _____ DAY OF _____, A.D., 20_____.

_____
OWNER

OWNER'S CERTIFICATE (LOT 2):

STATE OF ILLINOIS)
) SS
COUNTY OF DUPAGE)

THIS IS TO CERTIFY THAT **CANTERA DEVELOPMENT HOLDINGS LLC**, A_____ ILLINOIS CORPORATION, IS THE RECORD OWNER OF THE PROPERTY DESCRIBED IN THE SURVEYOR'S CERTIFICATE AFFIXED HEREON, AND DOES HEREBY CONSENT TO THE SUBDIVISION OF SAID PROPERTY, AND THE VARIOUS DEDICATIONS, GRANTS AND RESERVATIONS OF EASEMENT AND RIGHT-OF-WAY DEPICTED HEREON.

DATED THIS _____ DAY OF _____, A.D., 20_____.

_____
SIGNATURE
PLEASE TYPE/PRINT THE AUTHORIZED INDIVIDUAL'S NAME, TITLE

CORPORATION/COMPANY NAME, AND ADDRESS:
CANTERA DEVELOPMENT HOLDINGS LLC
TWO NORTHFIELD PLAZA, SUITE # 320
NORTHFIELD, IL 60093

AFFIX CORPORATE SEAL IF APPROPRIATE

NOTARY CERTIFICATE:

STATE OF ILLINOIS)
) SS
COUNTY OF _____)

I, THE UNDERSIGNED, A NOTARY PUBLIC IN AND FOR THE AFORESAID COUNTY AND STATE, DO HEREBY CERTIFY THAT THE FOREGOING SIGNATOR OF THE OWNER'S CERTIFICATE IS PERSONALLY KNOWN TO ME TO BE THE SAME PERSON WHOSE NAME IS SUBSCRIBED TO THE FOREGOING INSTRUMENT, AND THAT SAID INDIVIDUAL APPEARED AND DELIVERED SAID INSTRUMENT AS A FREE AND VOLUNTARY ACT OF THE CORPORATION AND THAT SAID INDIVIDUAL DID ALSO THEN AND THERE ACKNOWLEDGE THAT HE OR SHE IS A CUSTODIAN OF THE CORPORATE SEAL OF SAID CORPORATION AND DID AFFIX SAID SEAL OF SAID CORPORATION TO SAID INSTRUMENT AS HIS OR HER OWN FREE AND VOLUNTARY ACT AND AS THE FREE AND VOLUNTARY ACT OF SAID CORPORATION, AS OWNER, FOR THE USES AND PURPOSES THEREIN SET FORTH IN THE AFORESAID INSTRUMENT.

GIVEN UNDER MY HAND AND NOTARIAL SEAL THIS_____DAY OF _____, A.D. 20____.

BY:_____
NOTARY PUBLIC

COMMISSION EXPIRES_____

SCHOOL DISTRICT BOUNDARY STATEMENT

THE UNDERSIGNED, BEING DULY SWORN, UPON HIS/HER OATH DEPOSES AND STATES AS FOLLOWS: THAT **CANTERA DEVELOPMENT HOLDINGS LLC** IS THE OWNER OF THE PROPERTY LEGALLY DESCRIBED ON A PROPOSED PLAT OF SUBDIVISION SUBMITTED TO THE CITY FOR APPROVAL, WHICH LEGAL DESCRIPTION IS ATTACHED HERETO AND INCORPORATED BY REFERENCE HEREIN; AND TO THE BEST OF THE OF OWNER'S KNOWLEDGE AND BELIEF, SAID SUBDIVISION IS PARTIALLY LOCATED WITHIN THE BOUNDARIES OF THE WHEATON-WARRENVILLE COMMUNITY UNIT SCHOOL DISTRICT NO. 200, AND PARTIALLY LOCATED WITHIN THE NAPERVILLE COMMUNITY UNIT SCHOOL DISTRICT NO. 203.

DATED THIS _____ DAY OF _____, A.D., 20_____.

_____
OWNER

OWNER'S SURFACE WATER DRAINAGE CERTIFICATE

STATE OF ILLINOIS)
) SS
COUNTY OF DUPAGE)

THIS IS TO CERTIFY THAT OWNER(S) OF THE LAND HEREIN DESCRIBED OR DULY AUTHORIZED ATTORNEY CERTIFY THAT TO THE BEST OF MY KNOWLEDGE AND BELIEF THE DRAINAGE OF SURFACE WATERS WILL NOT BE CHANGED BY THE CONSTRUCTION OF SUCH SUBDIVISION OR ANY PART THEREOF, OR THAT, IF SUCH SURFACE WATER DRAINAGE WILL BE CHANGED, ADEQUATE PROVISION HAS BEEN MADE FOR COLLECTION AND DIVERSION OF SUCH SURFACE WATERS INTO PUBLIC AREAS, OR DRAINS WHICH THE SUBDIVIDER HAS A RIGHT TO USE, AND THAT SUCH SURFACE WATERS WILL NOT BE DEPOSITED ON THE PROPERTY OF ADJOINING LAND OWNERS IN SUCH CONCENTRATIONS AS MAY CAUSE DAMAGE TO THE ADJOINING PROPERTY BECAUSE OF THE CONSTRUCTION OF THE SUBDIVISION.

_____
NAME & TITLE (IF ANY)

_____
ADDRESS

DATED THIS _____ DAY OF _____, 20_____.

SURVEYOR'S AUTHORIZATION CERTIFICATION:

STATE OF ILLINOIS)
) S.S.
COUNTY OF COOK)

I, ROY G. LAWNICZAK, A REGISTERED PROFESSIONAL ILLINOIS LAND SURVEYOR NO. 35-2290, DO HEREBY AUTHORIZE THE CITY OF WARRENVILLE OR THEIR AGENT TO FILE WITH THE DU PAGE COUNTY RECORDER'S OFFICE THE PLAT KNOWN AS **CANTERA SUB-AREA "C" LOT 2 SUBDIVISION.**

BY:_____
ROY G. LAWNICZAK, REGISTERED ILLINOIS LAND SURVEYOR NO. 35-2290
LICENSE EXPIRES: NOVEMBER 30, 2020
PROFESSIONAL DESIGN FIRM LICENSE NO.: 184-004576
LICENSE EXPIRES: APRIL 30, 2019

OWNER'S CERTIFICATE (LOT 3):

STATE OF ILLINOIS)
) SS
COUNTY OF DUPAGE)

THIS IS TO CERTIFY THAT **CANTERA TOWNHOMES LLC** IS THE RECORD OWNER OF THE PROPERTY DESCRIBED IN THE SURVEYOR'S CERTIFICATE AFFIXED HEREON, AND DOES HEREBY CONSENT TO THE SUBDIVISION OF SAID PROPERTY, AND THE VARIOUS DEDICATIONS, GRANTS AND RESERVATIONS OF EASEMENT AND RIGHT-OF-WAY DEPICTED HEREON.

DATED THIS _____ DAY OF _____, A.D., 20_____.

_____
SIGNATURE
PLEASE TYPE/PRINT THE AUTHORIZED INDIVIDUAL'S NAME, TITLE

CORPORATION/COMPANY NAME, AND ADDRESS:
CANTERA TOWNHOMES LLC
550 FRONTAGE ROAD, SUITE # 3700
NORTHFIELD, IL 60093

AFFIX CORPORATE SEAL IF APPROPRIATE

NOTARY CERTIFICATE:

STATE OF ILLINOIS)
) SS
COUNTY OF _____)

I, THE UNDERSIGNED, A NOTARY PUBLIC IN AND FOR THE AFORESAID COUNTY AND STATE, DO HEREBY CERTIFY THAT THE FOREGOING SIGNATOR OF THE OWNER'S CERTIFICATE IS PERSONALLY KNOWN TO ME TO BE THE SAME PERSON WHOSE NAME IS SUBSCRIBED TO THE FOREGOING INSTRUMENT, AND THAT SAID INDIVIDUAL APPEARED AND DELIVERED SAID INSTRUMENT AS A FREE AND VOLUNTARY ACT OF THE CORPORATION AND THAT SAID INDIVIDUAL DID ALSO THEN AND THERE ACKNOWLEDGE THAT HE OR SHE IS A CUSTODIAN OF THE CORPORATE SEAL OF SAID CORPORATION AND DID AFFIX SAID SEAL OF SAID CORPORATION TO SAID INSTRUMENT AS HIS OR HER OWN FREE AND VOLUNTARY ACT AND AS THE FREE AND VOLUNTARY ACT OF SAID CORPORATION, AS OWNER, FOR THE USES AND PURPOSES THEREIN SET FORTH IN THE AFORESAID INSTRUMENT.

GIVEN UNDER MY HAND AND NOTARIAL SEAL THIS_____DAY OF _____, A.D. 20____.

BY:_____
NOTARY PUBLIC

COMMISSION EXPIRES_____

SCHOOL DISTRICT BOUNDARY STATEMENT

THE UNDERSIGNED, BEING DULY SWORN, UPON HIS/HER OATH DEPOSES AND STATES AS FOLLOWS:

THAT **CANTERA TOWNHOMES LLC** IS THE OWNER OF THE PROPERTY LEGALLY DESCRIBED ON A PROPOSED PLAT OF SUBDIVISION SUBMITTED TO THE CITY FOR APPROVAL, WHICH LEGAL DESCRIPTION IS ATTACHED HERETO AND INCORPORATED BY REFERENCE HEREIN;

AND TO THE BEST OF THE OF OWNER'S KNOWLEDGE AND BELIEF, SAID SUBDIVISION IS PARTIALLY LOCATED WITHIN THE BOUNDARIES OF THE WHEATON-WARRENVILLE COMMUNITY UNIT SCHOOL DISTRICT NO. 200, AND PARTIALLY LOCATED WITHIN THE NAPERVILLE COMMUNITY UNIT SCHOOL DISTRICT NO. 203.

DATED THIS _____ DAY OF _____, A.D., 20_____.

_____
OWNER

ENGINEER'S SURFACE WATER DRAINAGE CERTIFICATE:

STATE OF ILLINOIS)
) SS
COUNTY OF DUPAGE)

THIS IS TO CERTIFY THAT I, A REGISTERED PROFESSIONAL ENGINEER, CERTIFY THAT TO THE BEST OF MY KNOWLEDGE AND BELIEF THAT DRAINAGE OF SURFACE WATERS WILL NOT BE CHANGED BY CONSTRUCTION OF SUCH SUBDIVISION OR ANY PART THEREOF, OR THAT IF SUCH SURFACE WATER DRAINAGE WILL BE CHANGED, ADEQUATE PROVISIONS HAVE BEEN MADE FOR COLLECTION AND DIVERSION OF SUCH SURFACE WATERS INTO PUBLIC AREAS, OR DRAINS WHICH THE SUBDIVIDER HAS THE RIGHT TO USE, AND THAT SUCH SURFACE WATERS WILL NOT BE DEPOSITED ON THE PROPERTY OF ADJOINING LAND OWNERS IN SUCH CONCENTRATIONS AS MAY CAUSE DAMAGE TO THE ADJOINING PROPERTY BECAUSE OF THE CONSTRUCTION OF THE SUBDIVISION.

_____
NAME

_____
ADDRESS

_____
REGISTRATION NUMBER

DATED THIS _____ DAY OF _____, A.D. 20_____.

PROJECT No.:	2017-24719-1
ISSUE DATE:	12/4/17
SCALE:	1"=80'
SHEET NUMBER	3 OF 4

PETITIONER:
CANTERA DEVELOPMENT HOLDINGS LLC
TWO NORTHFIELD PLAZA, SUITE # 320
NORTHFIELD, IL 60093

PLAT PREPARED BY:
UNITED SURVEY SERVICE, LLC
CONSTRUCTION AND LAND SURVEYORS
7710 CENTRAL AVENUE, RIVER FOREST, IL 60305
TEL.: (847) 299 - 1010 FAX : (847) 299 - 5887
E-MAIL: USURVEY@USANDCS.COM

NO.	REVISIONS	DATE
1	REVISED PER COMMENTS	12/20/17
2	REVISED LOTS AND AREAS	01/05/18
3	REVISED PER COMMENTS	01/08/18
4	ADDED CERTIFICATES & NOTE	05/21/18
5	REVISED	06/22/18
6	REVISED PER COMMENTS	1/22/19
7	REVISED	02/12/19
8	REVISED PER COMMENTS	04/17/19

FINAL PLAT OF SUBDIVISION

CANTERA SUB-AREA "C", LOT 2 SUBDIVISION

OF PART OF THE NORTHEAST 1/4 OF SECTION 2, TOWNSHIP 38 NORTH, RANGE 9, EAST OF THE THIRD PRINCIPAL MERIDIAN, IN DUPAGE COUNTY, ILLINOIS

MAIL PLAT TO:

CITY OF WARRENVILLE
28W701 STAFFORD PLACE
WARRENVILLE, IL 60555

CITY COLLECTOR CERTIFICATE:

STATE OF ILLINOIS)
) SS
COUNTY OF DUPAGE)

I, _____ COLLECTOR OF THE CITY OF WARRENVILLE, DO HEREBY CERTIFY THAT THERE ARE NO DELINQUENT OR UNPAID CURRENT OR FORFEITED SPECIAL ASSESSMENTS OR ANY INSTALLMENTS THEREOF THAT HAVE BEEN APPORTIONED AGAINST THE TRACT OF LAND INCLUDED IN THE PLAT. DUE AGAINST THE LAND INCLUDED IN THE PLAN HEREON DRAWN.

DATED AT WARRENVILLE, DUPAGE COUNTY, ILLINOIS
THIS _____ DAY OF _____ , A.D., 20_____.

BY: _____
CITY COLLECTOR

CITY COUNCIL CERTIFICATE:

STATE OF ILLINOIS)
) SS
COUNTY OF DUPAGE)

THIS IS TO CERTIFY THAT THE CITY COUNCIL OFTHE CITY OF WARRENVILLE, ILLINOIS, HAS REVIEWED AND APPROVED THIS PLAT.

DATED AT WARRENVILLE, DUPAGE COUNTY, ILLINOIS
THIS _____ DAY OF _____ , A.D., 20_____.

BY: _____
MAYOR

ATTEST: _____
CITY CLERK

CITY ENGINEER'S CERTIFICATE:

STATE OF ILLINOIS)
) SS
COUNTY OF DUPAGE)

I, _____, CITY ENGINEER OF THE CITY OF WARRENVILLE, ILLINOIS, HEREBY CERTIFY THAT THE LAND IMPROVMENTS DESCRIBED IN THE PLAT, AND THE PLANS AND SPRCIFICATIONS THEREFORE, MEET THE MINIMUM REQUIREMENTS OF SAID CITY AND HAVE BEEN APPROVED BY ALL PUBLIC AUTHORITIES HAVING JURISDICTION THEREOF.

DATED AT WARRENVILLE, DUPAGE COUNTY, ILLINOIS
THIS _____ DAY OF _____ , A.D., 20_____.

BY: _____
CITY ENGINEER

CITY CLERK'S CERTIFICATE:

STATE OF ILLINOIS)
) SS
COUNTY OF DUPAGE)

I, _____, CITY CLERK OF THE CITY OF WARRENVILLE, ILLINOIS HEREBY CERTIFY THAT THE PLAT WAS PRESENTED TO AND BY ORDINANCE DULY APPROVED BY THE CITY COUNCIL OF SAID CITY AT ITS MEETING HELD ON _____, 20___, AND THAT THE REQUIRED BOND OR OTHER GUARANTEE HAS BEEN POSTED FOR THE COMPLETION OF THE IMPROVEMENTS REQUIRED BY THE REGULATIONS OF SAID CITY.

IN WITNESS WHEREOF, I HAVE HERETO SET MY HAND AND SEAL OF THE CITY OF WARRENVILLE, ILLINOIS, THIS ____ DAY OF _____, 20___.

BY: _____
CITY CLERK

PLAN COMMISSION CERTIFICATE:

STATE OF ILLINOIS)
) SS
COUNTY OF DUPAGE)

THIS IS TO CERTIFY THAT MEMBERS OF THE PLAN COMMISSION OF THE CITY OF WARRENVILLE, ILLINOIS HAVE REVIEWED AND APPROVED THIS PLAT.

DATED AT WARRENVILLE, DUPAGE COUNTY, ILLINOIS
THIS _____ DAY OF _____ , A.D., 20_____.

BY: _____
CHAIRMAN

ATTEST: _____
SECRETARY

COUNTY CLERK'S CERTIFICATE:

STATE OF ILLINOIS)
) SS
COUNTY OF DUPAGE)

I, THE UNDERSIGNED, AS COUNTY CLERK OF DUPAGE COUNTY, ILLINOIS, DO HEREBY CERTIFY THAT THERE ARE NO DELINQUENT GENERAL TAXES, NO UNPAID OR FORFEITED TAXES, AND NO REDEEMABLE TAX SALES AGAINST ANY OF THE LAND DEPICTED HEREON.

I FURTHER CERTIFY THAT I HAVE RECEIVED ALL STATUTORY FEES IN CONNECTION WITH THE PLAT DEPICTED HEREON.

GIVEN UNDER MY HAND AND SEAL OF THE COUNTY CLERK AT WHEATON, DUPAGE COUNTY, ILLINOIS, THIS _____ DAY OF _____ , A.D., 20_____.

BY: _____
COUNTY CLERK

COUNTY ENGINEER'S CERTIFICATE:

STATE OF ILLINOIS)
) SS
COUNTY OF DUPAGE)

I, _____, COUNTY ENGINEER OF SAID COUNTY, DO HEREBY CERTIFY THAT THE PLAT HAS BEEN EXAMINED BY ME AND FOUND TO COMPLY WITH THE HIGHWAY REQUIREMENTS AS SET FORTH IN A REGULATION GOVERNING PLATS OF SUBDIVISION LANDS ADOPTED BY THE COUNTY BOARD OF DUPAGE COUNTY, ILLINOIS.

DATED AT WARRENVILLE, DUPAGE COUNTY, ILLINOIS
THIS _____ DAY OF _____ , A.D., 20_____.

BY: _____
COUNTY ENGINEER

COUNTY RECORDER'S CERTIFICATE

STATE OF ILLINOIS)
) S S
COUNTY OF DUPAGE)

I, THE UNDERSIGNED, AS THE RECORDER OF DEEDS FOR DUPAGE COUNTY DO HEREBY CERTIFY THAT INSTRUMENT NUMBER_____ WAS FILED FOR RECORD IN THE RECORDER'S OFFICE OF _____ COUNTY, ILLINOIS, ON THE _____ DAY OF _____, A.D., 20_____ AT _____ O'CLOCK _____.M.

BY: _____
RECORDER OF DEEDS

CERTIFICATE OF DUPAGE COUNTY DIVISION TRANSPORTATION ENGINEER:

STATE OF ILLINOIS)
) SS
COUNTY OF DUPAGE)

THIS PLAT HAS BEEN APPROVED BY THE DUPAGE COUNTY DIVISION OF TRANSPORTATION WITH RESPECT TO ROADWAY ACCESS TO COUNTY HIGHWAY # 3 (FERRY ROAD) PURSUANT TO 765 ILCS 205/2; HOWEVER, A HIGHWAY PERMIT FOR ACCESS IS REQUIRED OF THE OWNER OF THE PROPERTY PRIOR TO CONSTRUCTION WITHIN THE COUNTY'S RIGHTS-OF-WAY.

DATED THIS _____ DAY OF _____, A.D. 20_____.

BY: _____
DUPAGE COUNTY DIVISION TRANSPORTATION ENGINEER

UTILITY AND DRAINAGE EASEMENT PROVISIONS

EASEMENTS ARE RESERVED FOR AND GRANTED TO THE CITY OF WARRENVILLE AND TO THOSE PUBLIC UTILITY COMPANIES OPERATING UNDER FRANCHISE FROM THE CITY, INCLUDING BUT NOT LIMITED TO, COMMONWEALTH EDISON COMPANY, NICOR GAS COMPANY, AT&T, COMCAST, AND THEIR SUCCESSORS AND ASSIGNS, OVER ALL THE AREAS MARKED "UTILITY & DRAINAGE EASEMENT ON THE PLAT FOR THE PERPETUAL RIGHT, PRIVILEGE AND AUTHORITY TO CONSTRUCT, RECONSTRUCT, REPAIR, INSPECT, MAINTAIN, AND OPERATE VARIOUS TRANSMISSION AND DISTRIBUTION SYSTEMS, AND INCLUDING STORM AND/OR SANITARY SEWERS, TOGETHER WITH ANY AND ALL NECESSARY MANHOLES, CATCH BASINS, CONNECTIONS, APPLIANCES, AND OTHER STRUCTURES AND APPURTENANCES AS MAY BE DEEMED NECESSARY BY SAID CITY, OVER, UPON, ALONG, UNDER AND THROUGH SAID INDICTED EASEMENT, TOGETHER WITH RIGHT OF ACCESS ACROSS THE PROPERTY FOR NECESSARY WORKERS AND EQUIPMENT TO DO ANY OF THE ABOVE WORK. THE RIGHT IS ALSO GRANTED TO CUT DOWN, TRIM OR REMOVE ANY TREES, SHRUBS OR OTHER PLANTS ON THE EASEMENT. EASEMENTS ARE HEREBY RESERVED AND GRANTED TO THE CITY AND OTHER GOVERNMENT AL AUTHORITIES HAVING JURISDICTION OF THE LAND SUBDIVIDED HEREBY, OVER THE ENTIRE EASEMENT AREA FOR INGRESS, EGRESS, AND THE PERFORMANCE OF MUNICIPAL AND OTHER GOVERNMENT AL SERVICES, INCLUDING WATER, STORM AND SANITARY SEWER SERVICE AND MAINTENANCE.

STORMWATER MANAGEMENT EASEMENT PROVISIONS

THE OWNERS, ON BEHALF OF ITSELF, ITS SUCCESSORS AND ASSIGNS, AND ALL FUTURE HOLDERS OF TITLE TO THE PROPERTY WHICH IS THE SUBJECT OF THIS PLAT (COLLECTIVELY, THE "OWNER"), HEREBY COVENANTS AND AGREES WITH THE CITY OF WARRENVILLE (THE "CITY") AS FOLLOWS:
THE OWNER SHALL MAINTAIN, OPERATE AND REPAIR THE PORTIONS OF THE PROPERTY IDENTIFIED ON THIS PLAT AS "STORMWATER MANAGEMENT EASEMENT ALL TIMES IN A MANNER CONSISTENT WITH THE PLANS AND SPECIFICATIONS APPROVED BY THE CITY (AND UPON REQUEST, FURNISH PROOF OF COMPLIANCE THEREWITH). NO PERMANENT BUILDING, OR UTILITY FACILITIES SHALL BE CONSTRUCTED ON THE STORMWATER MANAGEMENT EASEMENT AREAS BY THE OWNER, OR THE OWNER'S SUCCESSORS IN INTEREST, BUT SAID STORMWATER MANAGEMENT EASEMENT MAY BE USED FOR OTHER PURPOSES THAT DO NOT NOW OR LATER INTERFERE OR CONFLICT WITH THE AFORESAID USES OR RIGHTS OR IN ANYWAY AFFECT OR IMPEDE THE STORAGE OR FREE FLOW OF STORMWATER ON AND OVER SAID STORMWATER MANAGEMENT EASEMENT. THE OWNER GRANTS TO THE CITY AND ITS DESIGNEES THE RIGHT OF ACCESS UPON, OVER AND ACROSS THE PROPERTY TO INSPECT THE STORMWATER MANAGEMENT EASEMENT AREA AND TO PERFORM ANY MAINTENANCE OF SAID AREAS (AND TO STORE EQUIPMENT NECESSARY THEREFORE) WHICH THE OWNER HAS FAILED TO PERFORM, IF SUCH FAILURE CONTINUES FOR THIRTY (30) DAYS AFTER WRITTEN NOTICE FROM THE CITY OF SUCH FAILURE. THE CITY MAY ENTER UPON THE PROPERTY AND PERFORM SUCH WORK AS SHOULD HAVE BEEN UNDERTAKEN BY THE OWNER, WITHOUT NOTICE TO THE OWNER, IN AN EMERGENCY (E.G. WHERE PERSONAL INJURY OR MATERIAL DAMAGE TO PROPERTY MAY BE IMMINENT). THE OWNER SHALL BE LIABLE FOR THE COST OF ANY MAINTENANCE SO PERFORMED BY THE CITY AND SHALL PROMPTLY REIMBURSE THE CITY FOR SUCH COSTS, WITH INTEREST AT A STATUTORY PRE-JUDGMENT RATE CALCULATED FROM THE DATE OF EXPENDITURE. UPON RECORDATION BY THE CITY OF A CLAIM FOR REIMBURSEMENT, THE CITY SHALL HAVE A FORECLOSABLE LIEN UPON THE PROPERTY TO SECURE REIMBURSEMENT. IN ADDITION TO OTHER REMEDIES PROVIDED FOR ABOVE, UPON THE OWNER'S FAILURE TO MAINTAIN THE STORMWATER MANAGEMENT EASEMENT AREAS (AFTER NOTICE WHERE REQUIRED AS AFORESAID), THE CITY SHALL BE ENTITLED TO ALL REMEDIES AT LAW OR EQUITY TO ENFORCE THIS AGREEMENT, INCLUDING ALL REMEDIES FOR THE ABATEMENT OF A NUISANCE, WHICH REMEDIES SHALL BE CUMULATIVE AND NOT EXCLUSIVE. IF A JUDGMENT IS ENTERED AGAINST THE OWNER, THE OWNER SHALL PAY ALL REASONABLE ATTORNEYS FEES AND COSTS OF THE CITY. THE CITY SHALL NOT BE LIABLE TO THE OWNER OR ANY PARTY CLAIMING THROUGH THE OWNER FOR ANY DAMAGE CAUSED BY IT IN THE PERFORMANCE OF ANY MAINTENANCE UNDERTAKEN PURSUANT TO THIS AGREEMENT, UNLESS SUCH DAMAGE IS CAUSED BY WANTON OR WILLFUL CONDUCT. FAILURE TO ENFORCE A RIGHT GRANTED HEREUNDER SHALL NOT BE DEEMED A WAIVER OF SUCH RIGHT OR ANY OTHER RIGHTS HEREUNDER. NO PARTY SHALL BE LIABLE FOR FAILURE TO ENFORCE THE PROVISIONS HEREOF. THE OWNER RESERVES UNTO ITSELF ALL RIGHTS NOT MATERIALLY INCONSISTENT WITH THESE PROVISIONS, INCLUDING THE RIGHT TO IMPROVE THE PROPERTY AND TO GRANT EASEMENTS AND OTHER RIGHTS AND INTERESTS IN AND TO SAID PROPERTY. THE OWNER'S OBLIGATIONS UNDER THESE PROVISIONS MAY BE ASSUMED BY AN OWNER'S ASSOCIATION. UPON WRITTEN NOTICE OF SUCH ASSUMPTION, ANY NOTICE BY THE CITY OF NON-PERFORMANCE SHALL BE GIVEN TO SUCH OWNER'S ASSOCIATION. HOWEVER, EACH OWNER (IF THERE IS THEN MORE THAN ONE) IS AND SHALL REMAIN INDIVIDUALLY AND COLLECTIVELY LIABLE FOR ALL OF THE OBLIGATIONS OF THE OWNER HEREUNDER IF THE ASSOCIATION FAILS TO PERFORM SUCH OBLIGATIONS. IF TITLE TO ALL OR ANY PART OF THE PROPERTY IS VESTED IN A LAND TRUST, ANY BENEFICIARIES THEREOF SHALL BE PERSONALLY LIABLE FOR ALL OBLIGATIONS IMPOSED HEREBY ON THE OWNER OF SUCH PROPERTY OR PORTION THEREOF SO OWNED.

CITY EASEMENT PROVISIONS

A PERMANENT EXCLUSIVE EASEMENT IS HEREBY EXCLUSIVELY RESERVED FOR AND GRANTED TO THE CITY OF WARRENVILLE, ILLINOIS, AND ITS SUCCESSORS AND ASSIGNS (COLLECTIVELY "GRANTED") IN, UPON, ACROSS, UNDER AND THROUGH THE AREAS LABELED "CITY EASEMENT" ON THIS PLAT FOR THE PURPOSE OF INSTALLING, CONSTRUCTING, INSPECTING, OPERATING, REPLACING, RENEWING, ALTERING, ENLARGING, REMOVING, REPAIRING, CLEANING AND MAINTAINING THE STORM SEWER, SANITARY SEWER, WATER MAIN AND APPURTENANCES ("UTILITIES") TO EACH AND SUCH OTHER INSTALLATIONS AND SERVICE CONNECTIONS AS MAY BE REQUIRED TO FURNISH SERVICES TO SUCH PROPERTY AND ADJACENT AREAS, TOGETHER WITH THE RIGHT OF ACCESS ACROSS THE REAL ESTATE PLATTED HEREON FOR THE NECESSARY PERSONNEL AND EQUIPMENT TO DO ANY OR ALL OF THE ABOVE WORK. ALL SUCH UTILITY LINES SHALL BE UNDERGROUND ONLY. OTHER UTILITIES MAY INSTALL THEIR FACILITIES ACROSS THE CITY EASEMENT AREA, PERPENDICULAR, BUT NO PARALLEL TO THE CITY'S UNDERGROUND UTILITY LINES. NO PERMANENT BUILDINGS, ACCCESSORY STRUCTURES, FENCES OR ANY OTHER STRUCTURE THAT WOULD IMPEDE ACCESS TO THE UTILITIES OR FUNCTION OF THE SWALE SHALL BE PLACED ON THE EASEMENT, BUT THE PREMISES MAY BE USED FOR PAVED AREAS, DRIVEWAYS AND SIDEWALKS. TREES WITHIN THE EASEMENT SHALL BE PLANTED A MINIMUM OF FIVE FEET (5') FROM THE CENTERLINE OF THE TREE TO THE CENTERLINE OF THE CITY UTILITY PIPE. THE CITY OF WARRENVILLE RESTORATION OBLIGATIONS SHALL BE LIMITED TO TOPSOIL AND SEED FOR TURF GRASS. THE OWNER SHALL BE RESPONSIBLE FOR THE REPAIR OF ALL PAVEMENT, SIDEWALK, CURB, AND ANY OTHER HARD SURFACE. THE OWNER SHALL BE RESPONSIBLE FOR THE REPLACEMENT OBLIGATIONS WITH RESPECT TO TREES AND SHRUBS AND OTHER LANDSCAPING REFLECTING ON THE ORIGINAL LANDSCAPE PLAN APPROVED BY THE CITY OF WARRENVILLE FOR SUCH LOCATIONS.

SURVEYOR'S CERTIFICATE:

STATE OF ILLINOIS)
) S.S.
COUNTY OF COOK)

THIS IS TO CERTIFY THAT , I UNDERSIGNED, AN ILLINOIS PROFESSIONAL LAND SURVEYOR, HAVE SURVEYED AND SUBDIVIDED THE FOLLOWING DESCRIBED PROPERTY:

LOT 2 IN CANTERA SUB-AREA "C" LOTS C1 AND C2, BEING A RESUBDIVISION OF PART OF THE NORTHEAST 1/4 OF SECTION 2, TOWNSHIP 38 NORTH, RANGE 9, EAST OF THE THIRD PRINCIPAL MERIDIAN, ACCORDING TO THE PLAT OF SAID CANTERA SUB-AREA "C" LOTS C1 AND C2 RECORDED JANUARY 19, 2010 AS DOCUMENT R2010-007747, IN DUPAGE COUNTY, ILLINOIS.

AND

OUTLOT "A" IN AMOCO BUSINESS CENTER FINAL PLAT OF SUBDIVISION CANTERA SUBAREA "C", BEING A SUBDIVISION OF PART OF LOT 2 IN CANTERA SERVICE STATION NUMBER 1, TOGETHER WITH PART OF THE NORTHEAST 1/4 OF SECTION 2, TOWNSHIP 38 NORTH, RANGE 9, EAST OF THE THIRD PRINCIPAL MERIDIAN, ACCORDING TO THE PLAT RECORDED FEBRUARY 7, 1996 AS DOCUMENT R96-020336, IN DUPAGE COUNTY, ILLINOIS.

THE PLAT HEREON DRAWN IS A TRUE AND CORRECT REPRESENTATION OF SAID SURVEY AND ACCURATELY DEPICTS SAID PROPERTY. DIMENSIONS ARE SHOWN IN FEET AND DECIMAL PARTS THEREOF. I FURTHER CERTIFY THAT THE PROPERTY SHOWN ON THE PLAT HEREON DRAWN IS SITUATED WITHIN THE CORPORATE LIMITS OF A MUNICIPALITY WHICH HAS ADOPTED A COMPREHENSIVE PLAN AND WHICH IS EXERCISING THE SPECIAL POWERS AUTHORIZED BY DIVISION 12 OF ARTICLE 11 OF THE ILLINOIS MUNICIPAL CODE.

I FURTHER CERTIFY THAT THE SUBJECT PROPERTY IS LOCATED WITHIN AN AREA HAVING A ZONE DESIGNATION **"X" -** AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN AND ZONE DESIGNATION **"A" -** SPECIAL FLOOD HAZARD AREAS, NO BASE FLOOD ELEVATIONS DETERMINED BY THE SECRETARY OF HOUSING AND URBAN DEVELOPMENT, ON FLOOD INSURANCE RATE MAP **17043C0703H,** WITH A DATE OF IDENTIFICATION OF **DECEMBER 16, 2004**, FOR COMMUNITY NUMBER **170218 0703 H**, IN DUPAGE COUNTY, STATE OF ILLINOIS, WHICH IS THE CURRENT FLOOD INSURANCE RATE MAP FOR THE COMMUNITY IN WHICH SAID PROPERTY IS SITUATED.

GIVEN UNDER MY HAND AND SEAL THIS 22nd DAY OF JANUARY, 2019 AT RIVER FOREST, ILLINOIS.

BY:_____
ROY G. LAWNICZAK, REGISTERED ILLINOIS LAND SURVEYOR NO. 35-2290
LICENSE EXPIRES: NOVEMBER 30, 2020
PROFESSIONAL DESIGN FIRM LICENSE NO.: 184-004576
LICENSE EXPIRES: APRIL 30, 2021

ROY G. LAWNICZAK 35-002290 PROFESSIONAL LAND SURVEYOR STATE OF ILLINOIS CHICAGO, IL

PROJECT No.:	2017-24719-1
ISSUE DATE:	12/4/17
SCALE:	1"=80'
SHEET NUMBER	4 OF 4

PETITIONER:
CANTERA DEVELOPMENT HOLDINGS LLC
TWO NORTHFIELD PLAZA,
SUITE # 320
NORTHFIELD, IL 60093

PLAT PREPARED BY:
UNITED SURVEY SERVICE, LLC
CONSTRUCTION AND LAND SURVEYORS
7710 CENTRAL AVENUE, RIVER FOREST, IL 60305
TEL.: (847) 299 - 1010 FAX : (847) 299 - 5887
E-MAIL: USURVEY@USANDCS.COM

NO.	REVISIONS	DATE
1	REVISED PER COMMENTS	12/20/17
2	REVISED LOTS AND AREAS	01/05/18
3	REVISED PER COMMENTS	01/08/18
4	ADDED CERTIFICATES & NOTE	05/21/18
5	REVISED	06/22/18
6	REVISED PER COMMENTS	1/22/19
7	REVISED	02/12/19
8	REVISED PER COMMENTS	04/17/19

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WARRENVILLE

GENERAL APPLICATION INFORMATION FORM

RIVERVIEW WEST DEVELOPMENT
Name of Development/Subdivision

Project Number

Filing Fee

Date Paid

Filing Deposit

Date Paid

INSTRUCTIONS:

- ☐ **Before filing an application, the Warrenville Zoning Ordinance should be reviewed for filing procedures and requirements.**
- ☐ Please print or type. Application must be complete before filing with the City of Warrenville.
- ☐ Filing Fees/Deposits must accompany application.
- ☐ Proof of ownership, disclosure of beneficial interest, and authorization to represent owner must be attached to this application as provided in Zoning Ordinance No. 1018, page 2-4.
- ☐ Six (6) copies of this application, other related application forms and any additional application information required by law and/or in Chapter 2 of the Warrenville Zoning Ordinance shall be submitted simultaneously with this application. The application will not be forwarded to the Plan Commission/Zoning Board of Appeals for consideration until all required information and supporting documentation is submitted.

GENERAL APPLICATION INFORMATION:

1. Name of Applicant/Developer John C. Schiess, Architect
2. Address of Applicant/Developer 400 Ashland Ave River Forest, Illinois 60305
3. Phone 708-366-1500 Fax
4. E-mail Address john@jcsarchitect.com
5. Subject Property Address: 28301 Ferry Rd Warrenville,
6. Permanent Parcel Identification Number(s) PIN(s) of the Subject Property:
   See attached plat of survey completed by United Survey

7. Legal Description of the Subject Property:

See attached plat of survey completed by United

If additional space is required, the complete legal description may be attached to this application.

8. Name, mailing address, phone number, fax number and e-mail address of Property Owner if different from Applicant/Developer:

Cantera Apartments, Inc.

Address Two Northfield Plaza Suite #320 Northfield , Illinois 60093

Phone 847-562-2001 Fax

E-mail Address igor@interforumholdings.com

9. Name(s), mailing address(es), phone number(s), fax number(s) and e-mail address(es) of Developer, Site Engineer, Attorney and other Consultants involved in the project *(attach addendum if necessary):*

See attached Developer Site Engineer and Consultants

Address

Phone Fax

E-mail Address

10. Description of Present and Proposed Use of Property:

The current use is commercial/office park and the proposed use of the property will be mixed use residential and commercial

11. Present Zoning of Subject Property: Commercial / Office Park Use

REQUESTS: *(Check all Proposed/Requested action(s) that apply)*

- ☐ Zoning Ordinance Variation (Submit Application Form A)
- ☐ Special Use (Submit Application Form B)
- ☐ Rezoning/Map Amendment (Submit Application Form C)
- ☐ Landscape Relief
- ☐ Subdivision Control Ordinance Variation
- ☐ Land Division
- ☐ Plat of Subdivision/Resubdivision
- ☐ Preliminary Planned Unit Development (Submit Application Form D)
- ☐ Final Planned Unit Development (Submit Application Form D)
- ☐ Planned Unit Development Exceptions (Submit Application Form D)
- ☐ Minor Amendment to Approved Final PUD Plans (Submit Minor PUD Amendment Form)
- ☐ Major Amendment to Approved Final PUD Plans (Submit Major PUD Amendment Form)
- ☐ Annexation (Submit Annexation Petition)
- ☐ Conditional Use for Outdoor Display or Community Garden

I HEREBY CERTIFY THAT THE ABOVE INFORMATION IS TRUE AND ACCURATE TO THE BEST OF MY KNOWLEDGE AND BELIEF AND THAT I HAVE THOROUGHLY REVIEWED THE FILING PROCEDURES AND REQUIREMENTS OUTLINED IN CHAPTER 2 OF THE CITY OF WARRENVILLE ZONING ORDINANCE.

Signature of Applicant/Agent

May 18, 2018

Date

Riverview West Development

Name(s), address(es), phone number(s) of developer(s), site planner or engineer involved in the Email Address project plans.

John Conrad Schiess, Architect
400 Ashland Ave River Forest, Il. 60305
(708) 366-1500

Kevin Kenniff , P.E.
Bollinger, Lach & Associates, Inc.
333 Pierce Rd. Suite 200 Itasca, Il. 60143
(630) 438-6400

Orest Baranyk , Architect
710 Higgins Rd. Park Ridge, Il. 60068
(847) 292-5757

Bill Grieve
Gewald Hamilton Associates, Inc.
625 Forest Edge Dr. Vernon Hills, Il. 60061 (847) 478-9700

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APPLICATION FORM D
FOR PRELIMINARY/FINAL PLANNED UNIT DEVELOPMENT

Riverview West Development

Name of Development/Subdivision

Project Number

Approval Criteria for Planned Unit Development

In recommending approval or conditional approval of a General Site Plan for an SD District Development (including Development Control Regulations associated therewith) or a Preliminary or Final Plan for a Planned Unit Development (PUD), the Plan Commission shall transmit to the City Council written findings of fact that the application meets all of the criteria below or will meet them when the Commission's conditions are complied with. The City Council shall, in granting approval or conditional approval, also find that all of the following criteria are met or will be met when the conditions to which the approval is made subject are complied with.

Please review and provide a written response indicating how the proposed Planned Unit Development will meet these criteria:

1. SUPERIOR DESIGN

The PUD represents a more creative approach to the unified planning of development and incorporates a higher standard of integrated design and amenity than could be achieved under otherwise applicable zoning district and subdivision regulations, and solely on this basis modifications to the use and design standards established by such regulations are warranted.

Applicant Response:

The proposed development updates the previous zoning under the master Cantera Development by incorporating new uses - specifically higher density residential. And, in so doing responds to current market trends for adjacent users. Most notably are the needs of nearby employers to provide class A, high amenity rental units so as to attract young, recent college graduates who seek a certain lifestyle.

The proposed PUD also incorporates lower scale row homes that diversify the local housing types and attract a secondary market demographic. The proposed commercial is envisioned as supporting the needs of the current and future residents of this specific area.

2. MEETS PUD REQUIREMENTS

The PUD meets the requirements for Planned Unit Developments set forth in Warrenville Zoning Ordinance, and no modifications to the use and design standards otherwise applicable are allowed other than those permitted herein.

Applicant Response:

The proposed PUD does meet the standards as outlined in Warrenville's Zoning Ordinance. However, the proposed development does envision modifications and looks to establish new design standards. See

3. CONSISTENT WITH CITY PLAN

The PUD is generally consistent with the objectives of the City Comprehensive Plan as viewed in light of any changed conditions since its adoption.

Applicant Response:

The proposed development is generally consistent with the Objectives of the City Comprehensive Plan. But, it does update, the Plan by introducing a new use, residential, that was not previously considered for this area. Never the less, the introduction of this new use supports the already existing uses for reasons previously cited.

4. PUBLIC WELFARE

The PUD will not be detrimental to the public health, safety, morals, or general welfare.

Applicant Response:

Whereas the proposed plan as presented by this PUD Application will provide documentation from the Applicant's Architect, Civil Engineer, Water Quality Control Engineer, Geotechnical Engineer, Traffic Engineer and other design professionals as to issues related to public healthy, public safety and general welfare. And whereas these and possibly other design professionals will respond in a satisfactory manner to the Village's Consultants's comments related to these issues. Now therefore, the Applicant believes that they will meet the Standard set forth in this Section.

5. COMPATIBLE WITH ENVIRONS

Neither the PUD nor any portion thereof will be injurious to the use and enjoyment of other properties in its vicinity, seriously impair property values or environmental quality in the neighborhood, nor impede the orderly development of surrounding property.

Applicant Response:

Whereas the proposed plan as presented by this PUD Application will provide documentation from the Applicant's Real Estate professional, Architect, and other Real Estate professionals as to issues related to enjoyment of property and property values. And whereas these and possibly other design professionals will respond in a satisfactory manner to the Village's Consultant's and other stakeholder's comments related to these issues. Now therefore, the Applicant believes that they will meet the Standard set forth in this Section.

6. NATURAL FEATURES

The design of the PUD is as consistent as practical with the preservation of natural features of the site such as flood plains, wooded areas, steep slopes, natural drainage ways, or other areas of sensitive or valuable environmental character.

Applicant Response:

Whereas the proposed plan as presented by this PUD Application consists of a Site Plan, Engineering Plans. These plans and drawings outline a development that retains key natural features such as the detention pond, wooded areas and, in general, the natural topography of the site and its natural flow of water. Now therefore, the Applicant believes that they will meet the Standard set forth in this Section.

7. CIRCULATION

Streets, sidewalks, pedestrian ways, bicycle paths, off-street parking, and off-street loading as appropriate to the planned land uses are provided. They are adequate in location, size, capacity, and design to ensure safe and efficient circulation of automobiles, trucks, bicycles, pedestrians, fire trucks, garbage trucks, and snow plows as appropriate without blocking traffic, creating unnecessary pedestrian-vehicular conflict, creating unnecessary through traffic within the PUD, or unduly interfering with the safety or capacity of adjacent streets

Applicant Response:

Whereas the proposed plan as presented by this PUD Application consists of a Site Plan, Engineering Plans. These plans and drawings outline a development that provides for a bicycle path, walking path, off street parking and loading. Further, the Applicant will present both testimony by the Applicant's traffic engineer and other design professionals and key personnel from the apartment building's operator as to the size, location and adequacy of the parking and loading provided. Now therefore, the Applicant believes that they will meet the Standard set forth in this Section.

8. OPEN SPACES AND LANDSCAPING

The quality and quantity of public and common open spaces and landscaping provided are consistent with the higher standards of design and amenity required of a PUD. The size, shape, and location of a substantial portion of total public and common open space provided in residential areas render it useable for recreation purposes.

Open space between all buildings is adequate to allow for light and air, access by fire fighting equipment, and for privacy where walls have windows, terraces, or adjacent patios. Open space along the perimeter of the development is sufficient to protect existing and permitted future uses of adjacent property from adverse effects from the development.

Applicant Response:

Whereas the proposed plan as presented by this PUD Application consists of a Site Plan, Engineering Plans. These plans and drawings outline a development that maximizes the open spases between units and within units - specifically the open spaces provided as outdoor amenity spaces for the higher density multi-family apartment building and the open spaces at the rear of the proposed row homes. Now therefore, the Applicant believes that they will meet the Standard set forth in this Section.

9. COVENANTS

Where individual parcels are to be later sold, adequate provision has been made in the form of deed restrictions, homeowners or condominium associations, or the like for:

a. The preservation and maintenance of any open spaces, thoroughfares, utilities, water retention or detention areas, and other common elements not to be dedicated to the City or another public body

b. Such control of the use and exterior design of individual structures, if any, as is necessary for continuing conformance to the PUD Plan, such provision to be binding on all future ownership.

Applicant Response:

The Applicant shall engage with City Staff so as to develop a set of covenants and reasonable restrictions of use and maintenance.

10. PUBLIC SERVICES

The land uses, intensities, and phasing of the PUD are consistent with the anticipated ability of the City, the school districts, and other public bodies to provide and economically support police and fire protection, water supply, sewage disposal, schools, and other public facilities and services without placing undue burden on existing residents and businesses.

Applicant Response:

The Applicant shall engage with City Staff so as to develop a set of covenants and reasonable restrictions of use and maintenance.

11. PHASING

Each development phase of the PUD can, together with any phases that preceded it, exist as an independent unit that meets all of the foregoing criteria and all other applicable regulations herein even if no subsequent phase should ever be completed. The provision and improvement of public or common area improvements, open spaces, and amenities--or the provision of financial sureties guaranteeing their improvement--is phased generally proportionate to the phasing of the number of dwelling units or amount of non-residential floor area.

Applicant Response:

The Applicant believes that all of the above meets, with certain modifications and adjustments, the criteria and applicable regulations.

THE ABOVE INFORMATION IS TRUE AND ACCURATE TO THE BEST OF MY KNOWLEDGE AND BELIEF

Signature of Applicant/Agent

~~August 31, 2017~~ May 18, 2018

Application Date

RESIDENTIAL BUILDING

1 BEDROOM - 198 UNITS (54 %)
2 BEDROOM - 150 UNITS (42%)
3 BEDROOM - 16 UNITS (4%)
TOTAL - 364 UNITS (100%)

RESIDENTIAL PARKING

REQUIRED MULTI - FAMILY PARKING (364 D.U. x 1.54 CARS).....561 CARS
PROPOSED MULTI - FAMILY PARKING
GARAGE 408
OUTDOOR (AT ENTRY) 18
OUTDOOR (3 TIER LOT) 189 + 92 275
ACTUAL MULTI - FAMILY PARKING ON LOT 2 .....701 701 CARS

ACCESSIBLE SPACES REQUIRED (2%).....15 CARS
ACCESSIBLE SPACES PROPOSED..7(GARAGE)+8(OUTDOOR)..15 CARS

TORCH PARKWAY ROW
OUTLOT "A"
LOT 2
LOT 3
FUTURE TOWNHOMES
CONNECT TO RIVER TRAIL
DIRECTIONAL SIGN 2
EASEMENT
4'-0" HIGH POND FENCE
POND 2
WEST BRANCH DU PAGE RIVER
RIVER TRAIL
TORCH PARKWAY
CONNECT TO RIVER TRAIL
POND 1
POND 3
POND 4
FIRE LANE
POLLARD ROAD (PRIVATE ROAD)
364 UNITS MULTIFAMILY BUILDING W/ GARAGE
GARAGE 408 CARS INCLUDES 7 ACCESSIBLE SPACES
COURTYARD 1
COURTYARD 2
COURTYARD 3
COURTYARD 4
6'-0" HIGH COURTYARD FENCE
4'-0" HIGH POOL FENCE
POOL
EL. TRANSFORMER
RTU
FDC
TYP. CONCRETE PATIO WITH CEDAR BOARD FENCE AT GROUND LEVEL
EMERGENCY BACKUP GENERATOR AT ROOF
LOBBY
BIKE RACKS
18 CARS
275 CARS
TRASH RM.
LOADING RM.
MAIL RM.
LOADING AREA
REFUSE PICK UP AREA
PARKING FOR MAIL PACKAGES DELIVERY TRUCK
GAS METER CON. PAD
66 COMMERCIAL PARKING SPACES
PROPOSED PROPERTY LINE (TYP. INDICATION)
PEDESTRIAN PATH
CROSSWALK TYP. INDICATION
SIGN 1
SIGN 2
DIRECTIONAL SIGN 1
74 FUTURE COMMERCIAL PARKING SPACES
32 FUTURE COMMERCIAL PARKING SPACES
COM 1 2,000 s.f.
COM 5 1,800 s.f.
COMMERCIAL 2 10,050 s.f.
COMMERCIAL 3 10,050 s.f.
COMMERCIAL 4 10,050 s.f.
REFUSE COLLECTION AREA
MASONRY SCREEN WALL
EXISTING SIDEWALK
CURB
FUTURE COMMERCIAL
LOT 1
FERRY ROAD
CONNECT
HWL
NWL

PROPOSED SITE PLAN

SCALE: 1" = 60'-0"

TRUE NORTH PROJECT NORTH

0' 25' 50' 100' 200'

18 FEB 2019 REVISED:19 APR 2019

CANTERA DEVELOPMENT HOLDINGS, LLC
DEVELOPER
TWO NORTHFIELD PLAZA, SUITE #320 NORTHFIELD, IL 60093

364 D. U.
RIVER VIEW WEST
WARRENVILLE, ILLINOIS

BARANYK ASSOCIATES, LTD.
ARCHITECTS • ENGINEERS • PLANNERS
710 HIGGINS RD. PARK RIDGE, IL. 60068
FAX 847/825-8617 PHONE 847/292-5757

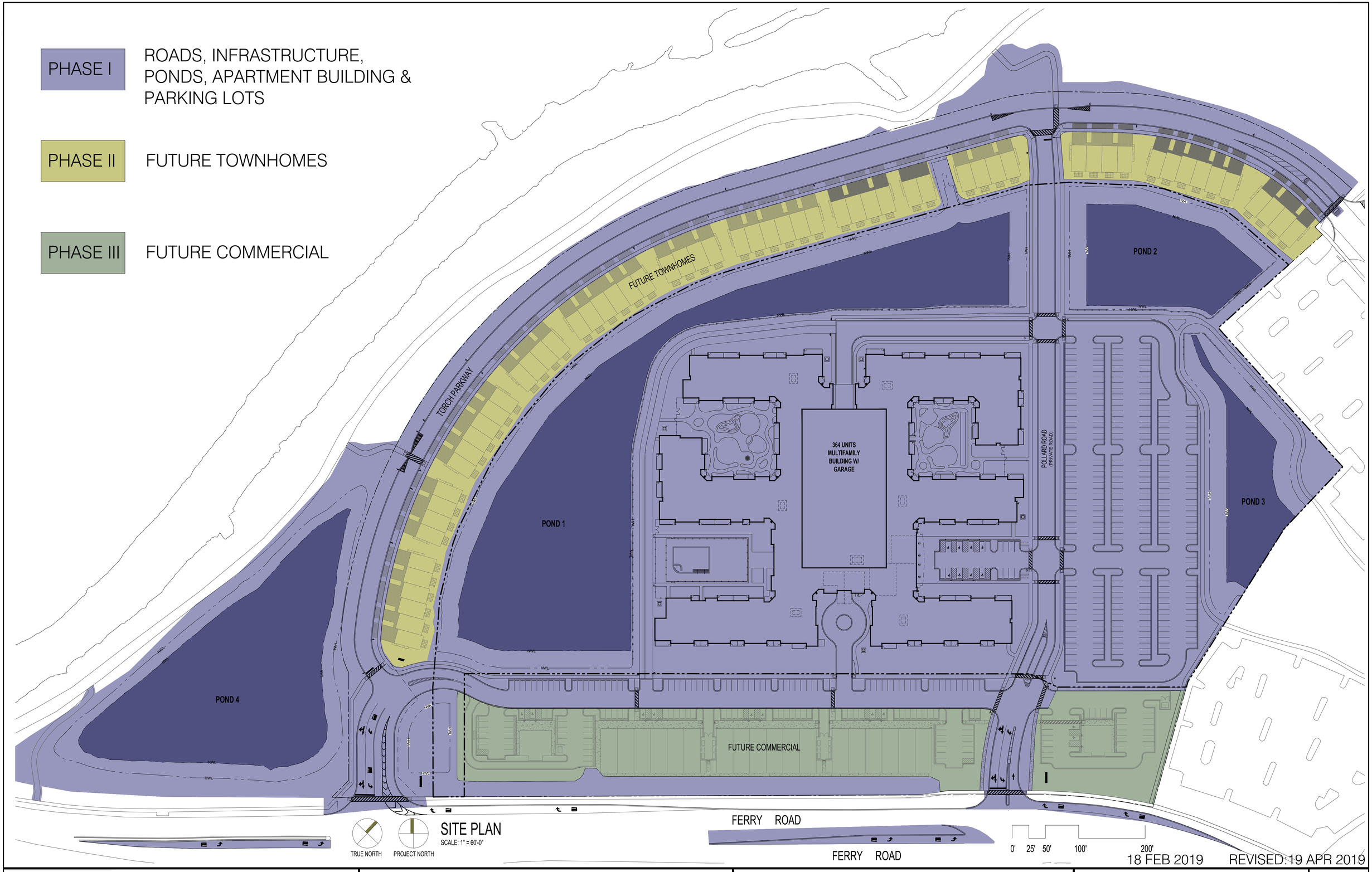
SITE PLAN (COLOR)

SHEET: A-1

PHASE I — ROADS, INFRASTRUCTURE, PONDS, APARTMENT BUILDING & PARKING LOTS

PHASE II — FUTURE TOWNHOMES

PHASE III — FUTURE COMMERCIAL



SITE PLAN
SCALE: 1" = 60'-0"

18 FEB 2019 REVISED:19 APR 2019

CANTERA DEVELOPMENT HOLDINGS, LLC
DEVELOPER
TWO NORTHFIELD PLAZA, SUITE #320 NORTHFIELD, IL 60093

364 D. U.
RIVER VIEW WEST
WARRENVILLE, ILLINOIS

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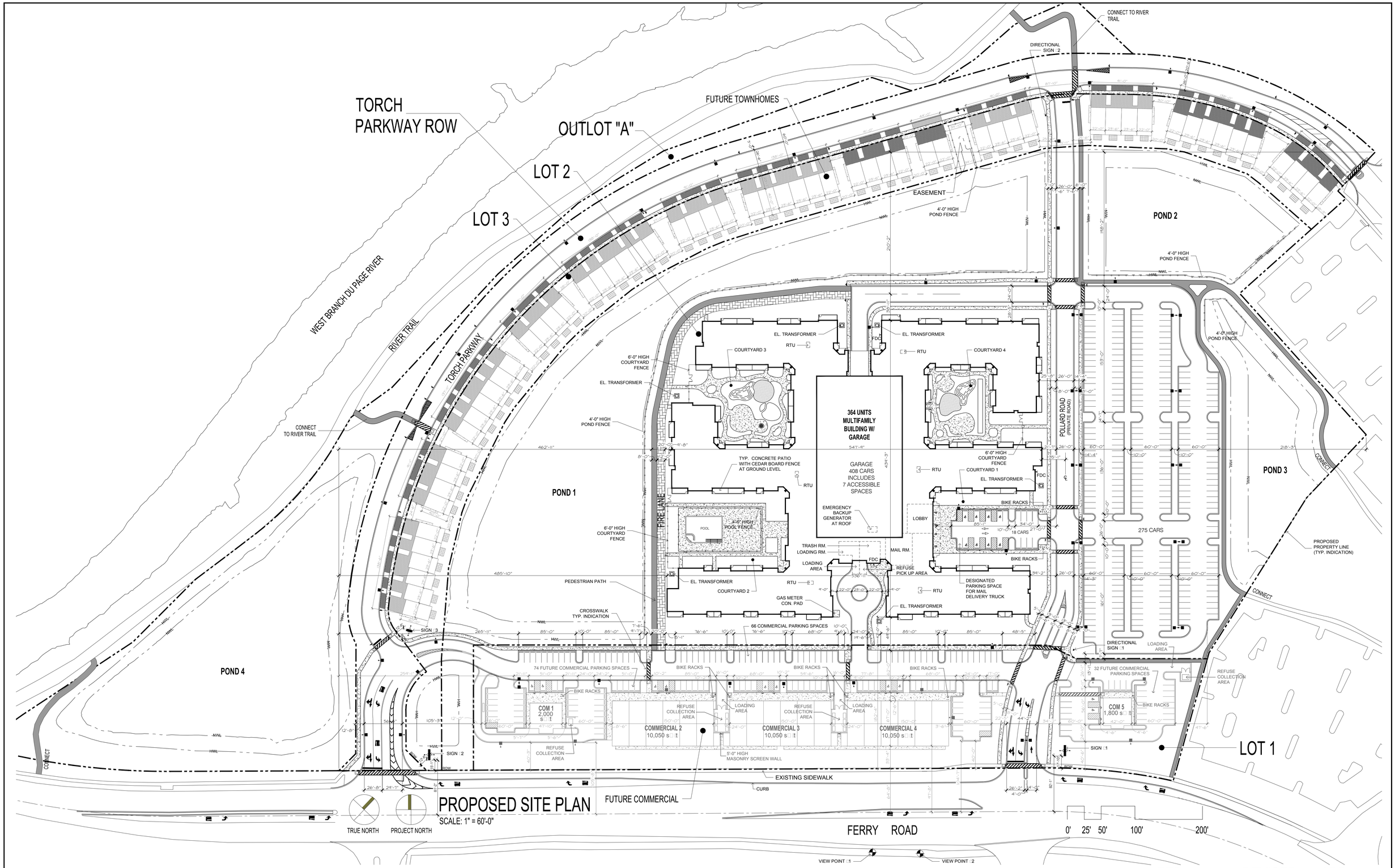
710 HIGGINS RD. PARK RIDGE, IL. 60068
FAX 847/825-8617 PHONE 847/292-5757

CONSTRUCTION PHASING PLAN

SHEET: A-2

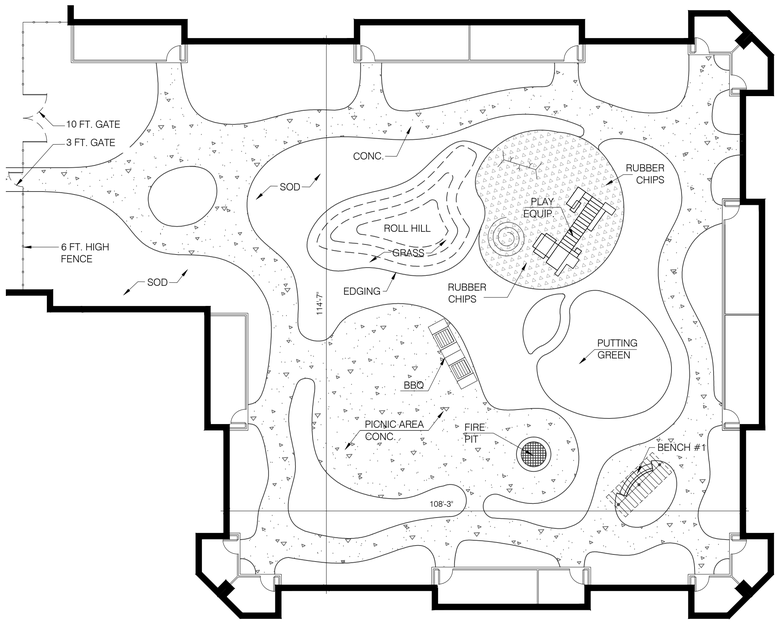


PROPOSED SITE PLAN

SCALE: 1" = 60'-0"

18 FEB 2019 REVISED:19 APR 2019

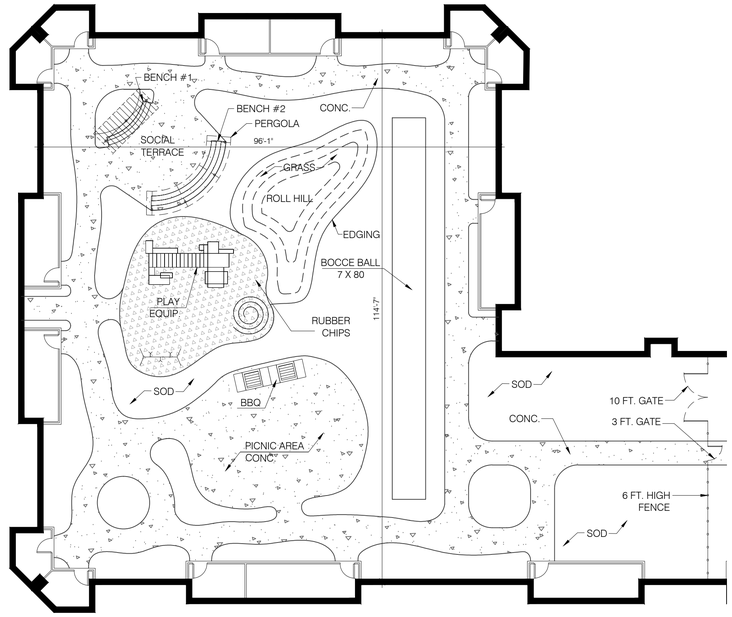
CANTERA APARTMENTS, LLC DEVELOPER TWO NORTHFIELD PLAZA, SUITE #320 NORTHFIELD, IL 60093	364 D. U. APARTMENTS AT RIVERVIEW WEST WARRENVILLE, ILLINOIS	BARANYK ASSOCIATES, LTD. ARCHITECTS • ENGINEERS • PLANNERS 710 HIGGINS RD. PARK RIDGE, IL. 60068 FAX 847/825-8617 PHONE 847/292-5757	SITE PLAN	SHEET: A-3



PROJECT NORTH TRUE NORTH

COURT YARD #3

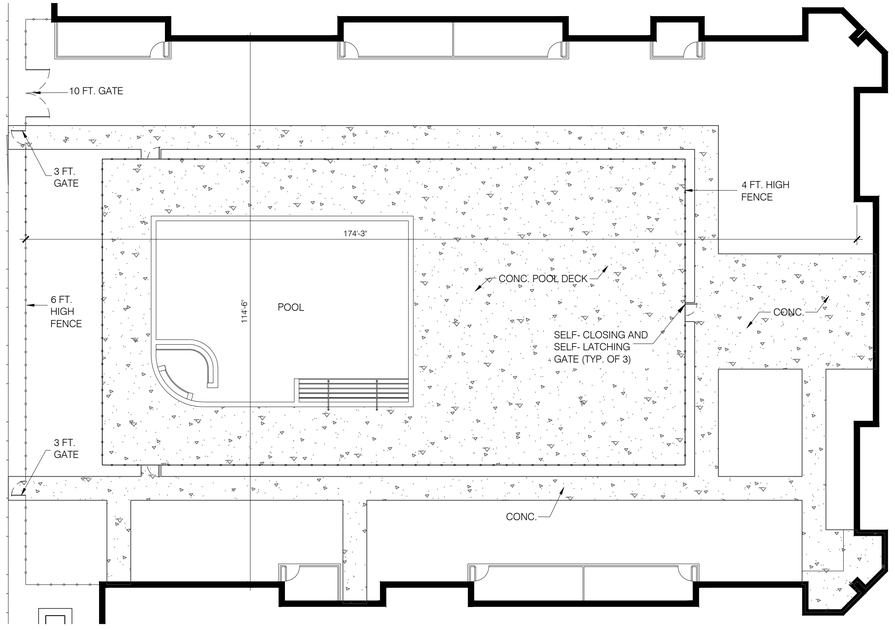
SCALE: 1" = 15'-0"



PROJECT NORTH TRUE NORTH

COURT YARD #4

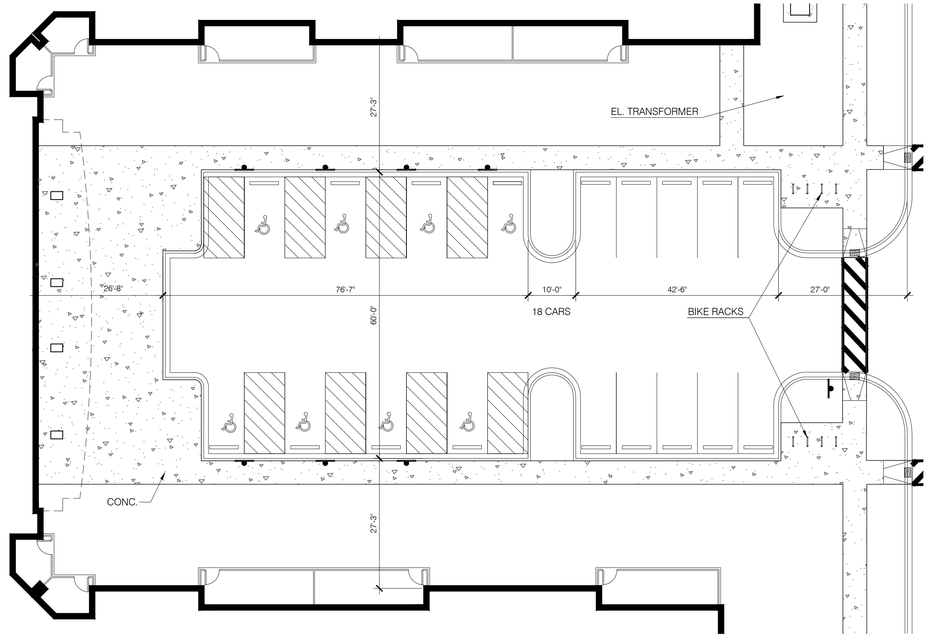
SCALE: 1" = 15'-0"



PROJECT NORTH TRUE NORTH

COURT YARD #2

SCALE: 1" = 15'-0"



PROJECT NORTH TRUE NORTH

COURT YARD #1

SCALE: 1" = 15'-0"

18 FEB 2019

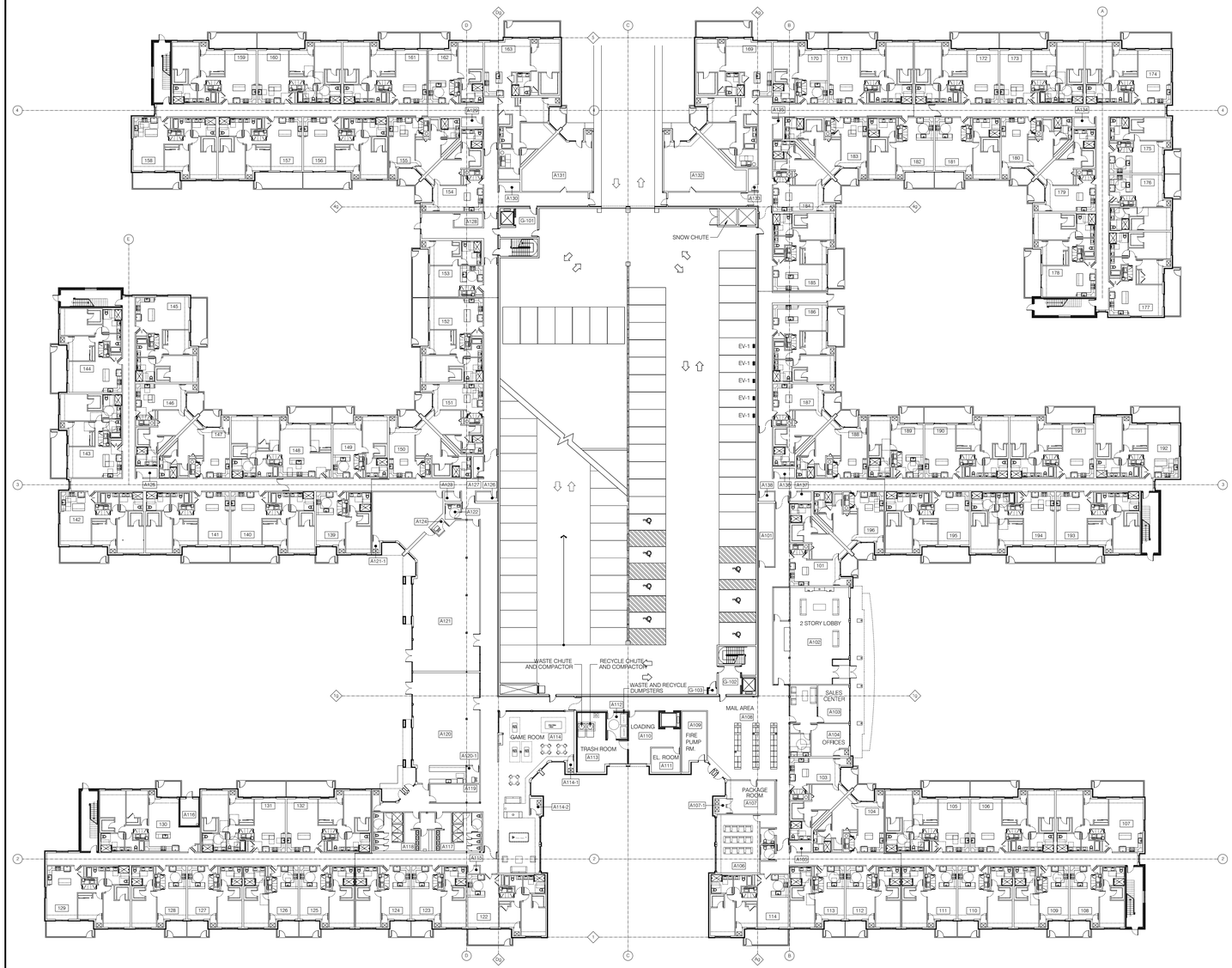
CANTERA APARTMENTS, LLC
DEVELOPER
TWO NORTHFIELD PLAZA, SUITE #320 NORTHFIELD, IL 60093

364 D. U.
APARTMENTS AT RIVERVIEW WEST
WARRENVILLE, ILLINOIS

BARANYK ASSOCIATES, LTD.
ARCHITECTS • ENGINEERS • PLANNERS
710 HIGGINS RD. PARK RIDGE, IL. 60068
FAX 847/825-8617 PHONE 847/292-5757

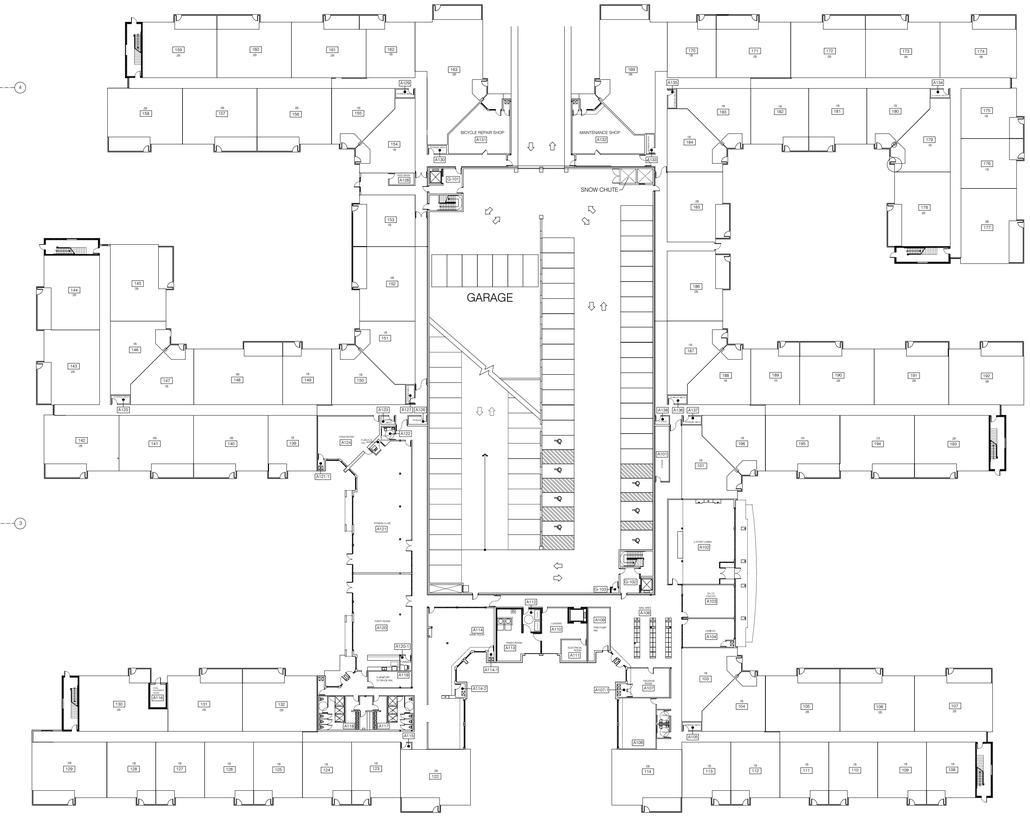
COURT YARDS

SHEET: A-4



TRUE NORTH PROJECT NORTH

1ST FLOOR PLAN
SCALE: 1" = 30'-0"



1ST FLOOR DIAGRAM
SCALE: 1" = 40'-0"

MULTI-FAMILY BUILDING SIZE - GROSS		UNIT COMPOSITION - NET RENTABLE																			
			1BD-1	1BD-2	1BD-3	1BD-4	1BD-5	1BD-6	1BD-7	1BD C -1	1BD C - 2	2BD-1	2BD-2	2BD-3	2BD-4	2BD-5	2BD-6	3BD-1	3BD-2	3BD-3	3BD-4	TOTAL
UNIT SIZE, SF			808	950	818	975	1067	822	781	850	910	1197	1201	1126	1217	1242	1272	1921	1457	1436	1471	
1ST FLOOR RESIDENTIAL -	117,547 SF	1ST FLOOR	17	2	2				1	9	9	23	8	2	1	2		2	1			79
2ND FLOOR RESIDENTIAL -	118,896 SF	2ND FLOOR	17	2	2	2	3			13	13	28	8		1	1			2	1		93
3RD FLOOR RESIDENTIAL -	118,896 SF	3RD FLOOR	17	2	2	2	3	1		13	13	26	8		1	1	2		2	1	2	96
4TH FLOOR RESIDENTIAL -	118,896 SF	4TH FLOOR	17	2	2	2	3	1		13	13	26	8		1	1	2		2	1	2	96
TOTAL RESIDENTIAL -	474,235 SF	**TOTAL**	**68**	**8**	**8**	**6**	**9**	**2**	**1**	**48**	**48**	**103**	**32**	**2**	**4**	**5**	**4**	**2**	**7**	**3**	**4**	**364**
TOTAL UNIT SIZE		TOTAL S.F.	54,944	7,600	6,544	5,850	9,603	1,644	781	40,800	43,680	123,291	38,432	2,252	4,868	6,210	5,088	3,842	10,199	4,308	5,884	365,628
GARAGE TOTAL 30,191 X 4 FL -	120,764 SF	**PERCENT OF TOTAL**	**15.0%**	**2.1%**	**1.8%**	**1.6%**	**2.6%**	**0.4%**	**#DIV/0!**	**11.2%**	**11.9%**	**33.7%**	**10.5%**	**0.6%**	**1.3%**	**1.7%**	**1.4%**	**1.1%**	**2.8%**	**1.2%**	**1.6%**	**#DIV/0!**
BUILDING TOTAL -	**594,999 SF**																					

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CANTERA DEVELOPMENT HOLDINGS, LLC
DEVELOPER
TWO NORTHFIELD PLAZA, SUITE #320 NORTHFIELD, IL 60093

364 D. U.
RIVER VIEW WEST
WARRENVILLE, ILLINOIS

BARANYK ASSOCIATES, LTD.
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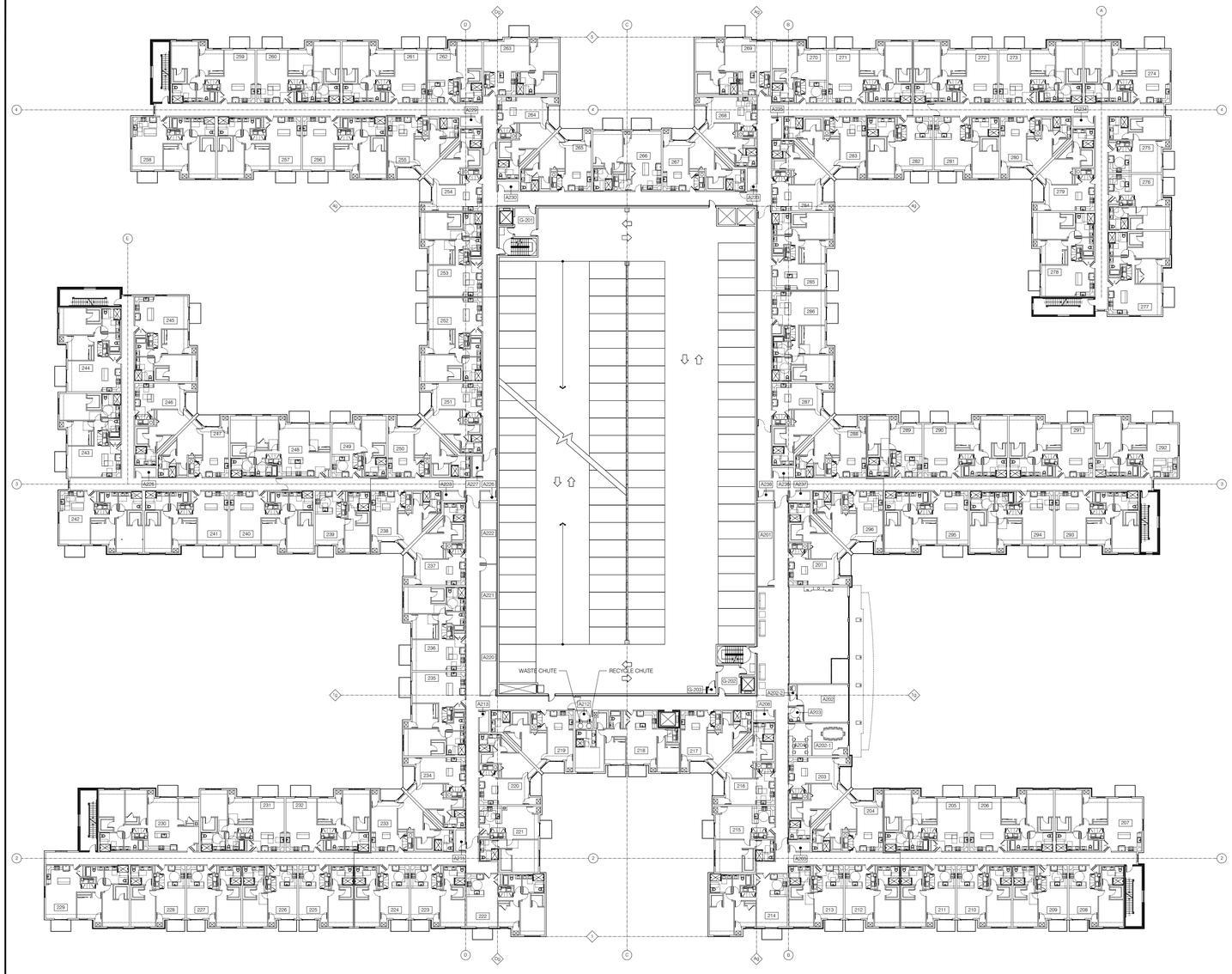
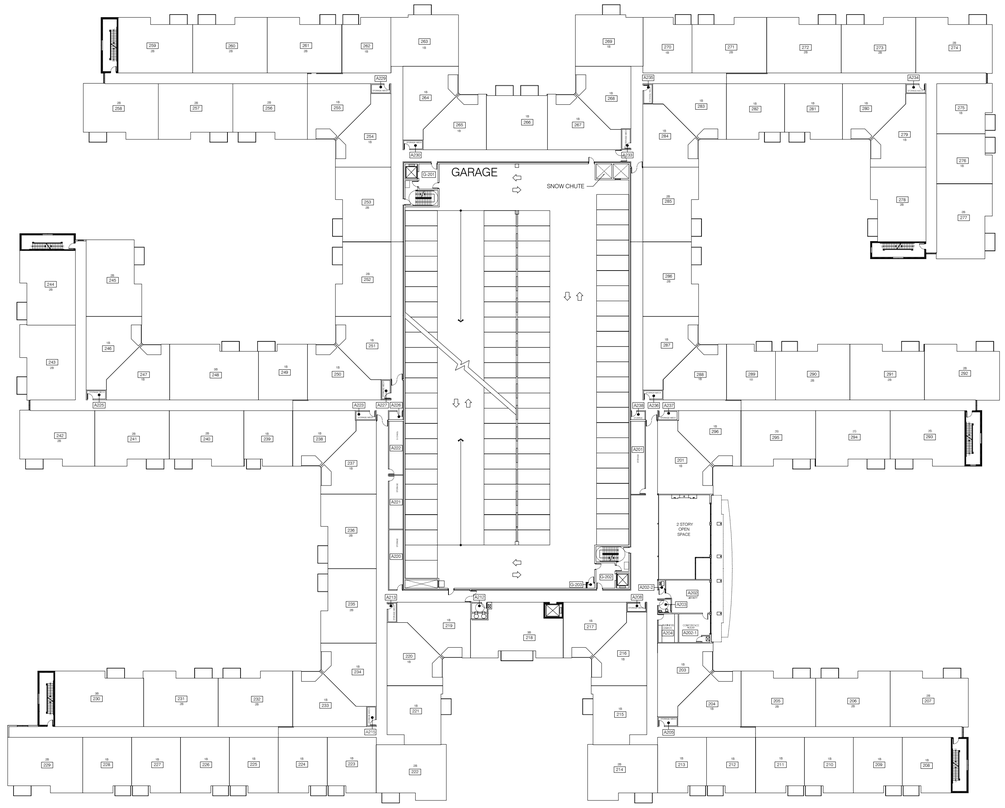
1ST FLOOR PLAN

SHEET: A-5





2ND FLOOR DIAGRAM
SCALE: 1" = 40'-0"

TRUE NORTH PROJECT NORTH

2ND FLOOR PLAN
SCALE: 1" = 30'-0"

MULTI-FAMILY BUILDING SIZE - GROSS		UNIT COMPOSITION - NET RENTABLE																			
		1BD-1	1BD-2	1BD-3	1BD-4	1BD-5	1BD-6	1BD-7	1BD C -1	1BD C - 2	2BD-1	2BD-2	2BD-3	2BD-4	2BD-5	2BD-6	3BD-1	3BD-2	3BD-3	3BD-4	TOTAL
UNIT SIZE, SF		808	950	818	975	1067	822	781	850	910	1197	1201	1126	1217	1242	1272	1921	1457	1436	1471	
1ST FLOOR RESIDENTIAL - 117,547 SF	1ST FLOOR	17	2	2				1	9	9	23	8	2	1	2		2	1			79
2ND FLOOR RESIDENTIAL - 118,896 SF	2ND FLOOR	17	2	2	2	3			13	13	28	8		1	1			2	1		93
3RD FLOOR RESIDENTIAL - 118,896 SF	3RD FLOOR	17	2	2	2	3	1		13	13	26	8		1	1	2		2	1	2	96
4TH FLOOR RESIDENTIAL - 118,896 SF	4TH FLOOR	17	2	2	2	3	1		13	13	26	8		1	1	2		2	1	2	96
TOTAL RESIDENTIAL - 474,235 SF	**TOTAL**	**68**	**8**	**8**	**6**	**9**	**2**	**1**	**48**	**48**	**103**	**32**	**2**	**4**	**5**	**4**	**2**	**7**	**3**	**4**	**364**
TOTAL UNIT SIZE	TOTAL S.F.	54,944	7,600	6,544	5,850	9,603	1,644	781	40,800	43,680	123,291	38,432	2,252	4,868	6,210	5,088	3,842	10,199	4,308	5,884	365,628
GARAGE TOTAL 30,191 X 4 FL - 120,764 SF	**PERCENT OF TOTAL**	**15.0%**	**2.1%**	**1.8%**	**1.6%**	**2.6%**	**0.4%**	**#DIV/0!**	**11.2%**	**11.9%**	**33.7%**	**10.5%**	**0.6%**	**1.3%**	**1.7%**	**1.4%**	**1.1%**	**2.8%**	**1.2%**	**1.6%**	**#DIV/0!**
BUILDING TOTAL - 594,999 SF																					

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CANTERA DEVELOPMENT HOLDINGS, LLC
DEVELOPER
TWO NORTHFIELD PLAZA, SUITE #320 NORTHFIELD, IL 60093

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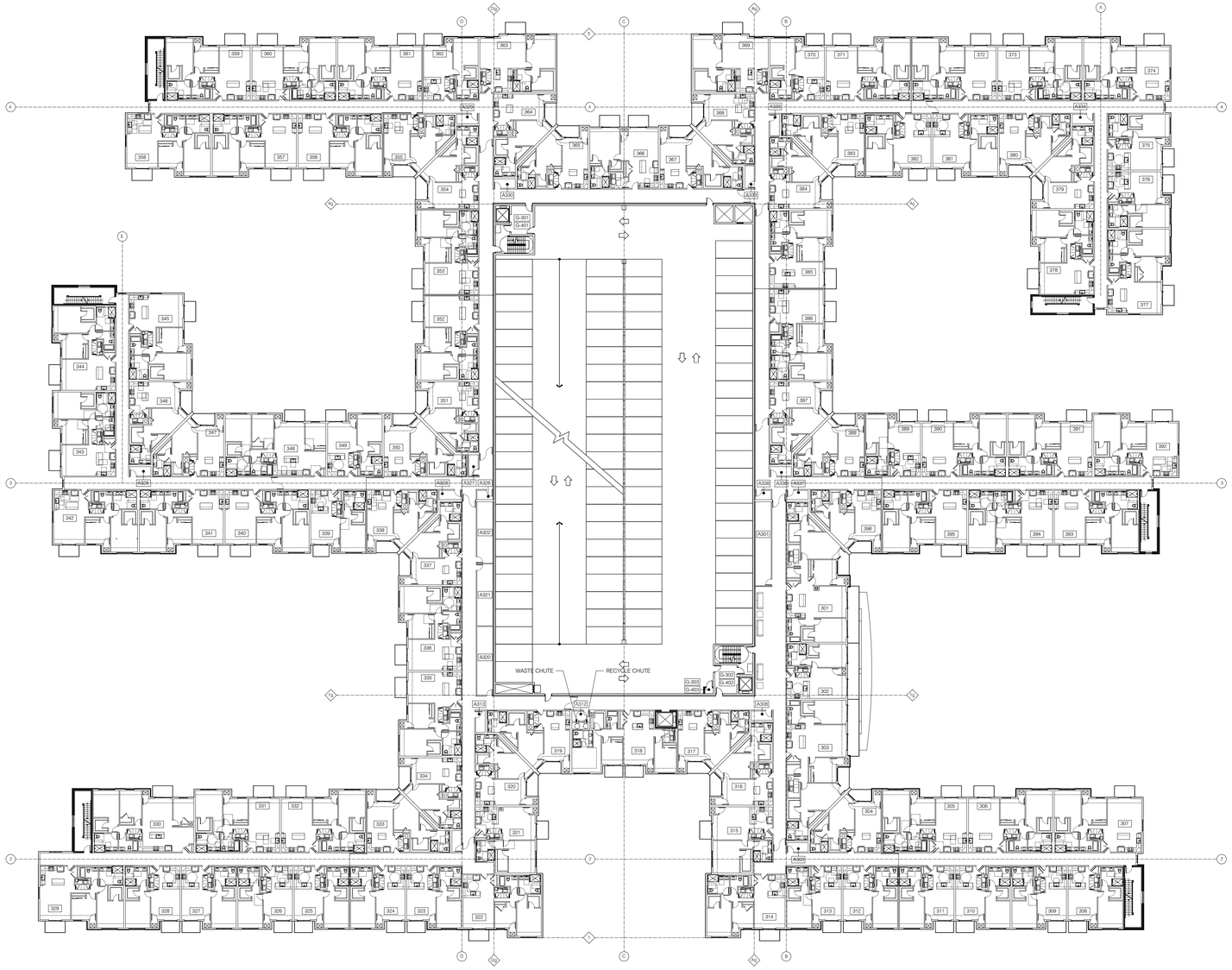
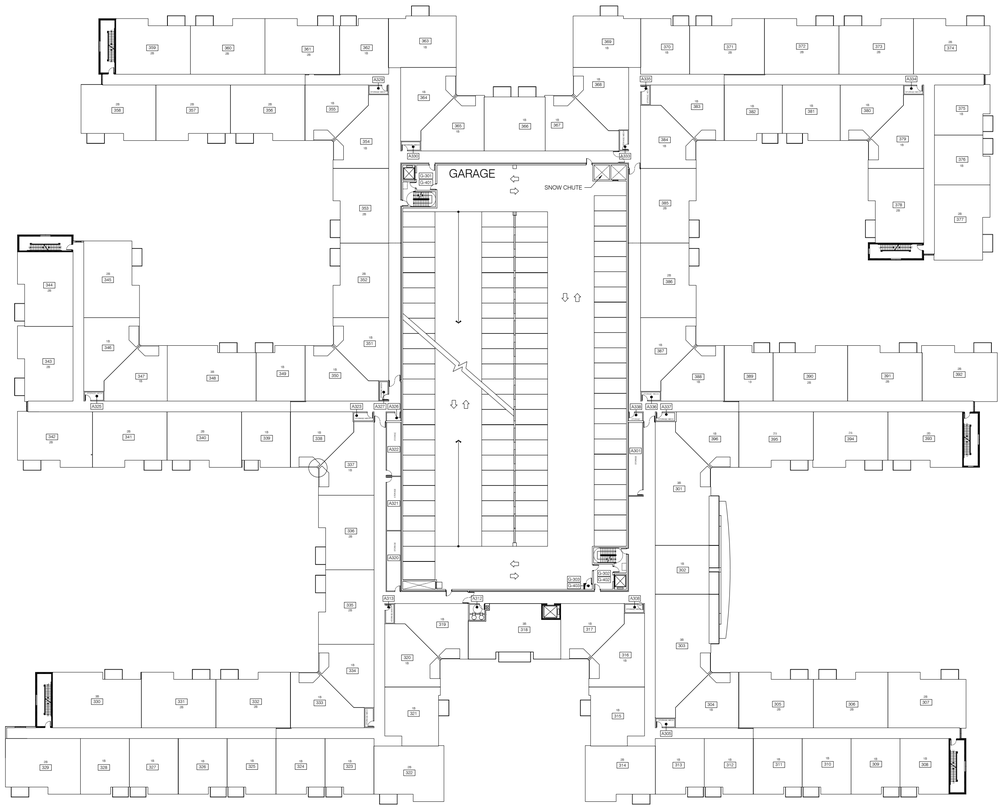
2ND FLOOR PLAN

SHEET: A-6





TRUE NORTH PROJECT NORTH

3RD FLOOR PLAN
4TH FLOOR PLAN SIMILAR
SCALE: 1" = 30'-0"

3RD FLOOR DIAGRAM
4TH FLOOR DIAGRAM SIMILAR
SCALE: 1" = 40'-0"

MULTI-FAMILY BUILDING SIZE - GROSS		UNIT COMPOSITION - NET RENTABLE																			
		1BD-1	1BD-2	1BD-3	1BD-4	1BD-5	1BD-6	1BD-7	1BD C -1	1BD C - 2	2BD-1	2BD-2	2BD-3	2BD-4	2BD-5	2BD-6	3BD-1	3BD-2	3BD-3	3BD-4	TOTAL
UNIT SIZE, SF		808	950	818	975	1067	822	781	850	910	1197	1201	1126	1217	1242	1272	1921	1457	1436	1471	
1ST FLOOR RESIDENTIAL - 117,547 SF	1ST FLOOR	17	2	2				1	9	9	23	8	2	1	2		2	1			79
2ND FLOOR RESIDENTIAL - 118,896 SF	2ND FLOOR	17	2	2	2	3			13	13	28	8		1	1			2	1		93
3RD FLOOR RESIDENTIAL - 118,896 SF	3RD FLOOR	17	2	2	2	3	1		13	13	26	8		1	1	2		2	1	2	96
4TH FLOOR RESIDENTIAL - 118,896 SF	4TH FLOOR	17	2	2	2	3	1		13	13	26	8		1	1	2		2	1	2	96
TOTAL RESIDENTIAL - 474,235 SF	**TOTAL**	**68**	**8**	**8**	**6**	**9**	**2**	**1**	**48**	**48**	**103**	**32**	**2**	**4**	**5**	**4**	**2**	**7**	**3**	**4**	**364**
TOTAL UNIT SIZE	TOTAL S.F.	54,944	7,600	6,544	5,850	9,603	1,644	781	40,800	43,680	123,291	38,432	2,252	4,868	6,210	5,088	3,842	10,199	4,308	5,884	365,628
GARAGE TOTAL 30,191 X 4 FL - 120,764 SF	**PERCENT OF TOTAL**	**15.0%**	**2.1%**	**1.8%**	**1.6%**	**2.6%**	**0.4%**	**#DIV/0!**	**11.2%**	**11.9%**	**33.7%**	**10.5%**	**0.6%**	**1.3%**	**1.7%**	**1.4%**	**1.1%**	**2.8%**	**1.2%**	**1.6%**	**#DIV/0!**
BUILDING TOTAL - 594,999 SF																					

18 FEB 2019 REVISED:19 APR 2019

CANTERA DEVELOPMENT HOLDINGS, LLC
DEVELOPER
TWO NORTHFIELD PLAZA, SUITE #320 NORTHFIELD, IL 60093

364 D. U.
RIVER VIEW WEST
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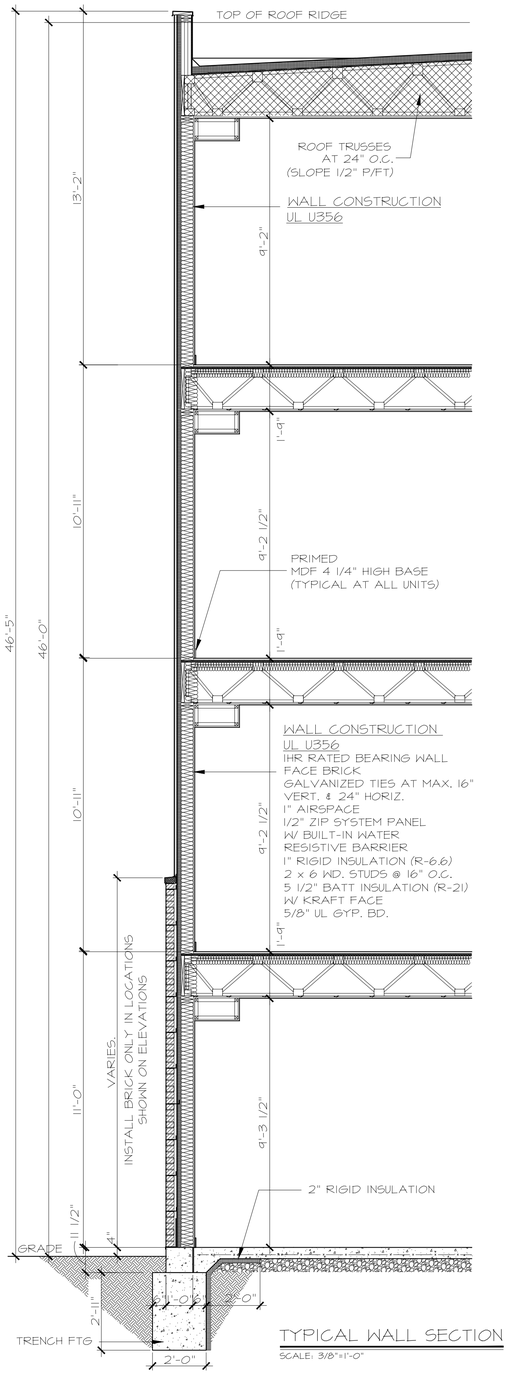
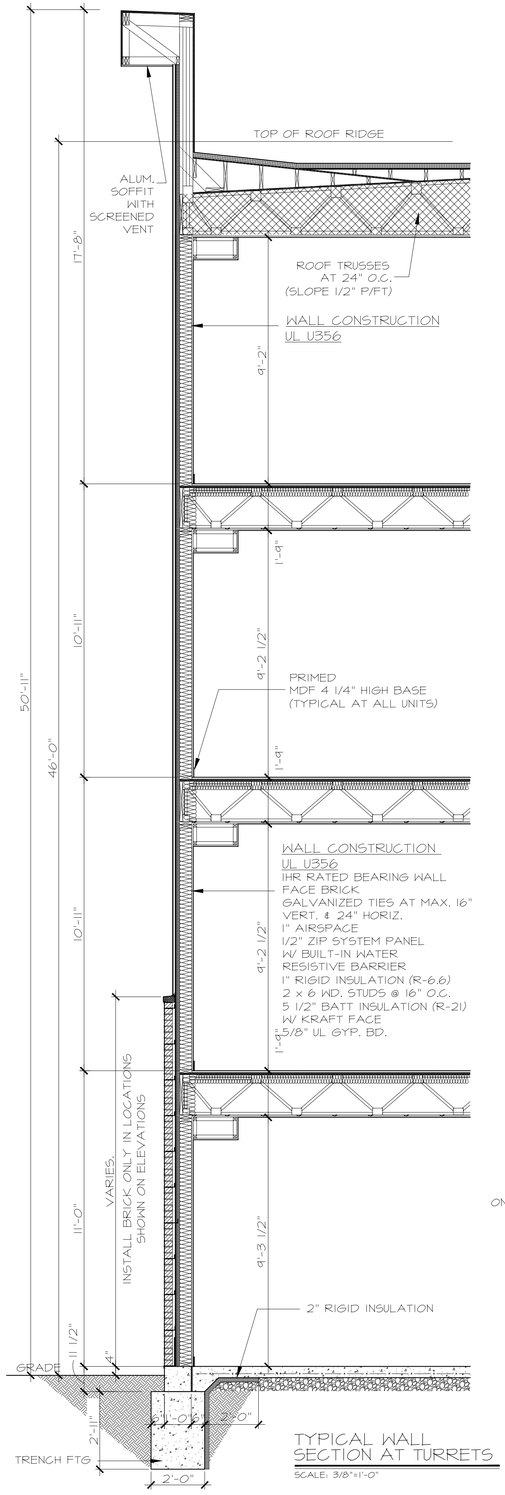
3RD FLOOR PLAN
4TH FLOOR PLAN

SHEET: A-7



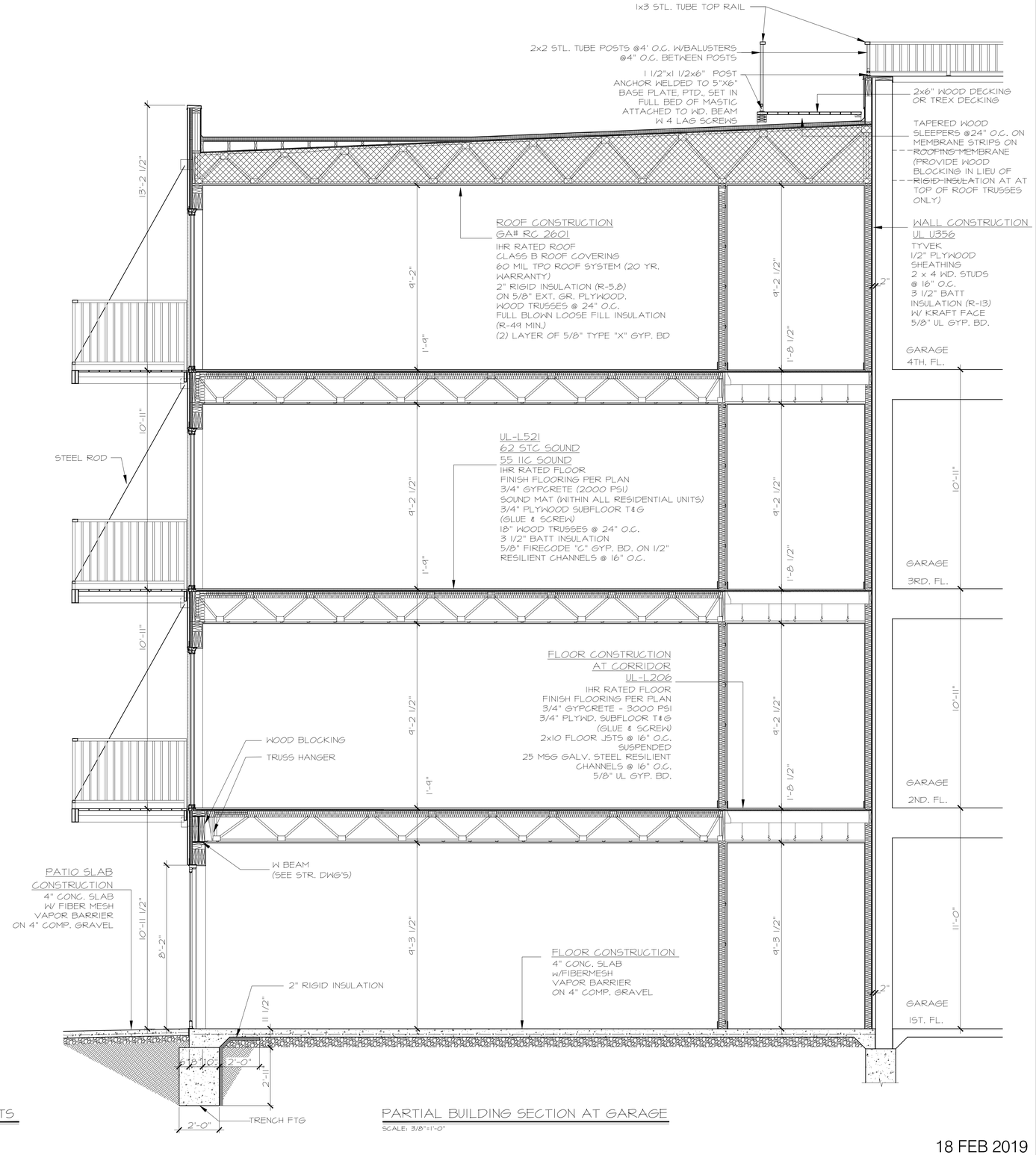
TYPICAL WALL SECTION

SCALE: 3/8"=1'-0"



TYPICAL WALL SECTION AT TURRETS

SCALE: 3/8"=1'-0"



PARTIAL BUILDING SECTION AT GARAGE

SCALE: 3/8"=1'-0"

18 FEB 2019

CANTERA DEVELOPMENT HOLDINGS, LLC
DEVELOPER

TWO NORTHFIELD PLAZA, SUITE #320 NORTHFIELD, IL 60093

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RIVER VIEW WEST
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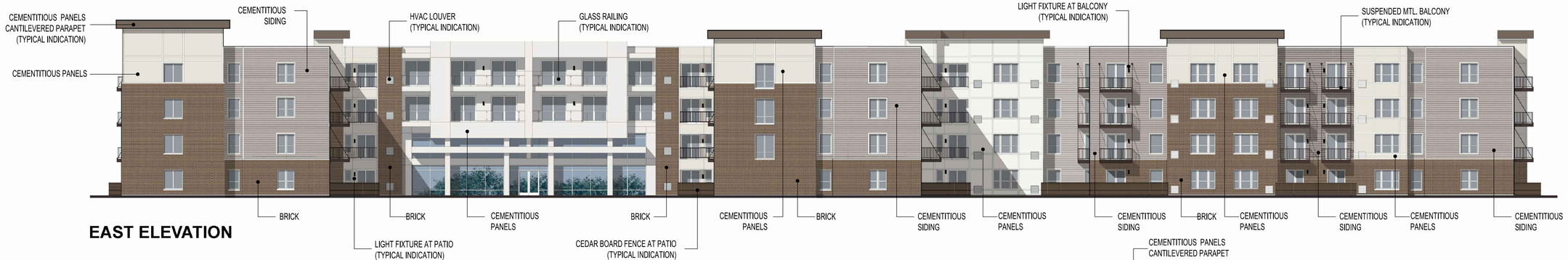
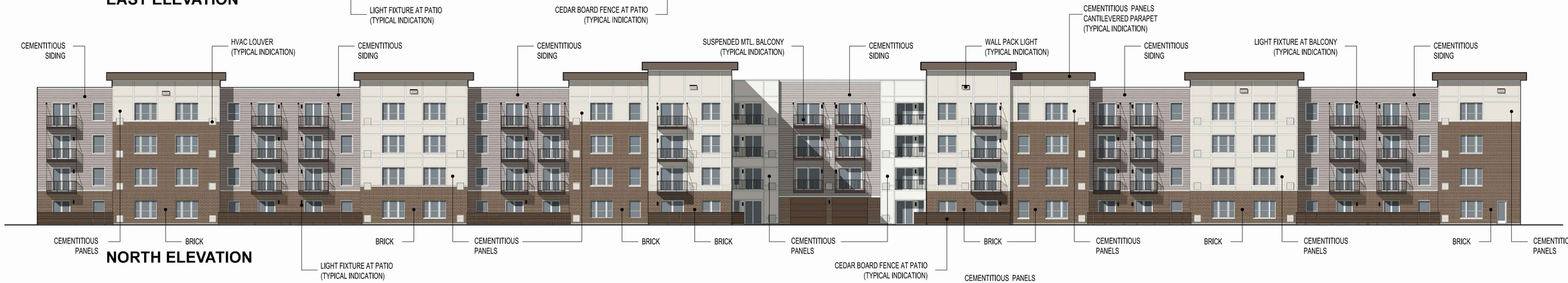
710 HIGGINS RD. PARK RIDGE, IL. 60068
FAX 847/825-8617 PHONE 847/292-5757

TYPICAL BUILDING AND WALL SECTIONS

SHEET: A-8



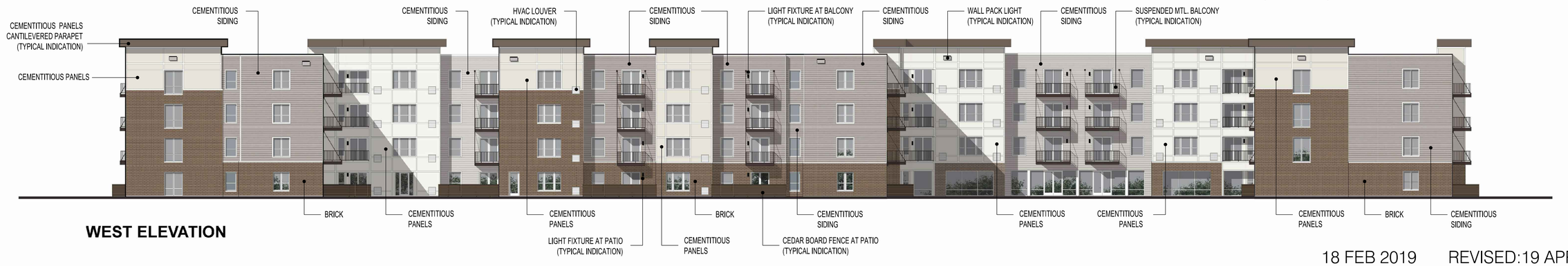
EAST ELEVATION



NORTH ELEVATION



SOUTH ELEVATION



WEST ELEVATION

18 FEB 2019 REVISED:19 APR 2019

CANTERA DEVELOPMENT HOLDINGS, LLC
DEVELOPER
TWO NORTHFIELD PLAZA, SUITE #320 NORTHFIELD, IL 60093

364 D. U.
RIVER VIEW WEST
WARRENVILLE, ILLINOIS

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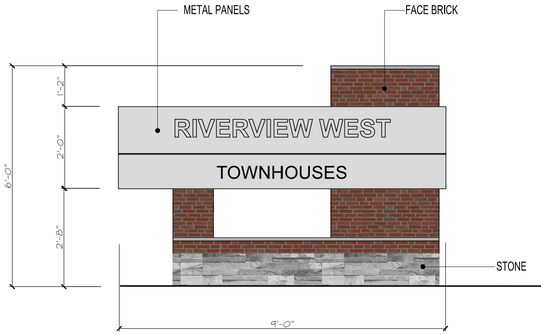
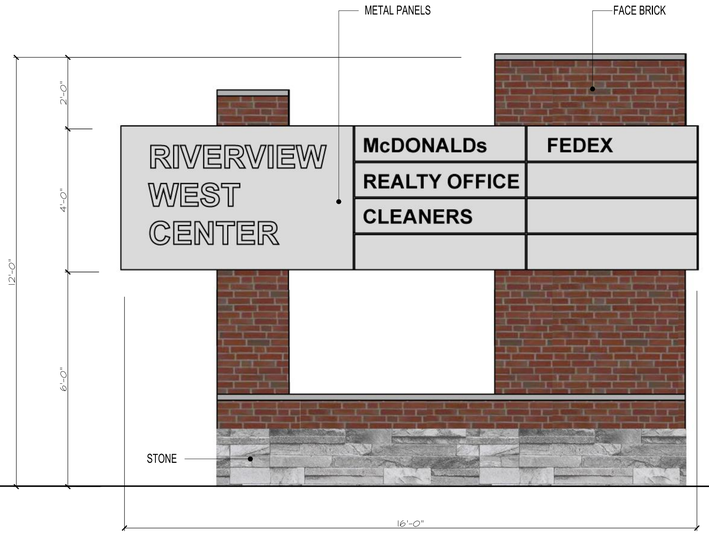
FAX 847/825-8617 PHONE 847/292-5757

ELEVATIONS

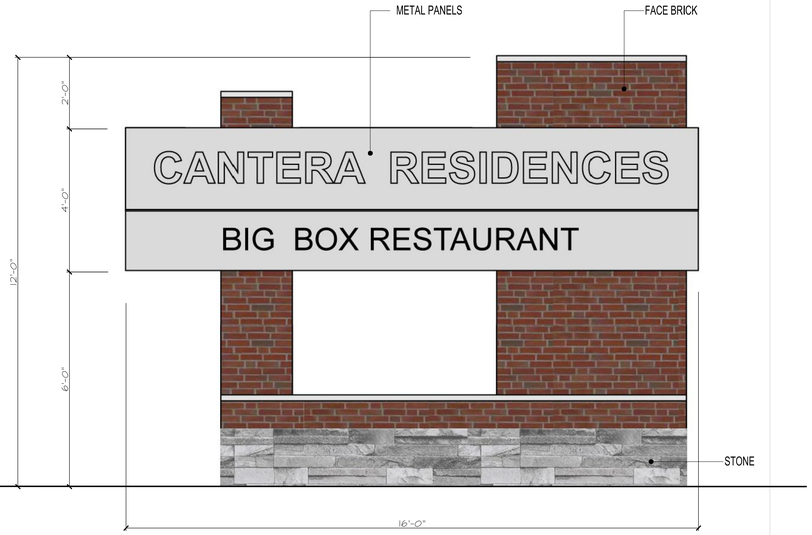
SHEET: A-9



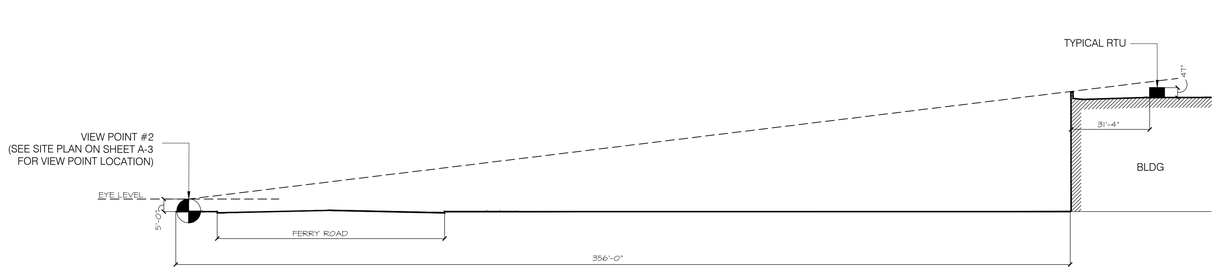
SIGN #3 ELEVATION



SIGN #2 ELEVATION

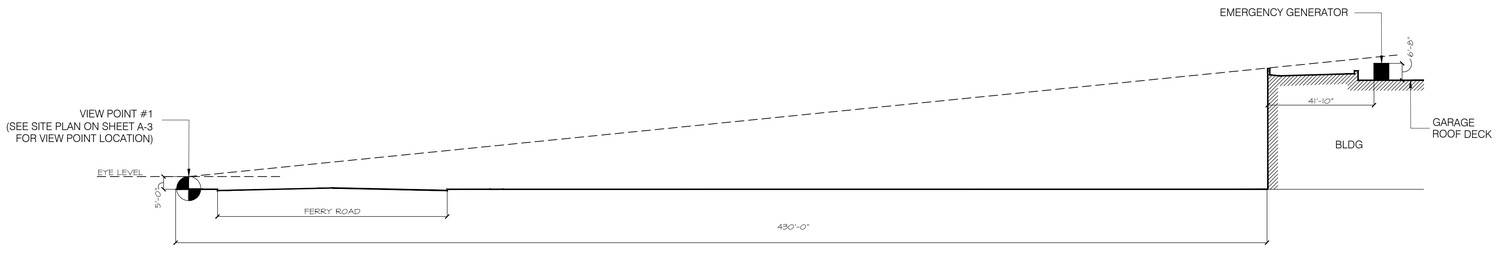


SIGN #1 ELEVATION



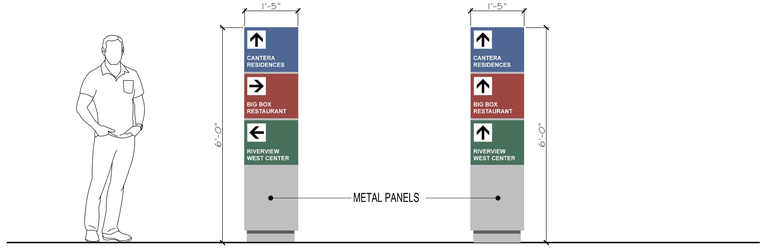
RTU VISIBILITY DIAGRAM

SCALE: N.I.S.



GENERATOR VISIBILITY DIAGRAM

SCALE: N.I.S.



DIRECTIONAL SIGNS #1 TYP. ELEVATION

DIRECTIONAL SIGNS #2 TYP. ELEVATION

FOR SIGNS LOCATIONS SEE SHEET A-3

18 FEB 2019 REVISED:19 APR 2019

CANTERA DEVELOPMENT HOLDINGS, LLC
DEVELOPER

TWO NORTHFIELD PLAZA, SUITE #320 NORTHFIELD, IL 60093

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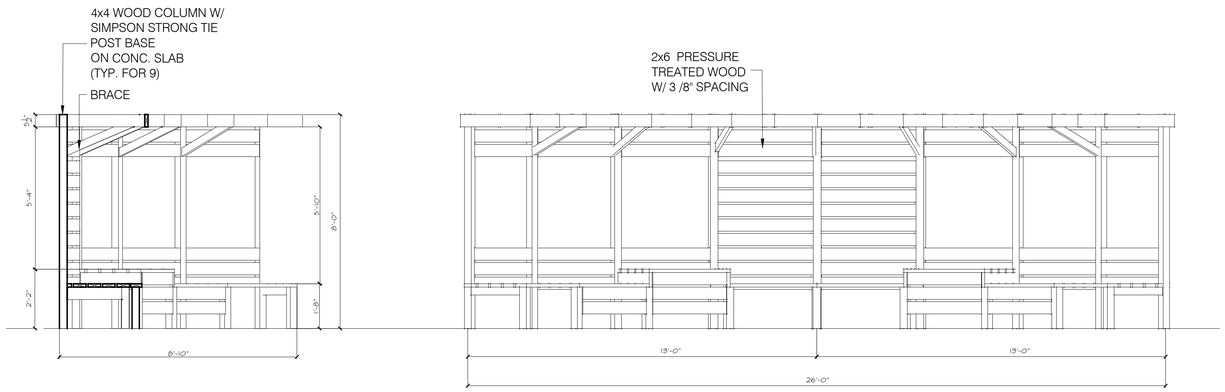
SIGNS
VISIBILITY DIAGRAMS

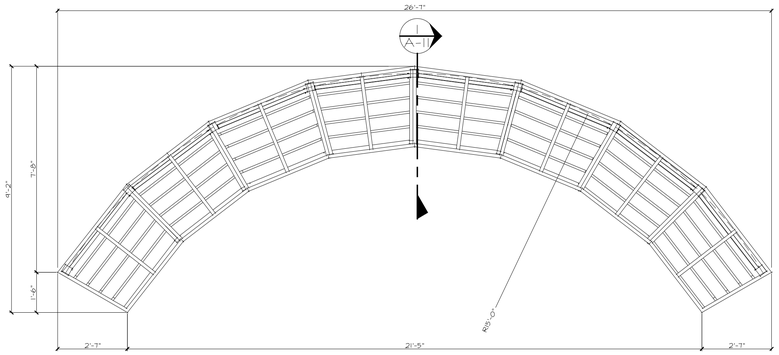
SHEET:
A-10

BENCH #2



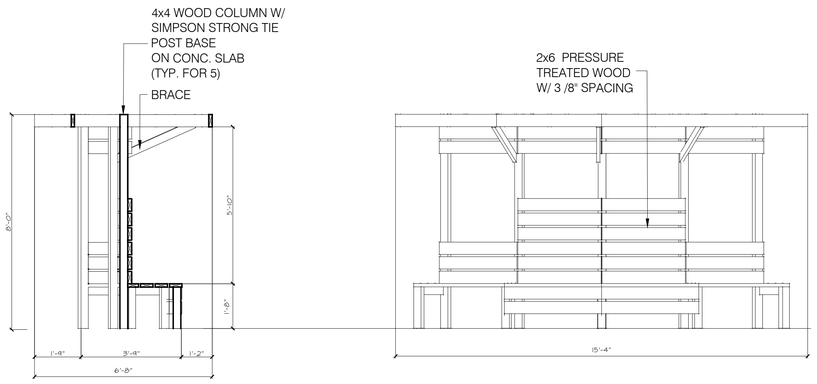
SECTION 1
SCALE: 3/8"=1'-0"

ELEVATION
SCALE: 3/8"=1'-0"



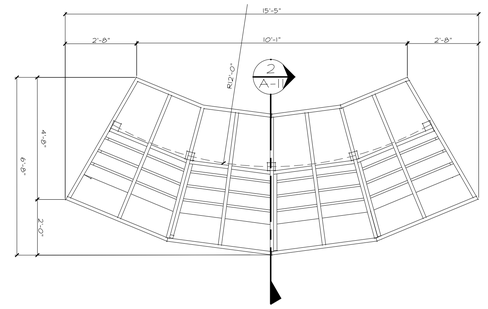
PLAN
SCALE: 3/8"=1'-0"

BENCH #1



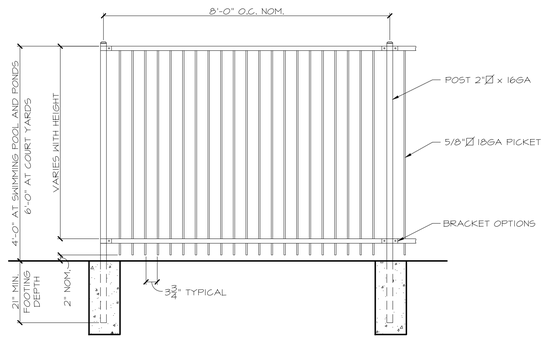
SECTION 2
SCALE: 3/8"=1'-0"

ELEVATION
SCALE: 3/8"=1'-0"



PLAN
SCALE: 3/8"=1'-0"

FENCE TO BE CONSTRUCTED OF HIGH QUALITY BLACK ALUMINUM



TYPICAL FENCE DETAIL
SCALE: 1/2"=1'-0"

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DEVELOPER
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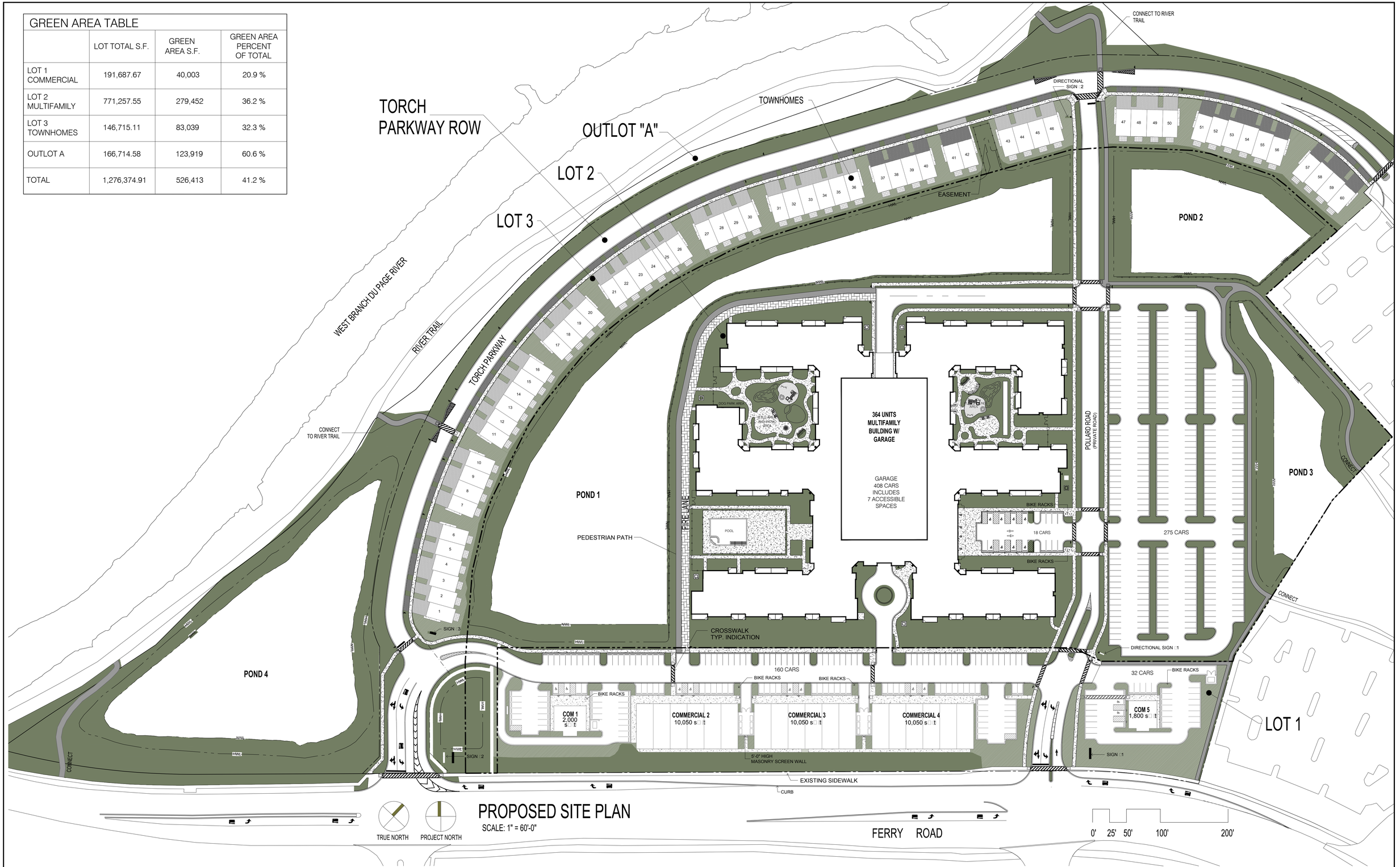
BENCH DETAILS
FENCE DETAIL

SHEET:
A-11

GREEN AREA TABLE

	LOT TOTAL S.F.	GREEN AREA S.F.	GREEN AREA PERCENT OF TOTAL
LOT 1 COMMERCIAL	191,687.67	40,003	20.9 %
LOT 2 MULTIFAMILY	771,257.55	279,452	36.2 %
LOT 3 TOWNHOMES	146,715.11	83,039	32.3 %
OUTLOT A	166,714.58	123,919	60.6 %
TOTAL	1,276,374.91	526,413	41.2 %



PROPOSED SITE PLAN

SCALE: 1" = 60'-0"

18 FEB 2019 REVISED:19 APR 2019

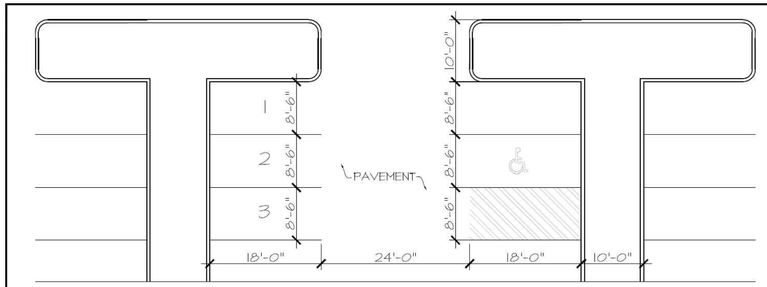
CANTERA DEVELOPMENT HOLDINGS, LLC
DEVELOPER
TWO NORTHFIELD PLAZA, SUITE #320 NORTHFIELD, IL 60093

364 D. U.
RIVER VIEW WEST
WARRENVILLE, ILLINOIS

BARANYK ASSOCIATES, LTD.
ARCHITECTS • ENGINEERS • PLANNERS
710 HIGGINS RD. PARK RIDGE, IL. 60068
FAX 847/825-8617 PHONE 847/292-5757

GREEN AREAS

SHEET: A-12



TYPICAL PARKING DETAIL

WEST BRANCH OF DU PAGE RIVER

TORCH PARKWAY

ASPHALT WALKING PATH
TYPICAL INDICATION

364 UNITS
MULTIFAMILY
BUILDING W/
GARAGE

POLLARD ROAD
(PRIVATE ROAD)

GRASSCRETE
TYPICAL INDICATION

CONCRETE WALKING PATH
TYPICAL INDICATION

RIVER TRAIL

TRUE NORTH

PROJECT NORTH

SITE PLAN
SCALE: 1" = 60'-0"

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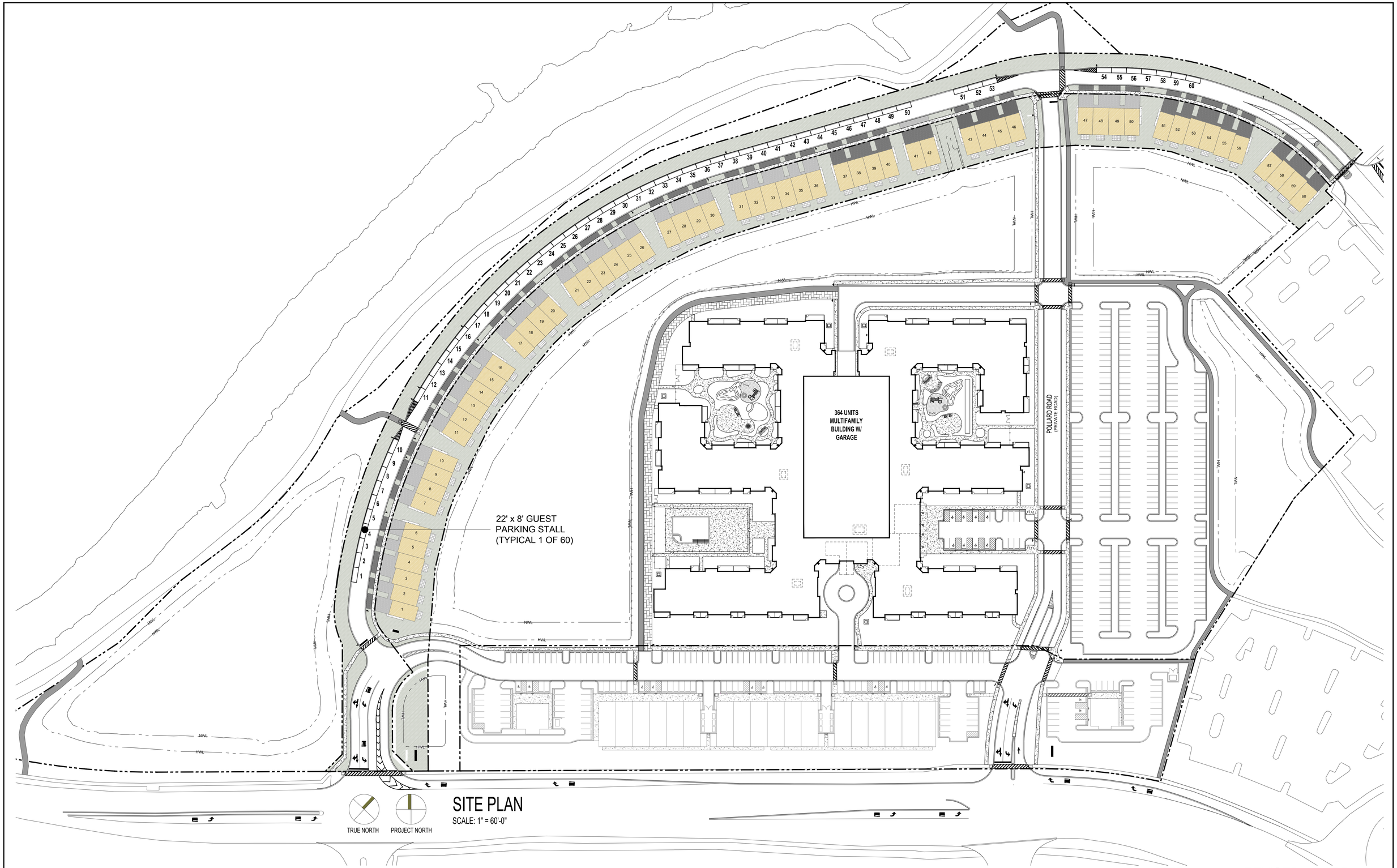
WALKING PATHS

SHEET:
A-13



SITE PLAN

SCALE: 1" = 60'-0"

TRUE NORTH PROJECT NORTH

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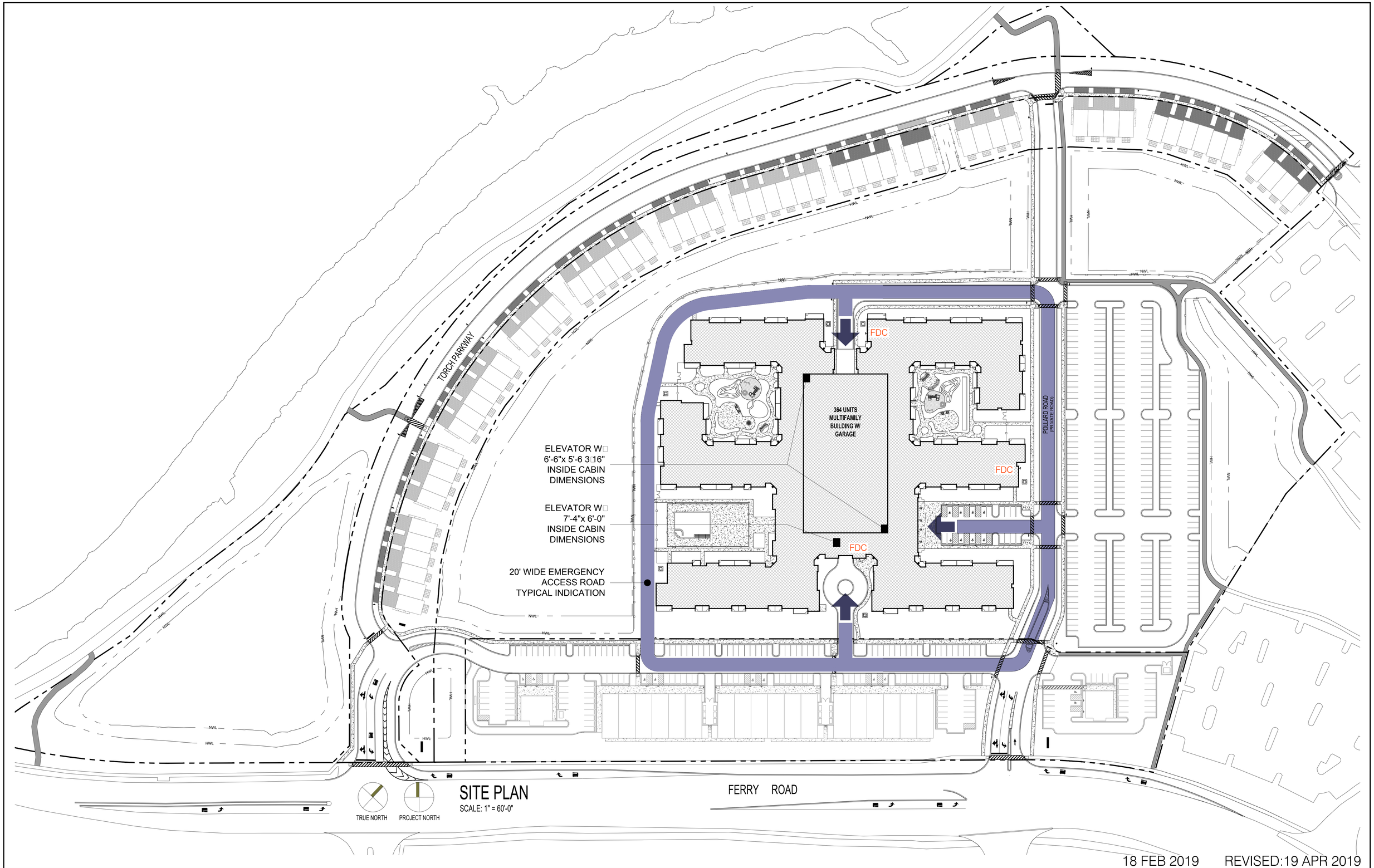
TOWNHOMES GUEST
PARKING DIAGRAM

SHEET:

A-14



SITE PLAN

SCALE: 1" = 60'-0"

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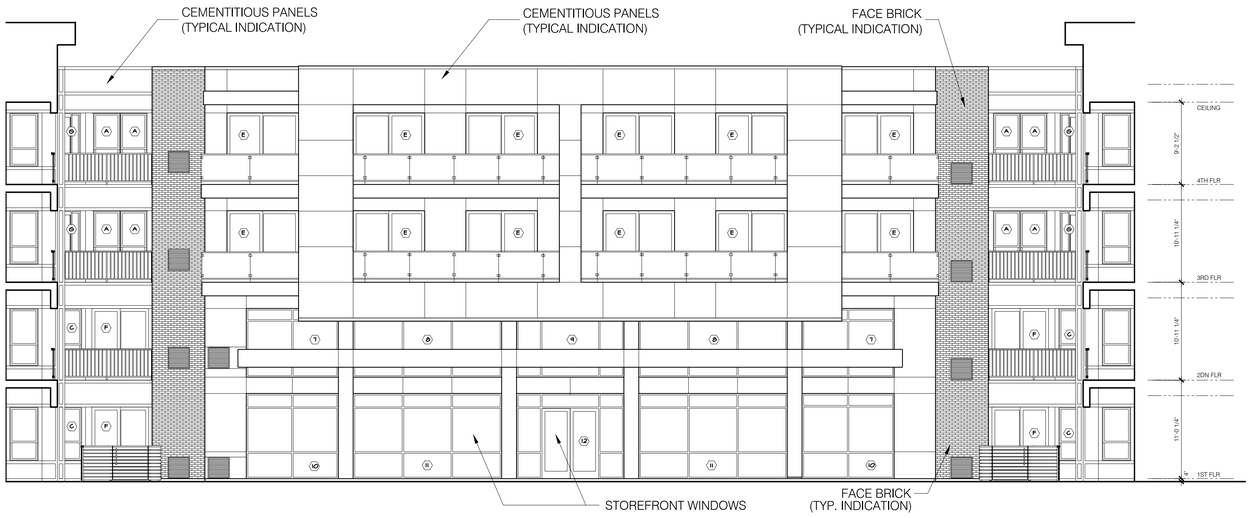
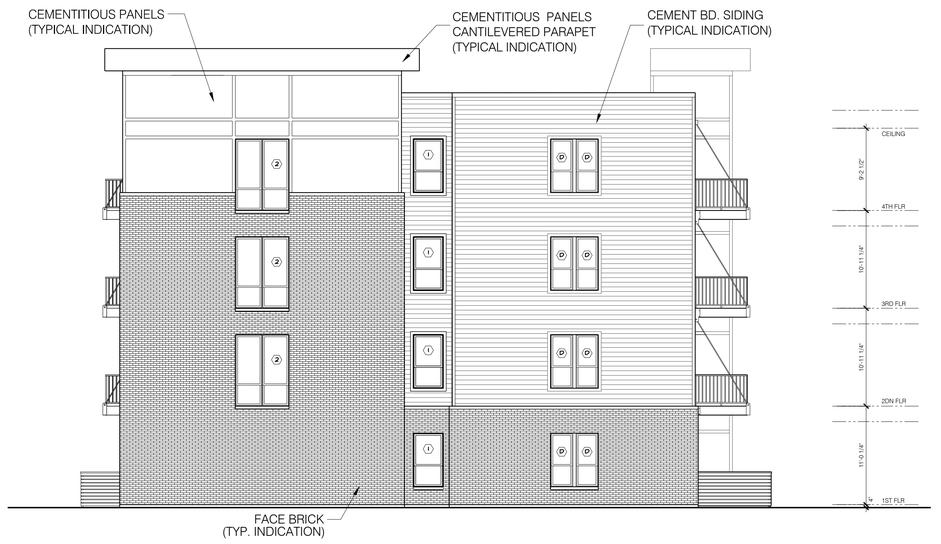
EMERGENCY RESPONSE DIAGRAM

SHEET: A-15



1 ELEVATION
SCALE: 1/8"=1'-0"



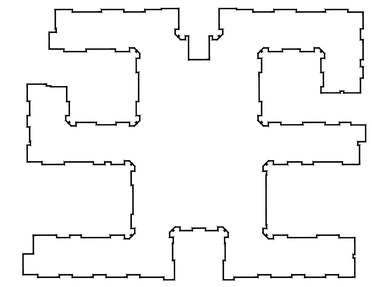
3 ELEVATION
SCALE: 1/8"=1'-0"



2 ELEVATION
SCALE: 1/8"=1'-0"

WALL FINISHES LEGEND

- FACE BRICK
- HARDIE PANELS W/ TRIM BOARDS
- HARDIE LAP. SIDING



KEY PLAN

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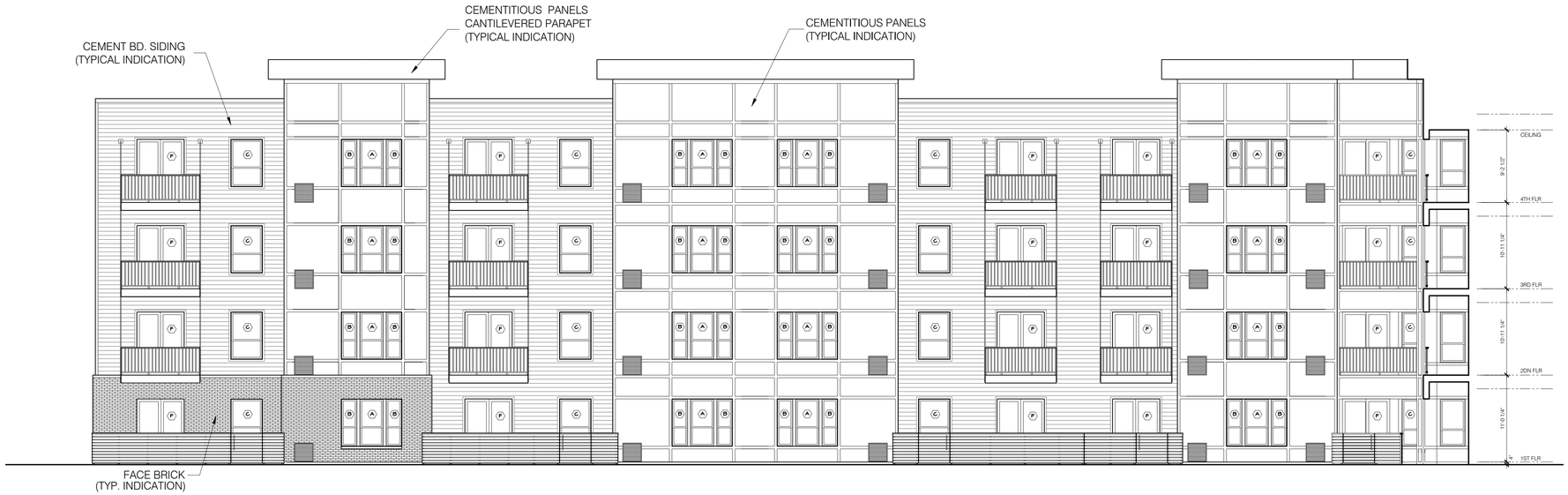
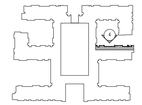
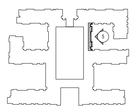
SHEET:
A-16





4 ELEVATION
SCALE: 1/8"=1'-0"

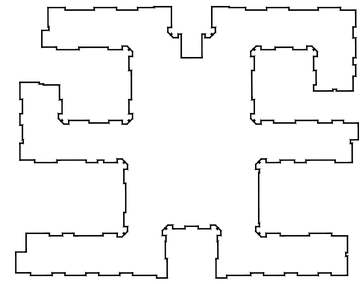




5 ELEVATION
SCALE: 1/8"=1'-0"

WALL FINISHES LEGEND

- FACE BRICK
- HARDIE PANELS W/ TRIM BOARDS
- HARDIE LAP. SIDING



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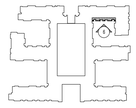
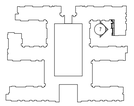
SHEET:
A-17



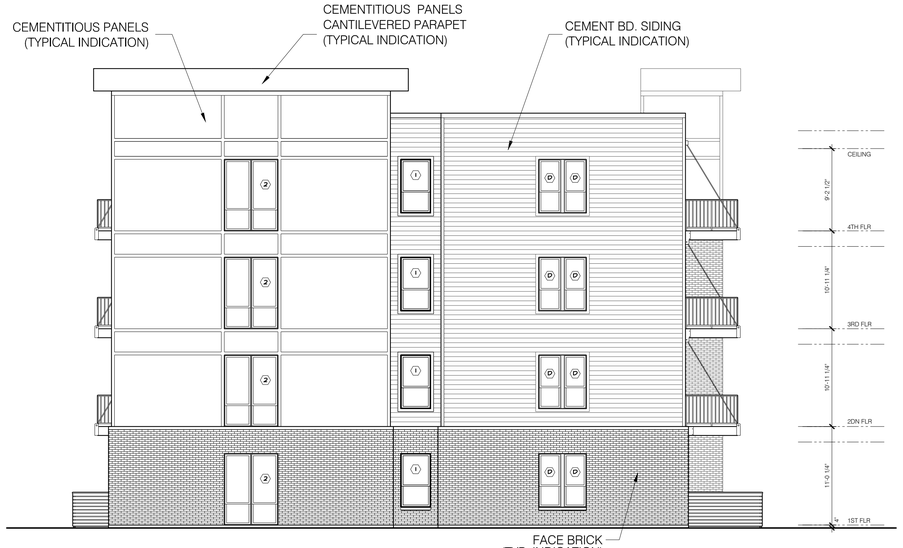


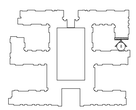
6 ELEVATION
SCALE: 1/8"=1'-0"





7 ELEVATION
SCALE: 1/8"=1'-0"

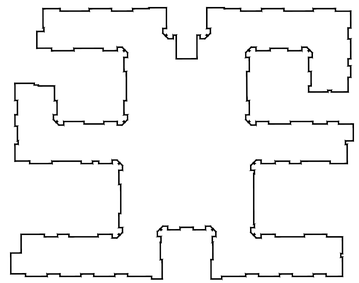




8 ELEVATION
SCALE: 1/8"=1'-0"

WALL FINISHES LEGEND

- FACE BRICK
- HARDIE PANELS W/ TRIM BOARDS
- HARDIE LAP. SIDING



KEY PLAN

TRUE NORTH PROJECT NORTH

18 FEB 2019 REVISED:19 APR 2019

CANTERA DEVELOPMENT HOLDINGS, LLC
DEVELOPER

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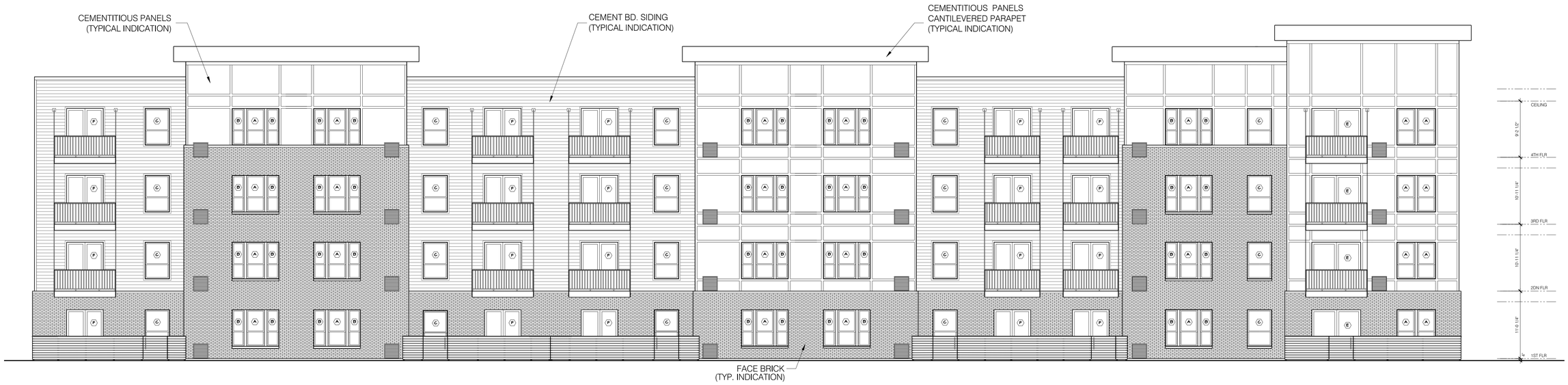
SHEET:
A-18



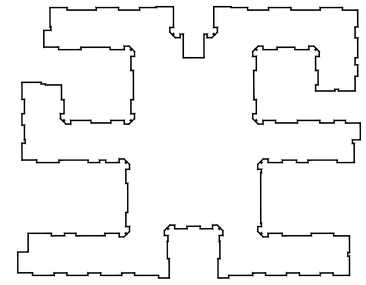
10 ELEVATION
SCALE: 1/8"=1'-0"



9 ELEVATION
SCALE: 1/8"=1'-0"

WALL FINISHES LEGEND

- FACE BRICK
- HARDIE PANELS W/ TRIM BOARDS
- HARDIE LAP. SIDING



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TRUE NORTH PROJECT NORTH

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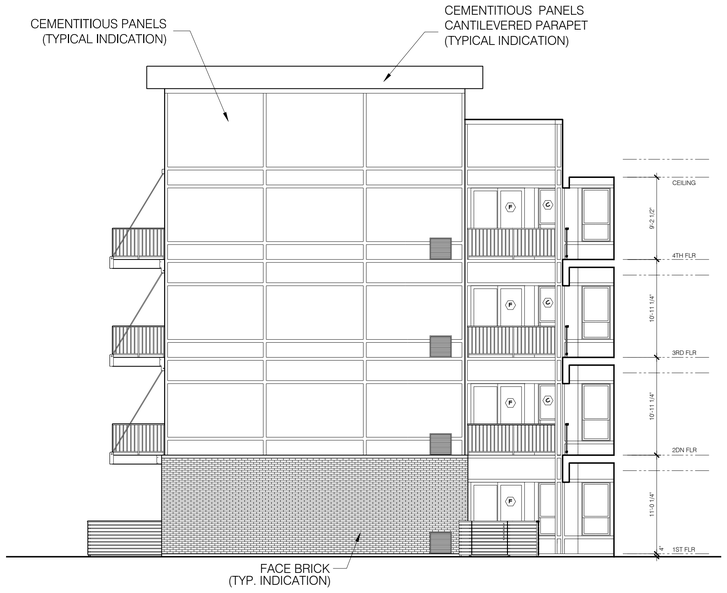
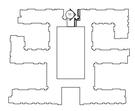
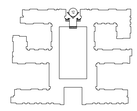
SHEET:
A-19



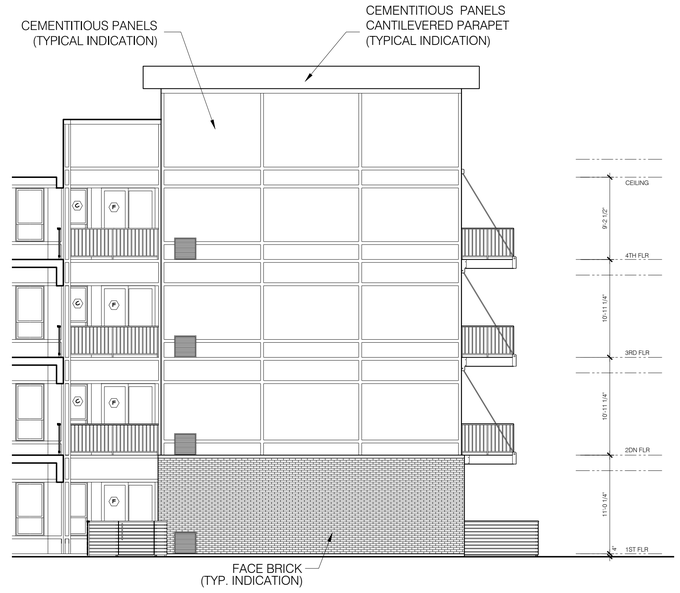


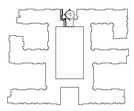
11 ELEVATION
SCALE: 1/8"=1'-0"





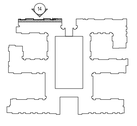
12 ELEVATION
SCALE: 1/8"=1'-0"





13 ELEVATION
SCALE: 1/8"=1'-0"

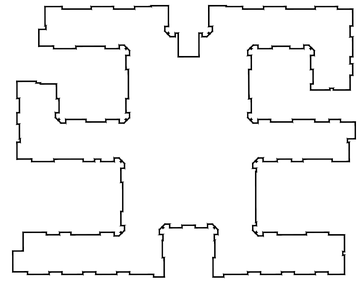




14 ELEVATION
SCALE: 1/8"=1'-0"

WALL FINISHES LEGEND

- FACE BRICK
- HARDIE PANELS W/ TRIM BOARDS
- HARDIE LAP. SIDING



KEY PLAN

TRUE NORTH PROJECT NORTH

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DEVELOPER

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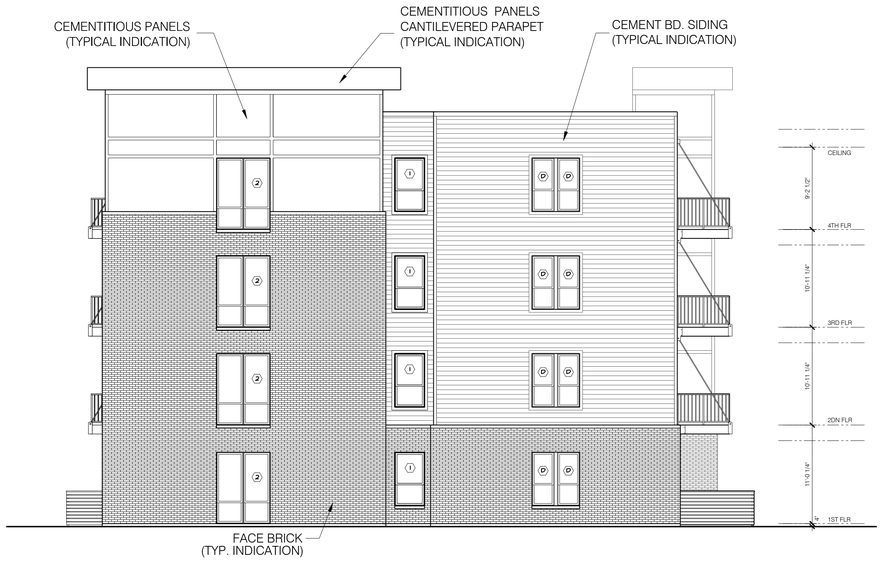
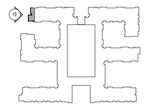
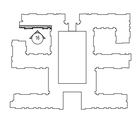
SHEET:
A-20





15 ELEVATION
SCALE: 1/8" = 1'-0"

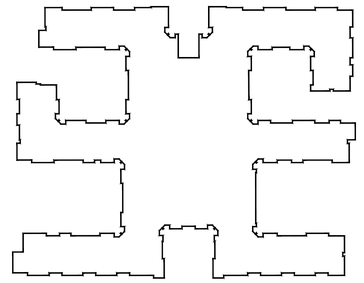




16 ELEVATION
SCALE: 1/8" = 1'-0"

WALL FINISHES LEGEND

- FACE BRICK
- HARDIE PANELS W/ TRIM BOARDS
- HARDIE LAP. SIDING



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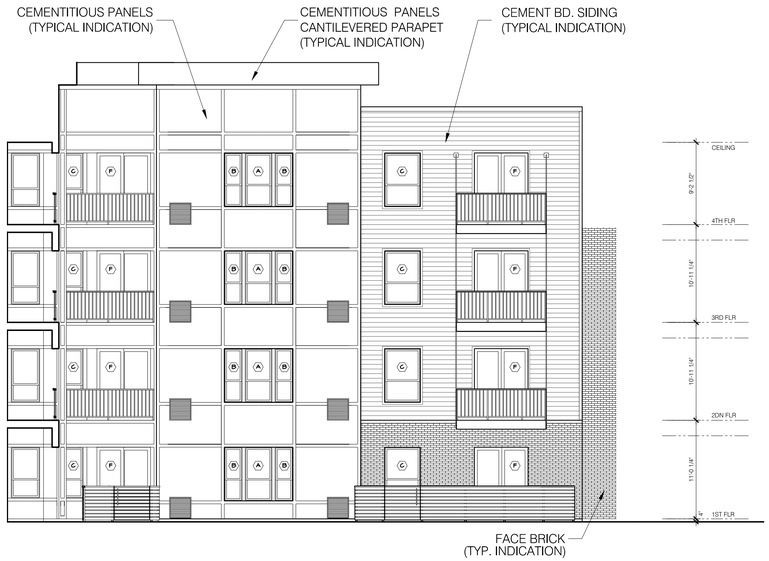
SHEET:
A-21

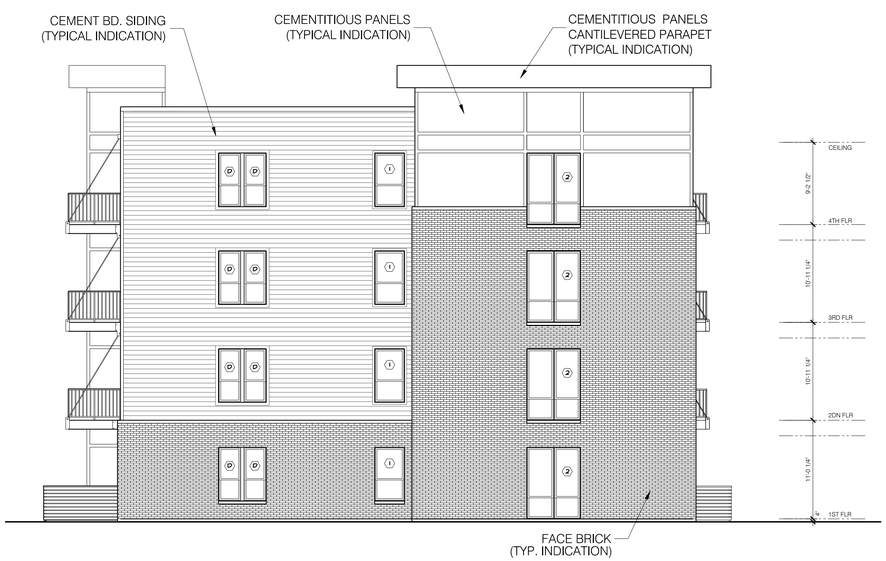


17 ELEVATION
SCALE: 1/8"=1'-0"

18 ELEVATION
SCALE: 1/8"=1'-0"



19 ELEVATION
SCALE: 1/8"=1'-0"



20 ELEVATION
SCALE: 1/8"=1'-0"

WALL FINISHES LEGEND

- FACE BRICK
- HARDIE PANELS W/ TRIM BOARDS
- HARDIE LAP. SIDING

KEY PLAN

TRUE NORTH PROJECT NORTH

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SHEET: A-22



21 ELEVATION
SCALE: 1/8" = 1'-0"



22 ELEVATION
SCALE: 1/8" = 1'-0"

WALL FINISHES LEGEND

- FACE BRICK
- HARDIE PANELS W/ TRIM BOARDS
- HARDIE LAP. SIDING

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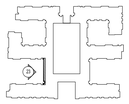
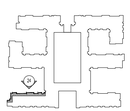
SHEET:
A-23





23 ELEVATION
SCALE: 1/8"=1'-0"

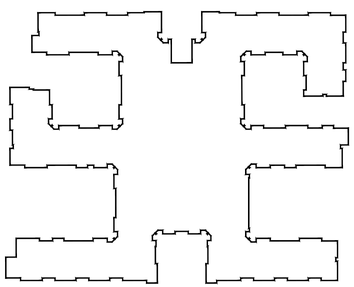




24 ELEVATION
SCALE: 1/8"=1'-0"

WALL FINISHES LEGEND

- FACE BRICK
- HARDIE PANELS W/ TRIM BOARDS
- HARDIE LAP. SIDING



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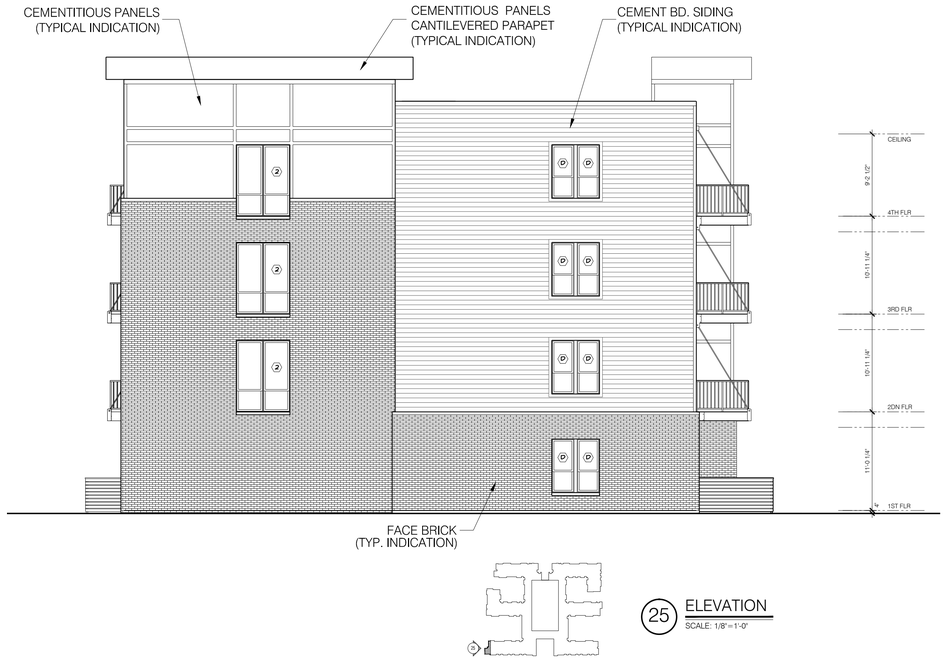
SHEET:
A-24



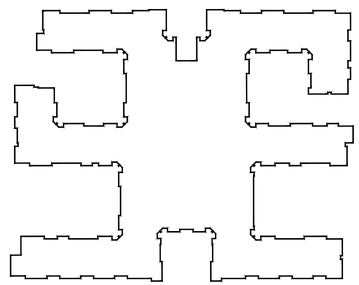
26 ELEVATION
SCALE: 1/8" = 1'-0"



25 ELEVATION
SCALE: 1/8"=1'-0"

WALL FINISHES LEGEND

- FACE BRICK
- HARDIE PANELS W/ TRIM BOARDS
- HARDIE LAP. SIDING



KEY PLAN
TRUE NORTH PROJECT NORTH

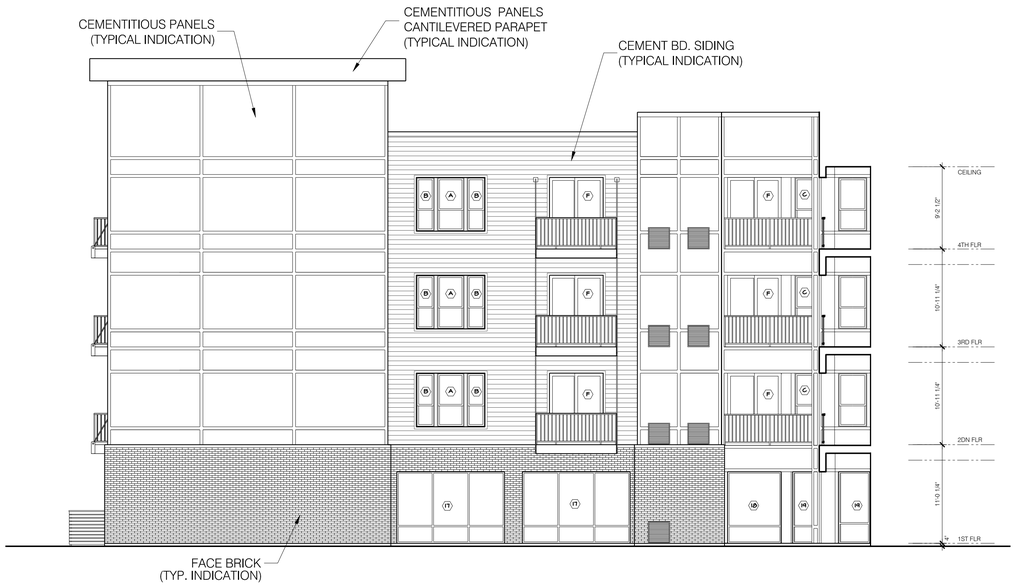
18 FEB 2019 REVISED:19 APR 2019

CANTERA DEVELOPMENT HOLDINGS, LLC
DEVELOPER
TWO NORTHFIELD PLAZA, SUITE #320 NORTHFIELD, IL 60093

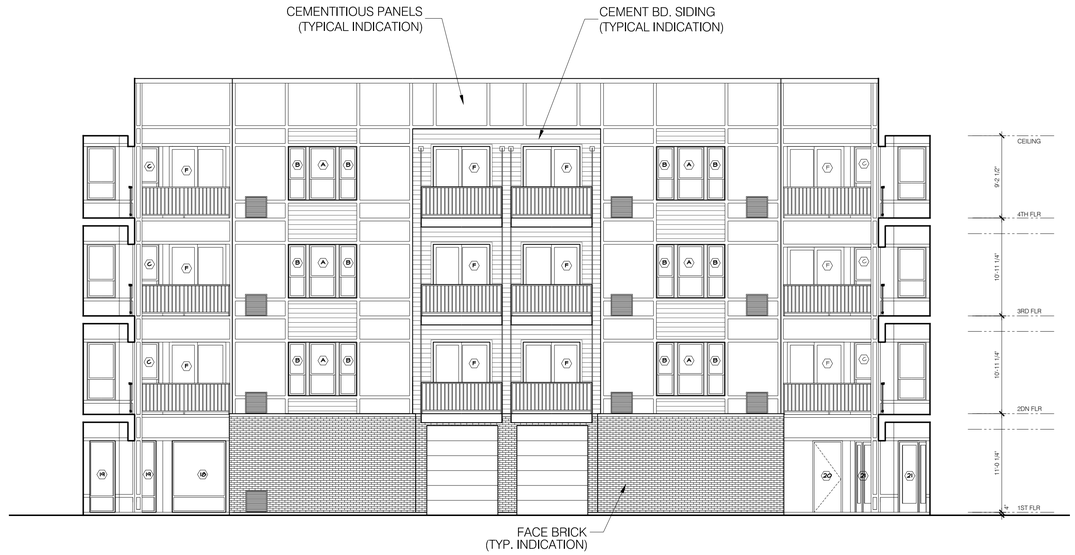
364 D. U.
RIVER VIEW WEST
WARRENVILLE, ILLINOIS

BARANYK ASSOCIATES, LTD.
ARCHITECTS • ENGINEERS • PLANNERS
710 HIGGINS RD. PARK RIDGE, IL. 60068
FAX 847/825-8617 PHONE 847/292-5757

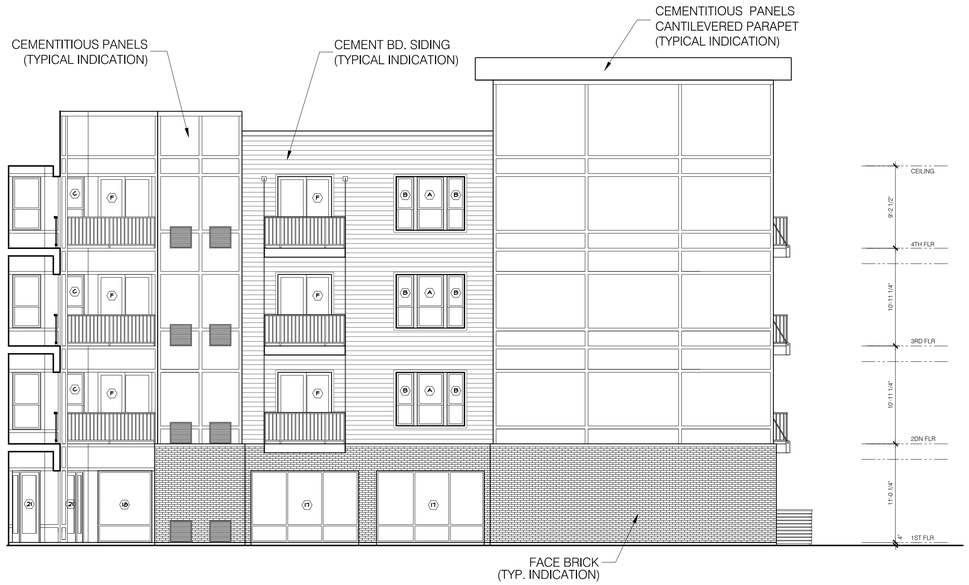
SHEET:
A-25



27 ELEVATION
SCALE: 1/8"=1'-0"



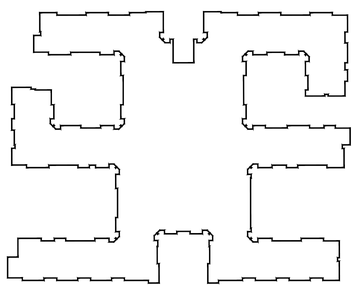
28 ELEVATION
SCALE: 1/8"=1'-0"



29 ELEVATION
SCALE: 1/8"=1'-0"

WALL FINISHES LEGEND

- FACE BRICK
- HARDIE PANELS W/ TRIM BOARDS
- HARDIE LAP. SIDING



KEY PLAN

TRUE NORTH PROJECT NORTH

18 FEB 2019 REVISED:19 APR 2019

CANTERA DEVELOPMENT HOLDINGS, LLC
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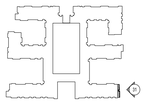
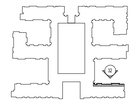
SHEET:
A-26





31 ELEVATION
SCALE: 1/8"=1'-0"





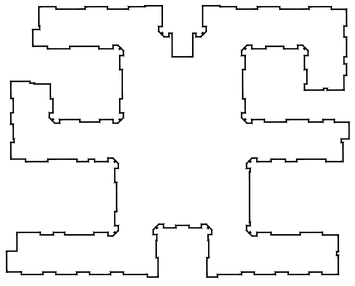
32 ELEVATION
SCALE: 1/8"=1'-0"



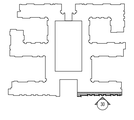
2
03.14.19

WALL FINISHES LEGEND

- FACE BRICK
- HARDIE PANELS W/ TRIM BOARDS
- HARDIE LAP. SIDING



KEY PLAN
TRUE NORTH PROJECT NORTH



30 ELEVATION
SCALE: 1/8"=1'-0"

18 FEB 2019 REVISED:19 APR 2019

CANTERA DEVELOPMENT HOLDINGS, LLC
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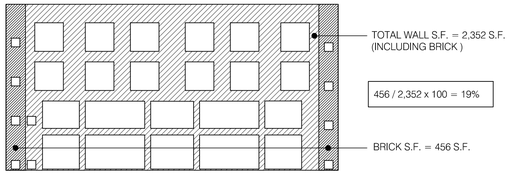
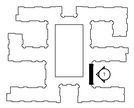
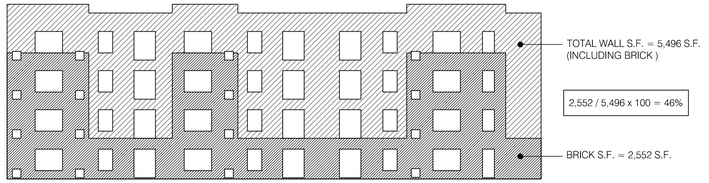
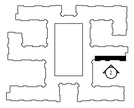
SHEET:
A-27



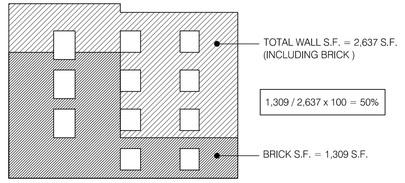


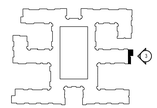
1 ELEVATION
SCALE: 1/20"=1'-0"



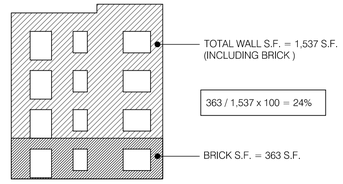


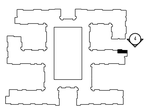
2 ELEVATION
SCALE: 1/20"=1'-0"



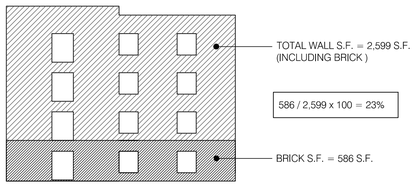


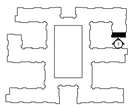
3 ELEVATION
SCALE: 1/20"=1'-0"



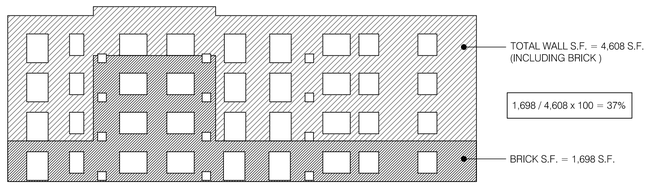


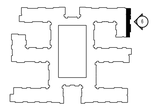
4 ELEVATION
SCALE: 1/20"=1'-0"



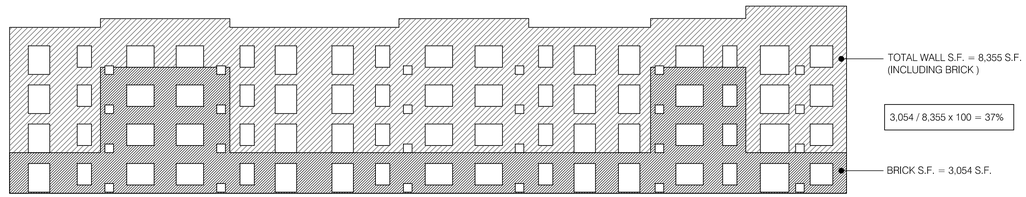


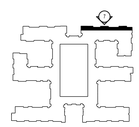
5 ELEVATION
SCALE: 1/20"=1'-0"



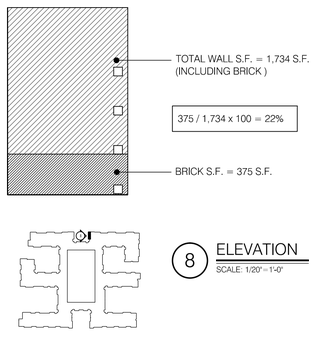


6 ELEVATION
SCALE: 1/20"=1'-0"

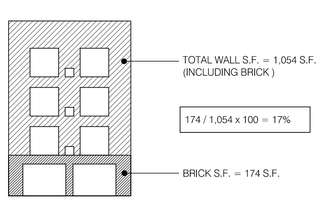


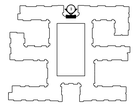


7 ELEVATION
SCALE: 1/20"=1'-0"

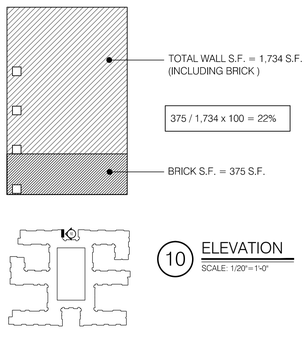


8 ELEVATION
SCALE: 1/20"=1'-0"

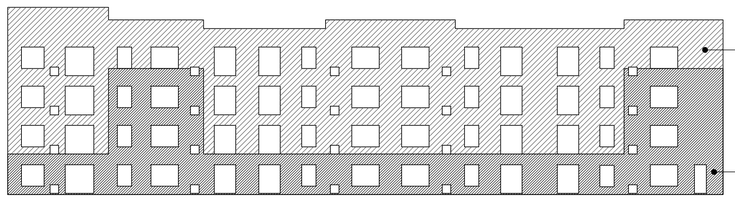


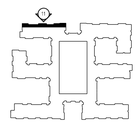


9 ELEVATION
SCALE: 1/20"=1'-0"

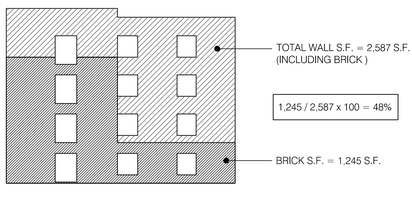


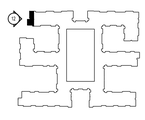
10 ELEVATION
SCALE: 1/20"=1'-0"



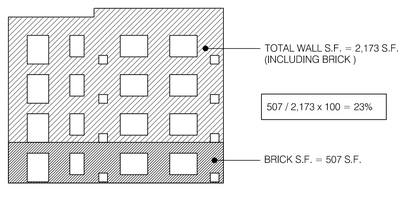


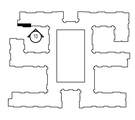
11 ELEVATION
SCALE: 1/20"=1'-0"





12 ELEVATION
SCALE: 1/20"=1'-0"



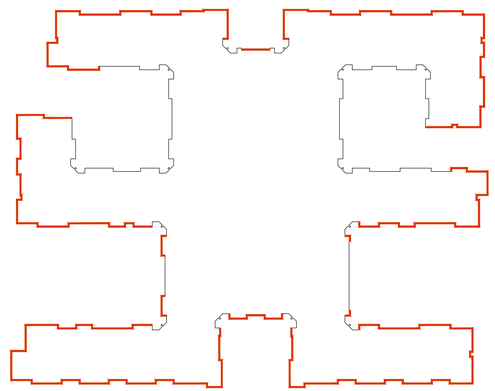


13 ELEVATION
SCALE: 1/20"=1'-0"

TOTAL WALL S.F. (SHEET A-28) = 44,089 S.F.

15,364 / 44,089 x 100 = 35%

BRICK S.F. (SHEET A-28) = 15,364 S.F.



BUILDING FOOTPRINT

18 FEB 2019

CANTERA DEVELOPMENT HOLDINGS, LLC
DEVELOPER

TWO NORTHFIELD PLAZA, SUITE #320 NORTHFIELD, IL 60093

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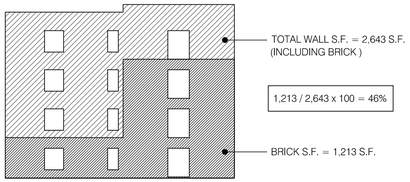
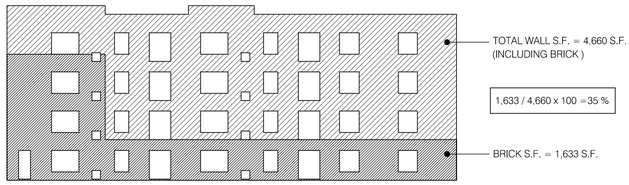
15,364 / 44,089 x 100 = 35% (SHEET A-28)

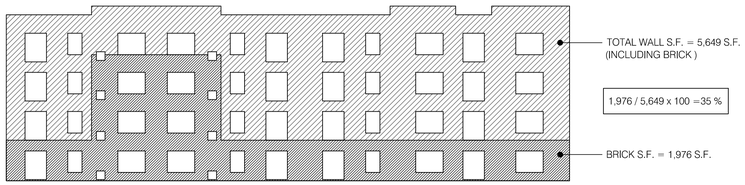
SHEET:
A-28



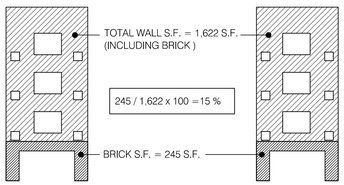
14 ELEVATION
SCALE: 1/20"=1'-0"



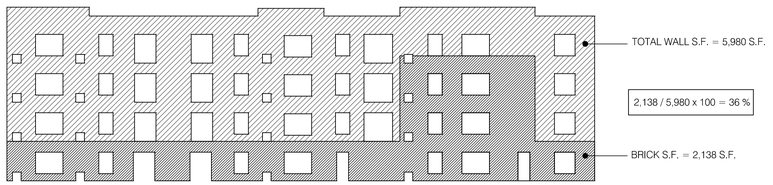
15 ELEVATION
SCALE: 1/20"=1'-0"



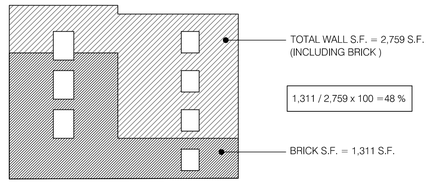
16 ELEVATION
SCALE: 1/20"=1'-0"



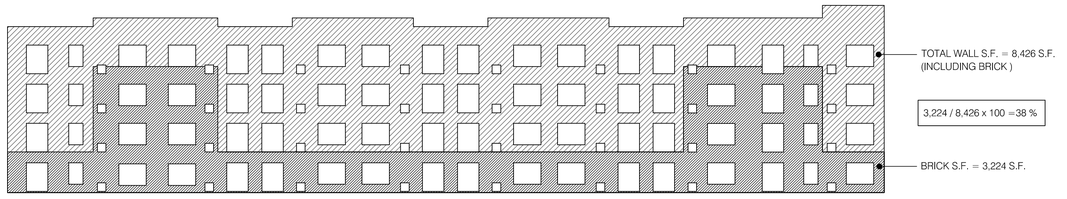
17 ELEVATION
SCALE: 1/20"=1'-0"



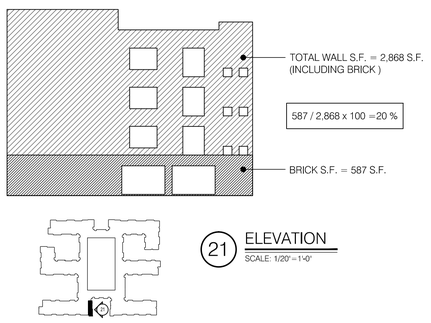
18 ELEVATION
SCALE: 1/20"=1'-0"



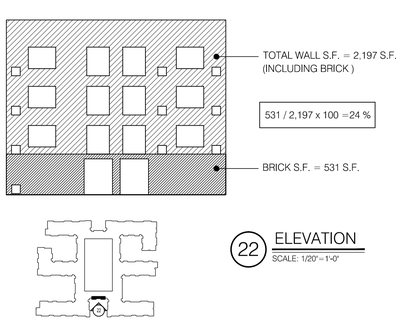
19 ELEVATION
SCALE: 1/20"=1'-0"



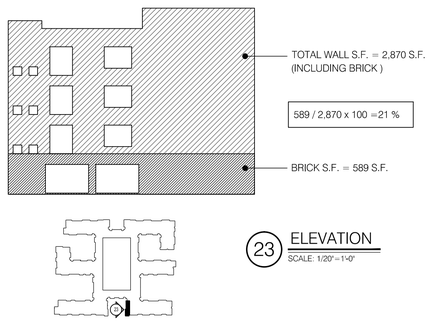
20 ELEVATION
SCALE: 1/20"=1'-0"



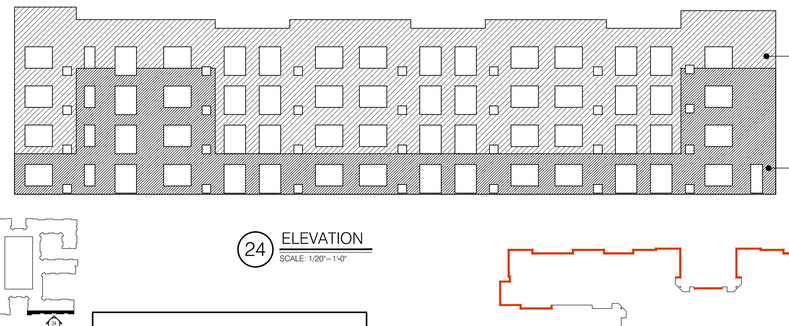
21 ELEVATION
SCALE: 1/20"=1'-0"



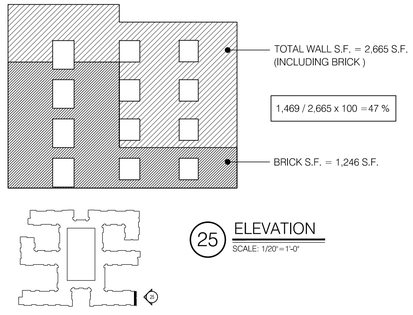
22 ELEVATION
SCALE: 1/20"=1'-0"



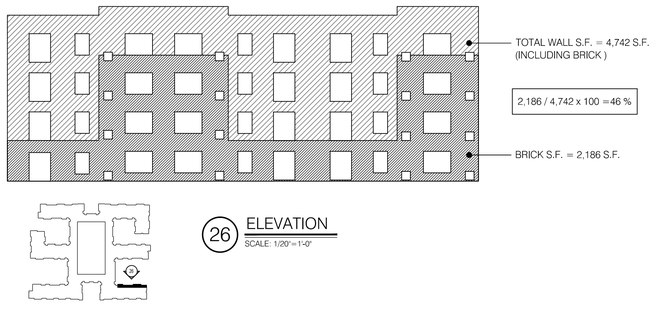
23 ELEVATION
SCALE: 1/20"=1'-0"



24 ELEVATION
SCALE: 1/20"=1'-0"



25 ELEVATION
SCALE: 1/20"=1'-0"



26 ELEVATION
SCALE: 1/20"=1'-0"

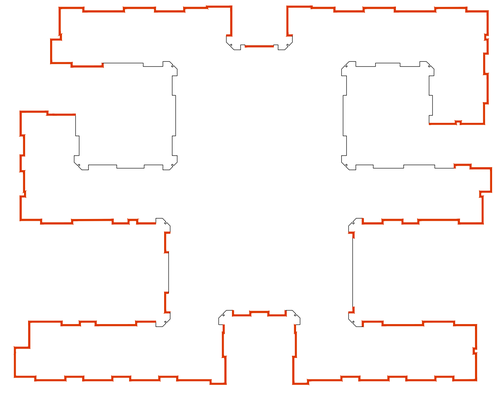
TOTAL WALL S.F. (SHEET A-29) = 54,549 S.F.

19,763 / 54,549 x 100 =36 %

BRICK S.F. (SHEET A-29) = 19,763 S.F.

Cantera Residences Material Summary

#	Material Square Footage	Total	Precentage
1	Fiber Cement Panels & Siding Area	33,696	34%
2	Brick Area	35,127	36%
3	Garage Door Area	373	0.4%
4	Storefront Area	1,771	1.8%
5	Window/ Door Area	26,253	27%
6	Magic Pak Louvers	1,419	1.4%
	Total Facade Area	98,638	100%



BUILDING FOOTPRINT

18 FEB 2019

CANTERA DEVELOPMENT HOLDINGS, LLC
DEVELOPER

TWO NORTHFIELD PLAZA, SUITE #320 NORTHFIELD, IL 60093

364 D. U.
RIVER VIEW WEST
WARRENVILLE, ILLINOIS

BARANYK ASSOCIATES, LTD.
ARCHITECTS • ENGINEERS • PLANNERS
710 HIGGINS RD. PARK RIDGE, IL. 60068
FAX 847/825-8617 PHONE 847/292-5757

15,364 / 44,089 x 100 = 35% (SHEET A-28)
19,763 / 54,549 x 100 = 36 % (SHEET A-29)
35,127 / 98,638 x 100 = 36 % TOTAL

SHEET:
A-29



BARANYK ASSOCIATES, LTD.
ARCHITECTS • ENGINEERS • PLANNERS

April 19, 2019

Ms. Natalia Domovessova
Senior Planner
City of Warrenville

RE: Riverview West Development
Final PUD / Plat Staff Review Comments - 2nd Review,
Memorandum,
Fire Inspector's Review

Dear Ms. Domovessova:

Pursuant to review letters, dated April 11, 2019, please note the following:

Riverview West Development
Final PUD / Plat Staff Review Comments - 2nd Review

1. List of Documents submitted

A-1 Title Sheet/Site Plan (color) - revised
A-2 Construction Phasing Plan- background updated
A-3 Site Plan - revised
A-4 Court Yards - no change
A-5 First Floor Plan (Residential Building) - denotations added
A-6 Second floor plan (Residential Building) - denotations added
A-7 Third and fourth floor plan (Residential Building) - denotations added
A-8 Typical Wall Sections - no change
A-9 Color Elevations - denotations added
A-10 Monument, Wall and Directional Signs- directional signs revised, visibility diagrams added.
A-11 Bench Details, typ. Fence Detail, RTU Visibility Diagram – visibility diagram removed
A-12 Green Areas- background updated
A-13 Walking Path Plan- background updated
A-14 Townhome Guest Parking Diagram- background updated
A-15 Emergency Response Diagram- background updated
A-16 Building Elevation 1, 2, 3 - denotations added
A-17 Building Elevation 4, 5 - denotations added

A-18 Building Elevation 6, 7, 8 - denotations added
A-19 Building Elevation 9, 10 - denotations added
A-20 Building Elevation 11, 12, 13, 14 - denotations added
A-21 Building Elevation 15, 16 - denotations added
A-22 Building Elevation 17, 18, 19, 20 - denotations added
A-23 Building Elevation 21, 22 - denotations added
A-24 Building Elevation 23, 24 - denotations added
A-25 Building Elevation 25, 26 - denotations added
A-26 Building Elevation 27, 28, 29 - denotations added
A-27 Building Elevation 30, 31, 32 - denotations added
A-28 Material summary - no change
A-29 Material summary - no change

1.1 List of Photometric Plans submitted

PH-1 Photometric Plan - multi-family, commercial, and parking - no change
PH-2 Photometric Plan - Torch Parkway - revised
PH-3 Photometric Plan - west side of Commercial Drive - no change
PH-4 Photometric Plan - monument signs - no change

1.2 List of Cut sheets submitted

CS-1 Typical balcony connection detail - no change
CS-2 Typical balcony drawing - no change
CS-3 Typical balcony product data - no change
CS-4 Typical bicycle rack - no change
CS-5 Typical Hardie panels and siding - no change
CS-6 Typical magic pak product data – no change
CS-7 Typical patio screen wall detail - dimension added
CS-8 Typical pool fence - note added
CS-9 Rooftop Units - new
CS-10 Generator - new
CS-11 Color chart - new
LD-1 Typical light detail (light pole and monument sign) - multi-family, commercial, and parking - no change
LD-2 Typical light detail - west side of Commercial Drive - no change
LD-3 Typical light detail - Torch Parkway - no change
LD-4 Typical balcony light fixture - residential - no change
LD-5 Typical wall mount light fixture - residential - no change
LD-6 Typical Sign Lighting – new

1.3 3D Rendering

4. Warrenville Fire Protection District Review

See response at the end of the letter

5. Apartment Building

a. Roof top equipment

Two roof top equipment visibility diagrams provided. The diagrams showing that the equipment will not be visible from south sidewalk of Ferry Road. See sheet A-11
* Typical RTU visibility from south sidewalk of Ferry Rd.
* Generator visibility from south sidewalk of Ferry Rd.

b. Fence detail

The note “fence to be constructed of high quality, black aluminum” was added to cut sheet CS-8, and sheet A-11

c. Screen wall/fences

Denotation of the screen wall at patios was revised on architectural plans to comply.
Height of the screen walls at patios indicated on cut sheet CS-7
The color is specified on cut sheet CS-11

d. Ground Sign Lighting

See cut sheet LD-6

e. Balcony Details

For proposed balcony construction detail see cut sheet CS-2
For proposed balcony flooring material see cut sheet CS-3
To prevent corrosion all metal balconies will be constructed of powder coated aluminum.

f. Building Elevation Colors

For color scheme of the proposed apartment building see cut sheet CS-11

g. EV charging stations

Five EV charging stations provided. For location see first floor plan on sheet A-5
In addition, to the five quick charging stations indicated on the first floor, forty-one overnight charging stations will be installed throughout the garage. Locations for these charging stations will be indicated on the building permit submittal drawings.

6. Site Plan and Landscape Plan

a. Site plan

The line weight of all proposed property lines on the drawing was adjusted to bold to be more readable. See sheet A-3

f. Generator

For generator specifications and dimensions see cut sheet CS-10
Also, see generator visibility diagram on sheet A-11
The diagram showing that the generator will not be visible from south sidewalk of Ferry Road.

g. Trash and Recycling Station

Two compactors for waste and recycle will be provided at trash room at first floor. See sheet A-5
Outside refuse pick up area indicated on the site plan. See sheet A-3
No recycling facilities will be provided on the site. Refuse and recycling collection will be provided by a waste hauler company.

h. Mailroom

Location of the mailroom was indicated on the site plan.
A parking stall was designated for parking a mail truck at the front entrance parking lot. See sheet A-3 and first floor plan on sheet A-5.
Mail will be delivered to the mailroom through the building lobby.

i. Loading Area

Loading area indicated on the site plan. See sheet A-3.

i. Building Foundation Landscaping

Trees and shrubs on the 3D Rendering is an artistic representation.
Landscape plans supersede the 3D presentation.

8. Signage

a. Monument Sign Setbacks

Setbacks are complying with City requirements.
See dimensions from the signs to right-of -way lines and to centerline of Ferry Road on sheet A-3
Signs are located outside of vision clearance triangles. See civil engineering drawings. Sheet 49.

b. Site Wayfinding Signage

Directional signs were decreased in size to meet, 9 square feet per face, requirement. See sheet A-10

c. Apartment Building Wall Signs

Wall signs were removed from building elevations.

Fire Inspector's Review

Cul-de-sac turn around width was increased from 17'-5" to 22'-0".

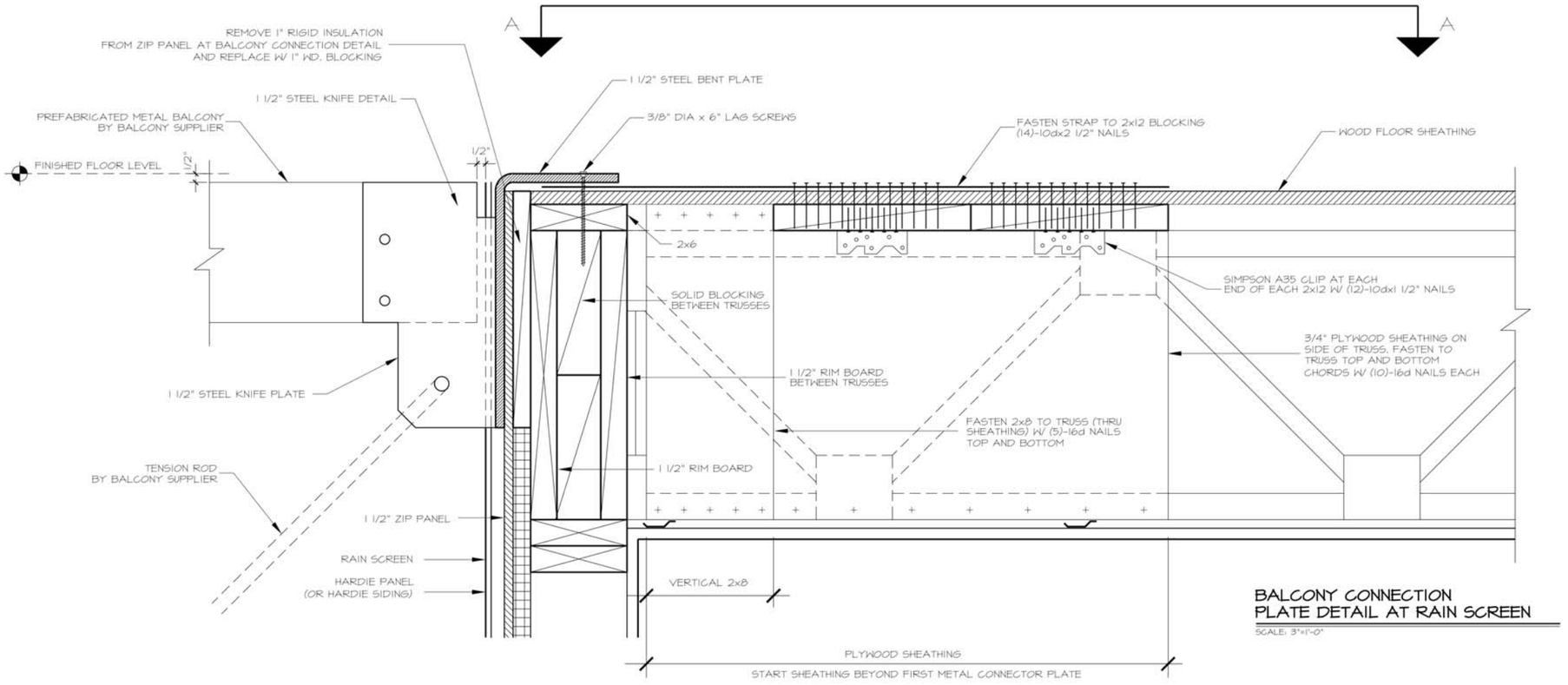
All phases of this project including townhomes will have an automatic fire sprinkler system installed.

Understood, but the development not planning to include a boat launch.

Sincerely,

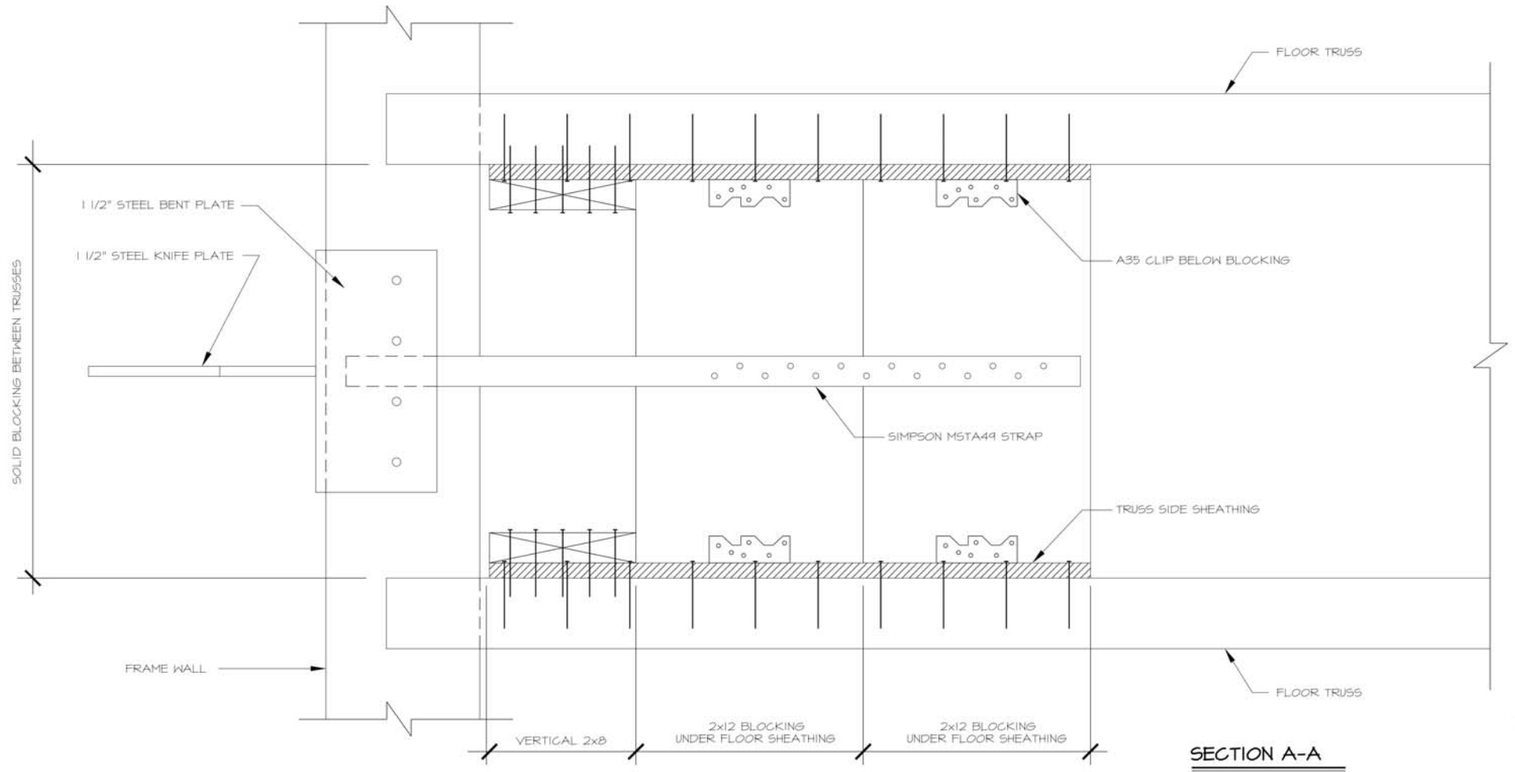
Baranyk Associates, Ltd.

Orest Baranyk A.I.A.



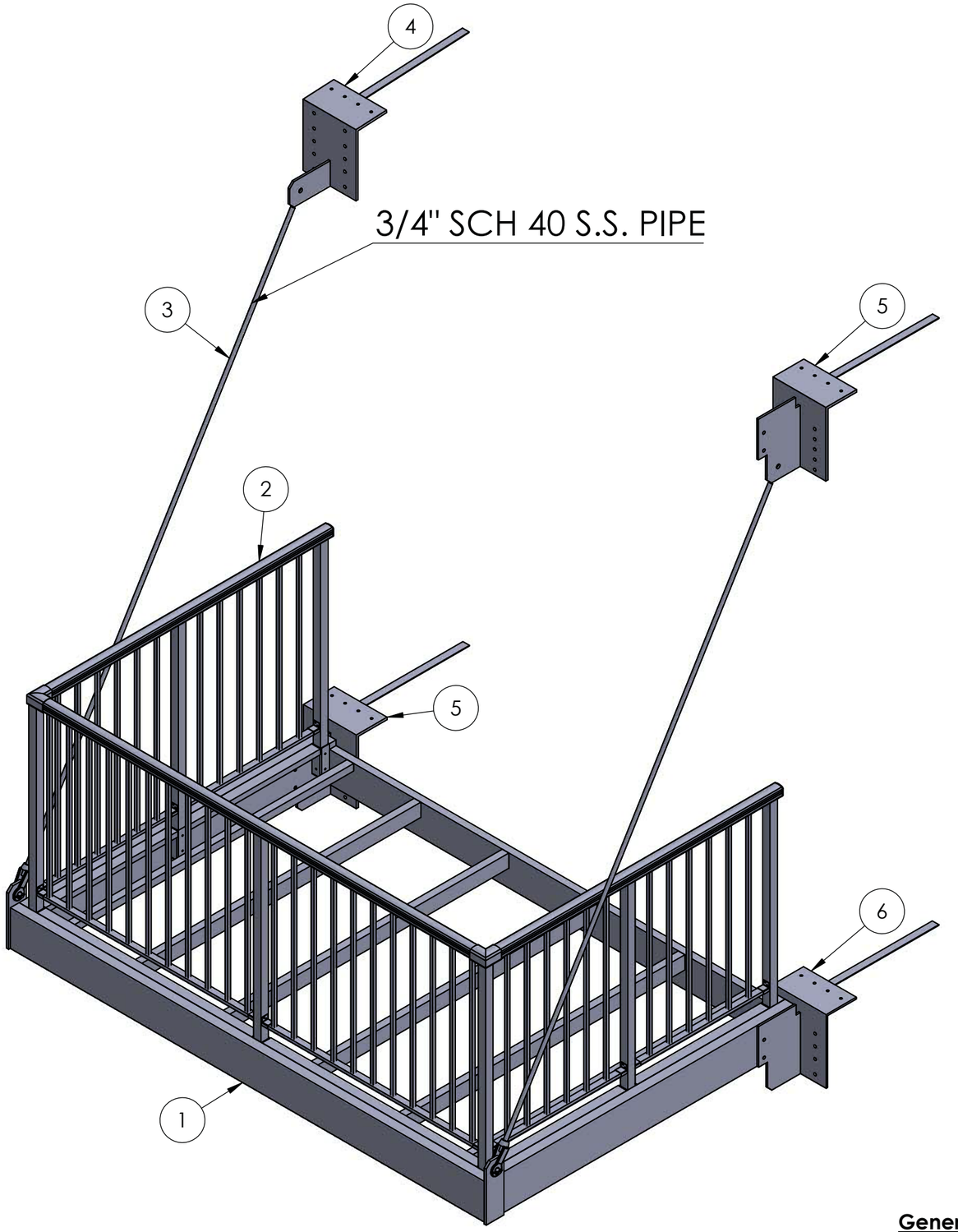
BALCONY CONNECTION PLATE DETAIL AT RAIN SCREEN

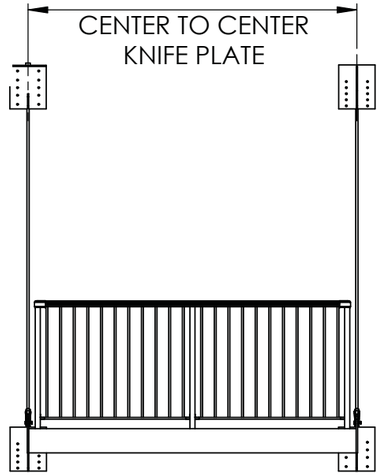
SCALE: 3"=1'-0"

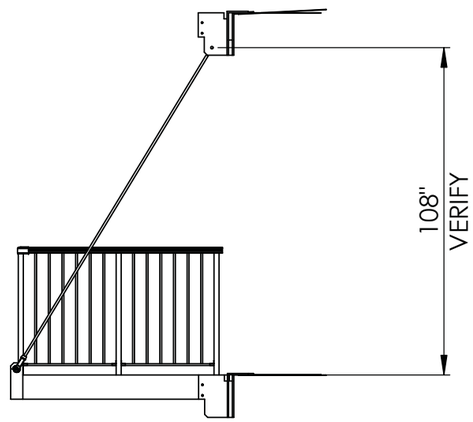


SECTION A-A

SCALE: 3"=1'-0"







#	Description	Total
1	BALCONY 01	1
2	BALCONY 01 RAIL	1
3	TIE ROD 01	2
4	HIGHEST LEVEL KNIFE PLATE	1
5	INTERMEDIATE LEVEL KNIFE PLATE	2
6	LOWEST LEVEL - SIDING	1

CS-2

02/18/19

General Notes:

-

CONTRACTOR: McShane Construction

PROJECT LOCATION: -

PHASE:

PROJECT:

PROGRESS / DATE COMPLETED:

ENDURABLE Building Products
6500 SHINGLE CREEK PARKWAY
BROOKLYN CENTER MN 55430
WWW ENDURABLE COM
PHONE: 763 585 0097 - FAX: 763 585 0100

	NAME	SIGNATURE	DATE
DRAWN	Asobrack		
CHK'D			
APPV'D			
MFG			
Q.A			

DESCRIPTION:

BALCONY 01 ISO

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UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES

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PART NUMBER: MCSH10-BALC-01-ISO

MCSH10-BALC

REVISION:

Decks Built To Last

Endurable® Residential Products

Endurable Product's ***alumiLAST®*** brand of deck building products provides you with an outstanding variety of versatile aluminum based materials for your new deck and recreation areas.

Imagine building a deck you never need to replace.

One that won't rot, crack or peel. With beautiful powder coated finishes. Perfect for residential and commercial use.



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Deck Frames



alumiLAST®
Sun Shades



alumiLAST®
Pergolas

alumiLAST® Aluminum Frame Systems



alumiLAST®
Stairs



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Balconies

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6660 Shingle Creek Parkway, Suite F
Brooklyn Center, MN 55430



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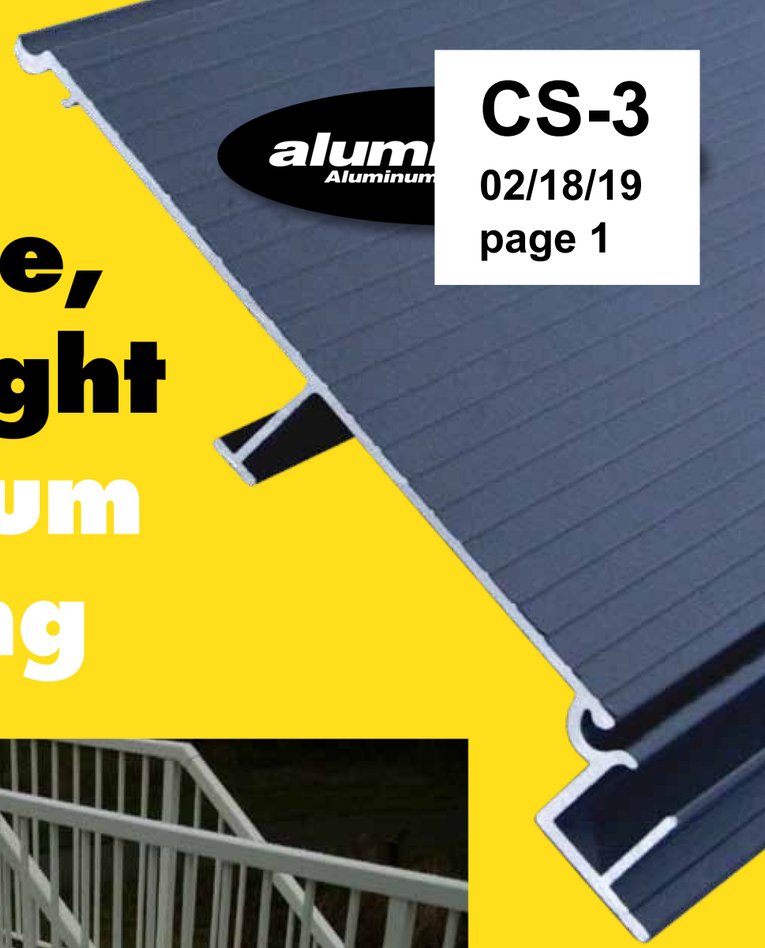
Railings

Call for a FREE cost analysis! 800.933.2060 • 763.585.0097 (in MN)

Durable, Watertight Aluminum Decking





alumiLAST® Aluminum

CS-3
02/18/19
page 1

Stronger than Composite, Lighter than Wood.

page 2



Enjoy the Benefits of *alumiLAST*® Decking.

Have you been searching for a durable, lightweight decking solution that is also watertight? Then you are looking for ***alumiLAST***® Decking. It's stronger than wood, more rigid than composites and its unique intelocking system keeps water running off and not through your deck, letting you use the patio underneath on rainy days. ***alumiLAST***® Decking is worry-free. It won't rot, split, warp, bow or twist like wood. It's the missing link in maintenance free decks.

Waterproof

Watertight

Slip Resistant

Fade Resistant

Limited Lifetime Warranty*

alumiLAST® Aluminum Decking

Features & Specifications

MATERIAL: 6005-T5 series marine grade aluminum (extruded for precision)

LENGTHS: 12', 16', 20'

WIDTH: Main boards, 6" wide, starter board 1" wide

WEIGHT: 1lb. per lineal foot

SPAN: 24" on center

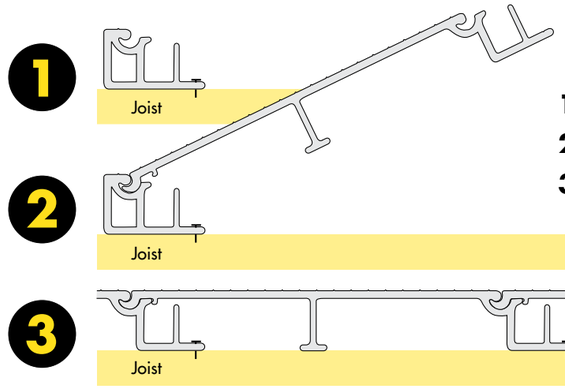
STRENGTH: 400 lbs. per square foot

FINISH: Low maintenance powder coated finish. Slip resistant coating with ridges. Naturally UV resistant

FIRE RATING: Non-Flammable

DRAINAGE: 1/8th" Downward pitch per lineal foot is recommended

MEETS INTERNATIONAL BUILDING CODE

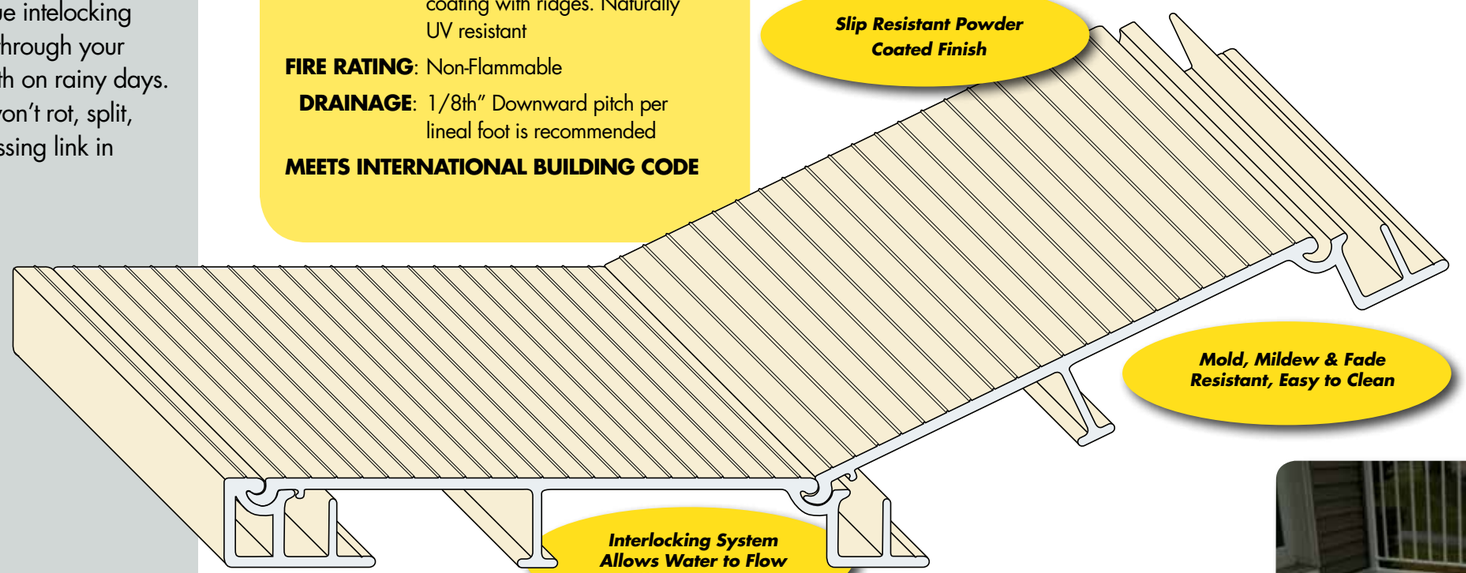


Easy to Install!

1. Install the ***alumiLAST***® starter block.

2. Insert and fasten the pieces of ***alumiLAST***® Decking.

3. Attach the ***alumiLAST***® edge trim to the last piece.



Cost Effective.

Like composites we are more expensive than wood. Yet there are a number of reasons why ***alumiLAST***® Decking is the most cost effective long term solution.

- **You never need to replace our decking**
- **Cleans with soapy water: no power washing, no sanding, no staining or painting, no rotting boards**
- **You use 30% LESS Joists since you only need 24" on center vs. 16"**
- **Less Labor, lighter materials**

Standard Colors

Wheat | Light Gray | Storm Gray

Included in Our Price All Orders Receive FREE:

- **Starter Block • Edge Trim**
- **Color Matched Edge Trim Screws**
- **Hidden Decking Screws**





** Limited Lifetime Warranty on the aluminum decking. 20 Year Limited Warranty on the powder coated finish.*

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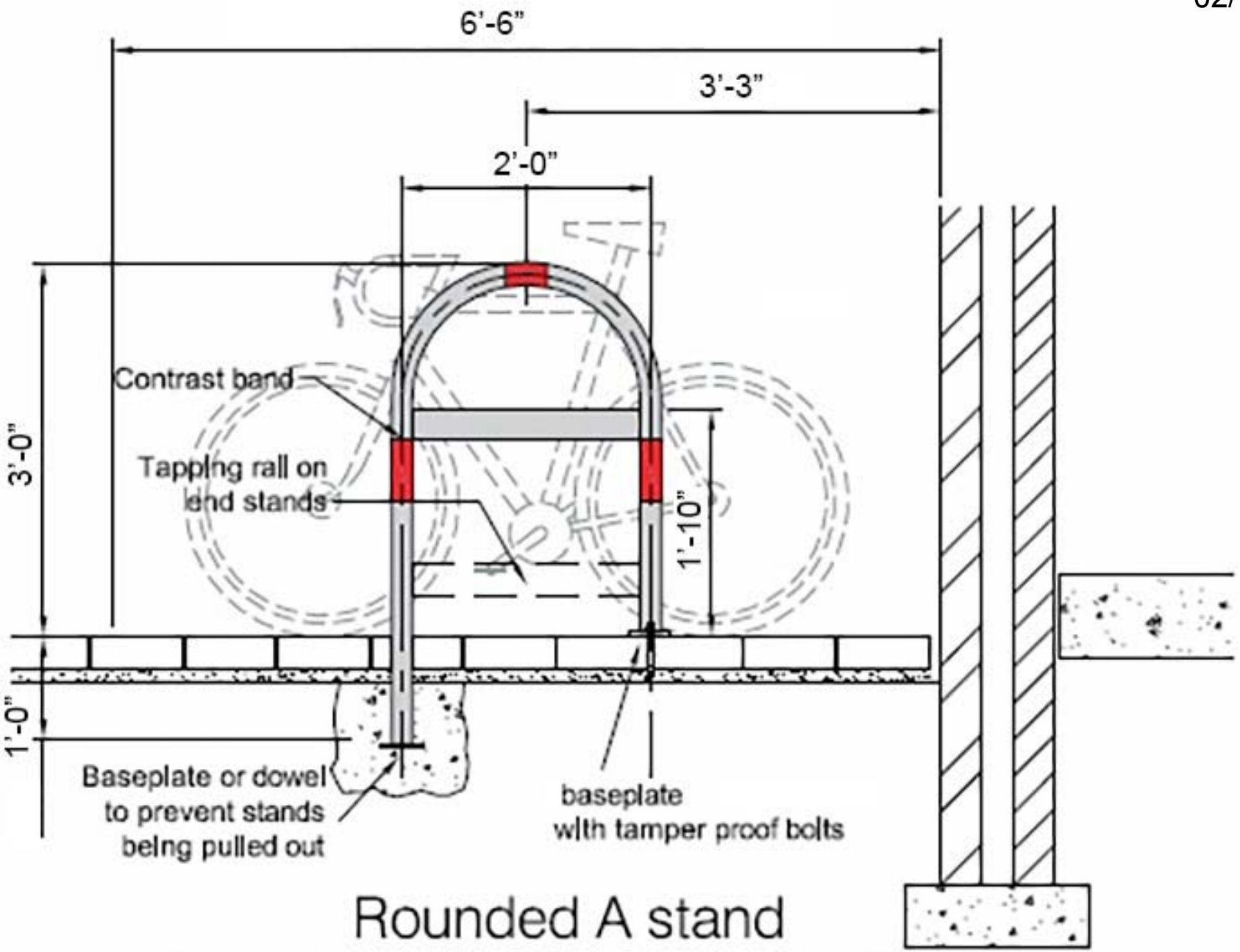


Rounded A stand

One of the most popular designs

HardiePanel®
HardiePlank®
HardieTrim®

HardiePanel® Vertical Siding

HardiePanel® with HardieTrim® Boards

HardiePlank® Lap Siding

For product specifications reference pages 22-25.



Versatile designs so that they
LOVE WHERE THEY LIVE.

magic-pak® **Model Number:** 36MGE4-09-18

36MGE4-09-18		
Cooling Performance		
Gross Total Capacity	17,600	btu
Gross Sensible Capacity	13,024	btu
Efficiency (at ARI)	9.00	EER
Total Air Supply	616	cfm
Outdoor DB Temp	95.0	°F
Entering DB Temp	80.0	°F
Entering WB Temp	67.0	°F
Leaving DB Temp	60.4	°F
Leaving WB Temp	58.2	°F
Heating Performance		
Heating Capacity Input	36,000	btu
Heating Capacity Output	28,800	btu
AFUE	80.0%	
Supply Air Performance		
Total Supply Air	616	cfm
External Static Pressure	.40	in. w.g.
Blower Speed	High	
Motor Rating	.33	hp
Electrical Data		
Power Supply	208/230	volts
	1	Phase
	60	Hertz
Total System Ampacity	15.0	Amps
Maximum Fuse Size	20	Amps
Weight		
Unit Weight	280	lb

Options Selected

- ALVRAL-1 - Extruded Aluminum Louver Kit
- ASLEEVE12-1 - 12 inch Wall Sleeve Kit

NOTES

Louver - choice of colors

Sleeve - select 2", 6", 8", 10", or 12" deep





magic-pak **Model Number:** 36MGE4-09-18

Gas Heating / Electric Cool Thru-the-Wall Unit

Features

- Completely self-contained heating and cooling package
- Pre-wired and pre-charged
- Individually metered and controlled
- Easy service access
- Louver color options to match building façade
- Internal vent system (direct vent)

REFRIGERANT SYSTEM

- Uses environmentally friendly refrigerant R-410A
- High efficiency compressor
- Copper tubing with enhanced fin coils.

HEAT EXCHANGER

- Aluminized steel heat exchanger

CABINET

- Fully insulated cabinet

BLOWER

- Four-speed permanently lubricated motor for low maintenance, maximum efficiency and wide airflow range
- PSC permanently lubricated motor for low maintenance and maximum efficiency
- Dynamically balanced blower with resilient motor mounts for smooth and quiet operation
- Internal washable filter

CONTROLS

- Color coded wiring for easy service
- Fuse protection on 24V circuit

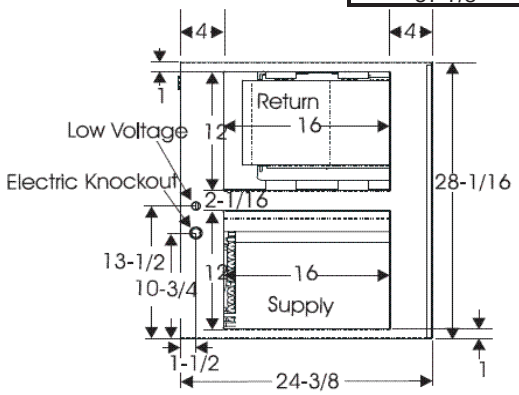
INSTALLATION

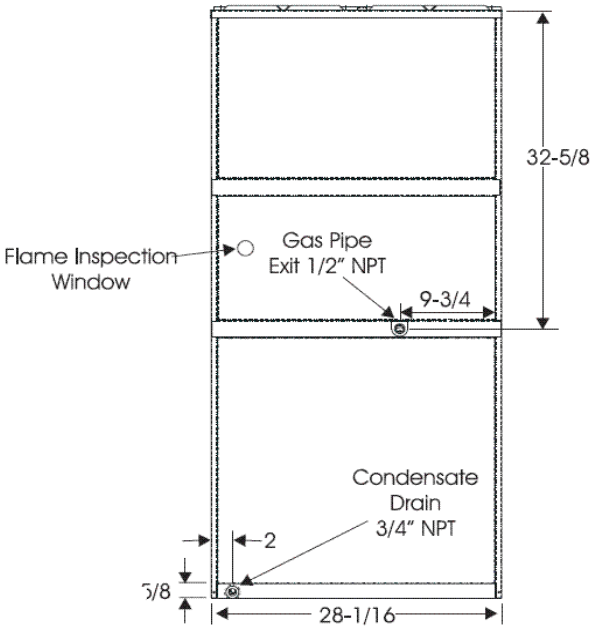
- Easy to install and service
- Louver mounts flush to outside wall.

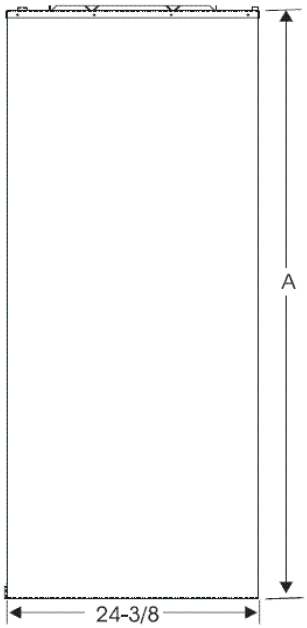
WARRANTY

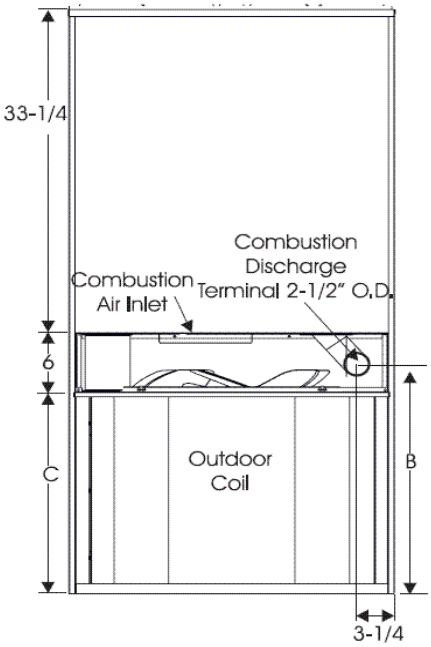
- 5 Year limited on all parts
- 10 year limited warranty on aluminized heat exchanger

Dimensions (in.)		
A	B	C
57-7/8	20-1/2	18-5/8



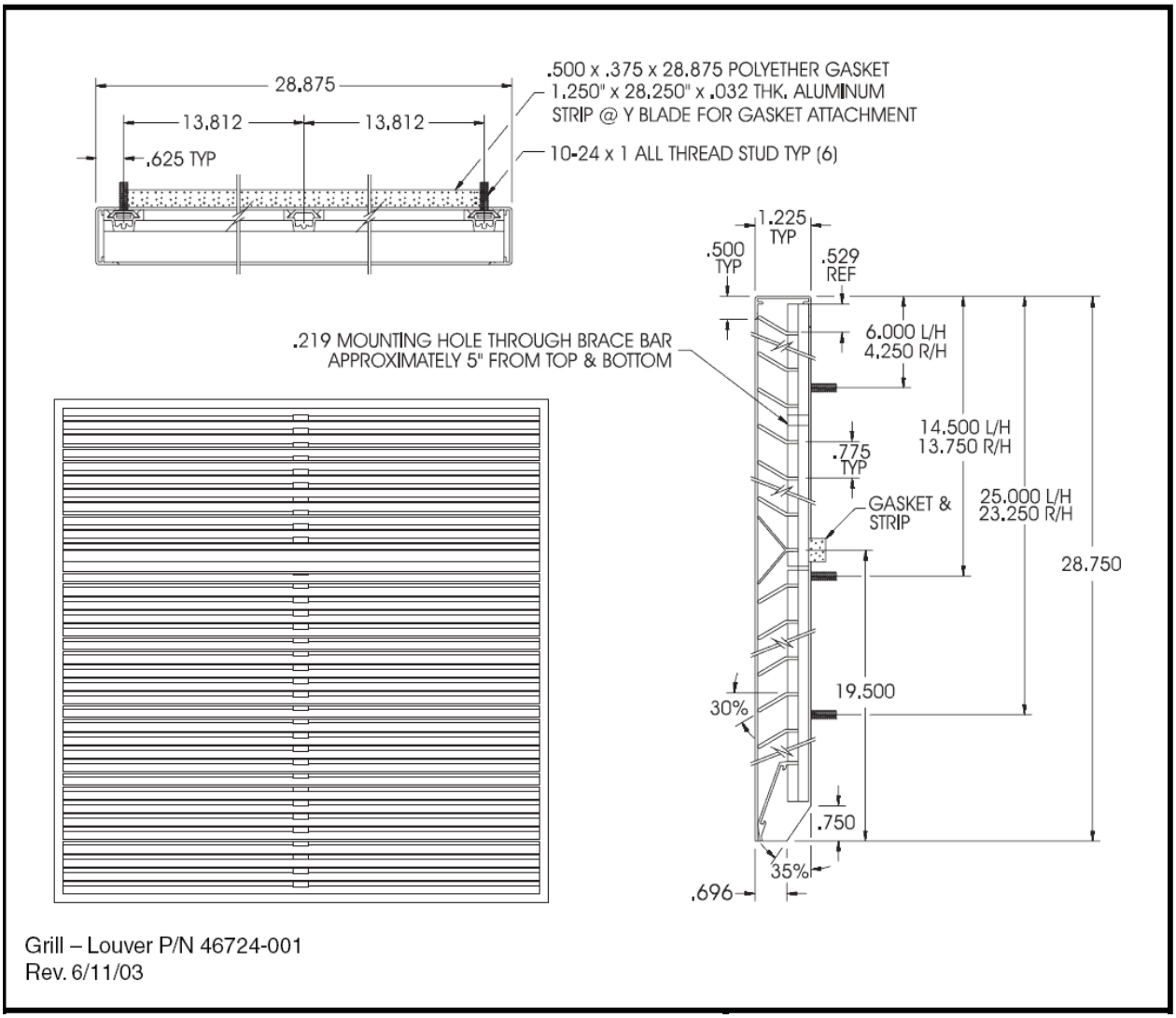




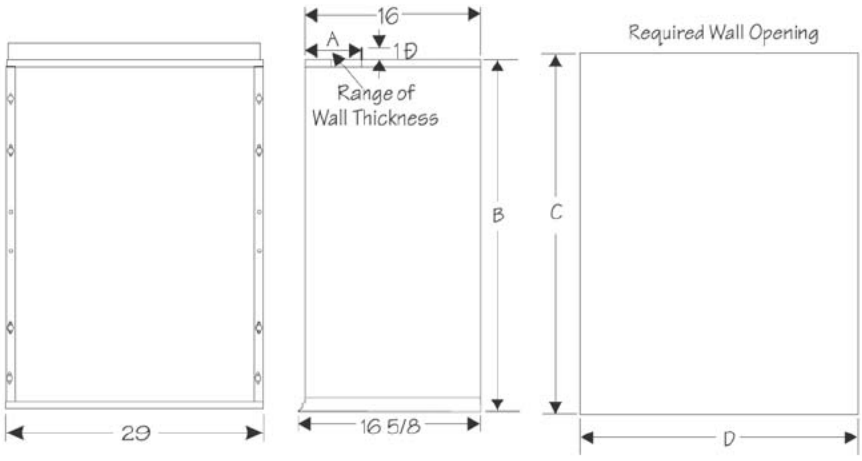


ALVRAL-1

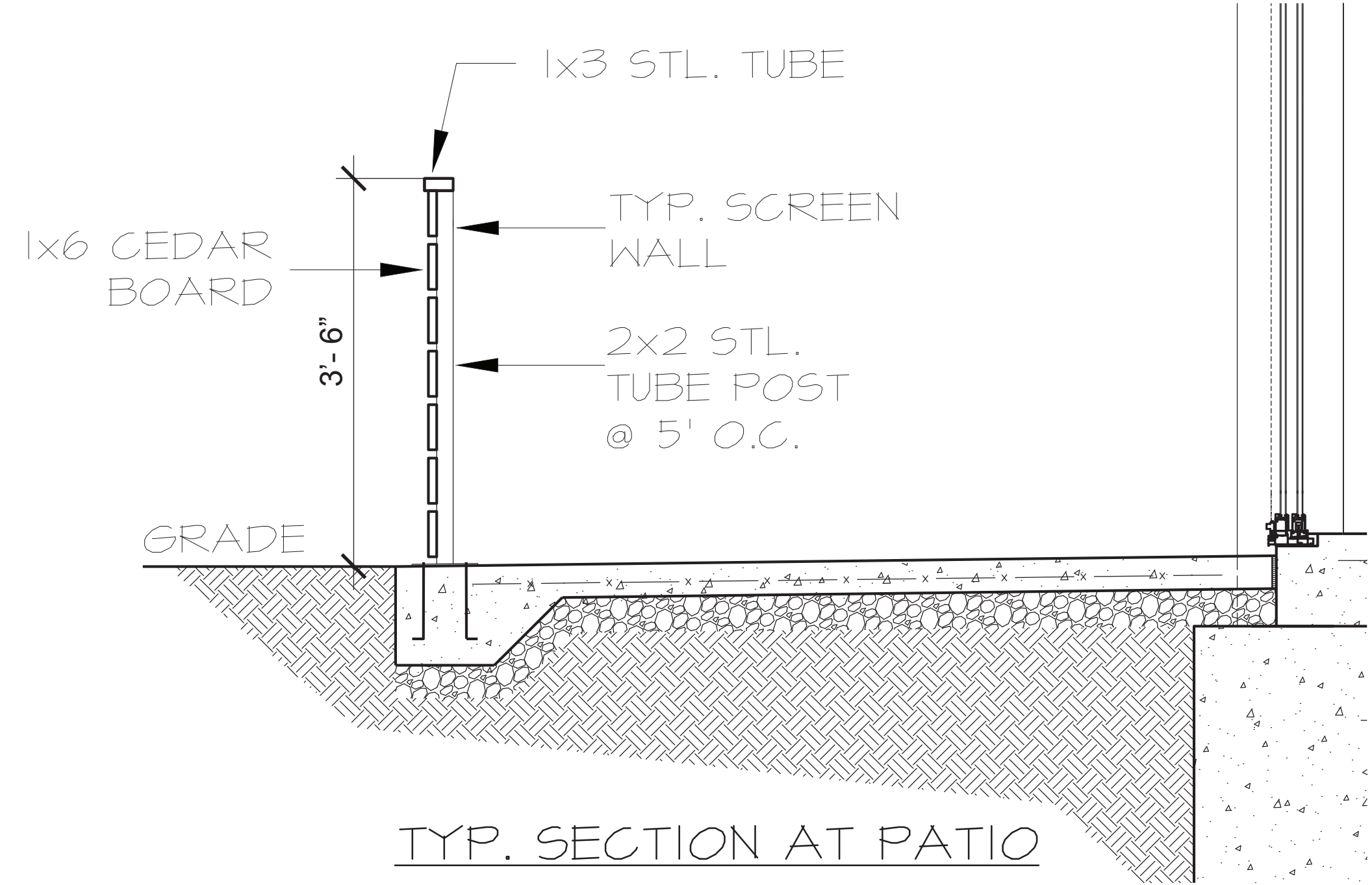
Architectural Extruded Aluminum Louver



Grill – Louver P/N 46724-001
Rev. 6/11/03



Dimensions (in.)			
A	B	C	D
12	29	29-1/8	29-1/8

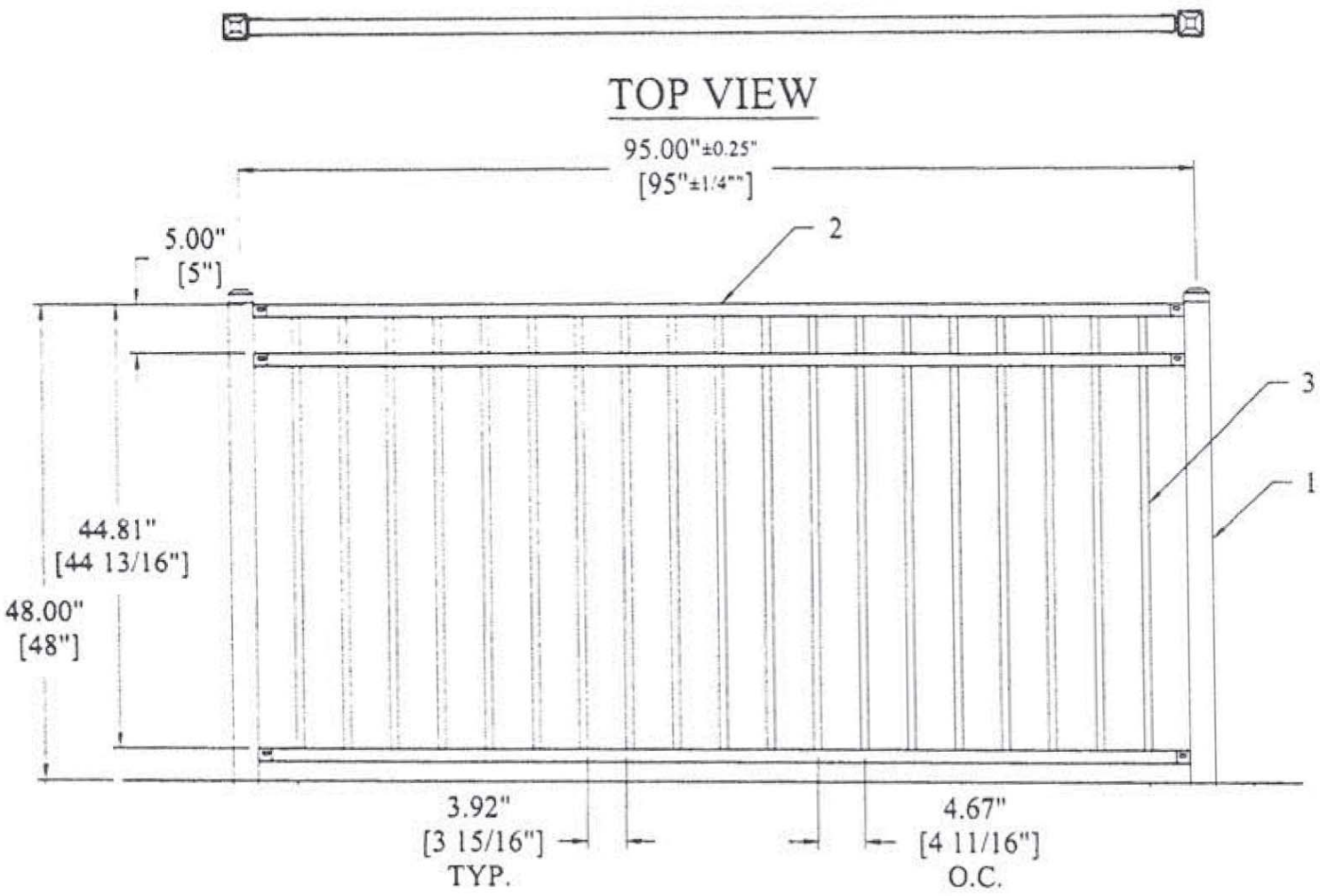


TYP. SECTION AT PATIO

CS-8

02/18/19

REVISED:19 APR 2019



ELEVATION VIEW

#	DESCRIPTION
1	2 ½" SQ X .080" ALUMINUM POST
2	1 7/16" X 1 ½" ALUMINUM FORERUNNER RAIL
3	¾" SQ X .045 PICKET
	ABX1 BRACKET

POOL FENCE

FENCE TO BE CONSTRUCTED OF HIGH QUALITY BLACK ALUMINUM

PDF-XChange Editor Click to BUY NOW! www.tracker-software.com

Lennox Industries Inc. - Product Submittal

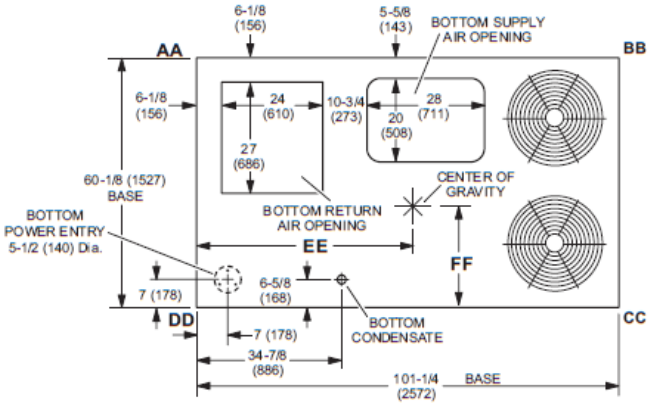
System ID: RTU 1-6
Package Model: LGH120H4B **Description:** PKGGE/10TON/CONFIGURABLE

DIMENSIONS - INCHES (MM)

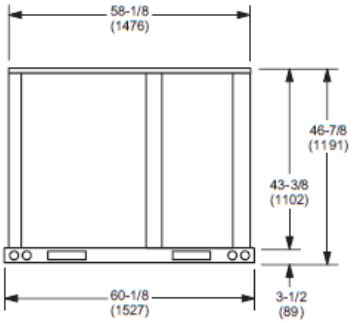
Model No.	CORNER WEIGHTS																CENTER OF GRAVITY							
	AA				BB				CC				DD				EE				FF			
	Base		Max.		Base		Max.		Base		Max.		Base		Max.		Base		Max.		Base		Max.	
	lbs.	kg	lbs.	kg	lbs.	kg	lbs.	kg	lbs.	kg	lbs.	kg	lbs.	kg	lbs.	kg	in.	mm	in.	mm	in.	mm	in.	mm
092	293	133	338	153	263	119	295	134	286	130	316	143	326	148	370	168	46.5	1181	45.5	1156	24.5	622	25.5	648
102	294	134	340	154	265	120	297	135	288	131	318	144	328	149	372	169	46.5	1181	45.5	1156	24.5	622	25.5	648
120	306	139	349	158	275	125	305	138	295	134	326	148	334	152	382	173	46.5	1181	45.5	1156	24.5	622	25.5	648
150	316	143	359	163	284	129	314	142	304	138	393	178	345	157	393	178	46.5	1181	45.5	1156	24.5	622	25.5	648

Base Unit - The unit with NO INTERNAL OPTIONS.

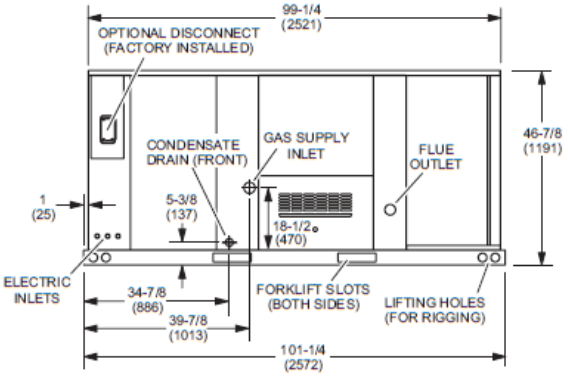
Max. Unit - The unit with ALL INTERNAL OPTIONS Installed. (Economizer, Standard Static Power Exhaust Fans, Controls, etc.). Does not include accessories external to unit or high static power exhaust.



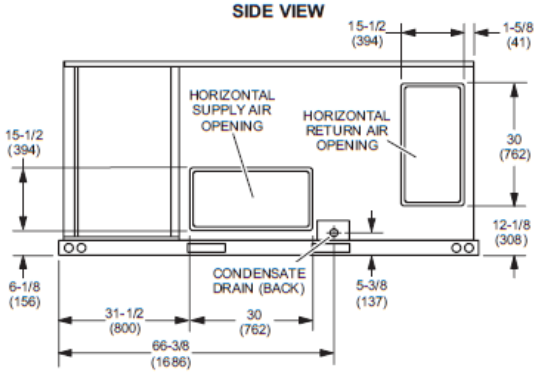
TOP VIEW



END VIEW



SIDE VIEW



SIDE VIEW
(Horizontal Openings)

Lennox Industries Inc. - Product Submittal

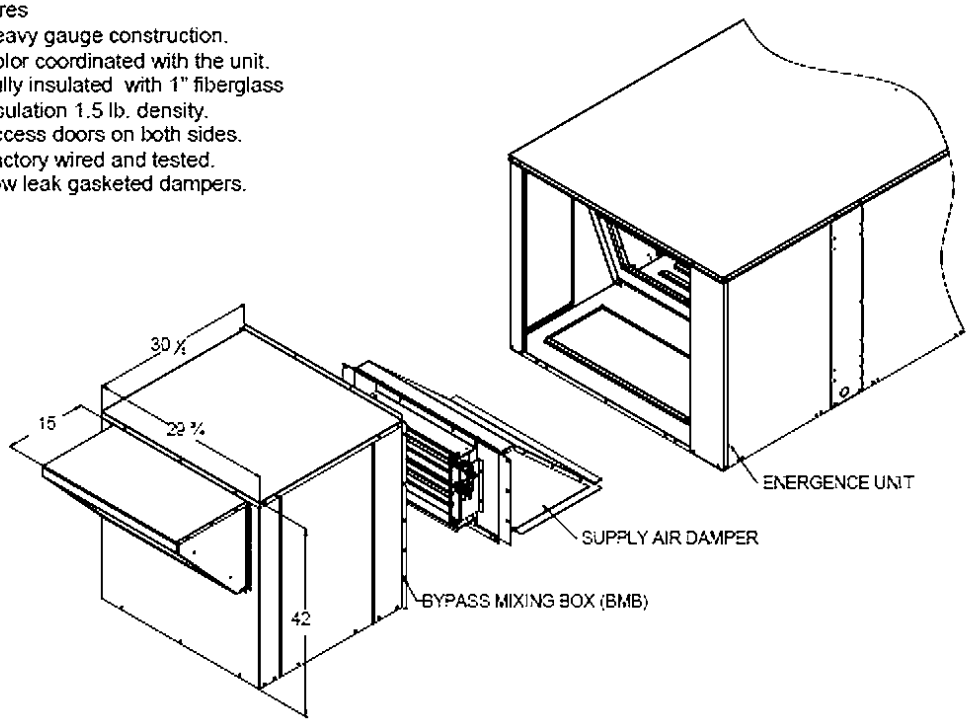
System ID: RTU 1-6
Package Model: LGH120H4B **Description:** PKGGE/10TON/CONFIGURABLE

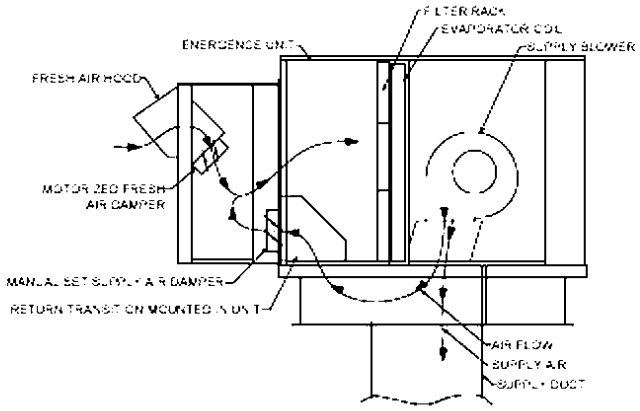
RUSKIN ROOFTOP SYSTEMS

SPECIFICATION DATA FOR LENNOX INDUSTRIES ENERGENCE LGH/LCH 092H-120H, 150S UNITS

RRS MODEL#: 50-307-51
BYPASS MIXING BOX

Features
1. Heavy gauge construction.
2. Color coordinated with the unit.
3. Fully insulated with 1" fiberglass insulation 1.5 lb. density.
4. Access doors on both sides.
5. Factory wired and tested.
6. Low leak gasketed dampers.





FOR PRICES SEE: FORM#

NOVEMBER 20, 2009 FORM# LXMB51

RUSKIN ROOFTOP SYSTEMS
1628 Diplomat Drive, Carrollton, Texas 75006-6510 Phone (972) 247-7447 (800) 562-4822 Fax (972) 243-0940

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Specification sheet

Gaseous Fuel Generator Set

GTA 855E Engine Series

250 kW 60 Hz



Description

The Cummins Inc. commercial Generator Set (GenSet) is a fully integrated power generation system providing optimum performance, reliability, and versatility for stationary standby power applications.

Features

Cummins Heavy-Duty Engine - Rugged 4-cycle industrial spark-ignited engine delivers reliable power, low emissions, and quick response to load changes.

Alternator - Several alternator sizes offer selectable motor-starting capability with low reactance 2/3 pitch windings, low waveform distortion with non-linear loads, fault-clearing short-circuit capability, and class H insulation.

Control System - The PowerCommand® electronic control is standard equipment and provides total GenSet system integration, including automatic remote starting/stopping, precise voltage regulation, alarm and status message display, AmpSentry™ protective relay, output metering, and auto-shutdown at fault detection.

Warranty and Service - Backed by a comprehensive warranty and worldwide distributor network.

UL 2200 Certification - This Cummins GenSet has been designed, tested, and certified to UL 2200 standards.

National Fire Protection Association (NFPA) - The GenSet accepts full rated load in a single step in accordance with NFPA 110 Type 10 (ten seconds) for Level 1 and Level 2 Emergency or Standby Power Supply Systems (EPSSs).

	Standby rating*		Emissions Compliance	Data sheet	
Model	60Hz kW (kVa)	50 Hz kW (kVa)		60 Hz	50 Hz
C250N6	250 (312)		EPA SI NSPS Stationary Emergency Certified	FR 10792	

* Tested at 0.8 power factor (PF) per NFPA 110.

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GenSet options and accessories

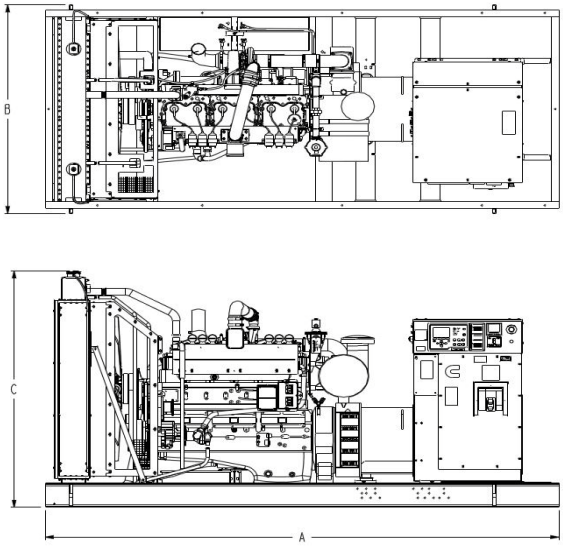
Engine
- 120 V, 2500 W coolant heaters
- 240/480 V, 4000 W coolant heaters
- 120/208/240 V, 300 W lube oil heater

Alternator
- 80 °C rise
- 105 °C rise

Fuel System
- Flexible fuel connector and fuel strainer

Exhaust System
- GenSet mounted muffler (enclosure models only)

Generator Set
- Batteries and battery charger
- Main line circuit breaker
- PowerCommand® Network Aux 101, 102 module
- Modbus® to BACnet™ Module
- Weather protective enclosure (F001) with silencer
- Level I and Level II enclosure w/silencer
- Audible alarm, remote drains, and oil maintainer
- Remote annunciator panel
- Spring isolators
- Two-year standby warranty
- Five-year basic power warranty



This outline drawing is for reference only.
Do not use for installation design.

	Dim "A" mm (in.)	Dim "B" mm (in.)	Dim "C" mm (in.)
C250N6	3734 (147)	1676 (66)	1997 (79)

NOTE: Consult drawings for applicable weights. Contact the factory for additional information. See enclosure Specification Sheet for enclosure dimensions.

Codes and Standards

The Prototype Test Support (PTS) program verifies the performance integrity of the GenSet design. Products bearing the PTS symbol have been subjected to demanding tests in accordance with NFPA 110 to verify the design integrity and performance under both normal and abnormal operating conditions. These conditions include: short circuit, endurance, temperature rise, torsional vibration, and transient response,

CSA Group tests products under a formal process to ensure that they meet the safety and/or performance requirements of applicable standards. This GenSet is certified to: CSA 22.2 No. 100 Motors and Generators; CSA 22.2 No. 0.4-044 Bonding of Electrical Equipment; CSA 22.2 No. 14 Industrial Control Equipment; and CSA 22.2 No. 0 General Requirements - Canadian Electrical Code, Part II.

Underwriters Laboratory (UL) is a world leader in product safety testing and certification. This GenSet is certified to UL2200 as open set, weather enclosure, and sound-attenuated enclosure configurations. The generator is certified to UL1004. The PowerCommand® Control System is certified to UL508.

Engine is certified to Stationary Emergency U.S. EPA New Source Performance Standards (NSPS), 40 CFR 60 subpart JJJ. U.S. applications must be applied per this EPA regulation.

This product has been manufactured under the controls established by a Bureau Veritas Certification approved management system that conforms with ISO 9001:2015.

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Weather Protective and Sound Attenuated Steel Enclosures



Specification Sheet 150-750 kW Regulated Standby Generator Sets

Description

Cummins NPower provides the option of protecting your Cummins Generator Set (GenSet) with weather protective and sound attenuated steel enclosures that not only limit the GenSet from producing high decibels of sound, but also protect the GenSet from harsh weather conditions. These field-installable enclosure kits are designed to enclose the entire GenSet while allowing ample air flow for cooling. Multiple kit configurations are available for each GenSet model to suit most weather protection and sound control requirements:

Weather protective enclosures (F001-WPE) provide protection from climate conditions and include an internally-mounted exhaust silencer. The enclosure and exhaust silencer are appropriate for applications where sound reducing enclosures are not required.

Level I sound attenuated enclosures (F001-L1) provide weather protection and include an internally-mounted exhaust silencer and sound insulating panels. The silencer and the panels reduce the noise level of the GenSet to a level below that achieved with a weather protective enclosure. Level I sound attenuated enclosures are appropriate for applications where sound reducing enclosures are required.

Level II sound attenuated enclosures (F001-L2) provide weather protection and include an internally- mounted exhaust silencer and sound insulating panels which reduce the noise level of the GenSet to a level below that achieved with a Level I sound attenuated enclosure. Level II sound attenuated enclosures are appropriate for applications where sound reducing enclosures are required.

150 to 200 kW Standard Construction

- 14-gauge, low carbon, hot-rolled ASTM A1011 steel construction (panels)
- 12-gauge, low carbon, hot-rolled ASTM A1011 steel construction (posts)

250 to 750 kW Standard Construction

- Galvannealed construction for corrosive environments

Features and Benefits

- Stainless steel hardware
- Compact footprint
- Zinc phosphate pretreatment, e-coat primer and super durable powder topcoat print minimizes corrosion and color fade
- Two or three recessed doors per side (depending on GenSet dimensions) for service access
- Doors keyed alike for added security and convenience
- Weather protective seals around all doors on WPE & sound attenuated enclosures
- Enclosed exhaust silencer improves safety and protects against rust
- Critical sound level exhaust silencers in sound attenuated enclosures
- Rain collar and rain cap
- Non-hygroscopic sound-attenuating material
- Easy access lifting points for spreader bars and forklift, depending on model
- Enclosure attaches directly to GenSet skid base
- Designed for ambient temperatures up to 40 °C (104 °F)*
- Enclosures are designed for outdoor use only
- Standard wind rating of 100 mph
- Removable enclosure panels or hinged doors provide easy GenSet access
- Fixed louvers
- Cambered roof prevents water accumulation
- Fuel and electrical stub-up area within enclosure perimeter
- Aluminum construction offered as an option for corrosive environment

Refer to the GenSet Specification Sheet and the Sound Data Sheet for specific capabilities.

NOTE: GenSets with weather or sound attenuated enclosures may reduce the ambient capability by 2 to 4.5 °C (4 to 8 °F), depending on the type of enclosure and site conditions.

*The 350 kW GFEB model is designed for ambient temperatures up to 38 °C (100 °F).

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COLOR CHART

CS-11
04/19/19

HARDIE CEMENTITIOUS PANELS & SIDING

HARDIE PANELS

COLOR: ARCTIC WHITE
OR SIMILAR

HARDIE SIDING

COLOR: PEARL GRAY
OR SIMILAR

HARDIE PANELS
CANTILEVERED PARAPET

COLOR: TIMBER BARK
ZOR SIMILAR

BRICK



SIOUX CITY BRICK - SANDALWOOD
OR SIMILAR

PATIO SCREEN WALLS

STAIN COLOR - SW 3001
SHAGBARK
OR SIMILAR

BALCONY

COLOR SIMILAR TO - SW 3001

OVERHEAD DOORS

COLOR SIMILAR TO - SW 3001

OSQ Series

OSQ™ LED Area/Flood Luminaire – Medium

Product Description

The OSQ™ Area/Flood luminaire blends extreme optical control, advanced thermal management and modern, clean aesthetics. Built to last, the housing is rugged cast aluminum with an integral, weathertight LED driver compartment. Versatile mounting configurations offer simple installation. Its slim, low-profile design minimizes wind load requirements and blends seamlessly into the site providing even, quality illumination. The 'B' Input power designator is a suitable upgrade for HID applications up to 250 Watt, and the 'K' Input power designator is a suitable upgrade for HID applications up to 400 Watt.

Applications: Parking lots, walkways, campuses, car dealerships, office complexes, and internal roadways

Performance Summary

NanoOptic® Precision Delivery Grid™ optic

Assembled in the U.S.A. of U.S. and imported parts

Initial Delivered Lumens: Up to 17,291

Efficacy: Up to 136 LPW

CRI: Minimum 70 CRI

CCT: 3000K (+/- 300K), 4000K (+/- 300K), 5700K (+/- 500K)

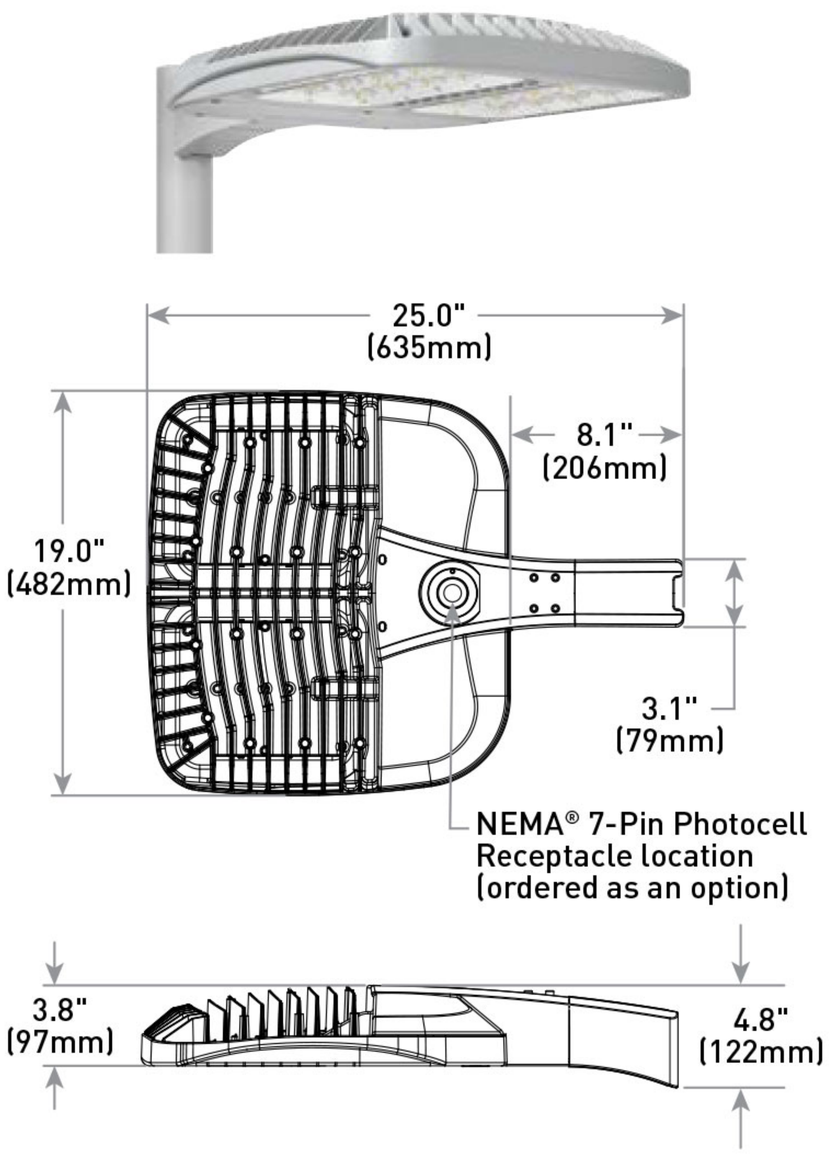
Limited Warranty†: 10 years on luminaire/10 years on Colorfast DeltaGuard® finish

† See http://lighting.cree.com/warranty for warranty terms

Accessories

Field-Installed	
Backlight Shield OSQ-BLSMF – Front facing optics OSQ-BLSMR – Rotated optics	**Hand-Held Remote** XA-SENSREM - For successful implementation of the programmable multi-level option, a minimum of one hand-held remote is required

DA Mount



Weight
26.5 lbs. (12kg)

Ordering Information

Fully assembled luminaire is composed of two components that must be ordered separately:
Example: **Mount:** OSQ-AASV + **Luminaire:** OSQ-A-NM-2ME-B-40K-UL-SV

Mount (Luminaire must be ordered separately)*			
OSQ-			
OSQ-AA Adjustable Arm **OSQ-DA** Direct Arm	**Color Options:**	**SV** Silver **BK** Black	**BZ** Bronze **WH** White

* Reference EPA and pole configuration suitability data beginning on page 7

Luminaire (Mount must be ordered separately)								
OSQ	**A**	**NM**						
Product	**Version**	**Mounting**	**Optic**	**Input Power Designator**	**CCT**	**Voltage**	**Color Options**	**Options**
OSQ	**A**	**NM** No Mount	**Asymmetric** **2ME*** Type II Medium **4ME*** Type IV Medium **3ME*** Type III Medium **Symmetric** **5ME** Type V Medium **5SH** Type V Short **WSN** Wide Sign **15D** 15° Flood **25D** 25° Flood **40D** 40° Flood **60D** 60° Flood	**B** 86W **K** 130W **Z** 53W	**30K** 3000K **40K** 4000K **57K** 5700K	**UL** Universal 120-277V **UH** Universal 347-480V - Available with B & K Input Power Designators only	**BK** Black **BZ** Bronze **SV** Silver **WH** White	**F Fuse** - When code dictates fusing, use time delay fuse - Available for U.S. applications only **PML Programmable Multi-Level, up to 40' Mounting Height** - Refer to PML spec sheet for details - Intended for downlight applications at 0° tilt **PML2 Programmable Multi-Level, 10-30' Mounting Height** - Refer to PML spec sheet for details - Intended for downlight applications at 0° tilt **Q9/Q6/Q5/Q4/Q3/Q2/Q1 Field Adjustable Output** - Must select Q9, Q6, Q5, Q4, Q3, Q2, or Q1 - Offers full range adjustability - Refer to pages 9-10 for power and lumen values - Available with B & K Input Power Designators only - Not available with PML or PML2 options	**R NEMA® 7-Pin Photocell Receptacle** - 7-pin receptacle per ANSI C136.41 - Intended for downlight applications with maximum 45° tilt - Factory connected 0-10V dim leads - 18" (457mm) seven-conductor cord exits luminaire - Photocell and shorting cap by others **RL Rotate Left** - LED and optic are rotated to the left - Refer to RR/RL configuration diagram on page 10 for optic directionality **RR Rotate Right** - LED and optic are rotated to the right - Refer to RR/RL configuration diagram on page 10 for optic directionality

* Available with Backlight Shield when ordered with field-installed accessory (see table above)

US: lighting.cree.com T (800) 236-6800 F (262) 504-5415
Canada: www.cree.com/canada T (800) 473-1234 F (800) 890-7507

OSQ™ LED Area/Flood Luminaire – Medium

Product Specifications

CONSTRUCTION & MATERIALS

- Slim, low profile design minimizes wind load requirements
- Luminaire housing is rugged die cast aluminum with an integral, weathertight LED driver compartment and high-performance heat sink
- Convenient interlocking mounting method on direct arm mount. Mounting adaptor is rugged die cast aluminum and mounts to 3-6" (76-152mm) square or round pole, secured by two 5/16-18 UNC bolts spaced on 2" (51mm) centers
- Mounting for the adjustable arm mount adaptor is rugged die cast aluminum and mounts to 2" (51mm) IP, 2.375" (60mm) O.D. tenon
- Adjustable arm mount can be adjusted 180˚ in 2.5˚ increments
- Includes 18" (340mm) 18/5 or 16/5 cord exiting the luminaire. When ordered with R option, 18" (340mm) 18/7 or 16/7 cord is provided
- Designed for uplight and downlight applications
- Exclusive Colorfast DeltaGuard® finish features an E-Coat epoxy primer with an ultra-durable powder topcoat, providing excellent resistance to corrosion, ultraviolet degradation and abrasion. Silver, bronze, black, and white are available
- **Weight:** 26.5 lbs. (12kg)

ELECTRICAL SYSTEM

- **Input Voltage:** 120-277V or 347-480V, 50/60Hz, Class 1 drivers
- **Power Factor:** > 0.9 at full load
- **Total Harmonic Distortion:** < 20% at full load
- Integral 10kV surge suppression protection standard
- When code dictates fusing, a slow blow fuse or type C/D breaker should be used to address inrush current
- Designed with 0-10V dimming capabilities. Controls by others
- Refer to Dimming spec sheet for details
- **10V Source Current:** 0.15mA

REGULATORY & VOLUNTARY QUALIFICATIONS

- cULus Listed
- Suitable for wet locations
- Enclosure rated IP66 per IEC 60529 when ordered without R option
- Consult factory for CE Certified products
- Certified to ANSI C136.31-2001, 3G bridge and overpass vibration standards
- 10kV surge suppression protection tested in accordance with IEEE/ANSI C62.41.2
- Meets FCC Part 15, Subpart B, Class A standards for conducted and radiated emissions
- Luminaire and finish endurance tested to withstand 5,000 hours of elevated ambient salt fog conditions as defined in ASTM Standard B 117
- Meets Buy American requirements within ARRA
- DLC and DLC Premium qualified versions available. Some exceptions apply. Please refer to https://www.designlights.org/search/ for most current information
- RoHS compliant. Consult factory for additional details
- Dark Sky Friendly, IDA Approved when ordered with 30K CCT. Please refer to http://darksky.org/fsa/fsa-products/ for most current information
- **CA RESIDENTS WARNING:** Cancer and Reproductive Harm – www.p65warnings.ca.gov

Electrical Data*

Input Power Designator	System Watts 120-480V	Total Current (A)					
		120V	208V	240V	277V	347V	480V
B	86	0.73	0.43	0.37	0.32	0.25	0.19
K	130	1.09	0.65	0.56	0.49	0.38	0.28
Z	53**	0.46	0.26	0.22	0.19	N/A	N/A

* Electrical data at 25˚C (77˚F). Actual wattage may differ by +/- 10% when operating between 120-480V +/-10%
** Available with UL voltage only

OSQ Series Ambient Adjusted Lumen Maintenance[1]

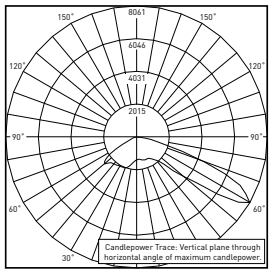
Ambient	Optic	Initial LMF	25K hr Projected[2] LMF	50K hr Projected[2] LMF	75K hr Projected[2]/ Calculated[3] LMF	100K hr Projected[2]/ Calculated[3] LMF
5˚C (41˚F)	Asymmetric	1.04	1.02	1.01	1.00[3]	0.99[3]
	Symmetric	1.05	1.04	1.03	1.03[2]	1.02[2]
10˚C (50˚F)	Asymmetric	1.03	1.01	1.00	0.99[3]	0.98[3]
	Symmetric	1.04	1.03	1.02	1.01[2]	1.00[2]
15˚C (59˚F)	Asymmetric	1.02	1.00	0.99	0.98[3]	0.97[3]
	Symmetric	1.02	1.02	1.01	1.00[2]	0.99[2]
20˚C (68˚F)	Asymmetric	1.01	0.99	0.98	0.97[3]	0.96[3]
	Symmetric	1.01	1.01	1.00	0.99[2]	0.98[2]
25˚C (77˚F)	Asymmetric	1.00	0.98	0.97	0.96[3]	0.95[3]
	Symmetric	1.00	0.99	0.98	0.98[2]	0.97[2]

[1] Lumen maintenance values at 25˚C (77˚F) are calculated per TM-21 based on LM-80 data and in-situ luminaire testing. Luminaire ambient temperature factors (LATF) have been applied to all lumen maintenance factors. Please refer to the Temperature Zone Reference Document for outdoor average nighttime ambient conditions.
[2] In accordance with IESNA TM-21-11, Projected Values represent interpolated value based on time durations that are within six times (6X) the IESNA LM-80-08 total test duration (in hours) for the device under testing ([DUT] i.e. the packaged LED chip)
[3] In accordance with IESNA TM-21-11, Calculated Values represent time durations that exceed six times (6X) the IESNA LM-80-08 total test duration (in hours) for the device under testing ([DUT] i.e. the packaged LED chip)

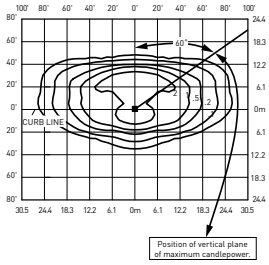
Photometry

All published luminaire photometric testing performed to IESNA LM-79-08 standards by a NVLAP accredited laboratory. To obtain an IES file specific to your project consult: http://lighting.cree.com/products/outdoor/area/osq-series

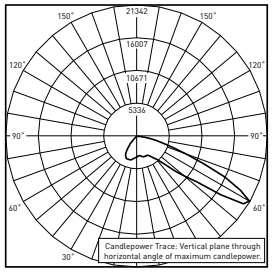
2ME



RESTL Test Report #: PL08877-001
OSQ-A-**-2ME-B-30K-UL
Initial Delivered Lumens: 10,381



OSQ-A-**-2ME-B-40K-UL
Mounting Height: 25' (7.6m) A.F.G.
Initial Delivered Lumens: 11,424
Initial FC at grade



CESTL Test Report #: PL07700-001A
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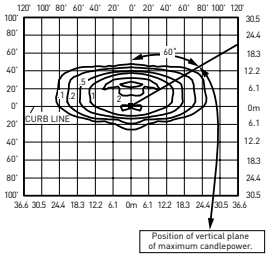
Initial Delivered Lumens: 22,822



OSQ-A-**-2ME-B-40K-UL w/OSQ-BLSMF
Mounting Height: 25' (7.6m) A.F.G.
Initial Delivered Lumens: 8,779
Initial FC at grade

Type II Medium Distribution

Input Power Designator	3000K		4000K		5700K	
	Initial Delivered Lumens*	BUG Ratings** Per TM-15-11	Initial Delivered Lumens*	BUG Ratings** Per TM-15-11	Initial Delivered Lumens*	BUG Ratings** Per TM-15-11
B	10,738	B2 U0 G2	11,424	B2 U0 G2	11,648	B2 U0 G2
K	16,022	B3 U0 G3	16,959	B3 U0 G3	17,291	B3 U0 G3
Z	6,481	B2 U0 G1	6,896	B2 U0 G1	7,031	B2 U0 G1

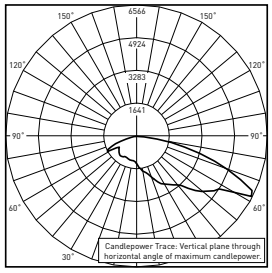
* Initial delivered lumens at 25°C (77°F). Actual production yield may vary between -10 and +10% of initial delivered lumens
** For more information on the IES BUG (Backlight-Uplight-Glare) Rating visit: https://www.ies.org/wp-content/uploads/2017/03/TM-15-11BUGRatingsAddendum.pdf. Valid with no tilt

Type II Medium w/BLS Distribution

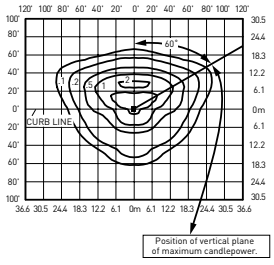
Input Power Designator	3000K		4000K		5700K	
	Initial Delivered Lumens*	BUG Ratings** Per TM 15 11	Initial Delivered Lumens*	BUG Ratings** Per TM 15 11	Initial Delivered Lumens*	BUG Ratings** Per TM 15 11
B	8,251	B2 U0 G2	8,779	B2 U0 G2	8,950	B2 U0 G2
K	12,312	B2 U0 G2	13,032	B2 U0 G2	13,286	B2 U0 G2
Z	4,980	B1 U0 G1	5,299	B1 U0 G1	5,402	B1 U0 G1

* Initial delivered lumens at 25°C (77°F). Actual production yield may vary between -10 and +10% of initial delivered lumens
** For more information on the IES BUG (Backlight-Uplight-Glare) Rating visit: https://www.ies.org/wp-content/uploads/2017/03/TM-15-11BUGRatingsAddendum.pdf. Valid with no tilt

3ME



RESTL Test Report #: PL08876-001A
OSQ-A-**-3ME-B-30K-UL
Initial Delivered Lumens: 10,421

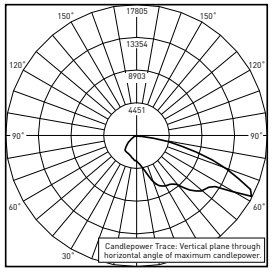


OSQ-A-**-3ME-B-40K-UL
Mounting Height: 25' (7.6m) A.F.G.
Initial Delivered Lumens: 11,424
Initial FC at grade

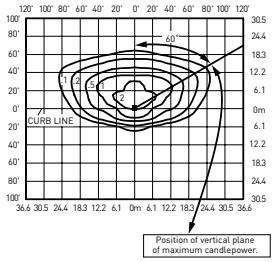
Type III Medium Distribution

Input Power Designator	3000K		4000K		5700K	
	Initial Delivered Lumens*	BUG Ratings** Per TM 15 11	Initial Delivered Lumens*	BUG Ratings** Per TM 15 11	Initial Delivered Lumens*	BUG Ratings** Per TM 15 11
B	10,738	B3 U0 G3	11,424	B3 U0 G3	11,648	B3 U0 G3
K	16,022	B3 U0 G3	16,959	B3 U0 G3	17,291	B3 U0 G3
Z	6,481	B2 U0 G2	6,896	B2 U0 G2	7,031	B2 U0 G2

* Initial delivered lumens at 25°C (77°F). Actual production yield may vary between -10 and +10% of initial delivered lumens
** For more information on the IES BUG (Backlight-Uplight-Glare) Rating visit: https://www.ies.org/wp-content/uploads/2017/03/TM-15-11BUGRatingsAddendum.pdf. Valid with no tilt



CESTL Test Report #: PL07699-001A
OSQ-A-**-3ME-U-57K-UL w/OSQ-BLSLF
Initial Delivered Lumens: 23,601



OSQ-A-**-3ME-B-40K-UL w/OSQ-BLSMF
Mounting Height: 25' (7.6m) A.F.G.
Initial Delivered Lumens: 9,019
Initial FC at grade

Type III Medium w/BLS Distribution

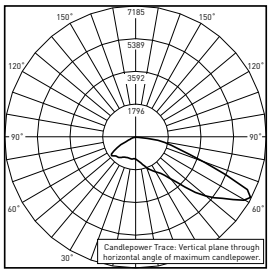
Input Power Designator	3000K		4000K		5700K	
	Initial Delivered Lumens*	BUG Ratings** Per TM-15-11	Initial Delivered Lumens*	BUG Ratings** Per TM-15-11	Initial Delivered Lumens*	BUG Ratings** Per TM-15-11
B	8,477	B1 U0 G2	9,019	B1 U0 G2	9,196	B1 U0 G2
K	12,649	B2 U0 G2	13,389	B2 U0 G2	13,650	B2 U0 G2
Z	5,117	B1 U0 G1	5,444	B1 U0 G1	5,551	B1 U0 G1

* Initial delivered lumens at 25°C (77°F). Actual production yield may vary between -10 and +10% of initial delivered lumens
** For more information on the IES BUG (Backlight-Uplight-Glare) Rating visit: https://www.ies.org/wp-content/uploads/2017/03/TM-15-11BUGRatingsAddendum.pdf. Valid with no tilt

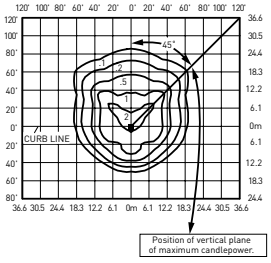
Photometry

All published luminaire photometric testing performed to IESNA LM-79-08 standards by a NVLAP accredited laboratory. To obtain an IES file specific to your project consult: http://lighting.cree.com/products/outdoor/area/osq-series

4ME



RESTL Test Report #: PL08878-001A
OSQ-A-**-4ME-B-30K-UL
Initial Delivered Lumens: 10,230

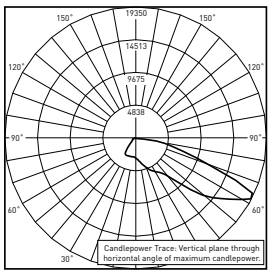


OSQ-A-**-4ME-B-40K-UL
Mounting Height: 25' (7.6m) A.F.G.
Initial Delivered Lumens: 11,424
Initial FC at grade

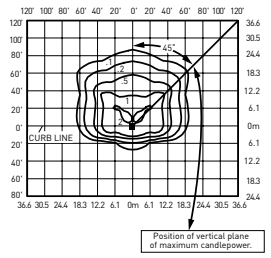
Type IV Medium Distribution

Input Power Designator	3000K		4000K		5700K	
	Initial Delivered Lumens*	BUG Ratings** Per TM-15-11	Initial Delivered Lumens*	BUG Ratings** Per TM-15-11	Initial Delivered Lumens*	BUG Ratings** Per TM-15-11
B	10,738	B2 U0 G2	11,424	B2 U0 G2	11,648	B2 U0 G2
K	16,022	B3 U0 G3	16,959	B3 U0 G3	17,291	B3 U0 G3
Z	6,481	B2 U0 G2	6,896	B2 U0 G2	7,031	B2 U0 G2

* Initial delivered lumens at 25°C (77°F). Actual production yield may vary between -10 and +10% of initial delivered lumens
** For more information on the IES BUG (Backlight-Uplight-Glare) Rating visit: https://www.ies.org/wp-content/uploads/2017/03/TM-15-11BUGRatingsAddendum.pdf. Valid with no tiltt



CESTL Test Report #: PL07692-001A
OSQ-A-**-4ME-U-57K-UL w/OSQ-BLSLF
Initial Delivered Lumens: 22,793



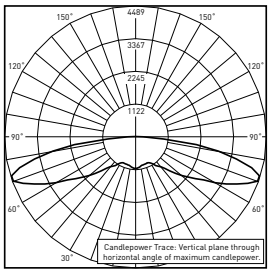
OSQ-A-**-4ME-B-40K-UL w/OSQ-BLSMF
Mounting Height: 25' (7.6m) A.F.G.
Initial Delivered Lumens: 8,779
Initial FC at grade

Type IV Medium w/BLS Distribution

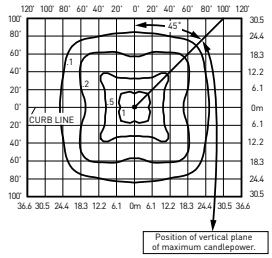
Input Power Designator	3000K		4000K		5700K	
	Initial Delivered Lumens*	BUG Ratings** Per TM 15 11	Initial Delivered Lumens*	BUG Ratings** Per TM 15 11	Initial Delivered Lumens*	BUG Ratings** Per TM 15 11
B	8,251	B1 U0 G2	8,779	B1 U0 G2	8,950	B1 U0 G2
K	12,312	B2 U0 G2	13,032	B2 U0 G2	13,286	B2 U0 G2
Z	4,980	B1 U0 G1	5,299	B1 U0 G1	5,402	B1 U0 G1

* Initial delivered lumens at 25°C (77°F). Actual production yield may vary between -10 and +10% of initial delivered lumens
** For more information on the IES BUG (Backlight-Uplight-Glare) Rating visit: https://www.ies.org/wp-content/uploads/2017/03/TM-15-11BUGRatingsAddendum.pdf. Valid with no tilt

5ME



RESTL Test Report #: PL08534-001B
OSQ-A-**-5ME-B-40K-UL
Initial Delivered Lumens: 10,519



OSQ-A-**-5ME-B-40K-UL
Mounting Height: 25' (7.6m) A.F.G.
Initial Delivered Lumens: 10,867
Initial FC at grade

Type V Medium Distribution

Input Power Designator	3000K		4000K		5700K	
	Initial Delivered Lumens*	BUG Ratings** Per TM-15-11	Initial Delivered Lumens*	BUG Ratings** Per TM-15-11	Initial Delivered Lumens*	BUG Ratings** Per TM-15-11
B	10,232	B4 U0 G3	10,867	B4 U0 G3	11,056	B4 U0 G3
K	15,063	B4 U0 G4	15,999	B4 U0 G4	16,277	B4 U0 G4
Z	5,257	B3 U0 G3	6,086	B3 U0 G3	6,192	B3 U0 G3

* Initial delivered lumens at 25°C (77°F). Actual production yield may vary between -10 and +10% of initial delivered lumens
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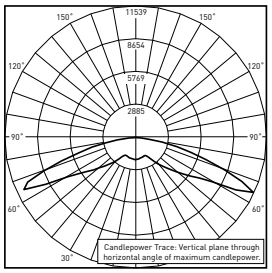
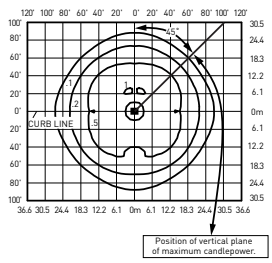
5SH



CESTL Test Report #: PL10754-001A
OSQ-A-**-5SH-U-40K-UL
Initial Delivered Lumens: 25,679



OSQ-A-**-5SH-B-40K-UL
Mounting Height: 25' (7.6m) A.F.G.
Initial Delivered Lumens: 11,478
Initial FC at grade

Type V Short Distribution

Input Power Designator	3000K		4000K		5700K	
	Initial Delivered Lumens*	BUG Ratings** Per TM 15 11	Initial Delivered Lumens*	BUG Ratings** Per TM 15 11	Initial Delivered Lumens*	BUG Ratings** Per TM 15 11
B	10,806	B4 U0 G2	11,478	B4 U0 G2	11,678	B4 U0 G2
K	15,909	B4 U0 G3	16,897	B4 U0 G3	17,191	B4 U0 G3
Z	5,552	B3 U0 G1	6,428	B3 U0 G2	6,539	B3 U0 G2

* Initial delivered lumens at 25°C (77°F). Actual production yield may vary between -10 and +10% of initial delivered lumens
** For more information on the IES BUG (Backlight-Uplight-Glare) Rating visit: https://www.ies.org/wp-content/uploads/2017/03/TM-15-11BUGRatingsAddendum.pdf. Valid with no tilt

Photometry

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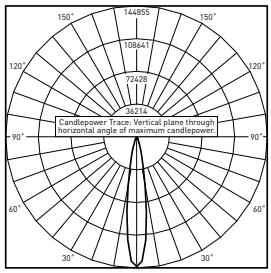
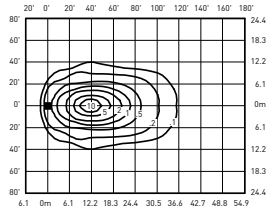
15D



CESTL Test Report #: PL07689-001A
OSQ-A-**-15D-U-30K-UL
Initial Delivered Lumens: 23,254

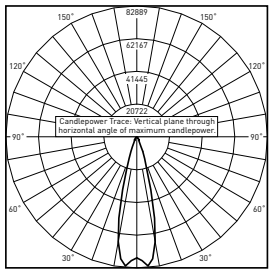


OSQ-A-**-15D-B-40K-UL
Mounting Height: 25' (7.6m) A.F.G., 60° Tilt
Initial Delivered Lumens: 11,478
Initial FC at grade

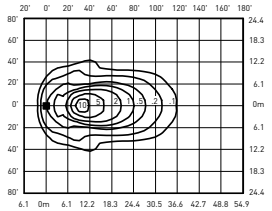
15° Flood Distribution			
Input Power Designator	3000K	4000K	5700K
	Initial Delivered Lumens*	Initial Delivered Lumens*	Initial Delivered Lumens*
B	10,806	11,478	11,678
K	15,909	16,897	17,191
Z	5,552	6,428	6,539

* Initial delivered lumens at 25°C (77°F). Actual production yield may vary between -10 and +10% of initial delivered lumens

25D



CESTL Test Report #: PL07687-001A
OSQ-A-**-25D-U-30K-UL
Initial Delivered Lumens: 23,265

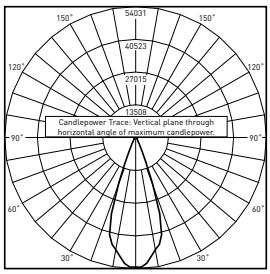


OSQ-A-**-25D-B-40K-UL
Mounting Height: 25' (7.6m) A.F.G., 60° Tilt
Initial Delivered Lumens: 11,478
Initial FC at grade

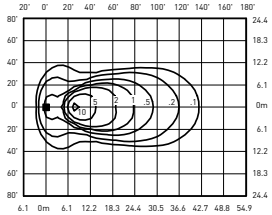
25° Flood Distribution			
Input Power Designator	3000K	4000K	5700K
	Initial Delivered Lumens*	Initial Delivered Lumens*	Initial Delivered Lumens*
B	10,806	11,478	11,678
K	15,909	16,897	17,191
Z	5,552	6,428	6,539

* Initial delivered lumens at 25°C (77°F). Actual production yield may vary between -10 and +10% of initial delivered lumens

40D



CESTL Test Report #: PL07697-001A
OSQ-A-**-40D-U-30K-UL
Initial Delivered Lumens: 22,943



OSQ-A-**-40D-B-40K-UL
Mounting Height: 25' (7.6m) A.F.G., 60° Tilt
Initial Delivered Lumens: 11,478
Initial FC at grade

40° Flood Distribution			
Input Power Designator	3000K	4000K	5700K
	Initial Delivered Lumens*	Initial Delivered Lumens*	Initial Delivered Lumens*
B	10,806	11,478	11,678
K	15,909	16,897	17,191
Z	5,552	6,428	6,539

* Initial delivered lumens at 25°C (77°F). Actual production yield may vary between -10 and +10% of initial delivered lumens

Photometry

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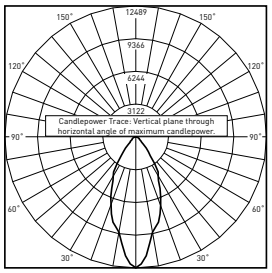
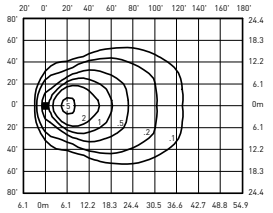
60D



CESTL Test Report #: PL08100-001B
OSQ-A-**-60D-B-30K-UL
Initial Delivered Lumens: 10,079

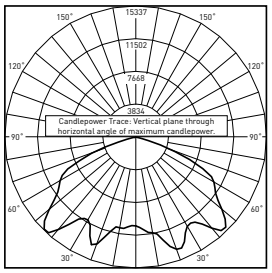


OSQ-A-**-60D-B-40K-UL
Mounting Height: 25' (7.6m) A.F.G., 60˚ Tilt
Initial Delivered Lumens: 11,478
Initial FC at grade

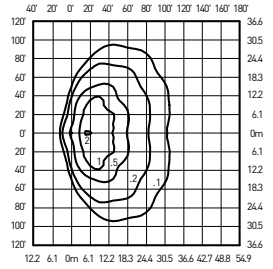
60˚ Flood Distribution			
Input Power Designator	3000K	4000K	5700K
	Initial Delivered Lumens*	Initial Delivered Lumens*	Initial Delivered Lumens*
B	10,806	11,478	11,678
K	15,909	16,897	17,191
Z	5,552	6,428	6,539

* Initial delivered lumens at 25˚C (77˚F). Actual production yield may vary between -10 and +10% of initial delivered lumens

WSN



CESTL Test Report #: PL07695-001A
OSQ-A-**-WSN-U-30K-UL
Initial Delivered Lumens: 23,116



OSQ-A-**-WSN-B-40K-UL
Mounting Height: 25' (7.6m) A.F.G., 60˚ Tilt
Initial Delivered Lumens: 11,478
Initial FC at grade

Wide Sign Distribution			
Input Power Designator	3000K	4000K	5700K
	Initial Delivered Lumens*	Initial Delivered Lumens*	Initial Delivered Lumens*
B	10,806	11,478	11,678
K	15,909	16,897	17,191
Z	5,552	6,428	6,539

* Initial delivered lumens at 25˚C (77˚F). Actual production yield may vary between -10 and +10% of initial delivered lumens

OSQ™ LED Area/Flood Luminaire – Medium

Luminaire EPA

Fixed Arm Mount – OSQ-DA Weight: 26.5 lbs. (12kg)					
Single	2 @ 180˚	2 @ 90˚	3 @ 90˚	3 @ 120˚	4 @ 90˚
					
0.74	1.48	1.19	1.93	1.63	2.38

Adjustable Arm Mount – OSQ-AA Weight: 26.5 lbs. (12kg)							
Single	2 @ 180˚	2 @ 90˚	3 @ 90˚	3 @ 120˚	3 @ 180˚	4 @ 180˚	4 @ 90˚
Tenon Configuration (0˚-80˚ Tilt); If used with Cree tenons, please add tenon EPA with Luminaire EPA							
 PB-1A*; PT-1; PW-1A3**	 PB-2A*; PB-2R2.375; PD-2A4(180); PT-2(180); PW-2A3**	 PB-2A*; PD-2A4(90); PT-2(90)	 PB-3A*; PD-3A4(90); PT-3(90)	 PB-3A*; PT-3(120)	 PB-3A*; PB-3R2.375	 PB-4A*(180)	 PB-4A*(90); PB-4R2.375; PD-4A4(90); PT-4(90)
0˚ Tilt							
0.74	1.48	1.19	1.93	1.63	3.33	4.66	2.38
10˚ Tilt							
0.75	1.48	1.49	2.23	2.15	4.22	5.84	2.98
20˚ Tilt							
1.12	1.48	1.86	2.60	2.85	5.31	7.32	3.72
30˚ Tilt							
1.46	1.48	2.20	2.94	3.56	6.34	8.68	4.40
45˚ Tilt							
1.96	1.96	2.69	3.43	4.54	7.83	10.68	5.38
60˚ Tilt							
2.33	2.33	3.07	3.81	5.11	8.94	12.16	6.14
70˚ Tilt							
2.49	2.49	3.23	3.97	5.11	9.43	12.80	6.46
80˚ Tilt							
2.58	2.58	3.32	4.06	5.11	9.71	13.16	6.64
Tenon Configuration (90˚ Tilt); If used with Cree tenons, please add tenon EPA with Luminaire EPA							
PB-1A*; PT-1; PW-1A3**	PB-2A*; PB-2R2.375; PD-2A4(180); PT-2(180); PW-2A3**	PB-2A*	PB-3A*	PB-3A*; PT-3(120)	PB-3A*; PB-3R2.375	PB-4A*(180)	PB-4A*(90); PB-4R2.375
90˚ Tilt							
2.61	2.61	4.44	6.05	5.11	9.79	13.28	10.39

* Specify pole size: 3 (3"), 4 (4"), 5 (5"), or 6 (6") for single, double or triple luminaire orientation or 4 (4"), 5 (5"), or 6 (6") for quad luminaire orientation
** These EPA values must be multiplied by the following ratio: Fixture Mounting Height/Total Pole Height. Specify pole size: 3 (3"), 4 (4"), 5 (5"), or 6 (6")

Tenon EPA

Part Number	EPA
PB-1A*	None
PB-2A*	0.82
PB-3A*	1.52
PB-4A*(180)	2.22
PB-4A*(90)	1.11
PB-2R2.375	0.92
PB-3R2.375	1.62
PB-4R2.375	2.32
PD Series Tenons	0.09
PT Series Tenons	0.10
PW-1A3**	0.47
PW-2A3**	0.94
WM-2	0.08
WM-4	0.25
WM-DM	None

* Specify pole size: 3 (3"), 4 (4"), 5 (5"), or 6 (6") for single, double or triple luminaire orientation or 4 (4"), 5 (5"), or 6 (6") for quad luminaire orientation
** These EPA values must be multiplied by the following ratio: Fixture Mounting Height/Total Pole Height. Specify pole size: 3 (3"), 4 (4"), 5 (5"), or 6 (6")

Tenons and Brackets‡ (must specify color)

Square Internal Mount Vertical Tenons (Steel)
- Mounts to 3-6" (76-152mm) square aluminum or steel poles

PB-1A* – Single
PB-2A* – 180˚ Twin
PB-3A* – 180˚ Triple
PB-4A*(90) – 90˚ Quad
PB-4A*(180) – 180˚ Quad

Square Internal Mount Horizontal Tenons (Aluminum)
- Mounts to 4" (102mm) square aluminum or steel poles

PD-2A4(90) – 90˚ Twin
PD-2A4(180) – 180˚ Twin
PD-3A4(90) – 90˚ Triple
PD-4A4(90) – 90˚ Quad

Wall Mount Brackets
- Mounts to wall or roof

WM-2 – Horizontal for OSQ-AA mount
WM-4 – L-Shape for OSQ-AA mount
WM-DM – Plate for OSQ-DA mount

Round External Mount Vertical Tenons (Steel)
- Mounts to 2.375" (60mm) O.D. round aluminum or steel poles or tenons

PB-2R2.375 – Twin
PB-3R2.375 – Triple
PB-4R2.375 – Quad

Round External Mount Horizontal Tenons (Aluminum)
- Mounts to 2.375" (60mm) O.D. round aluminum or steel poles or tenons
- Mounts to square pole with PB-1A* tenon

PT-1 – Single (Vertical)
PT-2(90) – 90˚ Twin
PT-2(180) – 180˚ Twin
PT-3(90) – 90˚ Triple
PT-3(120) – 120˚ Triple
PT-4(90) – 90˚ Quad

Mid-Pole Bracket
- Mounts to square pole

PW-1A3** – Single
PW-2A3** – Double

Ground Mount Post
- For ground-mounted flood luminaires

PGM-1 - for OSQ-AA mount

‡ Refer to the Bracket and Tenons spec sheet for more details

Direct Mount Configurations

Compatibility with OSQ-DA Direct Mount Bracket					
Input Power Designator	2 @ 90˚	2 @ 180˚	3 @ 90˚	3 @ 120˚	4 @ 90˚
3" Square					
B, K & Z	N/A	✓	N/A	N/A	N/A
3" Round					
B, K & Z	N/A	✓	N/A	N/A	N/A
4" Square					
B, K & Z	✓	✓	✓	N/A	✓
4" Round					
B, K & Z	✓	✓	✓	✓	✓
5" Square					
B, K & Z	✓	✓	✓	N/A	✓
5" Round					
B, K & Z	✓	✓	✓	✓	✓
6" Square					
B, K & Z	✓	✓	✓	N/A	✓
6" Round					
B, K & Z	✓	✓	✓	✓	✓

Field Adjustable Output (Q9/Q6/Q5/Q4/Q3/Q2/Q1) Option Description:

The Field Adjustable Output option enables the OSQ area luminaires to be tuned to the exact needs of a particular application through multiple levels of adjustment. When ordered with the Q option, the luminaire will be shipped from the factory at the selected Q setting and will be fully adjustable between the nine settings.

Q Option Power & Lumen Data – Designator B

Q Option Setting	CCT	System Watts	Lumen Values						Optics Qualified on DLC QPL	
		120-480V	Asymmetric	5ME	5SH & Floods	2ME w/ BLS	3ME w/ BLS	4ME w/BLS	Standard	Premium
Q9 (Full Power)	30K	86	10,738	10,232	10,806	8,251	8,477	8,251	5ME	2ME, 3ME, 4ME, 5SH, 15D, 25D, 40D, 60D, WSN
	40K		11,424	10,867	11,478	8,779	9,019	8,779	N/A	2ME, 3ME, 4ME, 5ME, 5SH, 15D, 25D, 40D, 60D, WSN
	57K		11,648	11,056	11,678	8,950	9,196	8,950		
Q6	30K	77	9,449	9,004	9,509	7,261	7,460	7,261	5ME	2ME, 3ME, 4ME, 5SH, 15D, 25D, 40D, 60D, WSN
	40K		10,053	9,563	10,101	7,726	7,937	7,726	N/A	2ME, 3ME, 4ME, 5ME, 5SH, 15D, 25D, 40D, 60D, WSN
	57K		10,250	9,729	10,277	7,876	8,092	7,876		
Q5	30K	72	8,913	8,492	8,969	6,848	7,036	6,848	5ME	2ME, 3ME, 4ME, 5SH, 15D, 25D, 40D, 60D, WSN
	40K		9,482	9,020	9,527	7,287	7,486	7,287	N/A	2ME, 3ME, 4ME, 5ME, 5SH, 15D, 25D, 40D, 60D, WSN
	57K		9,668	9,176	9,693	7,429	7,633	7,429		
Q4	30K	62	7,731	7,367	7,780	5,941	6,103	5,941	5ME	2ME, 3ME, 4ME, 5SH, 15D, 25D, 40D, 60D, WSN
	40K		8,225	7,824	8,264	6,321	6,494	6,321	N/A	2ME, 3ME, 4ME, 5ME, 5SH, 15D, 25D, 40D, 60D, WSN
	57K		8,387	7,960	8,408	6,444	6,621	6,444		
Q3	30K	53	6,550	6,241	6,592	5,033	5,171	5,033	5ME	2ME, 3ME, 4ME, 5SH, 15D, 25D, 40D, 60D, WSN
	40K		6,969	6,629	7,002	5,355	5,502	5,355	N/A	2ME, 3ME, 4ME, 5ME, 5SH, 15D, 25D, 40D, 60D, WSN
	57K		7,105	6,744	7,124	5,460	5,610	5,460		
Q2	30K	45	5,476	5,218	5,511	4,208	4,323	4,208	5ME	2ME, 3ME, 4ME, 5SH, 15D, 25D, 40D, 60D, WSN
	40K		5,826	5,542	5,854	4,477	4,600	4,477	N/A	2ME, 3ME, 4ME, 5ME, 5SH, 15D, 25D, 40D, 60D, WSN
	57K		5,940	5,639	5,956	4,565	4,690	4,565		
Q1	30K	34	4,188	3,990	4,214	3,218	3,306	3,218	5ME	2ME, 3ME, 4ME, 5SH, 15D, 25D, 40D, 60D, WSN
	40K		4,455	4,238	4,476	3,424	3,517	3,424	N/A	2ME, 3ME, 4ME, 5ME, 5SH, 15D, 25D, 40D, 60D, WSN
	57K		4,543	4,312	4,554	3,491	3,586	3,491		

Field Adjustable Output (Q9/Q6/Q5/Q4/Q3/Q2/Q1) Option Description:

The Field Adjustable Output option enables the OSQ area luminaires to be tuned to the exact needs of a particular application through multiple levels of adjustment. When ordered with the Q option, the luminaire will be shipped from the factory at the selected Q setting and will be fully adjustable between the nine settings.

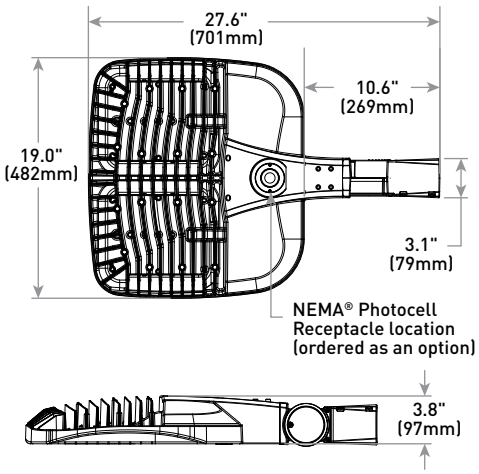
Q Option Power & Lumen Data – Designator K

Q Option Setting	CCT	System Watts	Lumen Values						Optics Qualified on DLC QPL	
		120-480V	Asymmetric	5ME	5SH & Floods	2ME w/BLS	3ME w/BLS	4ME w/BLS	Standard	Premium
Q9 (Full Power)	30K	130	16,022	15,063	15,909	12,312	12,649	12,312	5ME	2ME, 3ME, 4ME, 5SH, 15D, 25D, 40D, 60D, WSN
	40K		16,959	15,999	16,897	13,032	13,389	13,032	N/A	2ME, 3ME, 4ME, 5ME, 5SH, 15D, 25D, 40D, 60D, WSN
	57K		17,291	16,277	17,191	13,286	13,650	13,286		
Q6	30K	117	14,099	13,255	14,000	10,835	11,131	10,835	5ME	2ME, 3ME, 4ME, 5SH, 15D, 25D, 40D, 60D, WSN
	40K		14,924	14,079	14,869	11,468	11,782	11,468	N/A	2ME, 3ME, 4ME, 5ME, 5SH, 15D, 25D, 40D, 60D, WSN
	57K		15,216	14,324	15,128	11,692	12,012	11,692		
Q5	30K	110	13,298	12,502	13,204	10,219	10,499	10,219	5ME	2ME, 3ME, 4ME, 5SH, 15D, 25D, 40D, 60D, WSN
	40K		14,076	13,279	14,025	10,817	11,113	10,817	N/A	2ME, 3ME, 4ME, 5ME, 5SH, 15D, 25D, 40D, 60D, WSN
	57K		14,352	13,510	14,269	11,027	11,330	11,027		
Q4	30K	93	11,536	10,845	11,454	8,865	9,107	8,865	5ME	2ME, 3ME, 4ME, 5SH, 15D, 25D, 40D, 60D, WSN
	40K		12,210	11,519	12,166	9,383	9,640	9,383	N/A	2ME, 3ME, 4ME, 5ME, 5SH, 15D, 25D, 40D, 60D, WSN
	57K		12,450	11,719	12,378	9,566	9,828	9,566		
Q3	30K	80	9,773	9,188	9,704	7,510	7,716	7,510	5ME	2ME, 3ME, 4ME, 5SH, 15D, 25D, 40D, 60D, WSN
	40K		10,345	9,759	10,307	7,950	8,167	7,950	N/A	2ME, 3ME, 4ME, 5ME, 5SH, 15D, 25D, 40D, 60D, WSN
	57K		10,548	9,929	10,487	8,104	8,327	8,104		
Q2	30K	67	8,171	7,682	8,114	6,279	6,451	6,279	5ME	2ME, 3ME, 4ME, 5SH, 15D, 25D, 40D, 60D, WSN
	40K		8,649	8,159	8,617	6,646	6,828	6,646	N/A	2ME, 3ME, 4ME, 5ME, 5SH, 15D, 25D, 40D, 60D, WSN
	57K		8,818	8,301	8,767	6,776	6,962	6,776		
Q1	30K	51	6,249	5,875	6,205	4,802	4,933	4,802	5ME	2ME, 3ME, 4ME, 5SH, 15D, 25D, 40D, 60D, WSN
	40K		6,614	6,240	6,590	5,082	5,222	5,082	N/A	2ME, 3ME, 4ME, 5ME, 5SH, 15D, 25D, 40D, 60D, WSN
	57K		6,743	6,348	6,704	5,182	5,324	5,182		

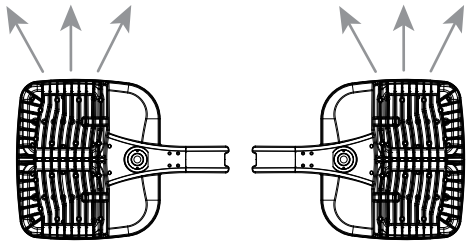
AA Mount



Weight
26.5 lbs. (12kg)



RR/RL Configuration



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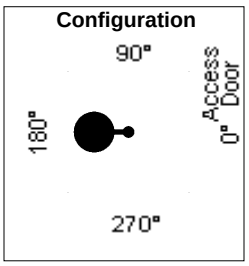
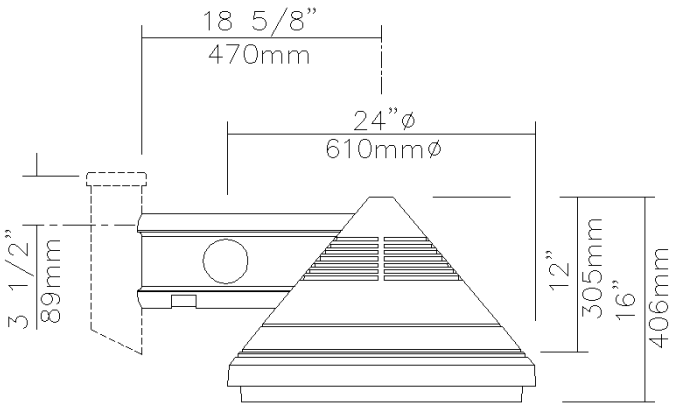
Warrenville Cantera (14595)





EPA: 1.89 sq ft / weight: 62 lb (28.2 kg)
Note: 3D image may not represent color or option selected.
Logos above include link, click to access.

Qty **1** Luminaire **OPC-250HPS-SG3-240-SCRAL7002TX-LMS8767M**

Description of Components:

Housing: In a pinched-cone shape, this housing is made of cast aluminum 356 and features horizontal grooves, mechanically assembled on the bracket.

Access-Mechanism: A gravity die cast 356 aluminum frame with latch and hinge. The mechanism shall offer tool-free access to the inside of the luminaire. An embedded memory-retentive gasket shall ensure weatherproofing.

Lens: Clear tempered glass lens, mechanically assembled onto a cast aluminum frame.

Lamp: *(Not included)*, 250 Watt High Pressure Sodium (ANSI Code S50), ED 18 bulb, mogul base.

Optical System: (SG3), IES type III (asymmetrical). Reflector composed of a chemically brightened multi-faceted anodized aluminum, mounted on a white frame. This assembly allows for a full rotation of the optical system in 90 degree increments.

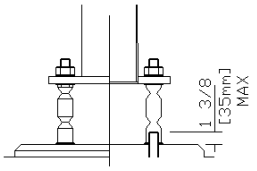
Ballast: High power factor of 90%. Primary voltage 240 volts. Lamp starting capacity -40F(-40C) degrees. Assembled on a unitized removable tray with quick disconnect plug.

Arms: Shall be made from extruded aluminum 6063-T5, complete with an access door and a decorative hole, mechanically assembled.

PHILIPS
LUMEC

Warrenville Cantera (14595)

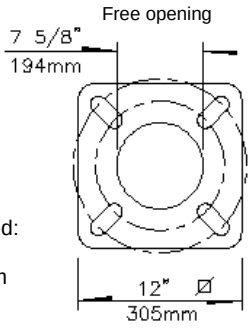
Base & Bolts Information

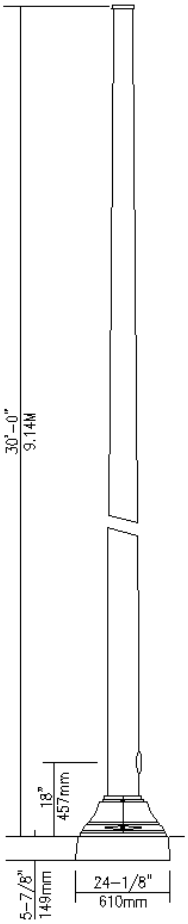


For 1" (25mm)Ø anchor bolts and breakaway couplings supplied by other.)

Anchor Plate

- Bolt Circle:
- Material:
  Cast Aluminum
- NOTE:
  Bolt Circle Allowed:
  11" to 12"
  279mm to 305mm





Qty **1** Pole **VSPA-30-SCRAL7002TX-LMS8767M**

Description of Components:

Pole Shaft: Shall be made from spun aluminum 6063-T4, tempered to T6 after welding, having a base diameter of 8" (203mm) and top diameter of 5" (127mm) with wall thickness of 0.156" (4mm) welded to both the bottom and top of the anchor plate. **Complete with a vibration damper.**

Maintenance Opening: The pole shall have a 4" x 8" (102mm x 203mm) maintenance opening centered 18" (457mm) from the bottom of the anchor plate, complete with a weatherproof cast 356 aluminum cover and a factory assembled copper ground lug.

Base Cover: Two piece round cast aluminum base cover **mechanically fastened with 1/4-20 allen head set screws.**

Breakaway Couplings cover: One piece spun aluminum component.

Note: A tenon will be provided when the luminaire or bracket does not fit directly on pole shaft. Tenon not shown on the drawing.

IMPORTANT: Philips Lumec strongly recommends the installation of the complete lighting assembly with all of its accessories upon the anchoring of the pole. This will ensure that the structural integrity of the product is maintained throughout its lifetime.

PHILIPS LUMEC

Warrenville Cantera (14595)

Qty **1** Miscellaneous **BACWS-SCRAL7002TX-LMS8767M**

Description of Components:

Wiring: Gauge (#14) TEW/AWM 1015 or 1230 wires, 6" (152mm) minimum exceeding top of pole.

Hardware: All exposed screws shall be complete with Ceramic primer-seal basecoat to reduce seizing of the parts and offers a high resistance to corrosion. All seals and sealing devices are made and/or lined with EPDM and/or silicone and/or rubber.

Finish: (SCRAL7002TX) Special Color **RAL7002, textured Olive grey**. In accordance with the AAMA 2603 standard. Application of polyester powder coat paint (4 mils/100 microns) with ± 1 mils/24 microns of tolerance. The Thermosetting resins provides a discoloration resistant finish in accordance with the ASTM D2244 standard, as well as luster retention in keeping with the ASTM D523 standard and humidity proof in accordance with the ASTM D2247 standard.

The surface treatment achieves a minimum of 2000 hours for salt spray resistant finish in accordance with testing performed and per ASTM B117 standard.

Warning: Please notice that most of our products are made from parts that need a tooling. A period of **5 years** without usage leads to obsolescence of the tooling. In doubt please validate with the factory if the toolings still are available.

Quality Control: The manufacturer must provide a written confirmation of its ISO 9001-2008 and ISO 14001-2004 International Quality Standards Certification.

Vibration Resistance:

Aluminum poles are not recommended in high vibration environments such as bridge, overpass, top of building, airport, train station, etc.

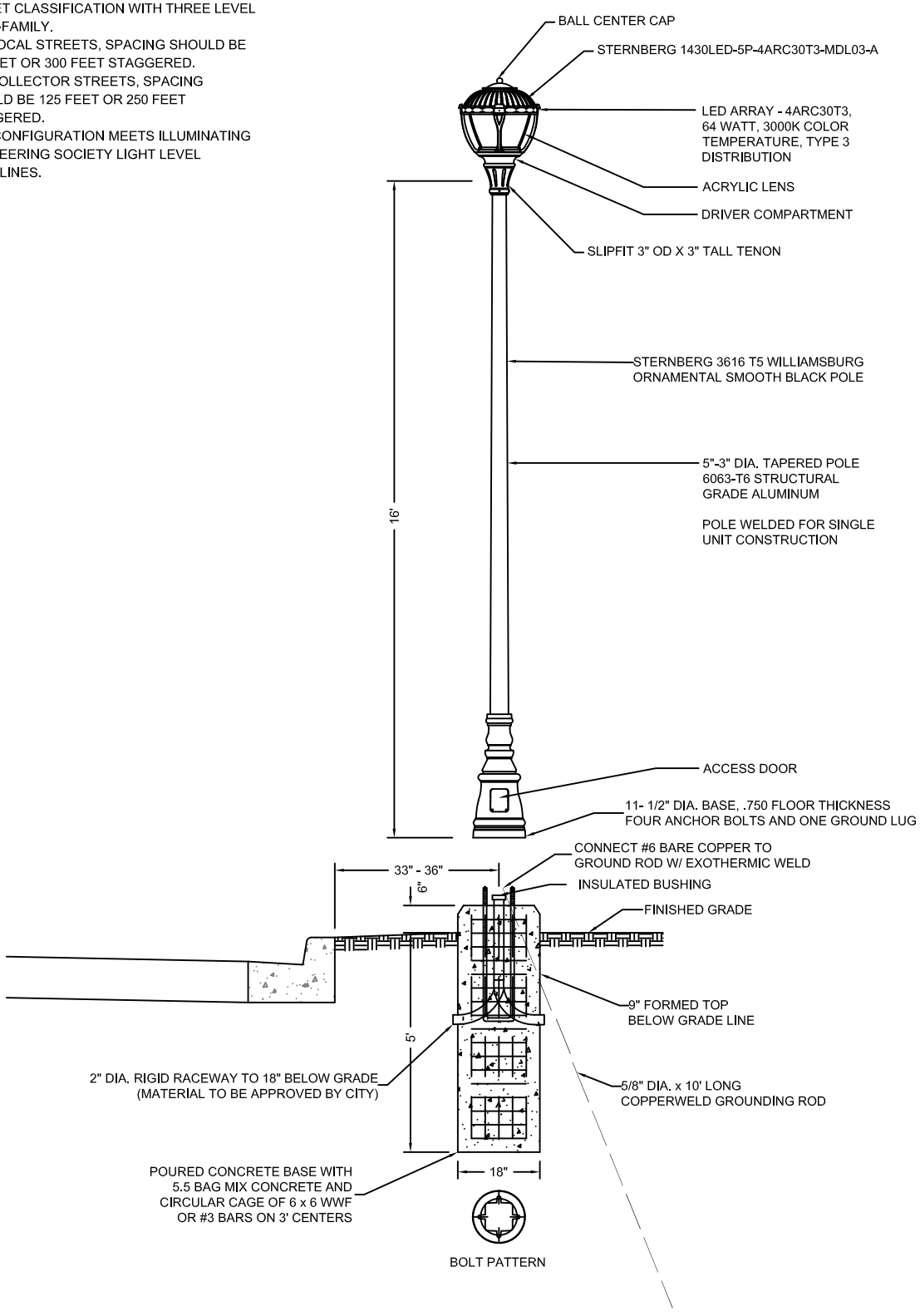
Web site information details: Click on any specific information details you need:

Paint finish / Warranties / ISO 9001-2008 Certification / ISO 14001-2004 Certification / CSA Pole Certification

PHILIPS
LUMEC

NOTES:

1. APPLICABLE FOR LOCAL OR COLLECTOR STREET CLASSIFICATION WITH THREE LEVEL MULTI-FAMILY.
2. FOR LOCAL STREETS, SPACING SHOULD BE 150 FEET OR 300 FEET STAGGERED.
3. FOR COLLECTOR STREETS, SPACING SHOULD BE 125 FEET OR 250 FEET STAGGERED.
4. THIS CONFIGURATION MEETS ILLUMINATING ENGINEERING SOCIETY LIGHT LEVEL GUIDELINES.



WARRENVILLE

City of Warrenville Standard

SL-01-16-64W

16' Ornamental Street Light Detail (64W)

DRAWN: KMH
REV:10-05-2018

Model No :: **20363-BL**
Name :: Poseidon



Project Name :: _____
Location :: _____
Type :: _____
Quantity :: _____
Notes :: _____

Product Information

Product ID :: 20363
UPC Code :: 641594153507
Mounting Type :: Wall
Finish :: Black (BL)
Diffuser :: N/A

See Page 2 for Custom Product Options

Product Dimensions

Fixture		Canopy	
Length ::	N/A	Length ::	N/A
Width ::	4.75”	Width ::	N/A
Diameter ::	N/A	Diameter ::	N/A
Extension ::	7”	Height ::	0.4”
Height ::	6”		
Overall Height ::	N/A		

c UL us LISTED

Technical Specifications

Qualifcations

Location Rating ::	Wall
Certification ::	cULus
IES File ::	No
Title 24 ::	No
Energy Star ::	No
ADA Compliant ::	No
Marine Grade ::	No
Emergency Lighting ::	No
Warranty ::	1 Year Manufacture

Specifications

Frame Material ::	Steel
Diffuser Material::	N/A
Lamping Type ::	N/A
Lamping Base ::	E-26
Lamp Quantity ::	1
Lamp Wattage ::	60 W
Total Wattage ::	60 W
Lamps Included ::	No
J-Box Type ::	Standard 4

Voltage

Voltage :: 120v

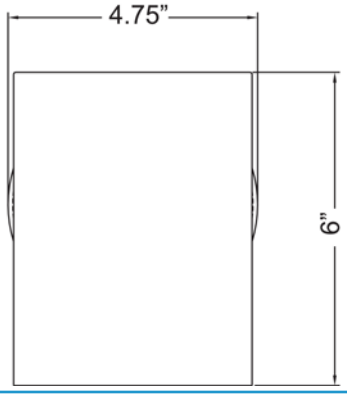
Photometrics

CCT ::	2700K
CRI ::	N/A
Wattage ::	60
Nominal Lumens ::	840
Delivered Lumens ::	N/A

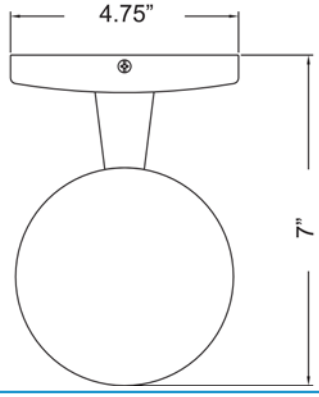
Recommended Dimmers

(TRIAC) Any Standard Dimmer

Line Drawing #1



Line Drawing #2



IES File

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Rev. 4/6/2018 Filename:: 20363-BL.pdf

access LIGHTING

XSP Series

XSPW™ LED Wall Mount Luminaire featuring Cree TrueWhite® Technology

Product Description

The XSPW™ LED wall mount luminaire has a slim, low profile design intended for outdoor wall mounted applications. The rugged lightweight aluminum housing and mounting box are designed for installation over standard single gang J-Boxes and mud ring single gang J-Boxes. The luminaire allows for through-wired or conduit entry from the top, bottom, sides and rear. The housing design is intended specifically for LED technology including a weathertight LED driver compartment and thermal management. Optic design features industry-leading NanoOptic® Precision Delivery Grid™ system in multiple distributions.

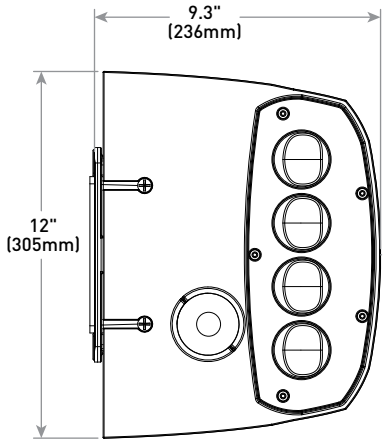
Applications: General area and security lighting

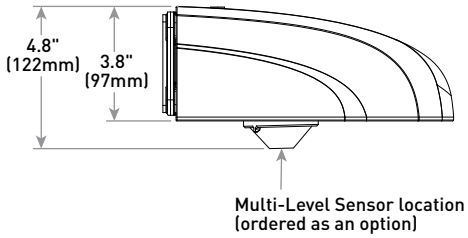


Performance Summary

- NanoOptic® Precision Delivery Grid™ optic
- Assembled in the U.S.A. of U.S. and imported parts
- **CRI:** Minimum 70 CRI (3000K, 4000K & 5700K); 90 CRI (5000K)
- **CCT:** 3000K, 4000K, 5000K, 5700K
- **Limited Warranty†:** 10 years on luminaire/10 years on Colorfast DeltaGuard® finish

†See http://lighting.cree.com/warranty for warranty terms





Multi-Level Sensor location
(ordered as an option)

Accessories

Field-Installed	
Beauty Plate WM-PLT12** - 12" (305mm) Square WM-PLT14** - 14" (356mm) Square - Covers holes left by incumbent wall packs	**Hand-Held Remote** XA-SENSREM - For successful implementation of the programmable multi-level option, a minimum of one hand-held remote is required

** Must specify color

Lumen Package	Weight
2L, 4L, 6L	11.0 lbs. (5.0kg)
8L	11.8 lbs. (5.4kg)

Ordering Information

Example: XSPW-B-WM-2ME-2L-30K-UL-BK

XSPW	B	WM						
Product	**Version**	**Mounting**	**Optic**	**Lumen Package***	**CCT**	**Voltage**	**Color Options**	**Options**
XSPW	B	**WM** Wall	**2ME** Type II Medium **3ME** Type III Medium **4ME** Type IV Medium	**2L** 2,490 lumens **4L** 4,270 lumens **6L** 6,100 lumens **8L** 8,475 lumens	**30K** 3000K - 70 CRI **40K** 4000K - 70 CRI **50K** 5000K - 90 CRI **57K** 5700K - 70 CRI	**UL** Universal 120-277V **UH** Universal 347-480V **34**** 347V - For use with P option only	**BK** Black **BZ** Bronze **SV** Silver **WH** White	**ML** **Multi-Level** - Refer to ML spec sheet for details - Available with UL voltage only **P** **Button Photocell** - Not available with ML or PML option - Available with UL and 34 voltages only **PML** **Programmable Multi-Level** - Refer to PML spec sheet for details - Available with UL voltage only

* Lumen Package selection codes identify approximate light output only. Actual lumen output levels may vary depending on CCT and optic selection. Refer to Initial Delivered Lumen tables for specific lumen values
** Consult factory for availability

Rev. Date: VersionB V2 01/03/2019

US: lighting.cree.com T (800) 236-6800 F (262) 504-5415
Canada: www.cree.com/canada T (800) 473-1234 F (800) 890-7507

XSPW™ LED Wall Mount Luminaire

Product Specifications

CREE TRUEWHITE® TECHNOLOGY

A revolutionary way to generate high-quality white light, Cree TrueWhite® Technology is a patented approach that delivers an exclusive combination of 90+ CRI, beautiful light characteristics and lifelong color consistency, all while maintaining high luminous efficacy – a true no compromise solution.

CONSTRUCTION & MATERIALS

- Slim, low profile design
- Luminaire housing specifically designed for LED applications with advanced LED thermal management and driver
- Luminaire mounting box designed for installation over standard single gang J-Boxes and mud ring single gang J-Boxes
- Luminaire can also be direct mounted to a wall and surface wired
- Secures to wall with four 3/16" (5mm) screws (by others)
- Conduit entry from top, bottom, sides, and rear
- Exclusive Colorfast DeltaGuard® finish features an E-coat epoxy primer with an ultra-durable powder topcoat, providing excellent resistance to corrosion, ultraviolet degradation and abrasion. Silver, black, white and bronze are available
- **Weight:** 2L, 4L, 6L - 11.0 lbs. (5.0kg); 8L - 11.8 lbs. (5.4kg)

ELECTRICAL SYSTEM

- **Input Voltage:** 120-277V or 347-480V, 50/60Hz
- **Power Factor:** > 0.9 at full load
- **Total Harmonic Distortion:** < 20% at full load
- Integral 10kV surge suppression protection standard
- When code dictates fusing, a slow blow fuse or type C/D breaker should be used to address inrush current
- Designed with 0-10V dimming capabilities. Controls by others
- **10V Source Current:** 0.15 mA
- **Operating Temperature Range:** -40˚C - +50˚C (-40˚F - +122˚F)

REGULATORY & VOLUNTARY QUALIFICATIONS

- cULus Listed
- Suitable for wet locations
- Designed for downlight applications only
- Enclosure rated IP66 per IEC 60598
- 10kV surge suppression protection tested in accordance with IEEE/ANSI C62.41.2
- Meets FCC Part 15, Subpart B, Class A standards for conducted and radiated emissions
- Luminaire and finish endurance tested to withstand 5,000 hours of elevated ambient salt fog conditions as defined in ASTM Standard B 117
- Meets Buy American requirements within ARRA
- RoHS compliant. Consult factory for additional details
- Dark Sky Friendly, IDA Approved when ordered with 30K CCT
- DLC and DLC Premium qualified versions available. Please refer to https://www.designlights.org/search/ for most current information
- **CA RESIDENTS WARNING:** Cancer and Reproductive Harm – www.p65warnings.ca.gov

Electrical Data*

Lumen Package	CCT/CRI	System Watts 120-480V	Efficacy	Total Current (A) 120V	208V	240V	277V	347V	480V
2L	30K/70 CRI	20	125	0.17	0.10	0.08	0.07	0.06	0.05
	40K/70 CRI	19	131	0.16	0.09	0.08	0.07	0.06	0.04
	50K/90 CRI	24	104	0.20	0.11	0.10	0.08	0.07	0.05
	57K/70 CRI	19	131	0.16	0.09	0.08	0.07	0.06	0.04
4L	30K/70 CRI	33	129	0.28	0.16	0.14	0.13	0.10	0.07
	40K/70 CRI	31	138	0.27	0.15	0.13	0.12	0.09	0.07
	50K/90 CRI	40	107	0.34	0.20	0.17	0.16	0.12	0.09
	57K/70 CRI	31	138	0.26	0.15	0.13	0.12	0.09	0.07
6L	30K/70 CRI	51	120	0.43	0.25	0.22	0.19	0.14	0.11
	40K/70 CRI	47	130	0.40	0.23	0.20	0.18	0.14	0.10
	50K/90 CRI	60	102	0.51	0.29	0.25	0.23	0.17	0.13
	57K/70 CRI	47	130	0.40	0.23	0.20	0.17	0.14	0.10
8L	30K/70 CRI	77	110	0.65	0.38	0.32	0.28	0.22	0.16
	40K/70 CRI	72	118	0.61	0.35	0.31	0.27	0.21	0.15
	50K/90 CRI	78	89	0.66	0.37	0.33	0.29	0.22	0.16
	57K/70 CRI	71	119	0.60	0.35	0.30	0.26	0.20	0.15

* Electrical data at 25˚C (77˚F). Actual wattage may differ by +/- 10% when operating between 120-277V or 347- 480V +/- 10%

XSPW Series Ambient Adjusted Lumen Maintenance Factors[1]

Ambient	Initial LMF	25K hr Projected[2] LMF	50K hr Projected[2] LMF	75K hr Calculated[3] LMF	100K hr Calculated[3] LMF
0˚C (32˚F)	1.05	1.00	0.98	0.96	0.94
5˚C (41˚F)	1.04	1.00	0.98	0.96	0.94
10˚C (50˚F)	1.03	0.99	0.97	0.95	0.93
15˚C (59˚F)	1.02	0.98	0.96	0.94	0.92
20˚C (68˚F)	1.01	0.97	0.95	0.93	0.91
25˚C (77˚F)	1.00	0.96	0.94	0.92	0.90
30˚C (86˚F)	0.99	0.95	0.93	0.91	0.89
35˚C (95˚F)	0.98	0.94	0.92	0.90	0.88
40˚C (104˚F)	0.97	0.93	0.91	0.89	0.87

[1] Lumen maintenance values at 25˚C (77˚F) are calculated per TM-21 based on LM-80 data and in-situ luminaire testing. Luminaire ambient temperature factors (LATF) have been applied to all lumen maintenance factors. Please refer to the Temperature Zone Reference Document for outdoor average nighttime ambient conditions

[2] In accordance with IESNA TM-21-11, Projected Values represent interpolated value based on time durations that are within six times (6X) the IESNA LM-80-08 total test duration (in hours) for the device under testing ([DUT) i.e. the packaged LED chip)

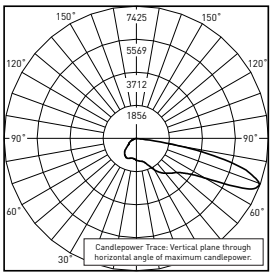
[3] In accordance with IESNA TM-21-11, Calculated Values represent time durations that exceed six times (6X) the IESNA LM-80-08 total test duration (in hours) for the device under testing ([DUT) i.e. the packaged LED chip)

XSPW™ LED Wall Mount Luminaire

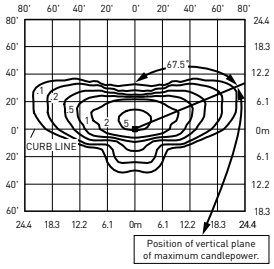
Photometry

All published luminaire photometric testing performed to IESNA LM-79-08 standards by a NVLAP accredited laboratory. To obtain an IES file specific to your project consult: http://lighting.cree.com/products/outdoor/wall-mount/xsp-series-wall

2ME



CESTL Test Report #: PL12798-001A
XSPW-B-**-2ME-8L-40K-UL
Initial Delivered Lumens: 8,622

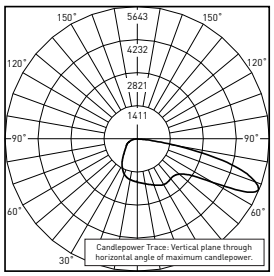


XSPW-B-**-2ME-8L-40K-UL
Mounting Height: 15' (4.6) A.F.G.
Initial Delivered Lumens: 8,475
Initial FC at grade

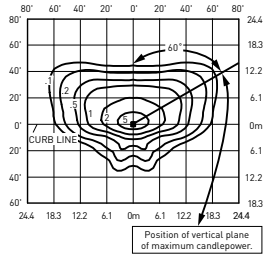
Type II Medium Distribution								
Lumen Package	3000K		4000K		5000K		5700K	
	Initial Delivered Lumens*	BUG Ratings** Per TM-15-11	Initial Delivered Lumens*	BUG Ratings** Per TM-15-11	Initial Delivered Lumens*	BUG Ratings** Per TM-15-11	Initial Delivered Lumens*	BUG Ratings** Per TM-15-11
2L	2,490	B1 U0 G1	2,490	B1 U0 G1	2,490	B1 U0 G1	2,490	B1 U0 G1
4L	4,270	B1 U0 G1	4,270	B1 U0 G1	4,270	B1 U0 G1	4,270	B1 U0 G1
6L	6,100	B1 U0 G2	6,100	B1 U0 G2	6,100	B1 U0 G2	6,100	B1 U0 G2
8L	8,475	B2 U0 G2	8,475	B2 U0 G2	6,925	B1 U0 G2	8,475	B2 U0 G2

* Initial delivered lumens at 25°C (77°F). Actual production yield may vary between -10 and +10% of initial delivered lumens
** For more information on the IES BUG (Backlight-Uplight-Glare) Rating visit: https://www.ies.org/wp-content/uploads/2017/03/TM-15-11BUGRatingsAddendum.pdf

3ME



CESTL Test Report #: PL12366-007A
XSPW-B-**-3ME-8L-40K-UL
Initial Delivered Lumens: 8,543



XSPW-B-**-3ME-8L-40K-UL
Mounting Height: 15' (4.6m) A.F.G.
Initial Delivered Lumens: 8,475
Initial FC at grade

Type III Medium Distribution								
Lumen Package	3000K		4000K		5000K		5700K	
	Initial Delivered Lumens*	BUG Ratings** Per TM-15-11	Initial Delivered Lumens*	BUG Ratings** Per TM-15-11	Initial Delivered Lumens*	BUG Ratings** Per TM-15-11	Initial Delivered Lumens*	BUG Ratings** Per TM-15-11
2L	2,490	B1 U0 G1	2,490	B1 U0 G1	2,490	B1 U0 G1	2,490	B1 U0 G1
4L	4,270	B1 U0 G1	4,270	B1 U0 G1	4,270	B1 U0 G1	4,270	B1 U0 G1
6L	6,100	B1 U0 G2	6,100	B1 U0 G2	6,100	B1 U0 G2	6,100	B1 U0 G2
8L	8,475	B2 U0 G2	8,475	B2 U0 G2	6,925	B1 U0 G2	8,475	B2 U0 G2

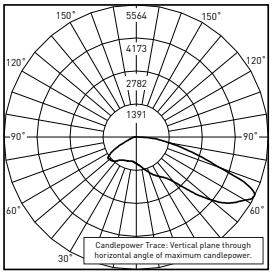
* Initial delivered lumens at 25°C (77°F). Actual production yield may vary between -10 and +10% of initial delivered lumens
** For more information on the IES BUG (Backlight-Uplight-Glare) Rating visit: https://www.ies.org/wp-content/uploads/2017/03/TM-15-11BUGRatingsAddendum.pdf

XSPW™ LED Wall Mount Luminaire

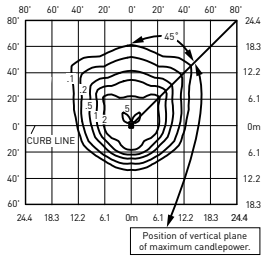
Photometry

All published luminaire photometric testing performed to IESNA LM-79-08 standards by a NVLAP accredited laboratory. To obtain an IES file specific to your project consult: http://lighting.cree.com/products/outdoor/wall-mount/xsp-series-wall

4ME



CESTL Test Report #: PL12799-001A
XSPW-B-**-4ME-8L-40K-UL
Initial Delivered Lumens: 8,873



XSPW-B-**-4ME-8L-40K-UL
Mounting Height: 15' (4.6m) A.F.G.
Initial Delivered Lumens: 8,475
Initial FC at grade

Type IV Medium Distribution								
Lumen Package	3000K		4000K		5000K		5700K	
	Initial Delivered Lumens*	BUG Ratings** Per TM-15-11	Initial Delivered Lumens*	BUG Ratings** Per TM-15-11	Initial Delivered Lumens*	BUG Ratings** Per TM-15-11	Initial Delivered Lumens*	BUG Ratings** Per TM-15-11
2L	2,490	B1 U0 G1	2,490	B1 U0 G1	2,490	B1 U0 G1	2,490	B1 U0 G1
4L	4,270	B1 U0 G1	4,270	B1 U0 G1	4,270	B1 U0 G1	4,270	B1 U0 G1
6L	6,100	B2 U0 G2	6,100	B2 U0 G2	6,100	B2 U0 G2	6,100	B2 U0 G2
8L	8,475	B2 U0 G2	8,475	B2 U0 G2	6,925	B2 U0 G2	8,475	B2 U0 G2

* Initial delivered lumens at 25°C (77°F). Actual production yield may vary between -10 and +10% of initial delivered lumens
** For more information on the IES BUG (Backlight-Uplight-Glare) Rating visit: https://www.ies.org/wp-content/uploads/2017/03/TM-15-11BUGRatingsAddendum.pdf

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OSQ Series

OSQ™ LED Area/Flood Luminaire – Medium

Product Description

The OSQ™ Area/Flood luminaire blends extreme optical control, advanced thermal management and modern, clean aesthetics. Built to last, the housing is rugged cast aluminum with an integral, weathertight LED driver compartment. Versatile mounting configurations offer simple installation. Its slim, low-profile design minimizes wind load requirements and blends seamlessly into the site providing even, quality illumination. The 'B' Input power designator is a suitable upgrade for HID applications up to 250 Watt, and the 'K' Input power designator is a suitable upgrade for HID applications up to 400 Watt.

Applications: Parking lots, walkways, campuses, car dealerships, office complexes, and internal roadways

Performance Summary

NanoOptic® Precision Delivery Grid™ optic

Assembled in the U.S.A. of U.S. and imported parts

Initial Delivered Lumens: Up to 17,291

Efficacy: Up to 136 LPW

CRI: Minimum 70 CRI

CCT: 3000K (+/- 300K), 4000K (+/- 300K), 5700K (+/- 500K)

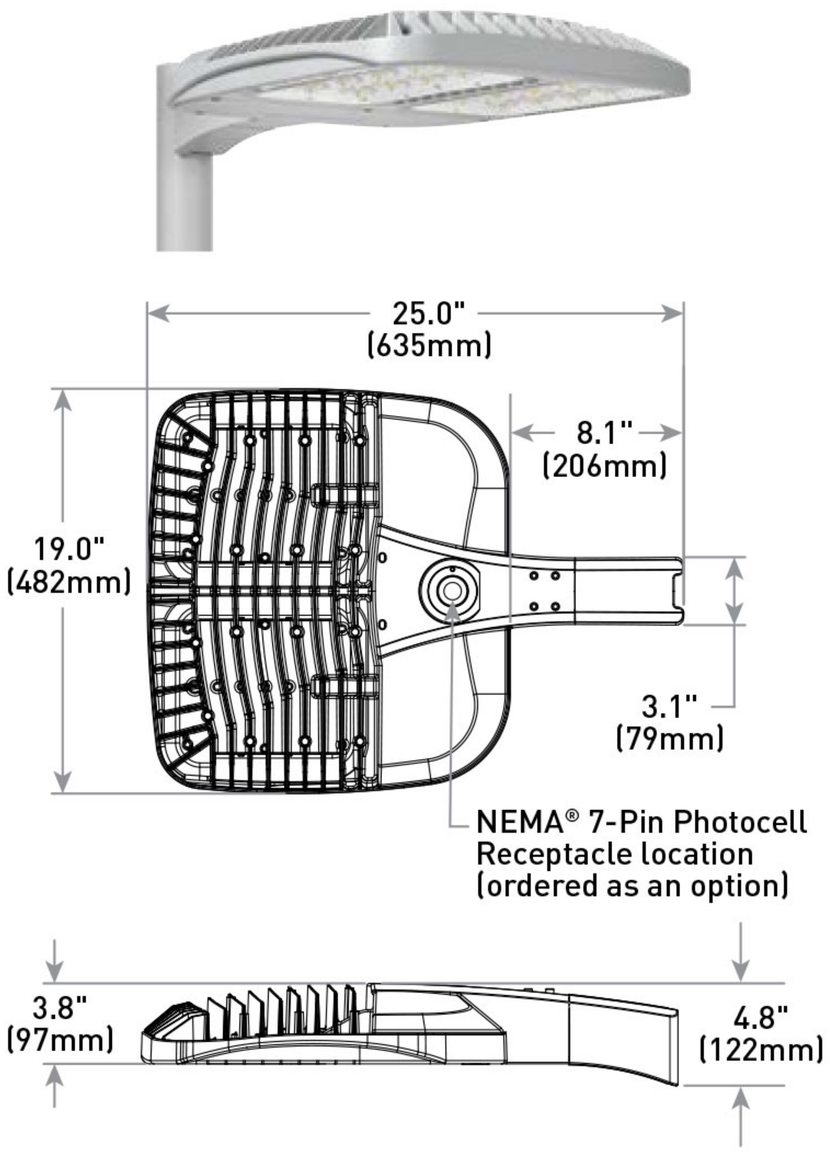
Limited Warranty†: 10 years on luminaire/10 years on Colorfast DeltaGuard® finish

† See http://lighting.cree.com/warranty for warranty terms

Accessories

Field-Installed	
Backlight Shield OSQ-BLSMF – Front facing optics OSQ-BLSMR – Rotated optics	**Hand-Held Remote** XA-SENSREM - For successful implementation of the programmable multi-level option, a minimum of one hand-held remote is required

DA Mount



Weight
26.5 lbs. (12kg)

Ordering Information

Fully assembled luminaire is composed of two components that must be ordered separately:
Example: **Mount:** OSQ-AASV + **Luminaire:** OSQ-A-NM-2ME-B-40K-UL-SV

Mount (Luminaire must be ordered separately)*			
OSQ-			
OSQ-AA Adjustable Arm **OSQ-DA** Direct Arm	**Color Options:**	**SV** Silver **BK** Black	**BZ** Bronze **WH** White

* Reference EPA and pole configuration suitability data beginning on page 7

Luminaire (Mount must be ordered separately)								
OSQ	**A**	**NM**						
Product	**Version**	**Mounting**	**Optic**	**Input Power Designator**	**CCT**	**Voltage**	**Color Options**	**Options**
OSQ	**A**	**NM** No Mount	**Asymmetric** **2ME*** Type II Medium **4ME*** Type IV Medium **3ME*** Type III Medium **Symmetric** **5ME** Type V Medium **5SH** Type V Short **WSN** Wide Sign **15D** 15° Flood **25D** 25° Flood **40D** 40° Flood **60D** 60° Flood	**B** 86W **K** 130W **Z** 53W	**30K** 3000K **40K** 4000K **57K** 5700K	**UL** Universal 120-277V **UH** Universal 347-480V - Available with B & K Input Power Designators only	**BK** Black **BZ** Bronze **SV** Silver **WH** White	**F Fuse** - When code dictates fusing, use time delay fuse - Available for U.S. applications only **PML Programmable Multi-Level, up to 40' Mounting Height** - Refer to PML spec sheet for details - Intended for downlight applications at 0° tilt **PML2 Programmable Multi-Level, 10-30' Mounting Height** - Refer to PML spec sheet for details - Intended for downlight applications at 0° tilt **Q9/Q6/Q5/Q4/Q3/Q2/Q1 Field Adjustable Output** - Must select Q9, Q6, Q5, Q4, Q3, Q2, or Q1 - Offers full range adjustability - Refer to pages 9-10 for power and lumen values - Available with B & K Input Power Designators only - Not available with PML or PML2 options	**R NEMA® 7-Pin Photocell Receptacle** - 7-pin receptacle per ANSI C136.41 - Intended for downlight applications with maximum 45° tilt - Factory connected 0-10V dim leads - 18" (457mm) seven-conductor cord exits luminaire - Photocell and shorting cap by others **RL Rotate Left** - LED and optic are rotated to the left - Refer to RR/RL configuration diagram on page 10 for optic directionality **RR Rotate Right** - LED and optic are rotated to the right - Refer to RR/RL configuration diagram on page 10 for optic directionality

* Available with Backlight Shield when ordered with field-installed accessory (see table above)

US: lighting.cree.com T (800) 236-6800 F (262) 504-5415

Canada: www.cree.com/canada T (800) 473-1234 F (800) 890-7507

Product Specifications

CONSTRUCTION & MATERIALS

- Slim, low profile design minimizes wind load requirements
- Luminaire housing is rugged die cast aluminum with an integral, weathertight LED driver compartment and high-performance heat sink
- Convenient interlocking mounting method on direct arm mount. Mounting adaptor is rugged die cast aluminum and mounts to 3-6" (76-152mm) square or round pole, secured by two 5/16-18 UNC bolts spaced on 2" (51mm) centers
- Mounting for the adjustable arm mount adaptor is rugged die cast aluminum and mounts to 2" (51mm) IP, 2.375" (60mm) O.D. tenon
- Adjustable arm mount can be adjusted 180˚ in 2.5˚ increments
- Includes 18" (340mm) 18/5 or 16/5 cord exiting the luminaire. When ordered with R option, 18" (340mm) 18/7 or 16/7 cord is provided
- Designed for uplight and downlight applications
- Exclusive Colorfast DeltaGuard® finish features an E-Coat epoxy primer with an ultra-durable powder topcoat, providing excellent resistance to corrosion, ultraviolet degradation and abrasion. Silver, bronze, black, and white are available
- **Weight:** 26.5 lbs. (12kg)

ELECTRICAL SYSTEM

- **Input Voltage:** 120-277V or 347-480V, 50/60Hz, Class 1 drivers
- **Power Factor:** > 0.9 at full load
- **Total Harmonic Distortion:** < 20% at full load
- Integral 10kV surge suppression protection standard
- When code dictates fusing, a slow blow fuse or type C/D breaker should be used to address inrush current
- Designed with 0-10V dimming capabilities. Controls by others
- Refer to Dimming spec sheet for details
- **10V Source Current:** 0.15mA

REGULATORY & VOLUNTARY QUALIFICATIONS

- cULus Listed
- Suitable for wet locations
- Enclosure rated IP66 per IEC 60529 when ordered without R option
- Consult factory for CE Certified products
- Certified to ANSI C136.31-2001, 3G bridge and overpass vibration standards
- 10kV surge suppression protection tested in accordance with IEEE/ANSI C62.41.2
- Meets FCC Part 15, Subpart B, Class A standards for conducted and radiated emissions
- Luminaire and finish endurance tested to withstand 5,000 hours of elevated ambient salt fog conditions as defined in ASTM Standard B 117
- Meets Buy American requirements within ARRA
- DLC and DLC Premium qualified versions available. Some exceptions apply. Please refer to https://www.designlights.org/search/ for most current information
- RoHS compliant. Consult factory for additional details
- Dark Sky Friendly, IDA Approved when ordered with 30K CCT. Please refer to http://darksky.org/fsa/fsa-products/ for most current information
- ⚠ **CA RESIDENTS WARNING:** Cancer and Reproductive Harm – www.p65warnings.ca.gov

Electrical Data*

Input Power Designator	System Watts 120-480V	Total Current (A)					
		120V	208V	240V	277V	347V	480V
B	86	0.73	0.43	0.37	0.32	0.25	0.19
K	130	1.09	0.65	0.56	0.49	0.38	0.28
Z	53**	0.46	0.26	0.22	0.19	N/A	N/A

* Electrical data at 25˚C (77˚F). Actual wattage may differ by +/- 10% when operating between 120-480V +/-10%
** Available with UL voltage only

OSQ Series Ambient Adjusted Lumen Maintenance[1]

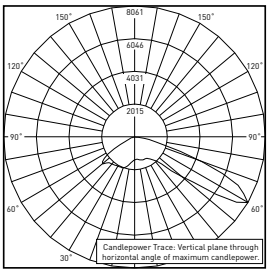
Ambient	Optic	Initial LMF	25K hr Projected[2] LMF	50K hr Projected[2] LMF	75K hr Projected[2]/ Calculated[3] LMF	100K hr Projected[2]/ Calculated[3] LMF
5˚C (41˚F)	Asymmetric	1.04	1.02	1.01	1.00[3]	0.99[3]
	Symmetric	1.05	1.04	1.03	1.03[2]	1.02[2]
10˚C (50˚F)	Asymmetric	1.03	1.01	1.00	0.99[3]	0.98[3]
	Symmetric	1.04	1.03	1.02	1.01[2]	1.00[2]
15˚C (59˚F)	Asymmetric	1.02	1.00	0.99	0.98[3]	0.97[3]
	Symmetric	1.02	1.02	1.01	1.00[2]	0.99[2]
20˚C (68˚F)	Asymmetric	1.01	0.99	0.98	0.97[3]	0.96[3]
	Symmetric	1.01	1.01	1.00	0.99[2]	0.98[2]
25˚C (77˚F)	Asymmetric	1.00	0.98	0.97	0.96[3]	0.95[3]
	Symmetric	1.00	0.99	0.98	0.98[2]	0.97[2]

[1] Lumen maintenance values at 25˚C (77˚F) are calculated per TM-21 based on LM-80 data and in-situ luminaire testing. Luminaire ambient temperature factors (LATF) have been applied to all lumen maintenance factors. Please refer to the Temperature Zone Reference Document for outdoor average nighttime ambient conditions.
[2] In accordance with IESNA TM-21-11, Projected Values represent interpolated value based on time durations that are within six times (6X) the IESNA LM-80-08 total test duration (in hours) for the device under testing ([DUT) i.e. the packaged LED chip)
[3] In accordance with IESNA TM-21-11, Calculated Values represent time durations that exceed six times (6X) the IESNA LM-80-08 total test duration (in hours) for the device under testing ([DUT) i.e. the packaged LED chip)

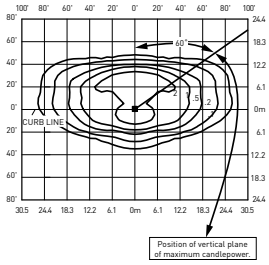
Photometry

All published luminaire photometric testing performed to IESNA LM-79-08 standards by a NVLAP accredited laboratory. To obtain an IES file specific to your project consult: http://lighting.cree.com/products/outdoor/area/osq-series

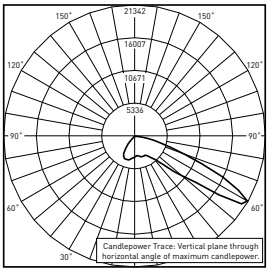
2ME



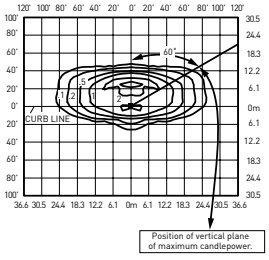
RESTL Test Report #: PL08877-001
OSQ-A-**-2ME-B-30K-UL
Initial Delivered Lumens: 10,381



OSQ-A-**-2ME-B-40K-UL
Mounting Height: 25' (7.6m) A.F.G.
Initial Delivered Lumens: 11,424
Initial FC at grade



CESTL Test Report #: PL07700-001A
OSQ-A-**-2ME-U-57K-UL w/OSQ-BLSLF
Initial Delivered Lumens: 22,822



OSQ-A-**-2ME-B-40K-UL w/OSQ-BLSMF
Mounting Height: 25' (7.6m) A.F.G.
Initial Delivered Lumens: 8,779
Initial FC at grade

Type II Medium Distribution

Input Power Designator	3000K		4000K		5700K	
	Initial Delivered Lumens*	BUG Ratings** Per TM-15-11	Initial Delivered Lumens*	BUG Ratings** Per TM-15-11	Initial Delivered Lumens*	BUG Ratings** Per TM-15-11
B	10,738	B2 U0 G2	11,424	B2 U0 G2	11,648	B2 U0 G2
K	16,022	B3 U0 G3	16,959	B3 U0 G3	17,291	B3 U0 G3
Z	6,481	B2 U0 G1	6,896	B2 U0 G1	7,031	B2 U0 G1

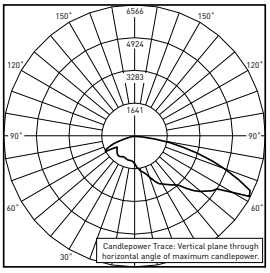
* Initial delivered lumens at 25°C (77°F). Actual production yield may vary between -10 and +10% of initial delivered lumens
** For more information on the IES BUG (Backlight-Uplight-Glare) Rating visit: https://www.ies.org/wp-content/uploads/2017/03/TM-15-11BUGRatingsAddendum.pdf. Valid with no tilt

Type II Medium w/BLS Distribution

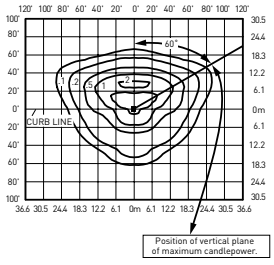
Input Power Designator	3000K		4000K		5700K	
	Initial Delivered Lumens*	BUG Ratings** Per TM 15 11	Initial Delivered Lumens*	BUG Ratings** Per TM 15 11	Initial Delivered Lumens*	BUG Ratings** Per TM 15 11
B	8,251	B2 U0 G2	8,779	B2 U0 G2	8,950	B2 U0 G2
K	12,312	B2 U0 G2	13,032	B2 U0 G2	13,286	B2 U0 G2
Z	4,980	B1 U0 G1	5,299	B1 U0 G1	5,402	B1 U0 G1

* Initial delivered lumens at 25°C (77°F). Actual production yield may vary between -10 and +10% of initial delivered lumens
** For more information on the IES BUG (Backlight-Uplight-Glare) Rating visit: https://www.ies.org/wp-content/uploads/2017/03/TM-15-11BUGRatingsAddendum.pdf. Valid with no tilt

3ME



RESTL Test Report #: PL08876-001A
OSQ-A-**-3ME-B-30K-UL
Initial Delivered Lumens: 10,421

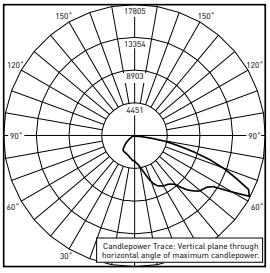


OSQ-A-**-3ME-B-40K-UL
Mounting Height: 25' (7.6m) A.F.G.
Initial Delivered Lumens: 11,424
Initial FC at grade

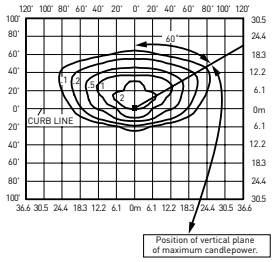
Type III Medium Distribution

Input Power Designator	3000K		4000K		5700K	
	Initial Delivered Lumens*	BUG Ratings** Per TM 15 11	Initial Delivered Lumens*	BUG Ratings** Per TM 15 11	Initial Delivered Lumens*	BUG Ratings** Per TM 15 11
B	10,738	B3 U0 G3	11,424	B3 U0 G3	11,648	B3 U0 G3
K	16,022	B3 U0 G3	16,959	B3 U0 G3	17,291	B3 U0 G3
Z	6,481	B2 U0 G2	6,896	B2 U0 G2	7,031	B2 U0 G2

* Initial delivered lumens at 25°C (77°F). Actual production yield may vary between -10 and +10% of initial delivered lumens
** For more information on the IES BUG (Backlight-Uplight-Glare) Rating visit: https://www.ies.org/wp-content/uploads/2017/03/TM-15-11BUGRatingsAddendum.pdf. Valid with no tilt



CESTL Test Report #: PL07699-001A
OSQ-A-**-3ME-U-57K-UL w/OSQ-BLSLF
Initial Delivered Lumens: 23,601



OSQ-A-**-3ME-B-40K-UL w/OSQ-BLSMF
Mounting Height: 25' (7.6m) A.F.G.
Initial Delivered Lumens: 9,019
Initial FC at grade

Type III Medium w/BLS Distribution

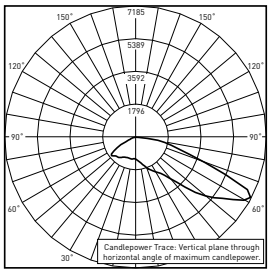
Input Power Designator	3000K		4000K		5700K	
	Initial Delivered Lumens*	BUG Ratings** Per TM-15-11	Initial Delivered Lumens*	BUG Ratings** Per TM-15-11	Initial Delivered Lumens*	BUG Ratings** Per TM-15-11
B	8,477	B1 U0 G2	9,019	B1 U0 G2	9,196	B1 U0 G2
K	12,649	B2 U0 G2	13,389	B2 U0 G2	13,650	B2 U0 G2
Z	5,117	B1 U0 G1	5,444	B1 U0 G1	5,551	B1 U0 G1

* Initial delivered lumens at 25°C (77°F). Actual production yield may vary between -10 and +10% of initial delivered lumens
** For more information on the IES BUG (Backlight-Uplight-Glare) Rating visit: https://www.ies.org/wp-content/uploads/2017/03/TM-15-11BUGRatingsAddendum.pdf. Valid with no tilt

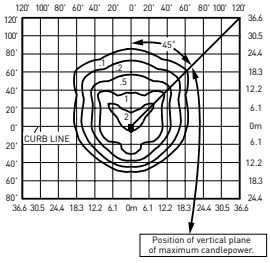
Photometry

All published luminaire photometric testing performed to IESNA LM-79-08 standards by a NVLAP accredited laboratory. To obtain an IES file specific to your project consult: http://lighting.cree.com/products/outdoor/area/osq-series

4ME



RESTL Test Report #: PL08878-001A
OSQ-A-**-4ME-B-30K-UL
Initial Delivered Lumens: 10,230

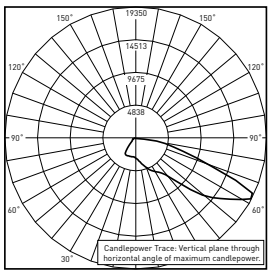


OSQ-A-**-4ME-B-40K-UL
Mounting Height: 25' (7.6m) A.F.G.
Initial Delivered Lumens: 11,424
Initial FC at grade

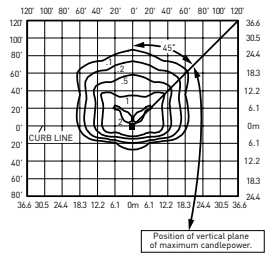
Type IV Medium Distribution

Input Power Designator	3000K		4000K		5700K	
	Initial Delivered Lumens*	BUG Ratings** Per TM-15-11	Initial Delivered Lumens*	BUG Ratings** Per TM-15-11	Initial Delivered Lumens*	BUG Ratings** Per TM-15-11
B	10,738	B2 U0 G2	11,424	B2 U0 G2	11,648	B2 U0 G2
K	16,022	B3 U0 G3	16,959	B3 U0 G3	17,291	B3 U0 G3
Z	6,481	B2 U0 G2	6,896	B2 U0 G2	7,031	B2 U0 G2

* Initial delivered lumens at 25°C (77°F). Actual production yield may vary between -10 and +10% of initial delivered lumens
** For more information on the IES BUG (Backlight-Uplight-Glare) Rating visit: https://www.ies.org/wp-content/uploads/2017/03/TM-15-11BUGRatingsAddendum.pdf. Valid with no tiltt



CESTL Test Report #: PL07692-001A
OSQ-A-**-4ME-U-57K-UL w/OSQ-BLSLF
Initial Delivered Lumens: 22,793



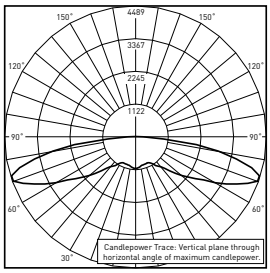
OSQ-A-**-4ME-B-40K-UL w/OSQ-BLSMF
Mounting Height: 25' (7.6m) A.F.G.
Initial Delivered Lumens: 8,779
Initial FC at grade

Type IV Medium w/BLS Distribution

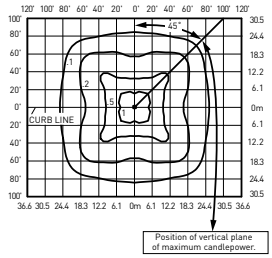
Input Power Designator	3000K		4000K		5700K	
	Initial Delivered Lumens*	BUG Ratings** Per TM 15 11	Initial Delivered Lumens*	BUG Ratings** Per TM 15 11	Initial Delivered Lumens*	BUG Ratings** Per TM 15 11
B	8,251	B1 U0 G2	8,779	B1 U0 G2	8,950	B1 U0 G2
K	12,312	B2 U0 G2	13,032	B2 U0 G2	13,286	B2 U0 G2
Z	4,980	B1 U0 G1	5,299	B1 U0 G1	5,402	B1 U0 G1

* Initial delivered lumens at 25°C (77°F). Actual production yield may vary between -10 and +10% of initial delivered lumens
** For more information on the IES BUG (Backlight-Uplight-Glare) Rating visit: https://www.ies.org/wp-content/uploads/2017/03/TM-15-11BUGRatingsAddendum.pdf. Valid with no tilt

5ME



RESTL Test Report #: PL08534-001B
OSQ-A-**-5ME-B-40K-UL
Initial Delivered Lumens: 10,519



OSQ-A-**-5ME-B-40K-UL
Mounting Height: 25' (7.6m) A.F.G.
Initial Delivered Lumens: 10,867
Initial FC at grade

Type V Medium Distribution

Input Power Designator	3000K		4000K		5700K	
	Initial Delivered Lumens*	BUG Ratings** Per TM-15-11	Initial Delivered Lumens*	BUG Ratings** Per TM-15-11	Initial Delivered Lumens*	BUG Ratings** Per TM-15-11
B	10,232	B4 U0 G3	10,867	B4 U0 G3	11,056	B4 U0 G3
K	15,063	B4 U0 G4	15,999	B4 U0 G4	16,277	B4 U0 G4
Z	5,257	B3 U0 G3	6,086	B3 U0 G3	6,192	B3 U0 G3

* Initial delivered lumens at 25°C (77°F). Actual production yield may vary between -10 and +10% of initial delivered lumens
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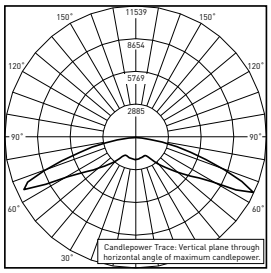
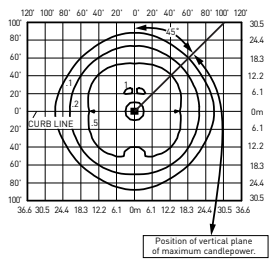
5SH



CESTL Test Report #: PL10754-001A
OSQ-A-**-5SH-U-40K-UL
Initial Delivered Lumens: 25,679



OSQ-A-**-5SH-B-40K-UL
Mounting Height: 25' (7.6m) A.F.G.
Initial Delivered Lumens: 11,478
Initial FC at grade

Type V Short Distribution

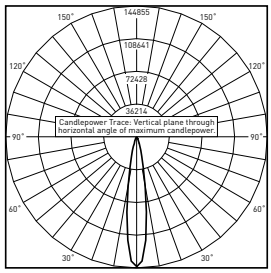
Input Power Designator	3000K		4000K		5700K	
	Initial Delivered Lumens*	BUG Ratings** Per TM 15 11	Initial Delivered Lumens*	BUG Ratings** Per TM 15 11	Initial Delivered Lumens*	BUG Ratings** Per TM 15 11
B	10,806	B4 U0 G2	11,478	B4 U0 G2	11,678	B4 U0 G2
K	15,909	B4 U0 G3	16,897	B4 U0 G3	17,191	B4 U0 G3
Z	5,552	B3 U0 G1	6,428	B3 U0 G2	6,539	B3 U0 G2

* Initial delivered lumens at 25°C (77°F). Actual production yield may vary between -10 and +10% of initial delivered lumens
** For more information on the IES BUG (Backlight-Uplight-Glare) Rating visit: https://www.ies.org/wp-content/uploads/2017/03/TM-15-11BUGRatingsAddendum.pdf. Valid with no tilt

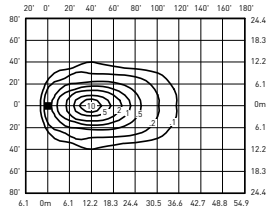
Photometry

All published luminaire photometric testing performed to IESNA LM-79-08 standards by a NVLAP accredited laboratory. To obtain an IES file specific to your project consult: http://lighting.cree.com/products/outdoor/area/osq-series

15D



CESTL Test Report #: PL07689-001A
OSQ-A-**-15D-U-30K-UL
Initial Delivered Lumens: 23,254

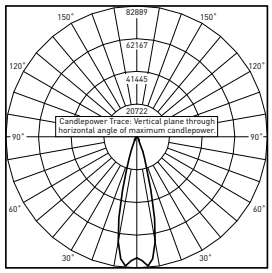


OSQ-A-**-15D-B-40K-UL
Mounting Height: 25' (7.6m) A.F.G., 60° Tilt
Initial Delivered Lumens: 11,478
Initial FC at grade

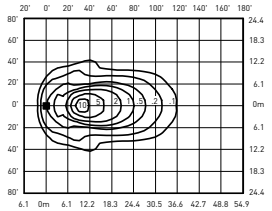
15° Flood Distribution			
Input Power Designator	3000K	4000K	5700K
	Initial Delivered Lumens*	Initial Delivered Lumens*	Initial Delivered Lumens*
B	10,806	11,478	11,678
K	15,909	16,897	17,191
Z	5,552	6,428	6,539

* Initial delivered lumens at 25°C (77°F). Actual production yield may vary between -10 and +10% of initial delivered lumens

25D



CESTL Test Report #: PL07687-001A
OSQ-A-**-25D-U-30K-UL
Initial Delivered Lumens: 23,265

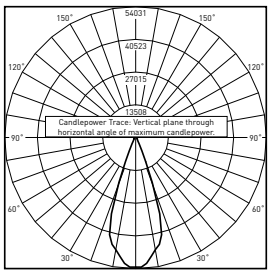


OSQ-A-**-25D-B-40K-UL
Mounting Height: 25' (7.6m) A.F.G., 60° Tilt
Initial Delivered Lumens: 11,478
Initial FC at grade

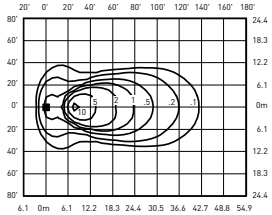
25° Flood Distribution			
Input Power Designator	3000K	4000K	5700K
	Initial Delivered Lumens*	Initial Delivered Lumens*	Initial Delivered Lumens*
B	10,806	11,478	11,678
K	15,909	16,897	17,191
Z	5,552	6,428	6,539

* Initial delivered lumens at 25°C (77°F). Actual production yield may vary between -10 and +10% of initial delivered lumens

40D



CESTL Test Report #: PL07697-001A
OSQ-A-**-40D-U-30K-UL
Initial Delivered Lumens: 22,943



OSQ-A-**-40D-B-40K-UL
Mounting Height: 25' (7.6m) A.F.G., 60° Tilt
Initial Delivered Lumens: 11,478
Initial FC at grade

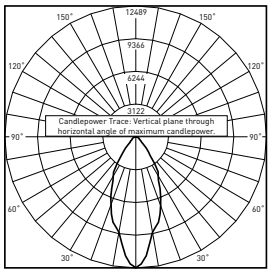
40° Flood Distribution			
Input Power Designator	3000K	4000K	5700K
	Initial Delivered Lumens*	Initial Delivered Lumens*	Initial Delivered Lumens*
B	10,806	11,478	11,678
K	15,909	16,897	17,191
Z	5,552	6,428	6,539

* Initial delivered lumens at 25°C (77°F). Actual production yield may vary between -10 and +10% of initial delivered lumens

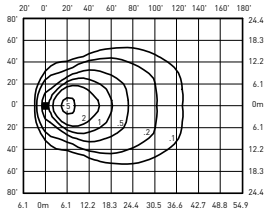
Photometry

All published luminaire photometric testing performed to IESNA LM-79-08 standards by a NVLAP accredited laboratory. To obtain an IES file specific to your project consult: http://lighting.cree.com/products/outdoor/area/osq-series

60D



CESTL Test Report #: PL08100-001B
OSQ-A-**-60D-B-30K-UL
Initial Delivered Lumens: 10,079

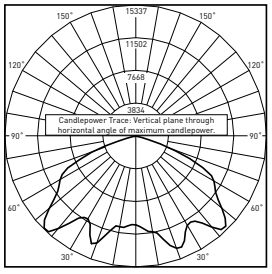


OSQ-A-**-60D-B-40K-UL
Mounting Height: 25' (7.6m) A.F.G., 60˚ Tilt
Initial Delivered Lumens: 11,478
Initial FC at grade

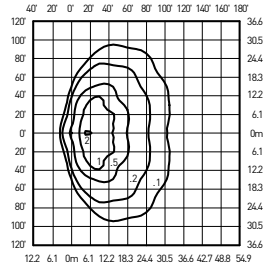
60˚ Flood Distribution			
Input Power Designator	3000K	4000K	5700K
	Initial Delivered Lumens*	Initial Delivered Lumens*	Initial Delivered Lumens*
B	10,806	11,478	11,678
K	15,909	16,897	17,191
Z	5,552	6,428	6,539

* Initial delivered lumens at 25˚C (77˚F). Actual production yield may vary between -10 and +10% of initial delivered lumens

WSN



CESTL Test Report #: PL07695-001A
OSQ-A-**-WSN-U-30K-UL
Initial Delivered Lumens: 23,116



OSQ-A-**-WSN-B-40K-UL
Mounting Height: 25' (7.6m) A.F.G., 60˚ Tilt
Initial Delivered Lumens: 11,478
Initial FC at grade

Wide Sign Distribution			
Input Power Designator	3000K	4000K	5700K
	Initial Delivered Lumens*	Initial Delivered Lumens*	Initial Delivered Lumens*
B	10,806	11,478	11,678
K	15,909	16,897	17,191
Z	5,552	6,428	6,539

* Initial delivered lumens at 25˚C (77˚F). Actual production yield may vary between -10 and +10% of initial delivered lumens

Luminaire EPA

Fixed Arm Mount – OSQ-DA Weight: 26.5 lbs. (12kg)					
Single	2 @ 180˚	2 @ 90˚	3 @ 90˚	3 @ 120˚	4 @ 90˚
					
0.74	1.48	1.19	1.93	1.63	2.38

Adjustable Arm Mount – OSQ-AA Weight: 26.5 lbs. (12kg)							
Single	2 @ 180˚	2 @ 90˚	3 @ 90˚	3 @ 120˚	3 @ 180˚	4 @ 180˚	4 @ 90˚
Tenon Configuration (0˚-80˚ Tilt); If used with Cree tenons, please add tenon EPA with Luminaire EPA							
 PB-1A*; PT-1; PW-1A3**	 PB-2A*; PB-2R2.375; PD-2A4(180); PT-2(180); PW-2A3**	 PB-2A*; PD-2A4(90); PT-2(90)	 PB-3A*; PD-3A4(90); PT-3(90)	 PB-3A*; PT-3(120)	 PB-3A*; PB-3R2.375	 PB-4A*(180)	 PB-4A*(90); PB-4R2.375; PD-4A4(90); PT-4(90)
0˚ Tilt							
0.74	1.48	1.19	1.93	1.63	3.33	4.66	2.38
10˚ Tilt							
0.75	1.48	1.49	2.23	2.15	4.22	5.84	2.98
20˚ Tilt							
1.12	1.48	1.86	2.60	2.85	5.31	7.32	3.72
30˚ Tilt							
1.46	1.48	2.20	2.94	3.56	6.34	8.68	4.40
45˚ Tilt							
1.96	1.96	2.69	3.43	4.54	7.83	10.68	5.38
60˚ Tilt							
2.33	2.33	3.07	3.81	5.11	8.94	12.16	6.14
70˚ Tilt							
2.49	2.49	3.23	3.97	5.11	9.43	12.80	6.46
80˚ Tilt							
2.58	2.58	3.32	4.06	5.11	9.71	13.16	6.64
Tenon Configuration (90˚ Tilt); If used with Cree tenons, please add tenon EPA with Luminaire EPA							
PB-1A*; PT-1; PW-1A3**	PB-2A*; PB-2R2.375; PD-2A4(180); PT-2(180); PW-2A3**	PB-2A*	PB-3A*	PB-3A*; PT-3(120)	PB-3A*; PB-3R2.375	PB-4A*(180)	PB-4A*(90); PB-4R2.375
90˚ Tilt							
2.61	2.61	4.44	6.05	5.11	9.79	13.28	10.39

* Specify pole size: 3 (3"), 4 (4"), 5 (5"), or 6 (6") for single, double or triple luminaire orientation or 4 (4"), 5 (5"), or 6 (6") for quad luminaire orientation
** These EPA values must be multiplied by the following ratio: Fixture Mounting Height/Total Pole Height. Specify pole size: 3 (3"), 4 (4"), 5 (5"), or 6 (6")

Tenon EPA

Part Number	EPA
PB-1A*	None
PB-2A*	0.82
PB-3A*	1.52
PB-4A*(180)	2.22
PB-4A*(90)	1.11
PB-2R2.375	0.92
PB-3R2.375	1.62
PB-4R2.375	2.32
PD Series Tenons	0.09
PT Series Tenons	0.10
PW-1A3**	0.47
PW-2A3**	0.94
WM-2	0.08
WM-4	0.25
WM-DM	None

* Specify pole size: 3 (3"), 4 (4"), 5 (5"), or 6 (6") for single, double or triple luminaire orientation or 4 (4"), 5 (5"), or 6 (6") for quad luminaire orientation

** These EPA values must be multiplied by the following ratio: Fixture Mounting Height/Total Pole Height. Specify pole size: 3 (3"), 4 (4"), 5 (5"), or 6 (6")

Tenons and Brackets‡ (must specify color)

Square Internal Mount Vertical Tenons (Steel)
- Mounts to 3-6" (76-152mm) square aluminum or steel poles

PB-1A* – Single
PB-2A* – 180˚ Twin
PB-3A* – 180˚ Triple
PB-4A*(90) – 90˚ Quad
PB-4A*(180) – 180˚ Quad

Square Internal Mount Horizontal Tenons (Aluminum)
- Mounts to 4" (102mm) square aluminum or steel poles

PD-2A4(90) – 90˚ Twin
PD-2A4(180) – 180˚ Twin
PD-3A4(90) – 90˚ Triple
PD-4A4(90) – 90˚ Quad

Wall Mount Brackets
- Mounts to wall or roof

WM-2 – Horizontal for OSQ-AA mount
WM-4 – L-Shape for OSQ-AA mount
WM-DM – Plate for OSQ-DA mount

Round External Mount Vertical Tenons (Steel)
- Mounts to 2.375" (60mm) O.D. round aluminum or steel poles or tenons

PB-2R2.375 – Twin
PB-3R2.375 – Triple
PB-4R2.375 – Quad

Round External Mount Horizontal Tenons (Aluminum)
- Mounts to 2.375" (60mm) O.D. round aluminum or steel poles or tenons
- Mounts to square pole with PB-1A* tenon

PT-1 – Single (Vertical)
PT-2(90) – 90˚ Twin
PT-2(180) – 180˚ Twin
PT-3(90) – 90˚ Triple
PT-3(120) – 120˚ Triple
PT-4(90) – 90˚ Quad

Mid-Pole Bracket
- Mounts to square pole

PW-1A3** – Single
PW-2A3** – Double

Ground Mount Post
- For ground-mounted flood luminaires

PGM-1 - for OSQ-AA mount

‡ Refer to the Bracket and Tenons spec sheet for more details

Direct Mount Configurations

Compatibility with OSQ-DA Direct Mount Bracket					
Input Power Designator	2 @ 90˚	2 @ 180˚	3 @ 90˚	3 @ 120˚	4 @ 90˚
3" Square					
B, K & Z	N/A	✓	N/A	N/A	N/A
3" Round					
B, K & Z	N/A	✓	N/A	N/A	N/A
4" Square					
B, K & Z	✓	✓	✓	N/A	✓
4" Round					
B, K & Z	✓	✓	✓	✓	✓
5" Square					
B, K & Z	✓	✓	✓	N/A	✓
5" Round					
B, K & Z	✓	✓	✓	✓	✓
6" Square					
B, K & Z	✓	✓	✓	N/A	✓
6" Round					
B, K & Z	✓	✓	✓	✓	✓

Field Adjustable Output (Q9/Q6/Q5/Q4/Q3/Q2/Q1) Option Description:

The Field Adjustable Output option enables the OSQ area luminaires to be tuned to the exact needs of a particular application through multiple levels of adjustment. When ordered with the Q option, the luminaire will be shipped from the factory at the selected Q setting and will be fully adjustable between the nine settings.

Q Option Power & Lumen Data – Designator B

Q Option Setting	CCT	System Watts	Lumen Values						Optics Qualified on DLC QPL	
		120-480V	Asymmetric	5ME	5SH & Floods	2ME w/ BLS	3ME w/ BLS	4ME w/BLS	Standard	Premium
Q9 (Full Power)	30K	86	10,738	10,232	10,806	8,251	8,477	8,251	5ME	2ME, 3ME, 4ME, 5SH, 15D, 25D, 40D, 60D, WSN
	40K		11,424	10,867	11,478	8,779	9,019	8,779	N/A	2ME, 3ME, 4ME, 5ME, 5SH, 15D, 25D, 40D, 60D, WSN
	57K		11,648	11,056	11,678	8,950	9,196	8,950		
Q6	30K	77	9,449	9,004	9,509	7,261	7,460	7,261	5ME	2ME, 3ME, 4ME, 5SH, 15D, 25D, 40D, 60D, WSN
	40K		10,053	9,563	10,101	7,726	7,937	7,726	N/A	2ME, 3ME, 4ME, 5ME, 5SH, 15D, 25D, 40D, 60D, WSN
	57K		10,250	9,729	10,277	7,876	8,092	7,876		
Q5	30K	72	8,913	8,492	8,969	6,848	7,036	6,848	5ME	2ME, 3ME, 4ME, 5SH, 15D, 25D, 40D, 60D, WSN
	40K		9,482	9,020	9,527	7,287	7,486	7,287	N/A	2ME, 3ME, 4ME, 5ME, 5SH, 15D, 25D, 40D, 60D, WSN
	57K		9,668	9,176	9,693	7,429	7,633	7,429		
Q4	30K	62	7,731	7,367	7,780	5,941	6,103	5,941	5ME	2ME, 3ME, 4ME, 5SH, 15D, 25D, 40D, 60D, WSN
	40K		8,225	7,824	8,264	6,321	6,494	6,321	N/A	2ME, 3ME, 4ME, 5ME, 5SH, 15D, 25D, 40D, 60D, WSN
	57K		8,387	7,960	8,408	6,444	6,621	6,444		
Q3	30K	53	6,550	6,241	6,592	5,033	5,171	5,033	5ME	2ME, 3ME, 4ME, 5SH, 15D, 25D, 40D, 60D, WSN
	40K		6,969	6,629	7,002	5,355	5,502	5,355	N/A	2ME, 3ME, 4ME, 5ME, 5SH, 15D, 25D, 40D, 60D, WSN
	57K		7,105	6,744	7,124	5,460	5,610	5,460		
Q2	30K	45	5,476	5,218	5,511	4,208	4,323	4,208	5ME	2ME, 3ME, 4ME, 5SH, 15D, 25D, 40D, 60D, WSN
	40K		5,826	5,542	5,854	4,477	4,600	4,477	N/A	2ME, 3ME, 4ME, 5ME, 5SH, 15D, 25D, 40D, 60D, WSN
	57K		5,940	5,639	5,956	4,565	4,690	4,565		
Q1	30K	34	4,188	3,990	4,214	3,218	3,306	3,218	5ME	2ME, 3ME, 4ME, 5SH, 15D, 25D, 40D, 60D, WSN
	40K		4,455	4,238	4,476	3,424	3,517	3,424	N/A	2ME, 3ME, 4ME, 5ME, 5SH, 15D, 25D, 40D, 60D, WSN
	57K		4,543	4,312	4,554	3,491	3,586	3,491		

Field Adjustable Output (Q9/Q6/Q5/Q4/Q3/Q2/Q1) Option Description:

The Field Adjustable Output option enables the OSQ area luminaires to be tuned to the exact needs of a particular application through multiple levels of adjustment. When ordered with the Q option, the luminaire will be shipped from the factory at the selected Q setting and will be fully adjustable between the nine settings.

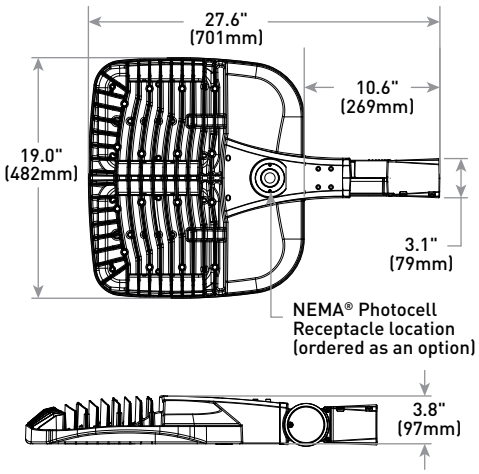
Q Option Power & Lumen Data – Designator K

Q Option Setting	CCT	System Watts	Lumen Values						Optics Qualified on DLC QPL	
		120-480V	Asymmetric	5ME	5SH & Floods	2ME w/BLS	3ME w/BLS	4ME w/BLS	Standard	Premium
Q9 (Full Power)	30K	130	16,022	15,063	15,909	12,312	12,649	12,312	5ME	2ME, 3ME, 4ME, 5SH, 15D, 25D, 40D, 60D, WSN
	40K		16,959	15,999	16,897	13,032	13,389	13,032	N/A	2ME, 3ME, 4ME, 5ME, 5SH, 15D, 25D, 40D, 60D, WSN
	57K		17,291	16,277	17,191	13,286	13,650	13,286		
Q6	30K	117	14,099	13,255	14,000	10,835	11,131	10,835	5ME	2ME, 3ME, 4ME, 5SH, 15D, 25D, 40D, 60D, WSN
	40K		14,924	14,079	14,869	11,468	11,782	11,468	N/A	2ME, 3ME, 4ME, 5ME, 5SH, 15D, 25D, 40D, 60D, WSN
	57K		15,216	14,324	15,128	11,692	12,012	11,692		
Q5	30K	110	13,298	12,502	13,204	10,219	10,499	10,219	5ME	2ME, 3ME, 4ME, 5SH, 15D, 25D, 40D, 60D, WSN
	40K		14,076	13,279	14,025	10,817	11,113	10,817	N/A	2ME, 3ME, 4ME, 5ME, 5SH, 15D, 25D, 40D, 60D, WSN
	57K		14,352	13,510	14,269	11,027	11,330	11,027		
Q4	30K	93	11,536	10,845	11,454	8,865	9,107	8,865	5ME	2ME, 3ME, 4ME, 5SH, 15D, 25D, 40D, 60D, WSN
	40K		12,210	11,519	12,166	9,383	9,640	9,383	N/A	2ME, 3ME, 4ME, 5ME, 5SH, 15D, 25D, 40D, 60D, WSN
	57K		12,450	11,719	12,378	9,566	9,828	9,566		
Q3	30K	80	9,773	9,188	9,704	7,510	7,716	7,510	5ME	2ME, 3ME, 4ME, 5SH, 15D, 25D, 40D, 60D, WSN
	40K		10,345	9,759	10,307	7,950	8,167	7,950	N/A	2ME, 3ME, 4ME, 5ME, 5SH, 15D, 25D, 40D, 60D, WSN
	57K		10,548	9,929	10,487	8,104	8,327	8,104		
Q2	30K	67	8,171	7,682	8,114	6,279	6,451	6,279	5ME	2ME, 3ME, 4ME, 5SH, 15D, 25D, 40D, 60D, WSN
	40K		8,649	8,159	8,617	6,646	6,828	6,646	N/A	2ME, 3ME, 4ME, 5ME, 5SH, 15D, 25D, 40D, 60D, WSN
	57K		8,818	8,301	8,767	6,776	6,962	6,776		
Q1	30K	51	6,249	5,875	6,205	4,802	4,933	4,802	5ME	2ME, 3ME, 4ME, 5SH, 15D, 25D, 40D, 60D, WSN
	40K		6,614	6,240	6,590	5,082	5,222	5,082	N/A	2ME, 3ME, 4ME, 5ME, 5SH, 15D, 25D, 40D, 60D, WSN
	57K		6,743	6,348	6,704	5,182	5,324	5,182		

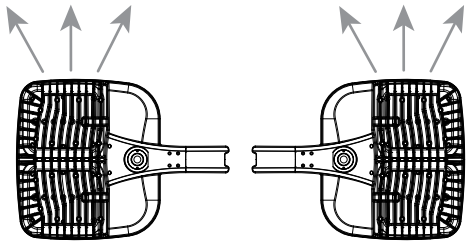
AA Mount



Weight
26.5 lbs. (12kg)



RR/RL Configuration



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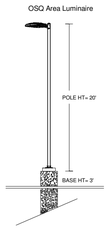
PH-1

02/18/19



Pole Mounted: 22' AFG

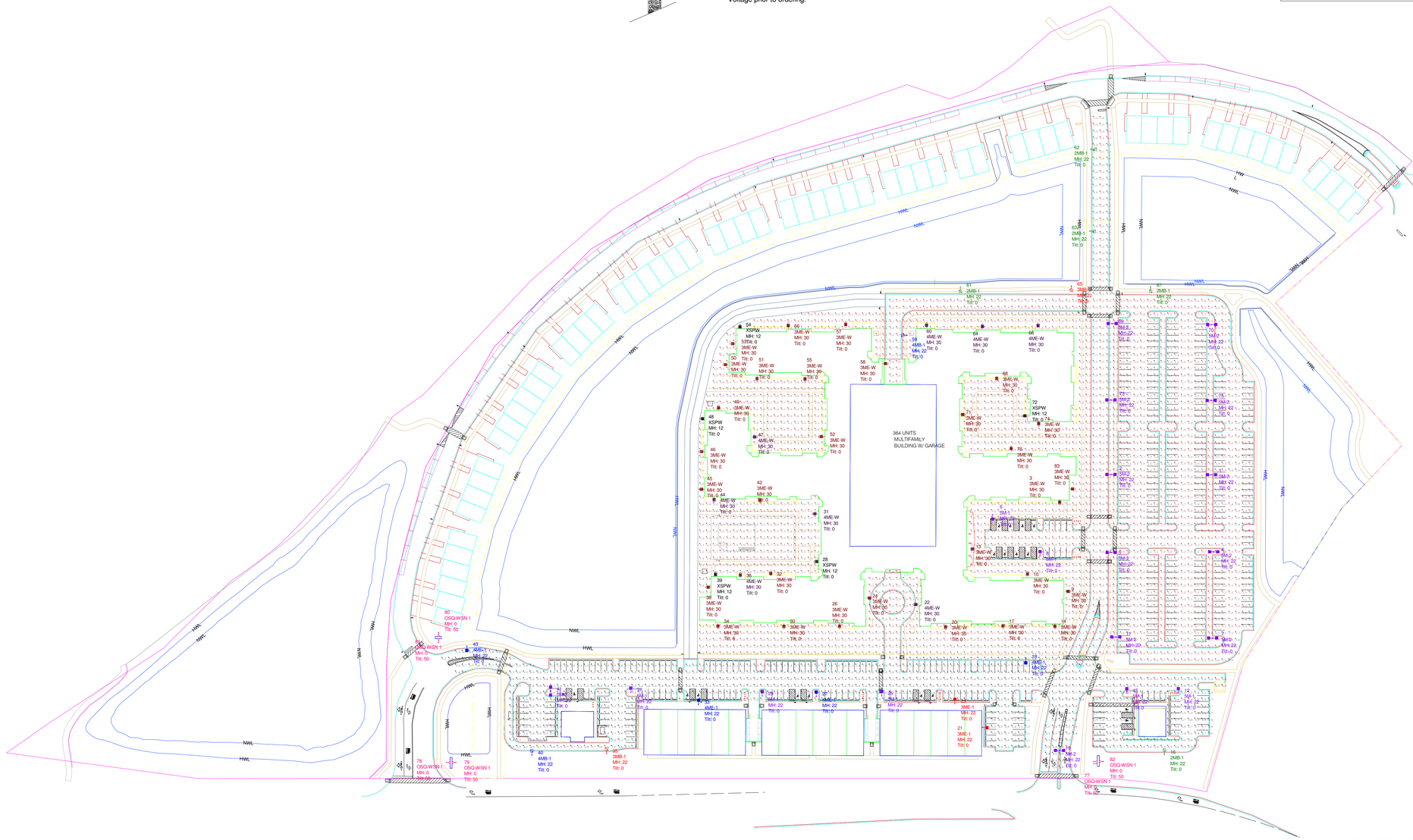
Proposed Poles Meets 140 MPH Sustained Winds.

Additional Required Equipment:
(22) PS4S20C1XX (20' X 4" SQUARE STEEL POLE)
(12) PS4S20C2XX (20' X 4" SQUARE STEEL POLE 2@180)
(47) OSQ-DAXX (DIRECT MOUNTING ARM)
(9) OSQ-BLSMF (BACK LIGHT SHIELD)
(38) WM-DM (MOUNTING PLATE)

Customer to verify Color, Mounting, Fixture Location and Voltage prior to ordering.

Luminaire Schedule							
Symbol	Qty	Label	Arrangement	Lumens/Lamp	LLF	Total Watts	Description
	5	2MB-1	SINGLE	13286	1.000	650	OSQ-A-NM-2ME-K-57K-xx-xx + OSQ-DAxx + OSQ-BLSMF
	2	3ME-1	SINGLE	17291	1.000	260	OSQ-A-NM-3ME-K-57K-xx-xx + OSQ-DAxx
	2	3MB-1	SINGLE	13650	1.000	260	OSQ-A-NM-3ME-K-57K-xx-xx + OSQ-DAxx + OSQ-BLSMF
	4	4ME-1	SINGLE	17291	1.000	520	OSQ-A-NM-4ME-K-57K-xx-xx + OSQ-DAxx
	2	4MB-1	SINGLE	13286	1.000	260	OSQ-A-NM-4ME-K-57K-xx-xx + OSQ-DAxx + OSQ-BLSMF
	7	5M-1	SINGLE	16277	1.020	910	OSQ-A-NM-5ME-K-57K-xx-xx + OSQ-DAxx
	12	5M-2	BACK-BACK	16277	1.020	3120	OSQ-A-NM-5ME-K-57K-xx-xx + OSQ-DAxx
	30	3ME-W	SINGLE	11648	1.000	2580	OSQ-A-NM-3ME-B-57K-xx-xx + OSQ-DAxx , WM-DM
	8	4ME-W	SINGLE	11678	1.000	688	OSQ-A-NM-4ME-B-57K-xx-xx + OSQ-DAxx, WM-DM
	5	XSPW	SINGLE	2490	0.970	95	XSPW-B-WM-3ME-2L-57K-xx
	6	OSQ-WSN 1	SINGLE	24617	1.000	1290	OSQ-A-NM-WSN-B-57K-UL-XX + OSQ-AAxx

Footcandles calculated using predicted lumen values after 50K hours of operation					
Label	Avg	Max	Min	Avg/Min	Max/Min
APARTMENT AREA	2.23	6.9	0.9	2.48	7.67
COMMERCIAL AREA	1.93	7.2	0.6	3.22	12.00



Customer responsible to verify ordering information/ catalogue number prior to placing order.

CREE™

1200 92nd Street - Sturtevant, WI 53177
www.cree.com - (800) 236-6800

Project Name: RIVERVIEW WARRENVILLE | SR-30877

Date:1/22/2019 | Scale: 1"=80' | Footcandles calculated at grade

Filename: 180531LT1LJSR3.AGI | Layout by: LINDA SCHALLER

Illumination results shown on this lighting design are based on project parameters provided to Cree, Inc. used in conjunction with luminaire test procedures conducted under laboratory conditions. Actual project conditions differing from these design parameters may affect field results. The customer is responsible for verifying dimensional accuracy along with compliance with any applicable electrical, lighting, or energy code.

PH-2

04/19/19

Luminaire Schedule							
Symbol	Qty	Label	Arrangement	LLF	Description	Tag	Lum. Watts
	4	T2-35	SINGLE	0.950	PT-1430LED-4ARC35T2-MDL03 (16' Pole)	17.5' MH	64.2
	17	T3R-35	SINGLE	0.950	PT-1430LED-4ARC35T3R-MDL03 (16' Pole)	17.5' MH	64.5

Calculation Summary								
Label	Description	CalcType	Units	Avg	Max	Min	Avg/Min	Max/Min
HARDSCAPE	Paved Surface Readings	Illuminance	Fc	0.74	2.10	0.13	5.69	16.15
StatArea_1	Intersection 1	Illuminance	Fc	0.89	1.31	0.23	3.87	5.70
StatArea_2	Intersection 2	Illuminance	Fc	0.80	1.13	0.50	1.60	2.26
StatArea_3	Crosswalk 1	Illuminance	Fc	0.89	0.94	0.83	1.07	1.13
StatArea_4	Crosswalk 2	Illuminance	Fc	1.18	1.25	1.11	1.06	1.13
StatArea_5	Crosswalk 3	Illuminance	Fc	1.13	1.25	1.00	1.13	1.25

364 UNITS
MULTIFAMILY
BUILDING W/
GARAGE

Crosswalk 3

Crosswalk 1

Intersection 1

Pole added

NWL

HWL

SternbergLighting

ESTABLISHED 1923 / EMPLOYEE OWNED

#	Date	Comments

Revisions

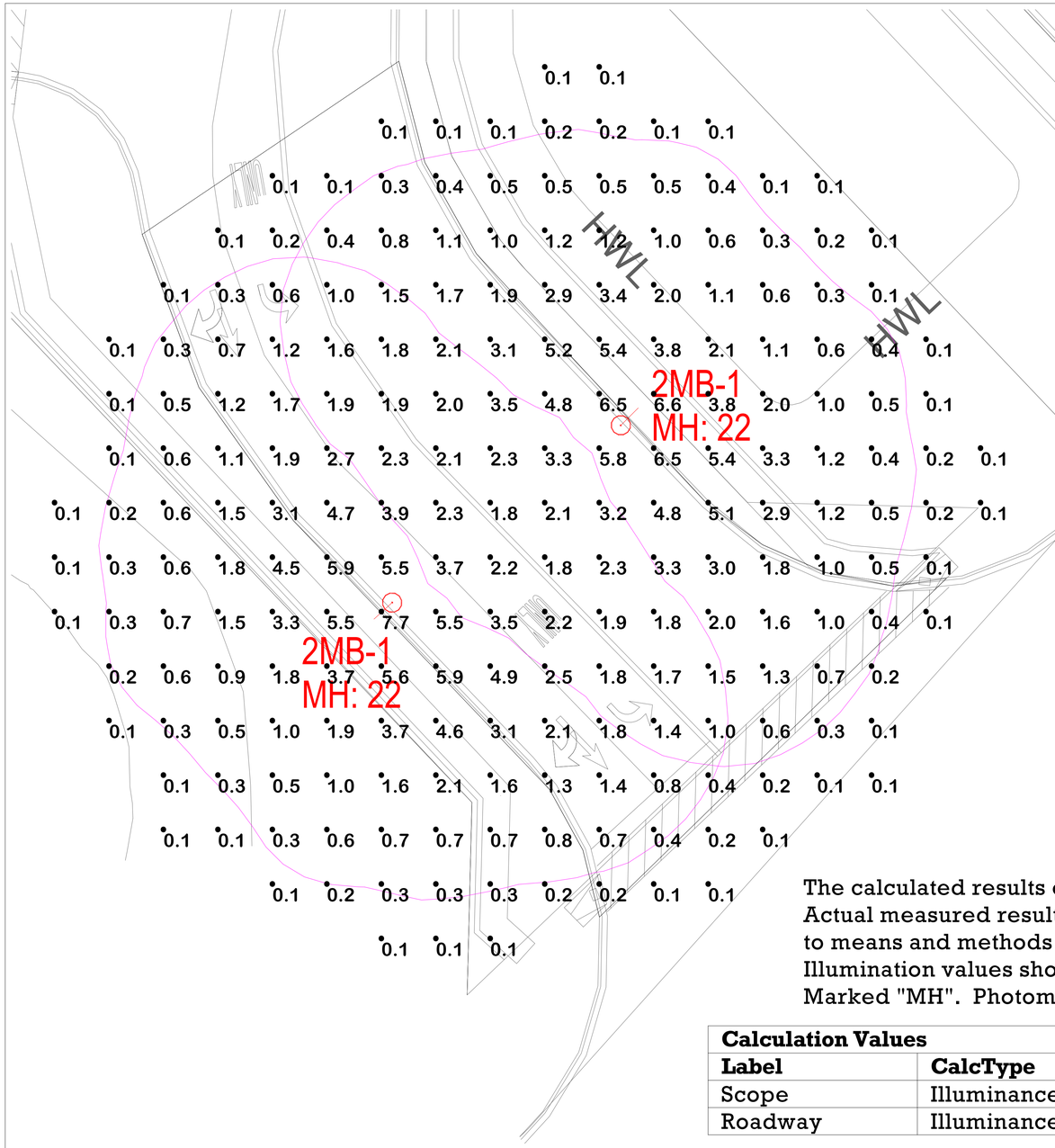
Drawn By: DRE
Drawing #: 3675
Date:4/17/2019
Scale: 1=110

Riverview

Warrenville, IL

PH-3

02/18/19



The calculated results of this lighting simulation represent a prediction of system performance.
Actual measured results may vary from the anticipated performance and are subject
to means and methods which are beyond the control of DB Lighting Consultation.
Illumination values shown (in foot-candles) are horizontal at grade based on Mounting Height of 22'-0"
Marked "MH". Photometric template indicates 0.25fc and is for reference only

Calculation Values

Label	CalcType	Units	Avg	Max	Min	Avg/Min	Max/Min
Scope	Illuminance	Fc	1.52	7.7	0.1	15.20	77.00
Roadway	Illuminance	Fc	2.19	7.7	0.1	21.90	77.00

Luminaire Data

Label	Qty	Symbol	Manufacture	Description	Lum. Lumens	LLF	Lum. Watts
2MB-1	2		SIGNIFY LUMEC	250HPS-DMS50-SG3	16614	1.000	273

Not to Scale

DB Lighting Consultation (DBLC) assumes no responsibility for any errors in the IES files, background images, or other information provided to DBLC to be used in these calculations.
Actual or measured results may vary due to manufacturer tolerances, component malfunctions, obstructions, varying surface reflectance's and other field conditions.
The owner assumes all responsibility for compliance with federal, state and/or local codes and regulations.

Prepared For:
Erin Murphy

Prepared by:
DB Lighting Consultation
407-924-4113

Chicago Lightworks
505 Warrenville Rd.
Suite 101
Lisle, IL 60532

Rev	Date	Comments
.	.....	.....
.	.....	.....
.	.....	.....
.	.....	.....
.	.....	.....

Revisions

Project Name: **City of Warrenville**
Project ID Number: **2019-109**
Date: **01/11/2019**

24" x 36"

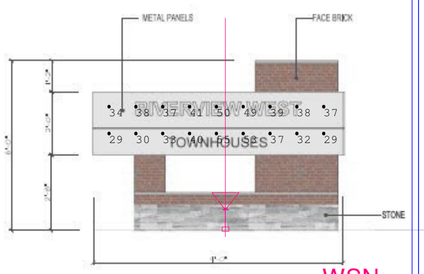
Luminaire Schedule							
Symbol	Qty	Label	Arrangement	LMF	Lum. Lumens	Lum. Watts	Part Number
	3	WSN	SINGLE	1.020	11678	86	OSQ-A-NM-WSN-B-57K-xx-xx + OSQ-AAxx

Calculation Summary (Footcandles calculated using predicted lumen values @ 50K hrs of operation)						
Label	Units	Avg	Max	Min	Avg/Min	Max/Min
SIGN #1	Fc	38.94	55	29	1.34	1.90
SIGN #2 & #3	Fc	33.25	48	19	1.75	2.53

Additional Equipment:
(3) OSQ-AAXX (ADJUSTABLE ARM MOUNT)

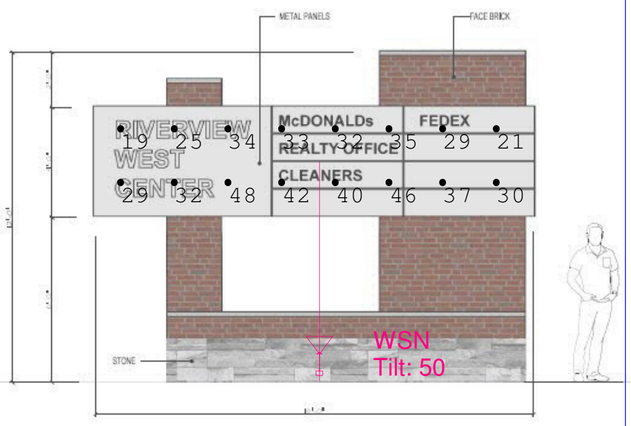
NOTEI 1 FIXTURE PER SIDE***

*** CUSTOMER TO VERIFY ORDERING INFORMATION AND
CATALOGUE NUMBER PRIOR TO PLACING ORDER ***



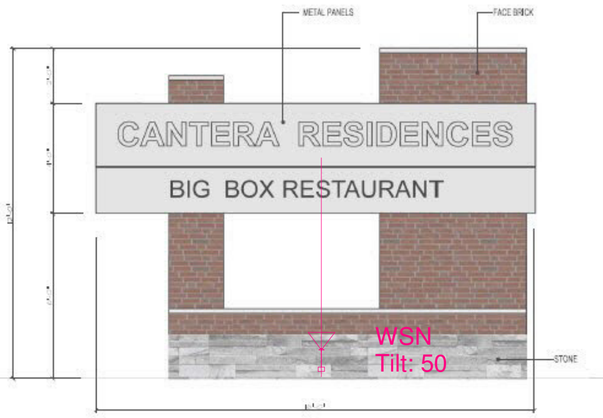
SIGN #3 ELEVATION

SETBACK: 6'



SIGN #2 ELEVATION

SETBACK: 6'



SIGN #1 ELEVATION

SETBACK: 6'

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Illumination results shown on this lighting design are based on project parameters provided to Cree, Inc. used inconjunction with luminaire test proceedures conducted under laboratory conditions. Actual project conditions differing from these design parameters may affect field results. The customer is responsible for verifying dimensional accuracy along with compliance with any applicable electrical, lighting,or energy code.

CANTERA SIGNS

SR-30877 || Footcandles calculated at grade || 190121DL1LJS.AGI

Layout By:
LINDA SCHALLER

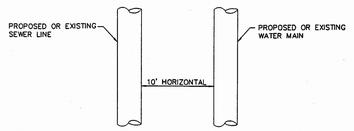
Date:1/22/2019

Scale 1" = 4'

0 8 16

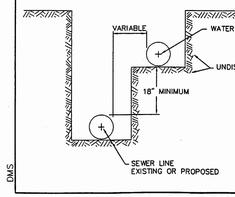
Design Firm License No. 184-001129

WHEN **PROPOSED** SEWER (OR WATER) IS LOCATED 10 FEET OR MORE FROM EXISTING WATER (OR SEWER), NO SPECIAL CONSTRUCTION REQUIRED. SEE SECTION 41-2.01B (1)



PLAN VIEW

WHEN **PROPOSED** SEWER (OR WATER) IS LOCATED **LESS THAN 10 FEET** FROM EXISTING WATER (OR SEWER), DETAILS BELOW SHALL APPLY. SEE SECTION 41-2.01B (2)



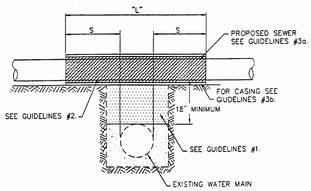
WATER AND SEWER SEPARATION REQUIREMENTS
HORIZONTAL SEPARATION

DMS

DIV.V/STANDARD DRAWING NO.18
DIV: V
PAGE: 160

PROPOSED SEWER LINE **WITH** 18" MINIMUM VERTICAL SEPARATION **ABOVE** EXISTING WATER MAIN.

NOTE: COMPACTION REQUIREMENTS REFER TO 20-2.20B



NOTE: "S" THE LENGTH NECESSARY TO PROVIDE 10 FEET OF SEPARATION AS MEASURED PERPENDICULAR TO TO EXISTING WATER MAIN

GUIDELINES

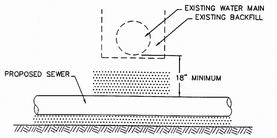
1. IF SELECT GRANULAR BACKFILL EXISTS: REMOVE WITHIN WIDTH OF PROPOSED SEWER TRENCH AND REPLACE WITH SELECT EXCAVATED MATERIAL (CLASS IV) AND COMPACT.
2. OMIT SELECT GRANULAR EMBEDMENT AND GRANULAR BACKFILL TO ONE (1) FOOT OVER TOP OF SEWER AND USE SELECT EXCAVATED MATERIAL (CLASS IV) AND COMPACT THE LENGTH OF "L" FEET.
3. a. CONSTRUCT "L" FEET OF PROPOSED SEWER OF WATER MAIN MATERIAL AND PRESSURE TEST. OR;
   b. USE "L" FEET OF WATER MAIN MATERIAL FOR CASING OF PROPOSED SEWER AND SEAL ENDS OF CASING.

WATER AND SEWER SEPARATION REQUIREMENTS
(VERTICAL SEPARATION)

DMS

DIV.V/STANDARD DRAWING NO.19
DIV: V
PAGE: 162

PROPOSED SEWER LINE **BELOW EXISTING** WATER MAIN WITH 18" MINIMUM VERTICAL SEPARATION.



GUIDELINES

1. PROVIDE ADEQUATE SUPPORT FOR EXISTING WATER MAIN TO PREVENT DAMAGE DUE TO SETTLEMENT OF SEWER TRENCH.

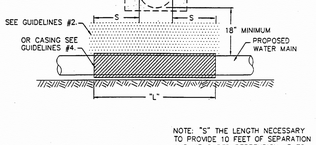
WATER AND SEWER SEPARATION REQUIREMENTS
(VERTICAL SEPARATION)

DMS

DIV.V/STANDARD DRAWING NO.20
DIV: V
PAGE: 164

PROPOSED WATER MAIN **BELOW EXISTING** SEWER LINE WITH 18" MINIMUM VERTICAL SEPARATION.

NOTE: COMPACTION REQUIREMENTS REFER TO 20-2.20B



NOTE: "S" THE LENGTH NECESSARY TO PROVIDE 10 FEET OF SEPARATION AND MEASURED PERPENDICULAR TO EXISTING SEWER LINE.

GUIDELINES

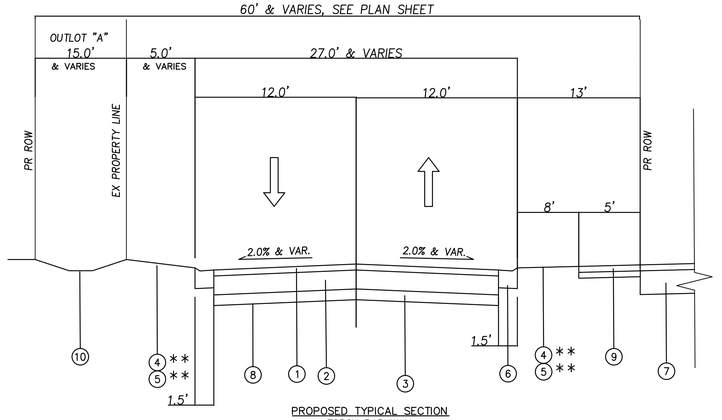
1. OMIT SELECT GRANULAR EMBEDMENT AND GRANULAR BACKFILL TO ONE (1) FOOT OVER TOP OF WATER MAIN AND USE SELECT EXCAVATED MATERIAL (CLASS IV) AND COMPACT THE LENGTH OF "L".
2. IF SELECT GRANULAR BACKFILL EXISTS, REMOVE WITHIN WIDTH OF EXISTING SEWER LINE TRENCH AND REPLACE WITH SELECT EXCAVATED MATERIAL (CLASS IV) AND COMPACT.
3. PROVIDE ADEQUATE SUPPORT FOR EXISTING SEWER LINE TO PREVENT DAMAGE DUE TO SETTLEMENT.
4. USE "L" FEET OF WATER MAIN MATERIAL FOR CASING OF PROPOSED WATER MAIN AND SEAL ENDS OF CASING.

WATER AND SEWER SEPARATION REQUIREMENTS
(VERTICAL SEPARATION)

DMS

DIV.V/STANDARD DRAWING NO.23
DIV: V
PAGE: 170

TORCH PARKWAY
60' & VARIES, SEE PLAN SHEET

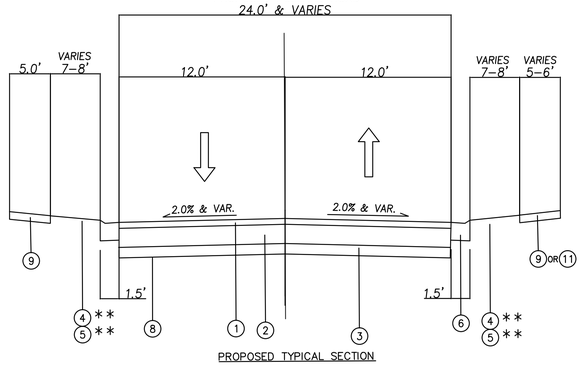


PROPOSED TYPICAL SECTION
TORCH PARKWAY

LEGEND

1. HMA SURFACE COURSE, MIX "D", N50 , 2.0"
2. HMA BINDER COURSE, IL-19.0, N50, 7"
3. SUBBASE GRANULAR MATERIAL, TYPE B, 4"
4. TOPSOIL FURNISH AND PLACE, 6"
5. SODDING, SALT TOLERANT
6. COMBINATION CURB AND GUTTER, B-6.12 (DEPRESSED CURB THROUGH DRIVEWAYS)
7. DRIVEWAY PAVEMENT
8. GEOTECHNICAL FABRIC
9. 5" PCC SIDEWALK ON 4" COMPACTED CA-6 SUBBASE
10. DRAINAGE SWALE (DEPTH VARIES)

PROPOSED POLLARD ROAD
24.0' & VARIES

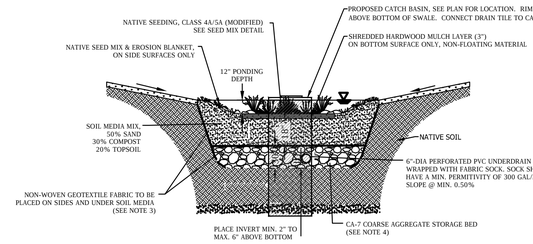


PROPOSED TYPICAL SECTION

LEGEND

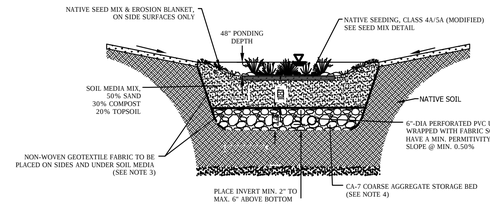
1. HMA SURFACE COURSE, MIX "D", N50 , 2.0"
2. HMA BINDER COURSE, IL-19.0, N50, 7"
3. SUBBASE GRANULAR MATERIAL, TYPE B, 4"
4. TOPSOIL FURNISH AND PLACE, 6"
5. SODDING, SALT TOLERANT
6. COMBINATION CURB AND GUTTER, B-6.12
7. DRIVEWAY PAVEMENT, SEE DRIVEWAY DETAIL
8. GEOTECHNICAL FABRIC
9. 5'- 5" PCC SIDEWALK ON 4" COMPACTED CA-6 SUBBASE
11. 6' - BITUMINOUS PATH

BIOSWALE DETAIL



NOTES:
1. DO NOT COMPACT NATIVE SOIL BENEATH PROPOSED BIOSWALE.
2. AFTER CONSTRUCTING BIOSWALE, CARE MUST BE TAKEN TO PREVENT COMPACTION OF INSTALLED AGGREGATE AND SOIL MEDIA LAYERS FROM EITHER PEDESTRIAN OR MECHANICAL MEANS.
3. NON-WOVEN GEOTEXTILE FABRIC SHALL MEET REQUIREMENTS OF ILLINOIS URBAN MANUAL MATERIAL SPECIFICATION 592 GEOTEXTILE, TABLE 2, CLASS I, WITH A MIN. PERMITIVITY OF 110 GAL/MIN/SF.
4. STONE STORAGE BED AGGREGATE MUST BE CA-7 COARSE AGGREGATE. NO RECYCLED MATERIALS.

BIORETENTION FACILITY DETAIL



NOTES:
1. DO NOT COMPACT NATIVE SOIL BENEATH PROPOSED BIOSWALE.
2. AFTER CONSTRUCTING BIOSWALE, CARE MUST BE TAKEN TO PREVENT COMPACTION OF INSTALLED AGGREGATE AND SOIL MEDIA LAYERS FROM EITHER PEDESTRIAN OR MECHANICAL MEANS.
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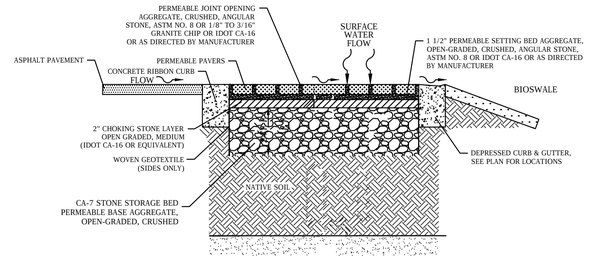
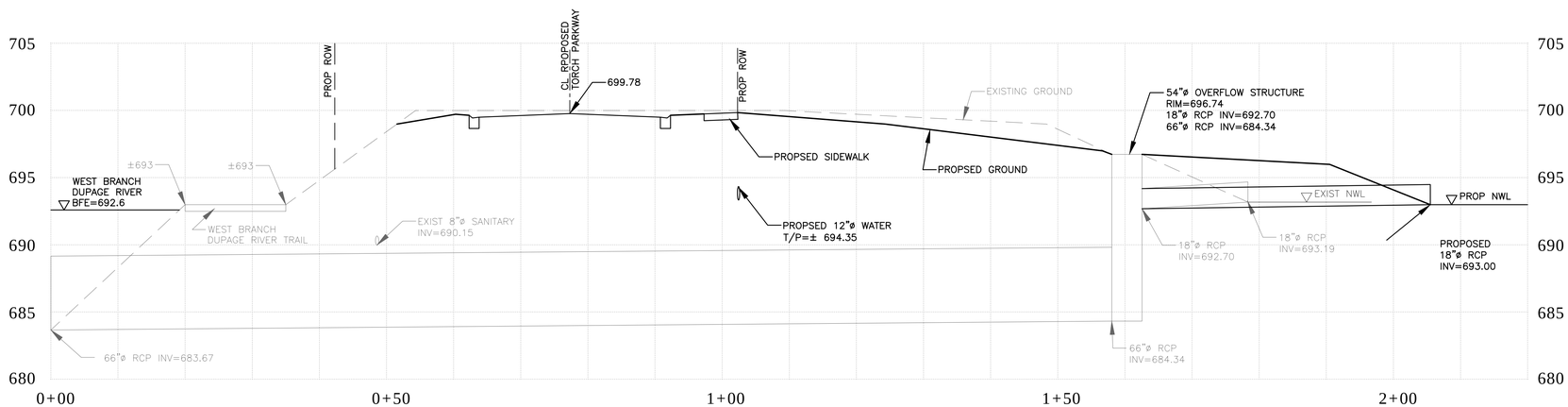
4. STONE STORAGE BED AGGREGATE MUST BE CA-7 COARSE AGGREGATE. NO RECYCLED MATERIALS.

PERMEABLE PAVERS DETAIL



NOTES:
1. WOVEN GEOTEXTILE FABRIC SHALL MEET REQUIREMENTS OF ILLINOIS URBAN MANUAL MATERIAL SPECIFICATION 592 GEOTEXTILE, TABLE 2, CLASS I, WITH A MIN. PERMITIVITY OF 110 GAL/MIN/SF.
2. STONE STORAGE BED AGGREGATE MUST BE CA-7 COARSE AGGREGATE, NO RECYCLED MATERIALS.
3. MAINTENANCE REQUIREMENTS INCLUDE ANNUAL VACUUMING AND LOW-PRESSURE POWER WASHING OF PAVEMENT SURFACE. DO NOT SEALCOAT, SEAL, OR COVER SURFACE OF PAVERS OR JOINTS.
4. CLEANOUTS SHALL BE LOCATED AT ENDS OF UNDERDRAINS AND OUTSIDE OF PAVEMENT AREA.



POND OUTLET PROFILE

04-19-19: PER CITY COMMENTS

REVISIONS:
09-18-18: REVISD PER CITY COMMENTS
11-05-18: REVISD PER FPD COMMENTS
01-18-19: REVISD PER CITY COMMENTS

FILE: V:\080-020 Cantera Lot 2 Sub Area C\Engineering\Drawings

JOB NO: 080-020
FIELD BOOK: N/A
FIELD BOOK: N/A
DRAWN BY: MK
CHECKED BY: KEK
COMPLETED:04/07/19

PREPARED FOR:
CANTERA DEVELOPMENT HOLDINGS, LLC.
TWO NORTHFIELD PLAZA, SUITE 320
NORTHFIELD, IL 60093
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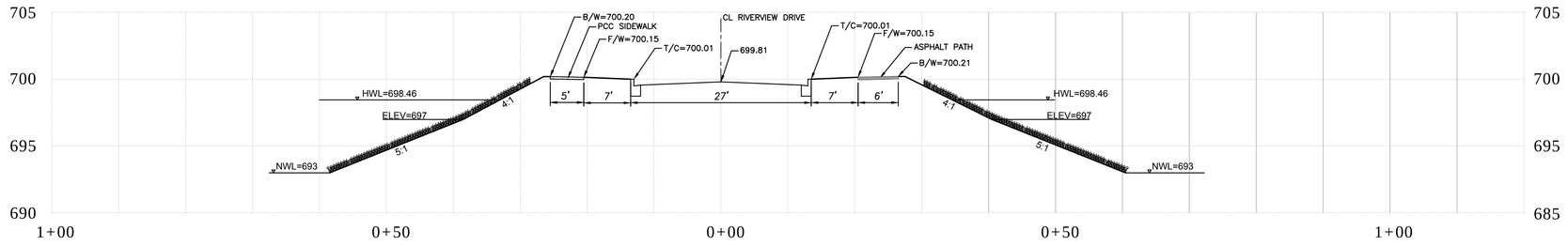
ITASCA * CHICAGO * ALGONQUIN * LAKE GENEVA * SOUTH BEND * INDIANAPOLIS

DETAILS

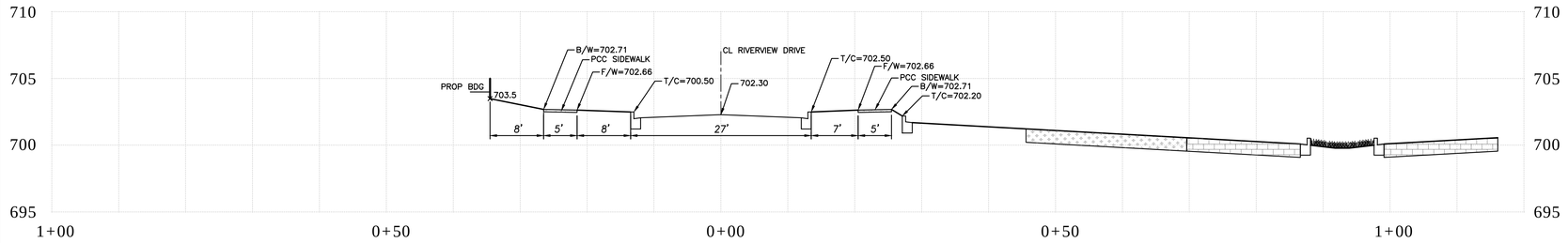
RIVER VIEW WEST
CITY OF WARRENVILLE, ILLINOIS

SHEET NUMBER
41
OF 71

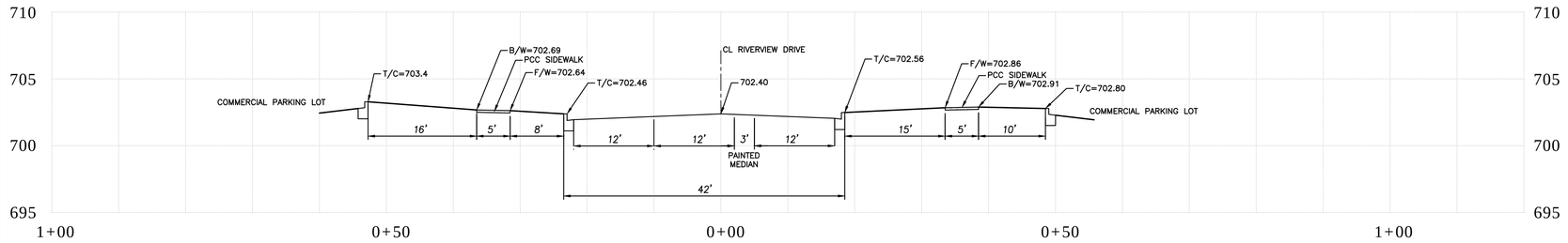
Design Firm License No. 184-001129



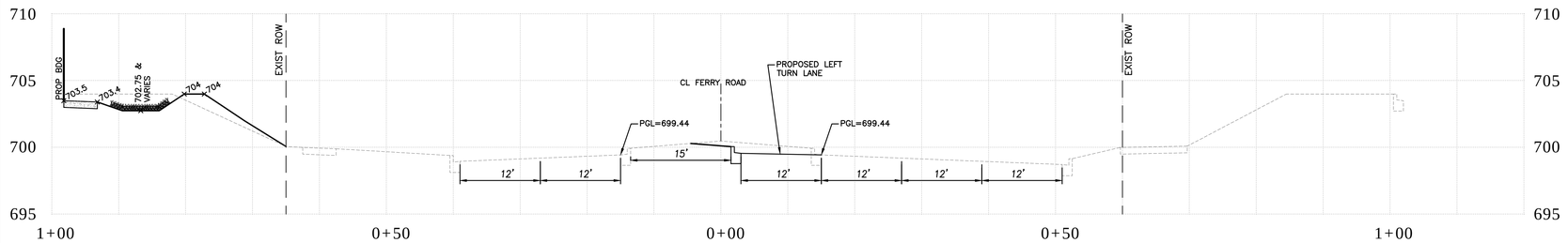
POLLARD ROAD STA 9+00



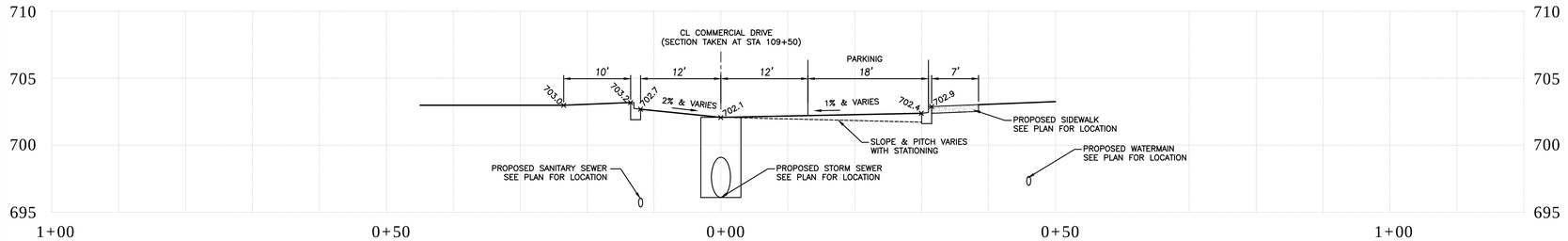
POLLARD ROAD STA 5+00



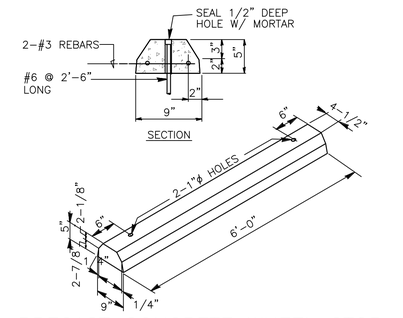
POLLARD ROAD STA 1+00



FERRY ROAD STA 129+50

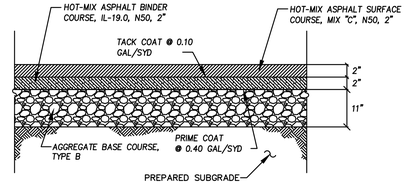


TYPICAL COMMERCIAL DRIVE SECTION



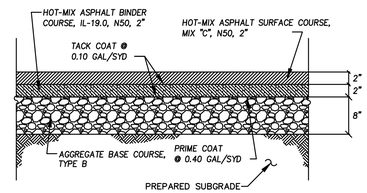
PRECAST CONCRETE WHEEL STOP

N.T.S.



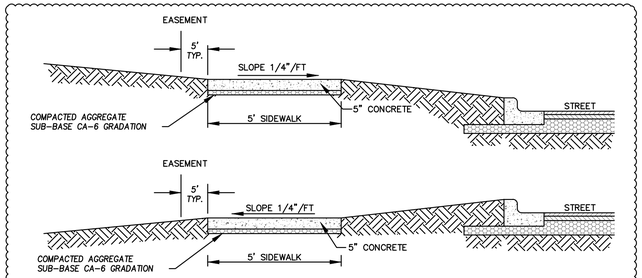
PAVEMENT STRUCTURAL NUMBER:
(2")(0.40) + (2")(0.33) + (11")(0.13) = 2.89

TYPICAL HEAVY DUTY PARKING LOT PAVEMENT SECTION



PAVEMENT STRUCTURAL NUMBER:
(2")(0.40) + (2")(0.33) + (8")(0.13) = 2.50

TYPICAL PARKING LOT PAVEMENT SECTION



GENERAL NOTES:

1. CONCRETE SHALL BE CLASS SI.
2. MINIMUM SIDEWALK THICKNESS SHALL BE FIVE INCHES (5").
3. SIDEWALK THICKNESS ACROSS DRIVEWAYS SHALL BE SEVEN INCHES (7") MINIMUM FOR RESIDENTIAL DRIVEWAYS, AND EIGHT INCHES (8") MINIMUM FOR NON-RESIDENTIAL DRIVEWAYS.
4. MAXIMUM LONGITUDINAL SLOPE SHALL NOT EXCEED 5% (20:1).
5. MAXIMUM TRANSVERSE CROSS SLOPE SHALL BE NO GREATER THAN 1/4"/FT. (2%) TYPICAL.
6. A TWO INCH (2") MINIMUM AGGREGATE SUB-BASE (CA-6 GRADATION) SHALL BE PROVIDED (FOUR INCHES (4" MINIMUM) THROUGH NON-RESIDENTIAL DRIVEWAYS).
7. AGGREGATE SUB-BASE COURSE SHALL BE MECHANICALLY COMPACTED.
8. ALL SIDEWALK SHALL BE PROMPTLY BACKFILLED AND PROTECTED FROM DAMAGE.
9. ALL SIDEWALK ALONG TORCH PARKWAY SHALL BE A MINIMUM OF 7" THICK.
10. ALL SIDEWALK THROUGH INTERSECTIONS ON RIVERVIEW DRIVE SHALL BE A MINIMUM OF 7" THICK.

SIDEWALK DETAIL

04-19-19: PER CITY COMMENTS

REVISIONS:
09-18-18: REVISD PER CITY COMMENTS
11-05-18: REVISD PER FPD COMMENTS
01-18-19: REVISD PER CITY COMMENTS
FILE: I:\080-020 Cantera Lot 2 Sub Area C\Engineering\Drawings\Final Engineering

JOB NO: 080-020
FIELD BOOK: N/A
FIELD BOOK: N/A
DRAWN BY: MK
CHECKED BY: KEK
COMPLETED:04/07/19

PREPARED FOR:
CANTERA DEVELOPMENT HOLDINGS, LLC.
TWO NORTHFIELD PLAZA, SUITE 320
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ITASCA * CHICAGO * ALGONQUIN * LAKE GENEVA * SOUTH BEND * INDIANAPOLIS

DETAILS

RIVER VIEW WEST
CITY OF WARRENVILLE, ILLINOIS

SHEET NUMBER
43
OF 71

Riverview West
City of Warrenville
Engineer's Opinion of Probable Cost

10-02-18
10-10-18
10-11-18
11-15-18
Revised 04-19-19

Item	Quantity	Unit	Unit Cost	Cost
Stormwater Management Facilities				
12" Diameter PVC SDR 26	1,198	LF	$115.00	$137,770.00
15" Diameter PVC SDR 26	1,726	LF	$125.00	$215,750.00
18" Diameter PVC SDR 26	834	LF	$135.00	$112,590.00
24" Diameter RCP	1,005	LF	$85.00	$85,425.00
30" Diameter RCP	463	LF	$95.00	$43,985.00
36" Diameter RCP	862	LF	$100.00	$86,200.00
Inlet, Type A	25	EA	$1,750.00	$43,750.00
Catch Basin, Type A 4' Diameter	39	EA	$2,800.00	$109,200.00
Catch Basin, Type A, 5' Diameter	35	EA	$3,500.00	$122,500.00
Catch Basin, Type A, 6' Diameter	1	EA	$5,500.00	$5,500.00
Manhole, Type A, 4' Diameter	1	EA	$2,700.00	$2,700.00
Manhole, Type A, 5' Diameter	5	EA	$3,250.00	$16,250.00
12" PRC FES	5	EA	$1,100.00	$5,500.00
15" PRC FES	5	EA	$1,100.00	$5,500.00
24" PRC FES	4	EA	$1,400.00	$5,600.00
30" PRC FES	1	EA	$1,700.00	$1,700.00
Trench Backfill	4,335	CYD	$35.00	$151,725.00
			Subtotal=	**$1,151,645.00**

Item	Quantity	Unit	Unit Cost	Cost
Sanitary Sewer				
PVC SDR 26, ASTM D-2241 - 12"	24	LF	$95.00	$2,280.00
PVC SDR 26, ASTM D-2241 - 8"	1,532	LF	$70.00	$107,240.00
Sanitary Manhole, Type A	18	EA	$4,000.00	$72,000.00
22"Steel Casing Pipe	30	LF	$250.00	$7,500.00
Trench Backfill	7,989	CYD	$35.00	$279,615.00
			Subtotal=	**$468,635.00**

Item	Quantity	Unit	Unit Cost	Cost
Water Main				
12" PVC C900 Water Main	1,421	LF	$95.00	$134,995.00
8" PVC C900 Water Main	3,457	LF	$80.00	$276,560.00
6" Ductile Iron Water Main	694	LF	$75.00	$52,050.00
3" Ductile Iron Water Main	99	LF	$55.00	$5,445.00
12" Valve & Vault	7	EA	$3,500.00	$24,500.00
8" Valve & Vault	12	EA	$3,500.00	$42,000.00
3" Valve & Vault	2	EA	$3,500.00	$7,000.00
Fire Hydrant w/ Auxiliary Valve & Valve Box	25	EA	$2,800.00	$70,000.00
Pressure Connection	1	EA	$5,000.00	$5,000.00
Connect to Existing 12" Water Stub	2	EA	$5,000.00	$10,000.00
22"Steel Casing Pipe	187	LF	$250.00	$46,750.00
Auger 8" WM Under Ferry Road	187	LF	$350.00	$65,450.00
Trench Backfill	4,722	CYD	$35.00	$165,270.00
			Subtotal=	**$905,020.00**

Riverview West
City of Warrenville
Engineer's Opinion of Probable Cost

10-02-18
10-10-18
10-11-18
11-15-18
Revised 04-19-19

Item	Quantity	Unit	Unit Cost	Cost
Pavement				
1.5" HMA Surface Course, Mix D, N50	181	TON	$81.00	$14,661.00
2" HMA Surface Course, Mix D, N50	2,464	TON	$81.00	$199,584.00
2" HMA Binder Course, IL-19.0, N50	1,349	TON	$77.00	$103,873.00
2.5" HMA Binder Course, IL-19.0, N50	209	TON	$77.00	$16,093.00
7" HMA Binder Course, IL-19.0, N50	4,198	TON	$77.00	$323,246.00
4" Aggregate Base Course, Type B	1,190	CY	$30.00	$35,700.00
6" Aggregate Base Course, Type B	248	CY	$30.00	$7,440.00
8" Aggregate Base Course, Type B	1,994	CY	$30.00	$59,820.00
11" Aggregate Base Course, Type B	634	CY	$30.00	$19,020.00
12.5" Aggregate Base Course, Type B	233	CY	$30.00	$6,990.00
Air-Pave Fire Lane	966	SY	$35.00	$33,810.00
Prime Coat @ 0.40 Gal/Syd	96,385	GAL	$1.25	$120,481.25
Tack Coat @ 0.10 Gal/Syd	2,139	GAL	$1.25	$2,673.75
Pavement Striping - 4" Yellow	2,786	LF	$0.40	$1,114.40
Pavement Striping - 4" Double Yellow	1,072	LF	$0.40	$428.80
Pavement Striping - 4" Skip-Dash Yellow	2,236	LF	$0.40	$894.40
Pavement Striping - 6" Solid White	1,447	LF	$1.20	$1,736.40
Pavement Striping - 6" Skip-Dash White	1,122	LF	$1.20	$1,346.40
Pavement Striping - 24" White	1,570	LF	$5.00	$7,850.00
Pavement Handicapped Symbols	17	EA	$75.00	$1,275.00
Pavement Striping Symbols (Turn, Only)	8	EA	$75.00	$600.00
Stop Sign	13	EA	$500.00	$6,500.00
Handicapped Parking Sign	18	EA	$600.00	$10,800.00
Speed Limit Sign	6	EA	$600.00	$3,600.00
No Parking Sign	9	EA	$600.00	$5,400.00
Pedestrian Crossing Sign	2	EA	$600.00	$1,200.00
Pedestrian Crosswalk Sign	2	EA	$300.00	$600.00
7" PCC Sidewalks	35,870	SQFT	$7.50	$269,025.00
5" PCC Sidewalks	22,749	SQFT	$5.50	$125,119.50
4" CA-6 Aggregate Subbase	724	CY	$30.00	$21,720.00
Handicapped Sidewalk Ramps	51	EA	$750.00	$38,250.00
Curb & Gutter - B-6.12	9,049	LF	$20.00	$180,980.00
Ribbon Curb	1,166	LF	$20.00	$23,320.00
Depressed Curb & Gutter	1,550	LF	$25.00	$38,750.00
Wheel Stops	184	EA	$100.00	$18,400.00
Existing Sidewalk Removal	795	SQFT	$10.00	$7,950.00
Existing Curb & Gutter Removal	36	LF	$10.00	$360.00
			Subtotal=	**$1,710,611.90**

Item	Quantity	Unit	Unit Cost	Cost
Erosion Control				
Silt Fence	5,747	LF	$4.00	$22,988.00
Inlet Filters	36	EA	$150.00	$5,400.00
Rolled/Staked Sediment Log	30	EA	$150.00	$4,500.00
Perforated Riser (for Outlet Pipe)	1	EA	$1,500.00	$1,500.00
Temp Erosion Control Blanket	1,248	SYD	$2.50	$3,120.00
Temp Erosion Control Seeding	3	ACRE	$500.00	$1,500.00
Sodding, Salt Tolerant	15,127	SYD	$7.00	$105,889.00
Seeding, Class 2A	0.9	ACRE	$4,000.00	$3,600.00
Stabilized Construction Entrance	614	SYD	$30.00	$18,420.00
Concrete Washout	3	EA	$1,000.00	$3,000.00
			Subtotal=	**$169,917.00**

Item	Quantity	Unit	Unit Cost	Cost
Misceleaneous				
Bike Rack	6	EA	$850.00	$5,100.00
Site Lighting	1	LS	$125,000.00	$125,000.00
			Subtotal=	**$130,100.00**

			Total=	**$4,535,928.90**

Design Firm License No. 184-001129

INDEX OF SHEETS

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6. GRADING PLAN
7. GRADING PLAN
8. GRADING PLAN
9. GRADING PLAN
10. GRADING PLAN
11. UTILITY PLAN
12. UTILITY PLAN
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15. UTILITY PLAN
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19. EROSION AND SEDIMENT CONTROL PLAN
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21. EROSION AND SEDIMENT CONTROL PLAN
22. EROSION AND SEDIMENT CONTROL PLAN
23. EROSION AND SEDIMENT CONTROL PLAN
24. PLAN AND PROFILE NORTH-SOUTH ROADWAY
25. PLAN AND PROFILE NORTH-SOUTH ROADWAY
26. PLAN AND PROFILE COMMERCIAL DRIVE
27. PLAN AND PROFILE COMMERCIAL DRIVE
28. PLAN AND PROFILE TORCH PARKWAY
29. PLAN AND PROFILE TORCH PARKWAY
30. PLAN AND PROFILE TORCH PARKWAY
31. PAVEMENT MARKING AND SIGNAGE PLAN
32. PAVEMENT MARKING AND SIGNAGE PLAN
33. PAVEMENT MARKING AND SIGNAGE PLAN
34. PAVEMENT MARKING AND SIGNAGE PLAN
35. PAVEMENT MARKING AND SIGNAGE PLAN
36. CONSTRUCTION DETAILS
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40. CONSTRUCTION DETAILS
41. CONSTRUCTION DETAILS
42. CONSTRUCTION DETAILS
43. CONSTRUCTION DETAILS
44. CONSTRUCTION DETAILS
45. ADA RAMP GRADING PLAN
46. ADA RAMP GRADING PLAN
47. ADA RAMP GRADING PLAN
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58. ADA RAMP GRADING PLAN
59. ADA RAMP GRADING PLAN
60. ADA RAMP GRADING PLAN
61. ADA RAMP GRADING PLAN
62. DRY UTILITY PLAN
63. SIGHT DISTANCE PLAN
64. SNOW REMOVAL PLAN
65. SWPPP
66. CONSTRUCTION DETAILS
67. CROSS SECTIONS
68. CROSS SECTIONS
69. CROSS SECTIONS
70. VEHICLE TURNING MOVEMENTS
71. VEHICLE TURNING MOVEMENTS

811 Know what's below. Call before you dig.
Formerly JULIE 1-800-892-0123

PROPOSED SITE IMPROVEMENT PLANS

FOR

RIVERVIEW WEST

LEGAL DESCRIPTION

LOT 2 IN CANTERA SUB-AREA "C" LOTS C1 AND C2, BEING A RESUBDIVISION OF PART OF THE NORTHEAST 1/4 OF SECTION 2, TOWNSHIP 38 NORTH, RANGE 9, EAST OF THE THIRD PRINCIPAL MERIDIAN, ACCORDING TO THE PLAT OF SAID CANTERA SUB-AREA "C" LOTS C1 AND C2 RECORDED JANUARY 19, 2010 AS DOCUMENT R2010-007747, IN DUPAGE COUNTY, ILLINOIS.

AND

OUTLOT "A" IN AMOCO BUSINESS CENTER FINAL PLAT OF SUBDIVISION CANTERA SUBAREA "C", BEING A SUBDIVISION OF PART OF LOT 2 IN CANTERA SERVICE STATION NUMBER 1, TOGETHER WITH PART OF THE NORTHEAST 1/4 OF SECTION 2, TOWNSHIP 38 NORTH, RANGE 9, EAST OF THE THIRD PRINCIPAL MERIDIAN, ACCORDING TO THE PLAT RECORDED FEBRUARY 7, 1996 AS DOCUMENT R96-020336, IN DUPAGE COUNTY, ILLINOIS.

PROJECT LOCATION



CITY OF WARRENVILLE
DUPAGE COUNTY, ILLINOIS

UTILITY CONTACT LIST

WARRENVILLE PUBLIC WORKS DEPARTMENT
3S346 MIGNIN DR
WARRENVILLE, IL 60555
PH: (630) 393-9050

WARRENVILLE CITY HALL
3S258 MANNING AVE
WARRENVILLE, IL 60555
PH: (630) 393-9427

WARRENVILLE FIRE PROTECTION DISTRICT
FIRE PREVENTION BUREAU
P.O. BOX 51
3S472 BATAVIA ROAD
WARRENVILLE, ILLINOIS 60555
PH: (630) 393-2175

DUPAGE COUNTY
DIVISION OF TRANSPORTATION
421 N COUNTY FARM RD
WHEATON, IL 60187
PH: (630) 407-6900

COMED
321 SWIFT RD,
LOMBARD, IL 60148
PH: (800) 334-7661

AT&T
1000 COMMERCE DR.
OAK BROOK, IL 60523
PH: (630)573-5450

NICOR
90 N FINLEY ROAD
GLEN ELLYN, IL 60137
PH: (888) 642-6748

BENCHMARK

1) RAILROAD SPKE IN SOUTHEAST FACE OF POWER POLE, 7" ABOVE GRADE AT SOUTHWEST CORNER OF WARRENVILLE ROAD AND WINFIELD ROAD
ELEVATION=725.47 (NAVD 88)

2) SQUARE CUT ON THE SOUTHEST CORNER OF DEIHL ROAD BRIDGE OVER DUPAGE RIVER
ELEVATION=700.25 (NAVD 88)

3) DUPAGE COUNTY BENCHMARK WI35004.
BRASS DISK LOCATED 0.2 MILES WEST ALONG WARRENVILLE ROAD FROM THE INTERSECTION OF WARRENVILLE ROAD & WINFIELD ROAD AT THE NORTHWEST END OF THE BRIDGE FOR WARRENVILLE ROAD OVER THE DUPAGE RIVER. STATION IS 31.4 FT NORTH OF THE CENTERLINE OF WARRENVILLE ROAD, 70.7 FT EAST OF POWER POLE 69299, AND 16.0 FT EAST OF THE WEST END OF THE SIDEWALK ON THE NORTH EDGE OF THE BRIDGE. MONUMNET IS FLUSH WITH THE SIDEWALK.
ELEVATION=695.79 (NAVD 88)

Existing Conditions									
Lot 1	Area	Lot 2	Area	Lot 3	Area	Torch Parkway ROW	Area	Outlot A	Area
Total Area	4.40	Total Area	17.71	Total Area	3.37	Total Area	3.05	Total Area	4.62
Pond Area	0.65	Pond Area	6.14	Pond Area	0.60	Pond Area	0.00	Pond Area	1.76
Impervious Area	0.13	Impervious Area	0.03	Impervious Area	0.00	Impervious Area	0.02	Impervious Area	0.00
Pervious Area	3.62	Pervious Area	11.54	Pervious Area	2.77	Pervious Area	3.04	Pervious Area	2.86
Weighted C	0.55	Weighted C	0.64	Weighted C	0.55	Weighted C	0.45	Weighted C	0.66
Proposed Conditions									
Lot 1	Area	Lot 2	Area	Lot 3	Area	Torch Parkway ROW	Area	Outlot A	Area
Total Area	4.40	Total Area	17.71	Total Area	3.37	Total Area	3.05	Total Area	3.83
Pond Area	0.00	Pond Area	5.95	Pond Area	0.00	Pond Area	0.00	Pond Area	2.36
Impervious Area	3.29	Impervious Area	7.87	Impervious Area	2.13	Impervious Area	1.99	Impervious Area	0.09
Pervious Area	1.11	Pervious Area	3.89	Pervious Area	1.24	Pervious Area	1.06	Pervious Area	1.38
Weighted C	0.82	Weighted C	0.86	Weighted C	0.77	Weighted C	0.78	Weighted C	0.80
LOT 1 DISTURBED AREA = 4.40 AC		LOT 2 DISTURBED AREA = 11.76 AC		LOT 3 DISTURBED AREA = 3.37 AC		TORCH PARKWAY ROW DISTURBED AREA = 3.05 AC		OUTLOT A DISTURBED AREA = 1.47 AC	

LEGEND

- PROPOSED FLARED END SECTION
- EXISTING FLARED END SECTION
- PROPOSED MANHOLE
- PROPOSED SANITARY MANHOLE
- EXISTING MANHOLE
- PROPOSED INLET
- EXISTING INLET
- PROPOSED FIRE HYDRANT
- EXISTING FIRE HYDRANT
- PROPOSED VALVE AND VAULT
- EXISTING VALVE AND VAULT
- PROPOSED B-BOX
- PROPOSED CATCH BASIN
- EXISTING CATCH BASIN
- PROPOSED NYLOPLAST DRAIN BASIN
- EXISTING TREE TO BE REMOVED
- EXISTING POWER POLE
- 8"W PROPOSED WATERMAIN
- 8"W EXISTING WATERMAIN
- PROPOSED SANITARY SEWER
- EXISTING SANITARY SEWER
- PROPOSED STORM SEWER
- EXISTING STORM SEWER
- EXISTING TREE LINE
- EXISTING STREET LIGHT
- 632 EXISTING CONTOUR
- 632 PROPOSED CONTOUR
- PROPOSED RIP-RAP
- PROPOSED SILT FENCE
- PROPOSED INLET FILTER
- 100-YEAR OVERLAND FLOW ROUTE
- PROPOSED FENCE
- EXISTING FENCE
- ROLLED SEDIMENT LOG
- ADA ACCESSIBLE RAMP
- PROPOSED LIGHT POLE
- WEST BRANCH DUPAGE RIVER WATERS EDGE
- WEST BRANCH DUPAGE RIVER BFE
- EXISTING BFE PER FEMA FIRM - GRAPHICAL
- EXISTING BFE PER ELEVATION
- PROPOSED BFE PER ELEVATION
- WET WEST BRANCH DUPAGE RIVER WETLAND BOUNDARY
- WEST BRANCH DUPAGE RIVER WETLAND BUFFER
- HWL - NWL
- LOT LINE
- NATIVE SEEDING AND EROSION CONTROL BLANKET BROAD SPECTRUM PRAIRIE W/ FLOWERS MIX
- NATIVE SEEDING AND EROSION CONTROL BLANKET LOW PROFILE DRY MESIC PRAIRIE W/ FLOWERS MIX
- NATIVE SEEDING AND EROSION CONTROL BLANKET TOUGH SHORELINE MIX
- SODDING
- TEMPORARY SEEDING AND MULCH OR HYDROSEED
- PCC PAVEMENT / SIDEWALK
- ASPHALT TRAIL / PATH
- GRASSCRETE FIRELANE PAVING SYSTEM
- PERMEABLE PAVEMENT
- HEAVY DUTY PAVEMENT
- TOWNHOME DRIVEWAYS
- TRENCH BACKFILL
- PROPOSED BIOSWALE

PREPARED BY:

Bollinger, Lach & Associates, Inc.
333 PIERCE ROAD, SUITE 200 ITASCA, IL 60143
P:(630) 438-6400 F:(630) 438-6444 www.bollingerlach.com

PROJECT MANAGER

PAGES 1-71 DATE 04-19-19

KEVIN E. KENNER 062-054009 REGISTERED PROFESSIONAL ENGINEER OF ILLINOIS

Design Firm License No. 184-001129

04-19-19: PER CITY COMMENTS
03-25-19: PER FPD COMMENTS
03-15-19: PER DUDOT COMMENTS
02-25-19: PER INTERNAL COORDINATION

REVISIONS:
09-18-18: REVISED PER CITY COMMENTS
11-05-18: REVISED PER FPD COMMENTS
01-18-19: REVISED PER CITY COMMENTS
02-18-19: REVISED PER CITY COMMENTS

FILE: V:\080-020 Cantera Lot 2 Sub Area C\Engineering\Drawings

JOB NO. 080-020
FIELD BOOK: N/A
FIELD BOOK: N/A
DRAWN BY: MK
CHECKED BY: KEK
COMPLETED: 04/07/19

PREPARED FOR:
CANTERA DEVELOPMENT HOLDINGS, LLC.
TWO NORTHFIELD PLAZA, SUITE 320
NORTHFIELD, IL 60093
TEL: (847) 562-2001

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ITASCA · CHICAGO · ALGONQUIN · LAKE GENEVA · SOUTH BEND · INDIANAPOLIS
CONSULTING ENGINEERS

COVER SHEET

RIVER VIEW WEST
CITY OF WARRENVILLE, ILLINOIS

SHEET NUMBER
1
OF 71

Design Firm License No. 184-001129

GENERAL NOTES:

1. THE STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, ILLINOIS DEPARTMENT OF TRANSPORTATION, LATEST REVISION (HEREINAFTER REFERRED TO AS "STANDARD SPECIFICATIONS"), AND THE STANDARD SPECIFICATIONS FOR WATER AND SEWER MAIN CONSTRUCTION IN ILLINOIS, LATEST REVISION (HEREINAFTER REFERRED TO AS "SSWSCI"), SHALL GOVERN CONSTRUCTION FOR THE PROPOSED IMPROVEMENTS, UNLESS SUPERCEDED BY THE THE CITY OF WARRENVILLE, ILLINOIS SUBDIVISION REGULATIONS AND/OR THE THE CITY OF WARRENVILLE BUILDING CODE, LATEST EDITIONS, AND/OR THE CITY OF WARRENVILLE STANDARD SPECIFICATIONS FOR WATERMAIN, SANITARY, SEWER AND STORM SEWER.

2. IN THE EVENT OF CONFLICT, THE CITY OF WARRENVILLE STANDARD SPECIFICATIONS SHALL PREVAIL.

3. THE STANDARD SPECIFICATIONS, HIGHWAY STANDARDS AND SUPPLEMENTAL SPECIFICATIONS AND RECURRING SPECIAL PROVISIONS, CONSTRUCTION PLANS, AND SUBSEQUENT DETAILS ARE ALL TO BE CONSIDERED AS PART OF THE CONTRACT. INCIDENTAL ITEMS NECESSARY TO COMPLETE THIS WORK MAY NOT BE SPECIFICALLY NOTED BUT ARE CONSIDERED PART OF THIS CONTRACT.

4. PRIOR TO COMMENCEMENT OF CONSTRUCTION, THE CONTRACTOR MUST NOTIFY THE OWNER AND ALL AFFECTED GOVERNMENTAL AGENCIES INCLUDING, BUT NOT LIMITED TO THE THE CITY OF WARRENVILLE (COMMUNITY DEVELOPMENT, BUILDING DEPARTMENT, PUBLIC WORKS), DUPAGE COUNTY, IEPA, ETC. TO ARRANGE FOR APPROPRIATE CONSTRUCTION INSPECTION. IN ADDITION, PRIOR TO COMMENCEMENT OF ANY CONSTRUCTION, ALL REQUIRED BONDS MUST BE POSTED, PERMIT FEES PAID AND PERMITS OBTAINED AND POSTED ONSITE.

5. NOTIFICATIONS

   A. THE CONTRACTOR SHALL NOTIFY THE OWNER AND/OR HIS REPRESENTATIVE AND ALL AFFECTED GOVERNMENTAL AGENCIES AT LEAST THREE (3) WORKING DAYS BEFORE THE INITIAL START OF OPERATIONS OR ANY TEMPORARY STOP OR RESUMPTION OF OPERATIONS. IN ADDITION, THE CONTRACTOR SHALL NOTIFY ALL AFFECTED TESTING AND INSPECTION AGENCIES SUFFICIENTLY IN ADVANCE OF CONSTRUCTION TO PROVIDE THE REQUIRED TESTING AND INSPECTIONS.

   B. THE CONTRACTOR SHALL BEAR ALL COSTS THAT RESULTS FROM THE FAILURE TO NOTIFY GOVERNMENTAL, TESTING OR INSPECTIONS AGENCIES INCLUDING, BUT NOT LIMITED TO SUSPENSIONS IN CONSTRUCTION OPERATIONS AND/OR REJECTIONS OF COMPLETED WORK.

6. A COPY OF THE APPROVED STAMPED PLANS AND SPECIFICATIONS AND OTHER AGENCIES' PERMITS, I.E. COUNTY HIGHWAY, ILLINOIS ENVIRONMENTAL PROTECTION AGENCY, ETC., MUST BE KEPT ON THE JOB SITE DURING CONSTRUCTION OF THE PROJECT WORK.

7. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR SAFETY ON THE JOB.

8. IT SHALL BE THE CONTRACTOR'S SOLE RESPONSIBILITY TO PROVIDE PROPER BARRICADING, SIGNAGE, WARNING DEVICES AND THE SAFE MANAGEMENT OF TRAFFIC WITHIN THE AREA OF CONSTRUCTION. ALL SUCH DEVICES AND THEIR INSTALLATION SHALL CONFORM TO THE ILLINOIS MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES FOR STREET AND HIGHWAYS, LATEST EDITION AND IN ACCORDANCE WITH THE CITY OF WARRENVILLE, ILLINOIS SUBDIVISION REGULATIONS AND THE CITY OF WARRENVILLE BUILDING CODE. NAME AND EMERGENCY PHONE NUMBERS SHALL BE GIVEN TO THE CITY OF WARRENVILLE AND THE ENGINEER PRIOR TO CONSTRUCTION.

9. CHANGES IN THE ENGINEERING PLANS MUST BE APPROVED BY THE ENGINEER. A WRITTEN REQUEST, ACCOMPANIED BY REVISED ENGINEERING PLANS, ARE TO BE SUBMITTED AND APPROVED BEFORE CONSTRUCTION OF CHANGES ARE STARTED.

10. NO PLANS SHALL BE USED FOR CONSTRUCTION UNLESS SPECIFICALLY MARKED FOR CONSTRUCTION. PRIOR TO COMMENCEMENT OF CONSTRUCTION, THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS, ELEVATIONS AND CONDITIONS AFFECTING THE WORK WITH THE ACTUAL CONDITIONS AT THE JOB SITE. THE CONTRACTOR MUST VERIFY THE ENGINEER'S LINE AND GRADE STAKES. IF THERE ARE ANY DISCREPANCIES WITH WHAT IS SHOWN ON THE CONSTRUCTION PLANS, HE MUST IMMEDIATELY REPORT SAME TO ENGINEER BEFORE DOING ANY WORK, OTHERWISE THE CONTRACTOR ASSUMES FULL RESPONSIBILITY. IN THE EVENT OF DISAGREEMENT BETWEEN THE CONSTRUCTION PLANS, SPECIFICATIONS AND/OR SPECIAL DETAILS, THE CONTRACTOR SHALL SECURE WRITTEN INSTRUCTION FROM THE ENGINEER PRIOR TO PROCEEDING WITH ANY PART OF THE WORK AFFECTED BY OMISSIONS OR DISCREPANCIES. FAILING TO SECURE SUCH INSTRUCTION, THE CONTRACTOR WILL BE CONSIDERED TO HAVE PROCEEDED AT HIS OWN RISK AND EXPENSE. IN THE EVENT OF ANY DOUBT OR QUESTIONS ARISING WITH RESPECT TO THE TRUE MEANING OF THE CONSTRUCTION PLANS OR SPECIFICATIONS, THE DECISION OF THE ENGINEER SHALL BE FINAL AND CONCLUSIVE.

11. EXISTING EASEMENTS AND RIGHT-OF-WAY LINES FOR EXISTING UTILITIES, BOTH PUBLIC AND PRIVATE, AND UTILITIES WITHIN PUBLIC RIGHT-OF-WAY ARE SHOWN ON THE PLANS ACCORDING TO AVAILABLE RECORDS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING THE EXACT LOCATION IN THE FIELD OF THESE UTILITIES AND THEIR PROTECTION FROM DAMAGE DURING CONSTRUCTION. IF EXISTING UTILITY LINES OF ANY NATURE ARE FOUND TO BE IN CONFLICT WITH THE NEW CONSTRUCTION, THE CONTRACTOR SHALL NOTIFY THE ENGINEER SO THAT THE CONFLICT MAY BE RESOLVED.

12. THE CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING ALL UTILITIES (AMERITECH, COMMONWEALTH EDISON ELECTRIC COMPANY, ETC.) PRIOR TO CONSTRUCTION AND ALL UTILITIES DAMAGED AND/ OR DISTURBED BY THE CONTRACTOR SHALL BE REPAIRED AT NO ADDITIONAL COST TO THE OWNER. LOCATIONS AS SHOWN ARE APPROXIMATE AND BASED UPON THE BEST AVAILABLE INFORMATION, CALL J.U.L.I.E. (800) 892-0123 FOR MAJOR UTILITY LOCATIONS.

13. ALL REQUIRED TESTING OF CONSTRUCTED IMPROVEMENTS INCLUDING, BUT NOT LIMITED TO WATERMAINS, SANITARY SEWERS, STORM SEWERS, STRUCTURES, PAVEMENTS, ETC. SHALL BE THE RESPONSIBILITY AND AT THE COST OF THE CONTRACTOR.

14. ALL EXISTING UTILITIES AND IMPROVEMENTS, INCLUDING BUT NOT LIMITED TO STRUCTURES, PAVEMENTS, CURBS AND PARKWAYS DAMAGED OR REMOVED AS A RESULT OF CONSTRUCTION ACTIVITIES SHALL BE PROMPTLY RESTORED TO THEIR RESPECTIVE ORIGINAL CONDITION. THIS WORK SHALL BE CONSIDERED INCIDENTAL TO THE CONTRACT UNLESS A SPECIFIC PAY ITEM IS LISTED ON THE BID LIST.

15. ANY TEMPORARY SHEETING OR BRACING FOR ANY EXCAVATIONS OR TRENCHES THAT MAY BE REQUIRED SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR AND SHALL NOT BE CONSIDERED EXTRA WORK. IN THE EVENT THAT SOFT MATERIALS ARE ENCOUNTERED IN SEWER CONSTRUCTION, THE CONTRACTOR SHALL (UPON APPROVAL OF THE OWNER AND/OR ENGINEER) OVER-EXCAVATE TO A DEPTH OF ONE (1) FOOT BELOW THE BOTTOM OF THE PIPE AND BACKFILL WITH COMPACTED CRUSHED STONE, PROPERLY FORMED TO FIT THE BOTTOM OF THE PIPE.

16. THE EXCAVATION TRENCH FOR SEWER PIPE AND STRUCTURE INSTALLATION SHALL BE KEPT DRY AT ALL TIMES DURING PIPE PLACEMENT. APPROPRIATE FACILITIES TO MAINTAIN THE DRY TRENCH SHALL BE PROVIDED BY THE CONTRACTOR AND THE COST OF SUCH SHALL BE INCIDENTAL TO THE UNIT PRICE BID FOR THE ITEM. PLANS FOR THE SITE DEWATERING, IF EMPLOYED, SHALL BE SUBMITTED TO AND APPROVED BY THE ENGINEER PRIOR TO IMPLEMENTATION. NO ADDITIONAL COMPENSATION SHALL BE MADE FOR DEWATERING DURING CONSTRUCTION.

17. THE CONTRACTOR SHALL PRESERVE ALL CONSTRUCTION STAKES UNTIL THEY ARE NO LONGER NEEDED. ANY STAKES DESTROYED OR DISTURBED BY THE CONTRACTOR PRIOR TO THEIR USE SHALL BE RESET BY THE DEVELOPER'S ENGINEER AT CONTRACTOR'S EXPENSE.

18. THE CONTRACTOR SHALL COLLECT AND REMOVE ALL CONSTRUCTION DEBRIS, EXCESS MATERIALS, TRASH, OIL AND GREASE RESIDUE, MACHINERY, TOOLS AND OTHER MISCELLANEOUS ITEMS WHICH WERE NOT PRESENT PRIOR TO PROJECT COMMENCEMENT AT NO ADDITIONAL EXPENSE TO THE OWNER. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ACQUIRING ANY AND ALL PERMITS NECESSARY FOR THE HAULING AND DISPOSAL REQUIRED FOR CLEAN-UP AS DIRECTED BY THE ENGINEER OR OWNER. BURNING ON THE SITE IS NOT PERMITTED.

19. BEFORE ACCEPTANCE BY THE OWNER AND FINAL PAYMENT, ALL WORK SHALL BE INSPECTED BY THE OWNER OR HIS REPRESENTATIVE.

20. CONTRACTOR SHALL REFER TO LANDSCAPE PLANS FOR COMPLETE LANDSCAPE INFORMATION.

21. REFER TO SITE ELECTRICAL DRAWINGS FOR EXISTING AND PROPOSED LIGHTING AND WIRING DETAILS AND SPECIFICATIONS.

MASS GRADING:

1. PRIOR TO THE COMMENCEMENT OF EARTHWORK OPERATIONS, THE SITE SHALL BE CLEARED IN ACCORDANCE WITH SECTION 201 OF THE STANDARD SPECIFICATIONS AT NO ADDITIONAL COST TO THE OWNER. CLEARING SHALL CONSIST OF THE REMOVAL AND DISPOSAL OF ALL OBSTRUCTIONS SUCH AS FENCES, WALLS, FOUNDATIONS, BUILDINGS, RUBBISH OF WHATEVER NATURE, EXISTING STRUCTURES, LOGS, SHRUBS, BUSHES, SAPLINGS, GRASS, WEEDS, OTHER VEGETATION, AND STUMPS OF LESS THAN SIX (6) INCHES IN DIAMETER. CLEARING SHALL EXTEND TO THE LIMITS OF DEVELOPMENT AND SHALL ALSO INCLUDE ALL ITEMS NOT SPECIFICALLY MARKED FOR PROTECTION.

2. THE CONTRACTOR SHALL REVIEW ALL SUBSURFACE/SOILS REPORTS, PERFORM SITE INSPECTION, AND VERIFY EXISTING TOPOGRAPHIC INFORMATION. ANY DISCREPANCY IN FINDINGS/CONCLUSIONS REGARDING EXISTING SITE CONDITIONS SHALL BE RESOLVED PRIOR TO THE START OF ANY EARTHWORK OPERATIONS. COMMENCEMENT OF EARTHWORK OPERATIONS INDICATES THAT THE CONTRACTOR HAS REVIEWED ALL AVAILABLE SITE INVESTIGATION DATA AND BASED HIS BID ACCORDINGLY.

3. EARTHWORK OPERATIONS, EARTH EXCAVATION AND PLACEMENT OF EMBANKMENT SHALL CONFORM TO SECTIONS 200, 202 AND 205 OF THE STANDARD SPECIFICATIONS.

4. ALL GRADING OPERATIONS MUST BE CONSTRUCTED ACCORDING TO THE ELEVATIONS AND GRADES AS SHOWN ON THE PLANS OR MODIFIED BY THE ENGINEER.

5. ALL EXCAVATED MATERIAL SHALL BE PLACED AND STOCKPILED ONSITE, AS SHOWN ON THE PLANS AND OUTSIDE OF FLOODPLAIN AREAS, WETLAND AREAS OR SPECIAL MANAGEMENT AREAS.

6. PLACEMENT OF STRUCTURAL FILL (EARTH AND OTHER SUITABLE MATERIALS) IN ORDER TO ACHIEVE THE PLAN SUBGRADE ELEVATIONS SHALL BE WITHIN A TOLERANCE OF 0.1 FEET. THE FILL MATERIAL SHALL BE PLACED IN LOOSE LIFTS THAT SHALL NOT EXCEED EIGHT (8) INCHES IN THICKNESS, AND THE WATER CONTENT SHALL BE ADJUSTED IN ORDER TO ACHIEVE REQUIRED COMPACTION. EARTH MATERIAL MAY BE PLACED WITHIN THOSE PORTIONS OF THE SITE NOT REQUIRING STRUCTURAL FILL, TO WITHIN SIX (6) INCHES OF THE PLAN FINISHED GRADE ELEVATION. IN AREAS REQUIRING STRUCTURAL FILL THE EARTH MATERIAL SHALL NOT BE PLACED OVER TOPSOIL OR OTHER UNSUITABLE MATERIALS UNLESS SPECIFICALLY DIRECTED BY A SOILS ENGINEER WITH THE CONCURRENCE OF THE OWNER.

MASS GRADING (CONT'D):

7. EXCESS EXCAVATED AND SURPLUS MATERIALS, IF NOT UTILIZED AS FILL OR IF DETERMINED TO BE UNSUITABLE BY THE SOILS ENGINEER, SHALL BE COMPLETELY REMOVED FROM THE CONSTRUCTION SITE AND DISPOSED OF OFF-SITE BY THE CONTRACTOR IN A LEGAL MANNER.

8. UNSUITABLE MATERIAL SHALL BE CONSIDERED AS MATERIAL WHICH IS NOT SUITABLE FOR THE SUPPORT OF PAVEMENT AND BUILDING CONSTRUCTION, AND IS ENCOUNTERED BELOW NORMAL TOPSOIL DEPTHS AND THE PROPOSED SUBGRADE ELEVATION. THE DECISION TO REMOVE SAID MATERIAL, AND TO WHAT EXTENT, SHALL BE MADE BY A SOILS ENGINEER WITH THE CONCURRENCE OF THE OWNER.

9. POSITIVE DRAINAGE MUST BE PROVIDED AT ALL TIMES IN AN ATTEMPT NOT TO AFFECT THE SUBJECT DEVELOPMENT OR TO INFRINGE UPON ADJACENT PROPERTIES. STORM WATER SHALL BE PREVENTED FROM RUNNING INTO OR STANDING IN EXCAVATED AREAS. FINAL GRADES SHALL BE PROTECTED AGAINST DAMAGE FROM EROSION AND TRAFFIC.

10. THE UPPER TWELVE (12) INCHES OF THE SUITABLE SUBGRADE MATERIAL IN ALL AREAS THAT MAY BE SOFT DUE TO EXCESS MOISTURE CONTENT SHALL BE SCARIFIED AND COMPACTED TO THE DEGREE SPECIFIED. THIS APPLIES TO CUT AREAS AS WELL AS FILL AREAS.

PAVEMENT:

1. PRIOR TO THE CONSTRUCTION OF THE CURB AND GUTTER AND THE PLACEMENT OF THE BASE MATERIAL, THE STREETS SHALL BE FINE GRADED TO WITHIN 0.1 FEET OF FINAL SUBGRADE ELEVATION, TO A POINT TWO (2) FEET BEYOND THE BACK OF CURB.

2. THE SUBGRADE OF ALL ROADS SHALL BE GRADED AND ROLLED IN ACCORDANCE WITH SECTION 301 OF THE STANDARD SPECIFICATIONS FOR THE ROAD AND BRIDGE CONSTRUCTION, CURRENT EDITION. PARTICULAR ATTENTION IS DIRECTED TO THE REQUIREMENTS FOR THE REPLACEMENT OF SOFT AND UNSTABLE MATERIAL AS CONTAINED IN ARTICLE 202.03 EMBANKMENT SHALL BE PLACED AND COMPACTED IN ACCORDANCE WITH SECTION 205 OF SAID SPECIFICATIONS.

3. SUBGRADE MATERIAL HAVING AN IBR LESS THAN 2.5 SHALL BE REMOVED AND REPLACED WITH SUITABLE FILL OR THE PAVEMENT MUST BE DESIGNED TO COMPENSATE FOR THE EXISTING SOIL CONDITIONS.

4. AT LEAST ONE STANDARD DENSITY TEST (PERFORMED IN ACCORDANCE WITH AASHTO T99) SHALL BE TAKEN IN EACH FILL SECTION, WITH THE MAXIMUM DISTANCE BETWEEN TESTS OF 300 FEET. ONE STANDARD PROCTOR TEST SHALL BE TAKEN FROM EACH DIFFERENT SOURCE OF BORROWED MATERIAL, IF REQUIRED BY THE CITY OF WARRENVILLE. THE PROCTOR AND DENSITY TESTS MUST BE SUBMITTED FOR REVIEW AND APPROVAL BY THE CITY OF WARRENVILLE. UPON APPROVAL OF THESE TESTS, THE CITY WILL MAKE AN INSPECTION OF THE SUBGRADE. THE SUBGRADE MUST BE APPROVED PRIOR TO PLACING ANY TYPE OF CURB AND GUTTER OR BASE MATERIAL. THE COST OF ALL TESTING WILL BE THE RESPONSIBILITY OF THE CONTRACTOR.

5. AGGREGATE BASE COURSE MATERIAL SHALL BE TYPE B, GRADATION CA-6. THE COMPACTED THICKNESS SHALL BE AS LISTED ON THE PLANS. PRIOR TO RECEIVING ANY PRIME COAT MATERIALS, THE BASE COURSE SHALL BE PREPARED ACCORDING TO SECTION 358 OF THE STANDARD SPECIFICATIONS.

6. AFTER THE AGGREGATE BASE COURSE HAS BEEN PREPARED, AND WHEN IN A DRY CONDITION, THE BITUMINOUS MATERIALS, AS SPECIFIED FOR PRIME IN ARTICLE 406.02 OF THE STANDARD SPECIFICATIONS, SHALL BE APPLIED UNIFORMLY AT A RATE OF 0.25 - 0.50 GAL/SYD. THE BITUMINOUS PRIMING MATERIAL SHALL BE PREPARED ACCORDING TO ARTICLE 403.07 AND THE METHOD OF APPLICATION SHALL BE AS SPECIFIED IN ARTICLE 403.09.

7. THE BITUMINOUS CONCRETE BINDER AND SURFACE COURSE SHALL COMPLY WITH THE STATE OF ILLINOIS CLASS I, AS SET FORTH IN SECTION 406 OF THE STANDARD SPECIFICATIONS. A TACK COAT SHALL BE APPLIED TO THE BASE COURSE AT A RATE OF 0.40 GALLONS PER SQUARE YARD.

8. AFTER A BASE CURING PERIOD OF NOT MORE THAN FIVE (5) DAYS AFTER PRIMING, A BITUMINOUS CONCRETE BINDER COURSE (MIXTURE B) SHALL BE CONSTRUCTED UPON THE BASE COURSE. THE COMPACTED THICKNESS OF THE BINDER AND COMPACTED GRANULAR BASE IS LISTED ON THE PLANS.

9. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING THE BASE AND BINDER COURSE ON A SAFE AND PASSABLE CONDITION UNTIL THE SAID BASE IS SURFACED. SHOULD ANY CONDITION OCCUR WHICH, IN THE JUDGEMENT OF THE ENGINEER, WOULD CONSTITUTE A HAZARD TO VEHICULAR OR PEDESTRIAN TRAFFIC. THE CONTRACTOR SHALL DO WHATEVER IS REQUIRED TO RESTORE THE ROADWAY TO A SAFE CONDITION. IF THE CONTRACTOR DOES NOT CORRECT SUCH HAZARDOUS CONDITIONS WITHIN 12 HOURS AFTER NOTIFICATION BY THE ENGINEER, THEN THE CITY OF WARRENVILLE MAY PERFORM REMEDIAL WORK AND BILL THE CHARGES TO THE CONTRACTOR.

10. ALL BITUMINOUS BINDER COURSE MATERIALS MUST BE IN PLACE FOR A MINIMUM OF TEN (10) MONTHS, INCLUDING WINTER AND SPRING BEFORE THE INSTALLATION OF THE SURFACE COURSE.

11. A PRIME COAT SHALL THEN BE APPLIED AT A RATE OF 0.15 GALLONS PER SQUARE YARD, AFTER WHICH BITUMINOUS SURFACE COURSE, CLASS I, MODIFIED, SHALL BE CONSTRUCTED. THE CONTRACTOR SHALL BE REQUIRED TO SEAL ANY SHRINKAGE CRACKS WHICH BECOME APPARENT WITHIN ONE (1) YEAR AFTER PLACING SURFACE COURSE. SURFACE COURSE SHALL BE OF THE THICKNESS LISTED ON THE PLANS.

12. CONCRETE CURB AND GUTTER SHALL BE CONSTRUCTED IN CONFORMANCE WITH SECTION 606 OF THE STANDARD SPECIFICATIONS AT THE LOCATIONS AND IN CONFORMANCE WITH THE DETAILS SHOWN ON THE PLANS. TWO (2) CONTINUOUS #4 BARS OF REINFORCING STEEL SHALL RUN THE ENTIRE LENGTH OF THE CURB AND GUTTER. THE CONCRETE USED THEREIN SHALL CONFORM TO STANDARD SPECIFICATIONS.

13. 3/4 INCH PRE-MOLDED BITUMINOUS EXPANSION JOINTS HAVING TWO (2) 3/4 INCH DOWEL BARS SHALL BE INSTALLED AT 45 FOOT INTERVALS AND AT ALL POINTS OF CURVATURE WHERE THE RADIUS IS LESS THAN 100 FEET. THE DOWEL BARS SHALL BE 18 INCHES LONG AND SHALL BE PROPERLY GREASED AND HAVE EXPANSION CAPS. CONTRACTION JOINTS SHALL BE FORMED AT 15-FOOT INTERVALS.

14. DEVELOPMENT PLANS SHALL INCLUDE SIDEWALK AND/OR CROSSWALKS AND SHALL BE CONSTRUCTED OF PORTLAND CEMENT CONCRETE TO A MINIMUM THICKNESS OF FIVE (5) INCHES. ALL SIDEWALKS MATERIALS, CONSTRUCTION AND TESTING SHALL MEET THE REQUIREMENTS OF THE STANDARD SPECIFICATIONS. REFER TO ARCHITECTURAL DRAWINGS FOR CONTROL JOINT LOCATIONS FOR WALKS ADJACENT TO BUILDING.

15. ALL EXPOSED CONCRETE WORK INCLUDING SIDEWALKS AND CURBS MUST HAVE CURING COMPOUND APPLIED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

16. PRIOR TO CONSTRUCTING THE BITUMINOUS SURFACE COURSE, THE BASE COURSE WILL BE REPAIRED TO THE SATISFACTION OF THE ENGINEER. BASE AND BINDER REPAIR SHALL INCLUDE REMOVAL OF THE EXISTING BINDER, PREPARING AND PRIMING THE BASE COURSE AT THE SPECIFIED RATE AND PLACING AND COMPACTING A MINIMUM OF TWO (2) INCHES OF CLASS I BINDER. PRIOR TO THE CONSTRUCTION THE SURFACE COURSE THE BASE COURSE SHALL BE PREPARED TO THE SATISFACTION OF THE ENGINEER.

17. THE CONSTRUCTION OF ALL PAVEMENT, CURBS AND GUTTERS, AND SIDEWALK IMPROVEMENTS, INCLUDING THE USE OF ALL MACHINERY, EQUIPMENT AND TOOLS, AND THE FURNISHING OF ALL MATERIALS, AND THE CONSTRUCTION OF ALL OTHER WORK NECESSARY TO COMPLETE THE PROPOSED IMPROVEMENTS, SHALL BE CONSTRUCTED ACCORDING TO THE REQUIREMENTS AS OUTLINED IN THE STATE'S STANDARD SPECIFICATIONS. THE MATERIAL FOR THOSE IMPROVEMENTS SHALL BE IN CONFORMANCE WITH THE APPROPRIATE SECTION OF THE STATE STANDARD SPECIFICATIONS.

18. ALL EXISTING MANHOLES AND STRUCTURES SHALL BE ADJUSTED TO MEET FINISHED GRADE. THIS SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.

19. ALL PAVING IMPROVEMENTS INSTALLED WILL BE SUBJECT TO TESTING, AS PROVIDED FOR IN THESE SPECIFICATIONS AND IN THE STANDARD SPECIFICATIONS. A COMPANY APPROVED BY DUPAGE COUNTY WILL PERFORM THE TESTING AT THE COST OF THE DEVELOPER. IF ANY IMPROVEMENTS ARE FOUND TO BE DEFECTIVE IN WORKMANSHIP OR MATERIALS, THEY SHALL BE REMOVED AND REPLACED.

20. THE SUBGRADE MATERIALS MUST BE PROOF-ROLLED AND TESTED PRIOR TO ANY PAVING OR CURB IMPROVEMENTS. TESTING REPORTS MUST BE SUBMITTED TO THE CITY OF WARRENVILLE FOR REVIEW AND APPROVAL. DENSITY TESTING OF THE BASE COURSE MATERIALS IS REQUIRED, ALL TESTING REPORTS MUST BE SUBMITTED TO THE CITY OF WARRENVILLE. TESTING WILL HAVE TO PASS A PROOF ROLL OF ONE QUARTER (¼) INCH DEFLECTION.

21. ALL STREETS, CURBS, GUTTERS AND SIDEWALKS WHICH ARE CONSTRUCTED WITHIN PUBLIC RIGHT-OF-WAY SHALL BE UNDER WARRANTY FOR ALL DEFECTS AND FAILURES FOR A PERIOD OF TWO (2) YEARS AFTER THE DATE OF ACCEPTANCE.

22. IN PAVEMENT AREAS WHERE UNSTABLE SOILS ARE PRESENT, TERRATEX NO. 8 GEOFABRIC OR APPROVED EQUAL SHALL BE USED AT THE DISCRETION OF THE ENGINEER. PLACE THE GEOFABRIC/GEOGRID SYSTEM IMMEDIATELY ABOVE THE STABLE PREPARED SUBGRADE AT BASE COURSE/SUBGRADE CONTACT, AND INSTALL FOLLOWING MANUFACTURERS INSTRUCTIONS. THE CITY OF WARRENVILLE APPROVAL IS REQUIRED.

23. PAVEMENT STRIPPING SHALL BE IN ACCORDANCE WITH STANDARD SPECIFICATIONS SECTION 780. PAVEMENT STRIPPING SHALL BE PAINT. PAVEMENT STRIPPING SHALL BE 4" WHITE UNTIL OTHERWISE NOTED. HANDICAPPED PARKING STALLS SHALL BE STRIPPED AS PER ADA SPECIFICATION. SEE DETAILS.

CITY OF WARRENVILLE WATER MAIN SPECIFICATIONS

1. ALL OPEN CUT WATER MAIN SHALL BE POLYVINYL CHLORIDE PLASTIC (PVC) PRESSURE PIPE PER AWWA SPECIFICATION C-900, CLASS 150 (DR-18). THE ABOVE PIPE AND FITTINGS SHALL BE FURNISHED WITH ELASTOMERIC GASKET JOINTS CONFORMING TO ASTM F477. TRENCH BACKFILL SHALL BE UTILIZED TO TWELVE INCHES (12") ABOVE THE TOP OF THE PVC WATER MAIN.

2. ALL WATER MAIN INSTALLED BY HORIZONTAL DIRECTIONAL DRILLING SHALL BE PVC PER AWWA SPECIFICATION C-900 WITH CERTALOK JOINTS. ASSEMBLY AND INSTALLATION OF PIPE SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS. ALL MATERIAL SPECIFICATIONS SHALL BE SUBMITTED TO THE CITY AND APPROVED PRIOR TO INSTALLATION.

3. ONE ¼" DIAMETER STAINLESS STEEL WIRES OR A SOLOSHOT 845 EHS TRACER WIRE AS MANUFACTURED BY COPPERHEAD OR APPROVED EQUAL SHALL BE INSTALLED DIRECTLY OVER THE CENTER OF THE WATER MAIN IN THE TRENCH WITH A MAXIMUM SEPARATION OF FOUR INCHES (4") ABOVE THE PIPE. THE TRACER WIRE WILL BE INSTALLED WITH THE WATER MAIN AND ATTACHED TO ALL IN-LINE VALVES, HYDRANT VALVES, HYDRANTS AND SERVICE LINES TO INSURE SIGNAL CONDUCTIVITY ALONG ALL PORTIONS OF THE NEW MAIN.

4. FITTINGS SHALL BE DUCTILE IRON, 250 PSI PRESSURE RATING, CEMENT MORTAR LINED WITH RESTRAINED PUSH-ON JOINT OR MECHANICAL JOINT WITH MEGALUG RETAINER GLANDS, OR APPROVED EQUAL.

5. WATER MAIN BOLTS SHALL BE STAINLESS STEEL ASTM 304.

6. RESTRAINED JOINTS - ALL FITTINGS SHALL HAVE RESTRAINED JOINTS. ALL WATER MAIN PIPING IN CASING SHALL HAVE RESTRAINED JOINTS. RESTRAINED JOINTS SHALL BE PUSH JOINT WITH A FIELD LOCK GASKET OR A MECHANICAL JOINT WITH MEGALUG RETAINER GLANDS, OR APPROVED EQUAL. ALL BENDS, TEES, AND DEAD END PIPING MUST BE RESTRAINED A MINIMUM OF 24' IN BOTH DIRECTIONS OF THE FITTING. THRUST CEMENT BLOCKING OF ALL FITTINGS, HYDRANTS, AND DEAD END PIPING IS REQUIRED.

7. PRESSURE CONNECTIONS - PRESSURE TAPPING SLEEVES SHALL BE ALL STAINLESS STEEL.

8. ALL VALVES SHALL BE RESILIENT WEDGE GATE VALVES MANUFACTURED IN A PRECAST CONCRETE VAULT. VALVES SHALL BE MUELLER, WATEROUS, OR CLOW MANUFACTURE. ALL BOLTS SHALL BE STAINLESS STEEL.

9. VALVE VAULTS SHALL BE PRE-CAST CONCRETE UNITS. FOR WATER MAINS 8-INCH DIAMETER OR LESS, THE VAULT SHALL BE 48-INCH INSIDE DIAMETER. FOR WATER MAINS 10-INCH DIAMETER AND GREATER, THE VAULT SHALL BE 60-INCH INSIDE DIAMETER.

10. FRAMES AND LIDS SHALL CONFORM TO NEENAH FOUNDRY R-1713 OR APPROVED EQUAL AND THE WORD "WATER" SHALL BE CAST IN THE COVER.

11. CASING - SPACERS ALL JOINTS WITHIN THE CASING SHALL BE RESTRAINED. SPACERS SHALL BE INSTALLED ON ALL PIPE IN CASING. SPACERS SHALL BE BOLT ON STYLE WITH A SHELL MADE IN TWO SECTIONS OF HEAVY T-304 STAINLESS STEEL. CASING SHALL BE FILLED WITH PEA GRAVEL OR SAND AND SEALED AT BOTH ENDS.

12. ALL DUCTILE IRON PIPES AND FITTINGS ARE REQUIRED TO BE ENCASED IN 8-MIL POLYETHYLENE CONFORMING TO AWWA C-105.

13. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO OBTAIN AND SUPPLY CERTIFICATION FOR ALL MATERIALS. SHOP DRAWINGS SHALL BE SUBMITTED TO AND APPROVED BY THE CITY BEFORE INSTALLATION.

14. DEPTH OF BURY FOR WATER MAIN TO BE 5'-6" (MINIMUM).

15. INSTALLATION SHALL CONFORM TO "STANDARD SPECIFICATIONS FOR WATER AND SEWER MAIN CONSTRUCTION IN ILLINOIS" LATEST EDITION.

CITY OF WARRENVILLE FIRE HYDRANT SPECIFICATIONS

1. HYDRANT SHALL BE FM APPROVED AND UL LISTED, SHALL CONFORM TO AWWA C-502, AND SHALL HAVE BREAKAWAY SAFETY FLANGES.

2. HYDRANTS SHALL BE MUELLER CENTURION, WATEROUS WB67-250, OR CLOW MEDALLION.

3. ALL BOLTS SHALL BE STAINLESS STEEL FROM AND INCLUDING THE BREAKAWAY FLANGE TO THE INLET ON THE HYDRANT SHOE.

4. ALL HYDRANTS SHALL HAVE A BRONZE CROSS ARM / TOP PLATE.

5. CONNECTING PIPING SHALL BE SIX-INCH (6") DIAMETER SHALL BE POLYVINYL CHLORIDE PLASTIC (PVC) PRESSURE PIPE PER AWWA SPECIFICATION C-900, CLASS 150 (DR-18). THE ABOVE PIPE AND FITTINGS SHALL BE FURNISHED WITH ELASTOMERIC GASKET JOINTS CONFORMING TO ASTM F477.

6. MAIN VALVE OPENING SHALL BE FIVE AND ONE QUARTER INCH (5-1/4") IN DIAMETER, COMPRESSION TYPE, WITH A BRASS DRAIN VALVE.

7. NOZZLES SHALL HAVE THREADED MALE ENDS CONFORMING TO "AMERICAN NATIONAL STANDARD FIRE HOSE CONNECTION SCREW THREADS. THE HYDRANT SHALL HAVE TWO NOZZLES OF 63 MM WHICH ARE 2- 1/2" AND ONE PUMPER NOZZLE OF 114 MM (4-1/2") WITH CAPS AND CHAINS.

8. HYDRANTS SHALL HAVE A MINIMUM WORKING PRESSURE OF 175 PSI.

9. HYDRANTS SHALL OPEN IN A COUNTER-CLOCKWISE DIRECTION, AS INDICATED BY AN ARROW AND THE WORD "OPEN" ON THE DOME.

10. HYDRANTS SHALL BE PAINTED A HIGH VISIBILITY RED, FACTORY APPLIED PAINT. HYDRANTS SHALL HAVE A SIX-INCH (6") AUXILIARY VALVE WITH BOX ON THE INLET PIPING. VALVE SHALL MEET WATER MAIN PIPING SPECIFICATIONS FOR THE CITY OF WARRENVILLE. AUXILIARY VALVE ATTACHED TO HYDRANT SHALL HAVE STAINLESS STEEL BOLTS AT THE FLANGE INLET.

11. CONNECTION OF SIX-INCH (6") PIPING SHALL BE RESTRAINED JOINTS FROM THE TEE AT THE WATER MAIN TO THE INLET OF THE HYDRANT WITH FIELD LOCK GASKETS FOR PUSH JOINT AND MEGALUG RETAINER GLANDS, OR APPROVED EQUAL FOR MECHANICAL JOINT.

CITY OF WARRENVILLE WATER SERVICE SPECIFICATIONS

1. FOR WATER SERVICES 2-INCH DIAMETER AND LESS SHALL BE TYPE "K" COPPER ONLY WITH A MINIMUM SIZE OF ONE-INCH (1") DIAMETER.

2. BRASS SHALL BE MUELLER OR FORD. ALL BRASS IS PREFERRED TO HAVE COMPRESSION FITTINGS. COMPRESSION FITTINGS MUST BE OF THE STAINLESS FULL CIRCLE RING RETAINAGE. N

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CITY OF WARRENVILLE SANITARY SEWER SPECIFICATIONS

1. ALL SANITARY SEWER AND SANITARY SEWER SERVICE PIPE SHALL BE SDR 26 ASTM D-2241 AND FITTINGS SHALL MEET THE REQUIREMENTS OF ASTM D-3139 OR EQUIVALENT. NOTE: THIS IS A PRESSURE RATED PIPE.
2. SANITARY SEWER SERVICES SHALL BE A MINIMUM OF 6-INCHES IN DIAMETER.
3. ALL SANITARY SEWERS SHALL BE AIR AND MANDREL TESTED, AND TELEVISED, INCLUDING PRIVATE COMMERCIAL LINES BETWEEN INSPECTION MANHOLE AND THE PUBLIC SANITARY SEWER. COPIES OF DVDS AND REPORTS SHALL BE PROVIDED TO THE CITY.
4. SANITARY SEWER MANHOLES SHALL HAVE OPENINGS FOR THE PIPE CONNECTIONS CAST INTO THE WALL OF THE STRUCTURE. RUBBER GASKETED COUPLING (BOOT) WITH STAINLESS STEEL BANDS / RETAINERS SHALL BE PER ASTM C-923.
5. WHEN CONNECTING TO AN EXISTING MANHOLE, THE HOLE MUST BE CORED AND A RUBBER GASKETED COUPLING (BOOT) WITH STAINLESS STEEL BANDS / RETAINERS SHALL BE PER ASTM C-923. THE BENCH SHALL BE REMOVED AND REPOURED, IF NECESSARY. RUBBER BOOTS/SEALS MUST BE USED WHERE PIPES ENTER MANHOLES. THE INTERNAL CONNECTION SHALL BE DRESSED UP WITH NON-SHRINK HYDRAULIC CEMENT. HYDRAULIC CEMENT, MORTAR, AND CONCRETE MUST BE OF THE STRENGTH AND WATER-TIGHTNESS QUALITY AS SPECIFIED IN THE ASTM STANDARDS
6. WHEN CONNECTING A NEW SANITARY SERVICE TO AN EXISTING SANITARY SEWER MAIN WITHOUT AN EXISTING WYE, CONTACT PUBLIC WORKS TO DETERMINE WHICH ONE OF THE TWO FOLLOWING METHODS SHALL BE USED:
   A. A SECTION OF THE MAIN SHALL BE CUT OUT TO INSTALL A NEW WYE. CONNECTION BETWEEN THE EXISTING SANITARY SEWER AND THE NEW WYE SHALL BE MADE WITH NON-SHEAR MISSION COUPLINGS WITH TWO STAINLESS STEEL BANDS TO A POINT WHERE THE COUPLING CANNOT SHIFT.
   B. CORE THE EXISTING MAIN AND MAKE THE CONNECTION WITH AN INSERTA TEE CONNECTION OR AN APPROVED EQUAL
7. SANITARY MANHOLES SHALL BE PRE-CAST CONCRETE UNITS. FOR SANITARY SEWERS 18-INCH DIAMETER OR LESS, THE MANHOLE SHALL BE 48-INCH INSIDE DIAMETER. FOR SANITARY SEWERS 21-INCH DIAMETER AND LARGER, THE MANHOLE SHALL BE 60-INCH INSIDE DIAMETER.
8. FRAMES AND LIDS SHALL CONFORM TO NEENAH FOUNDRY R-1713 OR APPROVED EQUAL OR OTHERWISE NOTED IN PLANS AND THE WORD "SANITARY" SHALL BE CAST IN THE COVER. THE LID SHALL BE A SELF- SEALING SOLID LID WITH WATERTIGHT GASKET AND CONCEALED PICKHOLE. ANY MANHOLE WITHIN A FLOODPLAIN SHALL HAVE A WATERTIGHT, BOLTDOWN FRAME AND LID, NEENAH R-1916-F1 OR APPROVED EQUAL.
9. ALL COMMERCIAL BUILDINGS SHALL HAVE AN INSPECTION MANHOLE.
10. MANHOLE SECTIONS AND ADJUSTING RINGS SHALL BE SEALED WITH BUTYL ROPE.
11. SANITARY MANHOLES SHALL HAVE A POURED CONCRETE BENCH.
12. RUNGS / STEPS SHALL BE INSTALLED IN MANHOLES UNLESS SPECIFICALLY PROHIBITED.
13. EXTERNAL CHIMNEY SEALS AND MACWRAP WILL BE REQUIRED WITH ALL SANITARY MANHOLES. THE FRAME, CHIMNEY, AND TOP "LIP" OF THE CONE SECTION SHALL BE REQUIRED TO BE SEALED WITH A CHIMNEY SEAL. THIS SHOULD BE OBSERVED BY THE CITY PRIOR TO BACKFILLING.
14. NO GROUND WATER WILL BE ALLOWED TO ENTER THE SANITARY SEWER DURING OR AFTER CONSTRUCTION.
15. NO MORE THAN TWELVE INCHES (12") OF ADJUSTING RINGS ARE ALLOWED.

SANITARY SEWER:

1. ALL SEWER PIPES MUST BE LAID ON A MINIMUM 6" CLASS B BEDDING MATERIAL (#2 TORPEDO SAND, OR GRADE 8 STONE, PROPERLY COMPACTED). TRENCH BACKFILL MUST BE WELL SPADED ON BOTH SIDES OF PIPE. SEE SANITARY SEWER TRENCH DETAIL FOR TRENCH BACKFILL REQUIREMENTS.
2. A DROP PIPE SHALL BE PROVIDED FOR A SEWER ENTERING A MANHOLE AT AN ELEVATION OF TWENTY-FOUR (24) INCHES OR MORE ABOVE THE MANHOLE INVERT. WHERE THE DIFFERENCE IN ELEVATION BETWEEN THE INCOMING SEWER AND THE MANHOLE INVERT IS LESS THAN TWENTY-FOUR (24) INCHES, THE INVERT SHALL BE FILLETED TO PREVENT SOLID DEPOSITION. ALL MANHOLES SHALL BE CONSTRUCTED WITH AN OUTSIDE DROP CONNECTION.
3. MANHOLES SHALL BE MADE OF PRECAST CONCRETE CONFORMING TO ASTM C-478. NO BRICK OR CONCRETE BLOCK MANHOLES SHALL BE PERMITTED. ALL MANHOLES SHALL BE WATERPROOFED BY COATING THE OUTSIDE WALL ACCORDING TO ASTM C-877. DISH FLOW LINE IS NOT ALLOWED. SEE SANITARY MANHOLE DETAIL FOR ADDITIONAL REQUIREMENTS.
4. SEWER SERVICES LATERALS SHALL BE MINIMUM OF SIX (6) INCHES IN DIAMETER AT A MINIMUM SLOPE OF ONE (1) PERCENT AND ARE TO BE CONNECTED TO THE SEWER MAIN AT THE TIME OF CONSTRUCTION BY USING A WYE. PROPOSED SERVICES ARE TO BE POLYVINYL CHLORIDE PIPE (PVC SDR-26) ASTM D-2241 WITH ASTM D-3139 FLEXIBLE ELASTOMERIC SEALS. WHERE A SANITARY SEWER SERVICE LINE IS TO CONNECT TO AN EXISTING SEWER MAIN OR LATERAL, TAPS SHALL BE MADEAS APPROVEDBY THE CITY OF WARRENVILLE.
9. ALL SANITARY SEWER, SERVICES, AND MANHOLES SHALL BE TESTED AND INSPECTED PRIOR TO ACCEPTANCE BY THE THE CITY OF WARRENVILLE. CONTRACTOR SHALL COMPLETE ALL TESTING AND PROVIDE ALL MATERIAL AND EQUIPMENT NECESSARY FOR TESTING. IF TESTING FAILS, CONTRACTOR SHALL REMEDY THE FAILURE TO THE SATISFACTION OF THE ENGINEER AND THE DISTRICT.
10. AS A MINIMUM, AN AIR TEST SHALL BE PERFORMED AS DESCRIBED IN SECTION 31-1.13(C) OF THE "SSWSCI". ALL FLEXIBLE SANITARY SEWER SHALL ALSO PASS A DEFLECTION (MANDREL) TEST AS DESCRIBED IN SECTION 31-1.13(D) OF THE "SSWSCI" AFTER THE SEWER PIPE HAS BEEN IN THE GROUND FOR A MINIMUM OF 30 DAYS.
11. THE CITY OF WARRENVILLE MAY REQUIRE ADDITIONAL EXFILTRATION AND/OR INFILTRATION TESTS TO BE COMPLETED ON ALL SANITARY SEWERS IN LIEU OF THE AIR TEST. IF DIRECTED BY THE DISTRICT, THE CONTRACTOR SHALL COMPLETE ALL ADDITIONAL TESTS ACCORDING TO SECTIONS 31.1.13 (A) & (B) OF THE "SSWSCI" AT NO ADDITIONAL COST TO THE OWNER, UNLESS OTHERWISE REQUIRED BY THE DISTRICT OR THE ENGINEER, THE MAXIMUM EXFILTRATION AND INFILTRATION LIMITS SHALL BE 240 AND 200 GALLONS PER INCH OF PIPE DIAMETER PER MILE PER DAY OF SEWER PIPE, INCLUDING MANHOLES IN THE TEST SECTION, RESPECTIVELY.
12. ALL MANHOLES SHALL BE TESTED FOR WATER TIGHTNESS IN ACCORDANCE WITH ASTM C969, "STANDARD PRACTICE FOR INFILTRATION AND EXFILTRATION ACCEPTANCE TESTING OF INSTALLED PRECAST CONCRETE PIPE SEWER LINES" OR ASTM C1244,"STANDARD TEST METHOD FOR CONCRETE SEWER MANHOLES BY NEGATIVE PRESSURE (VACUUM) TEST." ALL MANHOLES SHALL BE THOROUGHLY CLEANED OF DEBRIS AND ALL VISIBLE LEAKAGE ELIMINATED BEFORE INSPECTION AND ACCEPTANCE.
13. ALL DEFECTS AND CORRECTIVE WORK REQUIRED AS THE RESULT OF TV INSPECTION SHALL BE TAKEN CARE OF BY THE CONTRACTOR WITHOUT DELAY. UPON COMPLETION THEREOF, THE SEWER SHALL BE RE-TESTED AND SUCH FURTHER INSPECTION OF THE WORK MADE AS DEEMED NECESSARY BY THE CITY OF WARRENVILLE AT THE COST OF THE CONTRACTOR.
14. SPECIAL CONSIDERATION MUST BE GIVEN TO THE INSTALLATION OF THE SEWER SYSTEM BY THE CONTRACTOR DURING THE COURSE OF CONSTRUCTION TO INSURE PROTECTION OF THE ADJACENT AREA, SEWER ALIGNMENT, CONNECTION, WYE LOCATIONS, BACKFILLING, ETC.
15. ANY DEVIATION FROM APPROVED PLANS OR SPECIFICATIONS AFFECTING CAPACITY, FLOW, OPERATION OF UNITS, OR POINT OF DISCHARGE SHALL BE APPROVED, IN WRITING BY THE CITY OF WARRENVILLE BEFORE SUCH CHANGES ARE MADE AND SHALL BE SHOWN ON THE AS-BUILT DRAWINGS.

STANDARD CITY OF WARRENVILLE EROSION CONTROL NOTES

1. SEDIMENT AND EROSION CONTROL DEVICES SHALL BE INSTALLED AND FUNCTIONAL BEFORE THE SITE IS OTHERWISE DISTURBED. ALL RUNOFF FROM DISTURBED AREAS SHALL BE FILTERED BY SILT FENCE. IN ADDITION TO SILT FENCE, DISTURBED AREAS DRAINING MORE THAN ONE ACRE BUT FEWER THAN FIVE ACRES SHALL INCORPORATE A TEMPORARY SEDIMENT TRAP AT THE OUTFALL AND DISTURBED AREAS DRAINING MORE THAN FIVE ACRES SHALL INCORPORATE A TEMPORARY SEDIMENT BASIN AT THE OUTFALL.
2. IF A STOCKPILE IS TO REMAIN IN PLACE FOR MORE THAN THREE DAYS, IT SHALL BE SURROUNDED BY SILT FENCE. IF A STOCKPILE IS TO REMAIN IN PLACE FOR MORE THAN 7 DAYS, IT SHALL BE PROTECTED WITH TEMPORARY SEEDING.
3. ALL FLARED END SECTIONS SHALL BE PROTECTED BY SEDIMENT TRAPS AND/OR PERFORATED RISER PIPES UNTIL GROUND COVER HAS BEEN ESTABLISHED. FILTER FABRIC OR FILTER BASKETS SHALL BE INSTALLED UNDER ALL INLET AND CATCH BASIN GRATES AND SHALL BE MAINTAINED UNTIL GROUND COVER HAS BEEN ESTABLISHED.
4. WATER PUMPED FROM THE SITE SHALL BE FILTERED THROUGH THE USE OF A SILT BAG ON THE END OF THE DISCHARGE HOSE.
5. A SPECIFIC AREA SHALL BE DESIGNATED AS A CONCRETE WASH LOCATION AND SHALL BE SURROUNDED BY SILT FENCE.
6. ALL SOIL, MUD AND CONSTRUCTION DEBRIS WASHED, TRACKED OR OTHERWISE DEPOSITED ON STREET PAVEMENT SHALL BE REMOVED IMMEDIATELY AND A WASH-DOWN FACILITY SHALL BE PROVIDED FOR ALL CONSTRUCTION VEHICLES LEAVING THE SITE.
7. VEHICULAR ACCESS TO THE SITE SHALL BE RESTRICTED TO A TEMPORARY GRAVEL CONSTRUCTION ENTRANCE. THE TEMPORARY CONSTRUCTION ENTRANCE SHALL BE INSTALLED BEFORE THE START OF CONSTRUCTION AND SHALL REMAIN IN PLACE UNTIL THE PERMANENT DRIVEWAY IS INSTALLED
8. SEED WITH MULCH OR EROSION BLANKET, OR SOD, SHALL BE PLACED ON ALL DISTURBED AREAS WITHIN 7 DAYS OF TOP SOIL PLACEMENT AND FINAL GRADING. SILT FENCE SHALL REMAIN IN PLACE UNTIL A HEALTHY STAND OF GRASS HAS BEEN ESTABLISHED.

EROSION CONTROL:

1. THE CONTRACTOR SHALL INSTALL THE EROSION AND SEDIMENT CONTROL DEVICES AS SHOWN ON THE APPROVED EROSION AND SEDIMENT CONTROL PLAN.
2. EROSION AND SEDIMENT CONTROL PRACTICES SHALL BE FUNCTIONAL PRIOR TO HYDROLOGIC DISTURBANCE OF THE SITE.
3. ALL DESIGN CRITERIA, SPECIFICATIONS, AND INSTALLATION OF EROSION AND SEDIMENT CONTROL PRACTICES SHALL BE IN ACCORDANCE WITH THE ILLINOIS URBAN MANUAL.
4. A COPY OF THE APPROVED EROSION AND SEDIMENT CONTROL PLAN SHALL BE MAINTAINED ON THE SITE AT ALL TIMES.
5. INSPECTIONS AND DOCUMENTATION SHALL BE PERFORMED, AT A MINIMUM:
   a) UPON COMPLETION OF INITIAL EROSION AND SEDIMENT CONTROL MEASURES, PRIOR TO ANY SOIL DISTURBANCE.
   b) ONCE EVERY SEVEN (7) CALENDAR DAYS AND WITHIN 24 HOURS OF THE END OF A STORM EVENT WITH GREATER THAN 0.5 INCH OF RAINFALL OR LIQUID EQUIVALENT PRECIPITATION.
6. IF STRIPPING, CLEARING, GRADING, OR LANDSCAPING ARE TO BE DONE IN PHASES, THE CONTRACTOR SHALL PLAN FOR APPROPRIATE SOIL EROSION AND SEDIMENT CONTROL MEASURES.
7. A STABILIZED CONSTRUCTION ENTRANCE SHALL BE INSTALLED AT ANY POINT WHERE TRAFFIC WILL BE ENTERING OR LEAVING CONSTRUCTION SITE.
8. SEDIMENT OR SOIL REACHING A PUBLIC RIGHT OF WAY, STREET, ALLEY OR PARKING AREA SHALL BE REMOVED BY SCRAPING OR STREET CLEANING AS ACCUMULATIONS WARRANT AND TRANSPORTED TO A CONTROLLED SEDIMENT DISPOSAL AREA.
9. CONCRETE WASHOUT FACILITIES SHALL BE SHALL BE INSTALLED PRIOR TO ANY ON SITE CONSTRUCTION ACTIVITIES INVOLVING CONCRETE.
10. TEMPORARY DIVERSIONS SHALL BE CONSTRUCTED AS NECESSARY TO DIRECT ALL RUNOFF FROM HYDROLOGICALLY DISTURBED AREAS TO AN APPROPRIATE SEDIMENT TRAP OR BASIN.
11. DISTURBED AREAS WHERE CONSTRUCTION ACTIVITIES HAVE TEMPORARILY OR PERMANENTLY CEASED SHALL BE STABILIZED WITH TEMPORARY OR PERMANENT MEASURES WITHIN 7 DAYS.
12. ALL FLOOD PROTECTION AREAS AND WETLANDS SHALL, AT A MINIMUM, BE PROTECTED WITH A DOUBLE-ROW OF SILT FENCE.
13. SOIL STOCKPILES SHALL, AT A MINIMUM, BE PROTECTED WITH PERIMETER SEDIMENT CONTROLS. STOCKPILES THAT ARE TO REMAIN IN PLACE FOR MORE THAN THREE DAYS SHALL RECEIVE SOIL EROSION AND SEDIMENT CONTROL MEASURES. SOIL STOCKPILES SHALL NOT BE PLACED IN FLOOD PROTECTION AREAS OR THEIR BUFFERS.
14. EARTHEN EMBANKMENT SIDE SLOPES SHALL BE STABILIZED WITH EROSION CONTROL BLANKET.
15. STORM SEWERS THAT ARE OR WILL BE FUNCTIONING DURING CONSTRUCTION SHALL BE PROTECTED BY INLET FILTERS.
16. THE CONTRACTOR SHALL EITHER REMOVE OR REPLACE ANY EXISTING DRAIN TILES AND INCORPORATE THEM INTO THE DRAINAGE SYSTEM FOR THE DEVELOPMENT.
17. IF DEWATERING SERVICES ARE USED, ADJOINING PROPERTIES AND DISCHARGE LOCATIONS SHALL BE PROTECTED FROM EROSION AND SEDIMENTATION. DEWATERING SYSTEMS SHOULD BE INSPECTED DAILY DURING OPERATIONAL PERIODS. THE SITE INSPECTOR MUST BE PRESENT AT THE COMMENCEMENT OF DEWATERING ACTIVITIES.
18. ANY TRENCH DEWATERING, WHICH CONTAINS SEDIMENT SHALL PASS THROUGH A SEDIMENT SETTLING POND OR EQUALLY EFFECTIVE SEDIMENT CONTROL DEVICE. ALTERNATIVES MAY INCLUDE DEWATERING INTO A SUMP PIT, FILTER BAG OR EXISTING VEGETATED UPSLOPE AREA. SEDIMENT LADEN WATERS SHALL NOT BE DISCHARGE TO WATERWAYS, FLOOD PROTECTION AREAS OR THE COMBINED SEWER SYSTEM.
19. ALL PERMANENT EROSION CONTROL PRACTICES SHALL BE INITIATED WITHIN SEVEN (7) DAYS FOLLOWING THE COMPLETION OF SOIL DISTURBING ACTIVITIES.
20. ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE MAINTAINED AND REPAIRED AS NEEDED ON A YEAR-ROUND BASIS DURING CONSTRUCTION AND ANY PERIODS OF CONSTRUCTION SHUTDOWN UNTIL PERMANENT STABILIZATION IS ACHIEVED.
21. ALL TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES SHALL BE REMOVED WITHIN THIRTY (30) DAYS AFTER PERMANENT SITE STABILIZATION.
22. THE EROSION AND SEDIMENT CONTROL MEASURES SHOWN ON THE PLANS ARE THE MINIMUM REQUIREMENTS. ADDITIONAL MEASURES MAY BE REQUIRED BY THE ENGINEER, SITE INSPECTOR, OR THE CITY OF WARRENVILLE AT NO ADDITIONAL COST TO THE OWNER.
23. SOIL STOCKPILES SHALL NOT BE LOCATED IN A DRAINAGEWAY, FLOOD PLAIN AREA OR A DESIGNATED BUFFER, INLESS OTHERWISE APPROVED, UNDER SPECIFIC CONDITIONS TO BE ESTABISHED BY THE DIRECTOR OR ADMINISTRATOR.

FILE: I:\080-020 Cantera Lot 2 Sub Area C\Engineering\Drawings\Final Engineering

△ 04-19-19: PER CITY COMMENTS △ 03-15-19: PER DUDOT COMMENTS
△ 03-25-19: PER FPD COMMENTS △ 02-25-19: PER INTERNAL COORDINATION

REVISIONS:
△ 09-18-18: REVISED PER CITY COMMENTS
△ 11-05-18: REVISED PER FPD COMMENTS
△ 01-18-19: REVISED PER CITY COMMENTS
△ 02-18-19: REVISED PER CITY COMMENTS

JOB NO: 080-020
FIELD BOOK: N/A
FIELD BOOK: N/A
DRAWN BY: MK
CHECKED BY: KEK
COMPLETED:04/07/18

FILE: I:\080-020 Cantera Lot 2 Sub Area C\Engineering\Drawings

PREPARED FOR:
CANTERA DEVELOPMENT HOLDINGS, LLC.
TWO NORTHFIELD PLAZA, SUITE 320
NORTHFIELD, IL 60093
TEL: (847) 562-2001

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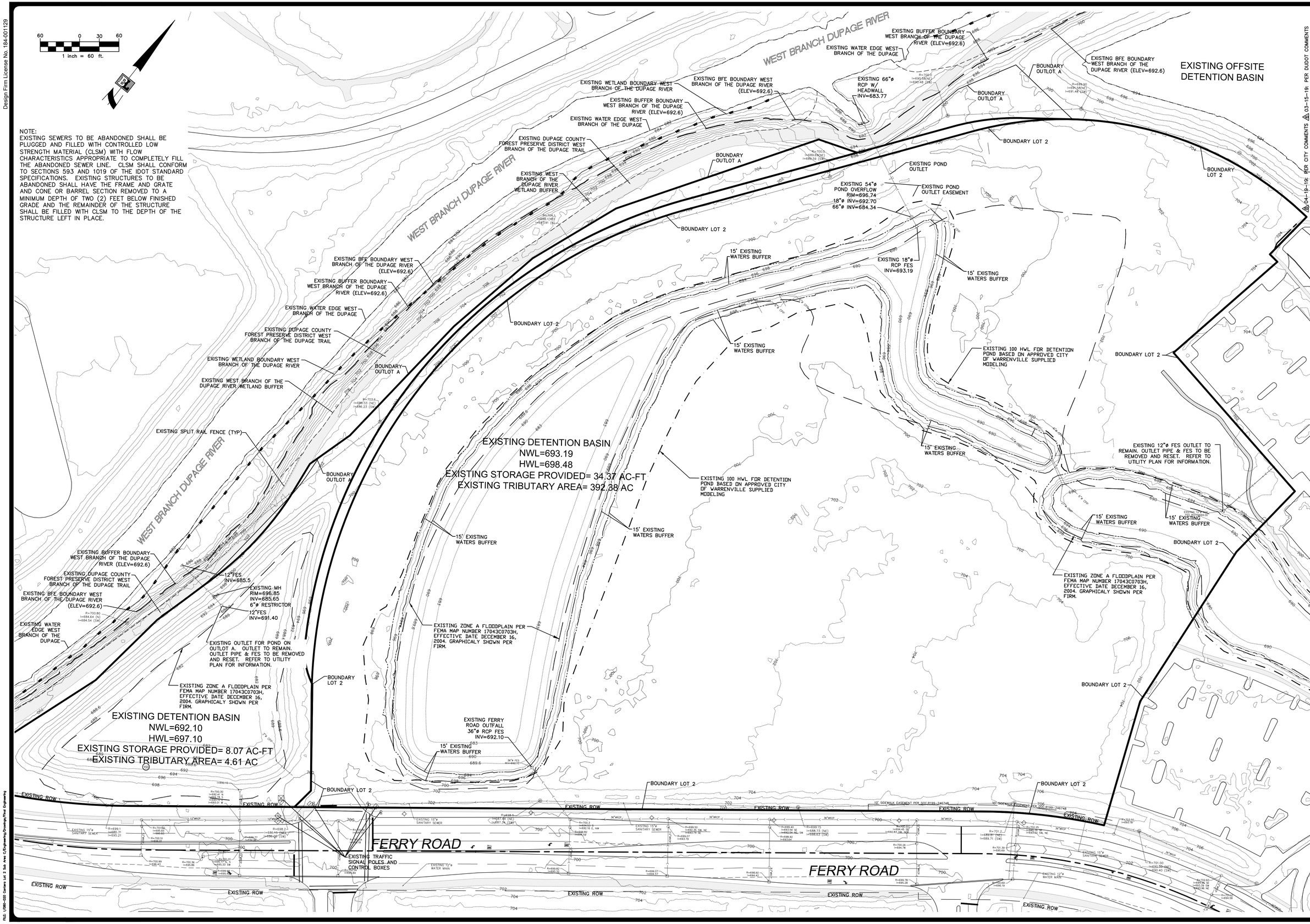
GENERAL NOTES

RIVER VIEW WEST
CITY OF WARRENVILLE, ILLINOIS

SHEET NUMBER
3
OF 71



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FILE: I:/080-020 Cantera Lot 2 Sub Area C/Engineering/Drawings/Final Engineering

JOB NO: 080-020	
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EXISTING CONDITIONS

RIVER VIEW WEST
CITY OF WARRENVILLE, ILLINOIS

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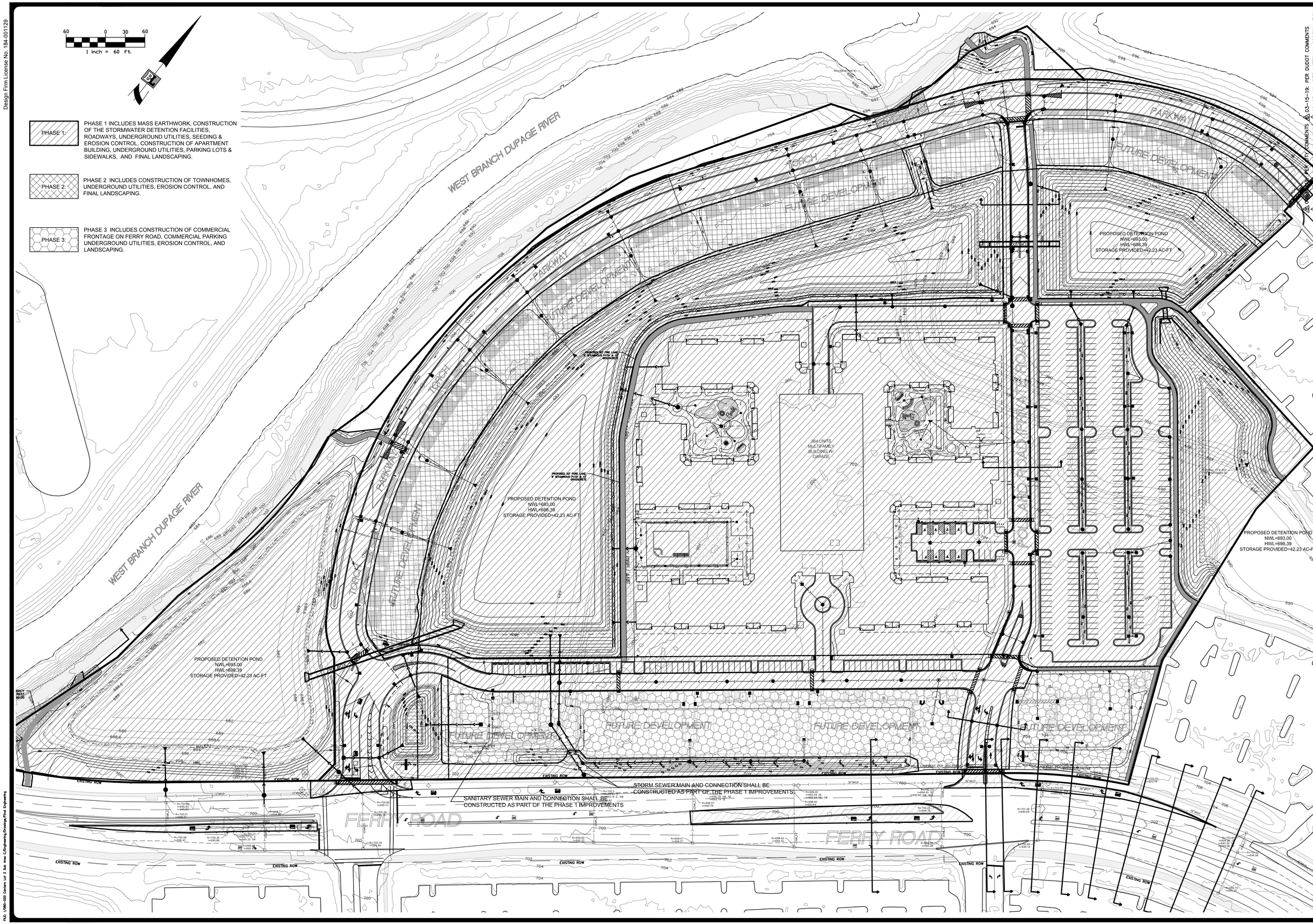

PHASE 1: PHASE 1 INCLUDES MASS EARTHWORK, CONSTRUCTION OF THE STORMWATER DETENTION FACILITIES, ROADWAYS, UNDERGROUND UTILITIES, SEEDING & EROSION CONTROL, CONSTRUCTION OF APARTMENT BUILDING, UNDERGROUND UTILITIES, PARKING LOTS & SIDEWALKS, AND FINAL LANDSCAPING.

PHASE 2: PHASE 2 INCLUDES CONSTRUCTION OF TOWNHOMES, UNDERGROUND UTILITIES, EROSION CONTROL, AND FINAL LANDSCAPING.

PHASE 3: PHASE 3 INCLUDES CONSTRUCTION OF COMMERCIAL FRONTAGE ON FERRY ROAD, COMMERCIAL PARKING UNDERGROUND UTILITIES, EROSION CONTROL, AND LANDSCAPING.

REVISIONS:	
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3 01-18-19: REVISED PER CITY COMMENTS	FIELD BOOK: N/A
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CONSTRUCTION PHASING PLAN

RIVER VIEW WEST
CITY OF WARRENVILLE, ILLINOIS

SHEET NUMBER
5
OF 71

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60 0 30 60

1 inch = 60 ft.

WEST BRANCH DUPAGE RIVER

FUTURE DEVELOPMENT

364 UNITS MULTIFAMILY BUILDING W/ GARAGE FF=704.00

PROPOSED DETENTION POND
NWL=693.00
HWL=698.39
STORAGE PROVIDED=42.23 AC-FT

FERRY ROAD

REVISIONS:	JOB NO: 080-020
09-18-18: REVISED PER CITY COMMENTS	FIELD BOOK: N/A
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01-18-19: REVISED PER CITY COMMENTS	DRAWN BY: MK
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FILE: I:\080-020 Cantera Lot 2 Sub Area 4\Engineering\Drawings\	COMPLETED: 04/07/18

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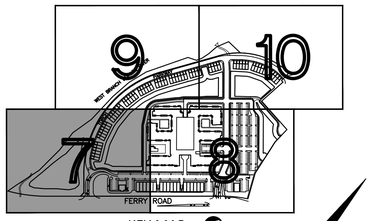
GRADING PLAN

RIVER VIEW WEST
CITY OF WARRENVILLE, ILLINOIS

SHEET NUMBER
6
OF 71

FILE: I:\080-020 Cantera Lot 2 Sub Area 4\Engineering\Drawings\Final Engineering

SEE SHEET 9 FOR CONTINUATION



30 0 15 30
1 inch = 30 ft.

WEST BRANCH DUPAGE RIVER

EXISTING WETLAND BOUNDARY WEST BRANCH OF THE DUPAGE RIVER
EXISTING WEST BRANCH OF THE DUPAGE RIVER WETLAND BUFFER
EXISTING SPLIT RAIL FENCE.
EXISTING BUFFER BOUNDARY WEST BRANCH OF THE DUPAGE RIVER (ELEV=692.6)
EXISTING WATER EDGE WEST BRANCH OF THE DUPAGE
EXISTING BFE BOUNDARY WEST BRANCH OF THE DUPAGE RIVER (ELEV=692.6)
EXISTING WETLAND BOUNDARY WEST BRANCH OF THE DUPAGE RIVER
EXISTING WEST BRANCH OF THE DUPAGE RIVER WETLAND BUFFER
EMERGENCY OVERFLOW SPILLWAY. SEE FULL PLAN VIEW ON SHEET 9.
BOUNDARY "OUTLOT A"
PROPOSD 100-YR HWL FOR DETENTION POND BASED ON MODIFIED APPROVED CITY OF WARRENVILLE SUPPLIED MODELING
DELINEATED EMERGENCY OVERLAND FLOW PATH
EXISTING BASIN SIDE SLOPE TO RECEIVE NATIVE PLANTINGS AND LANDSCAPING. REFER TO LANDSCAPE DRAWINGS FOR DETAIL
FOREST PRESERVE DISTRICT CONNECTION TRAIL
RE-GRADE EXISTING POND TO INCORPORATE DETENTION INTO LOT 2 DEVELOPMENT
PROPOSED DETENTION POND
NWL=693.00
HWL=698.39
STORAGE PROVIDED=42.23 AC-FT
EXISTING FLOODPLAIN BOUNDARY PER FEMA MAP NUMBER 17043C0703H EFFECTIVE DATE DECEMBER 16, 2004. GRAPHICALLY SHOWN PER FIRM.
PROPOSED POND OVERFLOW ELEV 699.04
PROPOSED 5'X7' PRC BOX CULVERTT
PROPOSED 5'X7' PRC BOX CULVERT
7" THICK PCC SIDEWALK ALONG TORCH PARKWAY
FUTURE DEVELOPMENT
4:1 MAX SLOPE ABOVE ELEV 697
±1,045 LF PROPOSED FENCE ON TOP OF RETAINING WALL. REFER TO DETAIL (TYP)
PROPOSED 20' FIRE LANE. 8' BITUMINOUS PATH & 12' GRASSCRETE
PROPOSED DETENTION POND
NWL=693.00
HWL=698.39
STORAGE PROVIDED=42.23 AC-FT
PROPOSED RETAINING WALL (TYP)
PROPOSED PROTECTIVE FENCE AT TOP OF RETAINING WALL. REFER TO DETAIL (TYP)
EXISTING FLOODPLAIN BOUNDARY PER FEMA MAP NUMBER 17043C0703H EFFECTIVE DATE DECEMBER 16, 2004. GRAPHICALLY SHOWN PER FIRM.
NATIVE PLANTINGS ON POND EDGE BETWEEN NWL AND ELEV 697 @ 5:1 MAX SLOPE (TYP) NATIVE PLANTINGS EXTEND TO ELEV 699.5
PROPOSED SPLIT RAIL FENCE REFER TO DETAIL (TYP)
DEPRESSED CURB & GUTTER
REVERSED PITCH CURB & GUTTER ON PARKING STALLS WHERE DRAINGE IS AWAY FROM CURB LINE (TYP).
PROVIDE CURB DEPRESSION FOR SURFACE WATER DRAINAGE
REVERSED PITCH CURB & GUTTER ON PARKING STALLS WHERE DRAINGE IS AWAY FROM CURB LINE (TYP).
REVERSED PITCH CURB & GUTTER ON PARKING STALLS WHERE DRAINGE IS AWAY FROM CURB LINE (TYP).
BIORETENTION FACILITY
BIOSWALE
REMOVE & REPLACE 50 SQFT EXISTING PCC SIDEWALK
REMOVE & REPLACE 50 SQFT EXISTING PCC SIDEWALK
EXISTING TRAFFIC SIGNAL EQUIPMENT
EXISTING TRAFFIC SIGNAL EQUIPMENT
2" MILL AND OVERLAY OF EXISTING LEFT TURN LANE APPROX. 438 SYD. MILLING LIMITS SHALL INCLUDE THE REMOVAL OF THE EXISTING RECESSED PAVEMENT MARKERS(TYP).
2" MILL AND OVERLAY OF EXISTING RIGHT TURN LANE AND DRIVEWAY ENTRANCE, APPROX. 757 SYD. MILLING LIMITS SHALL INCLUDE THE REMOVAL OF THE EXISTING RECESSED PAVEMENT MARKERS(TYP).
FERRY ROAD
EXISTING ROW
HEAVY DUTY PAVEMENT
NWL
HWL
BOUNDARY "OUTLOT A"

SEE SHEET 8 FOR CONTINUATION

REVISIONS:	FOB NO: 080-020
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GRADING PLAN

RIVER VIEW WEST
CITY OF WARRENVILLE, ILLINOIS

SHEET NUMBER
7
OF 71

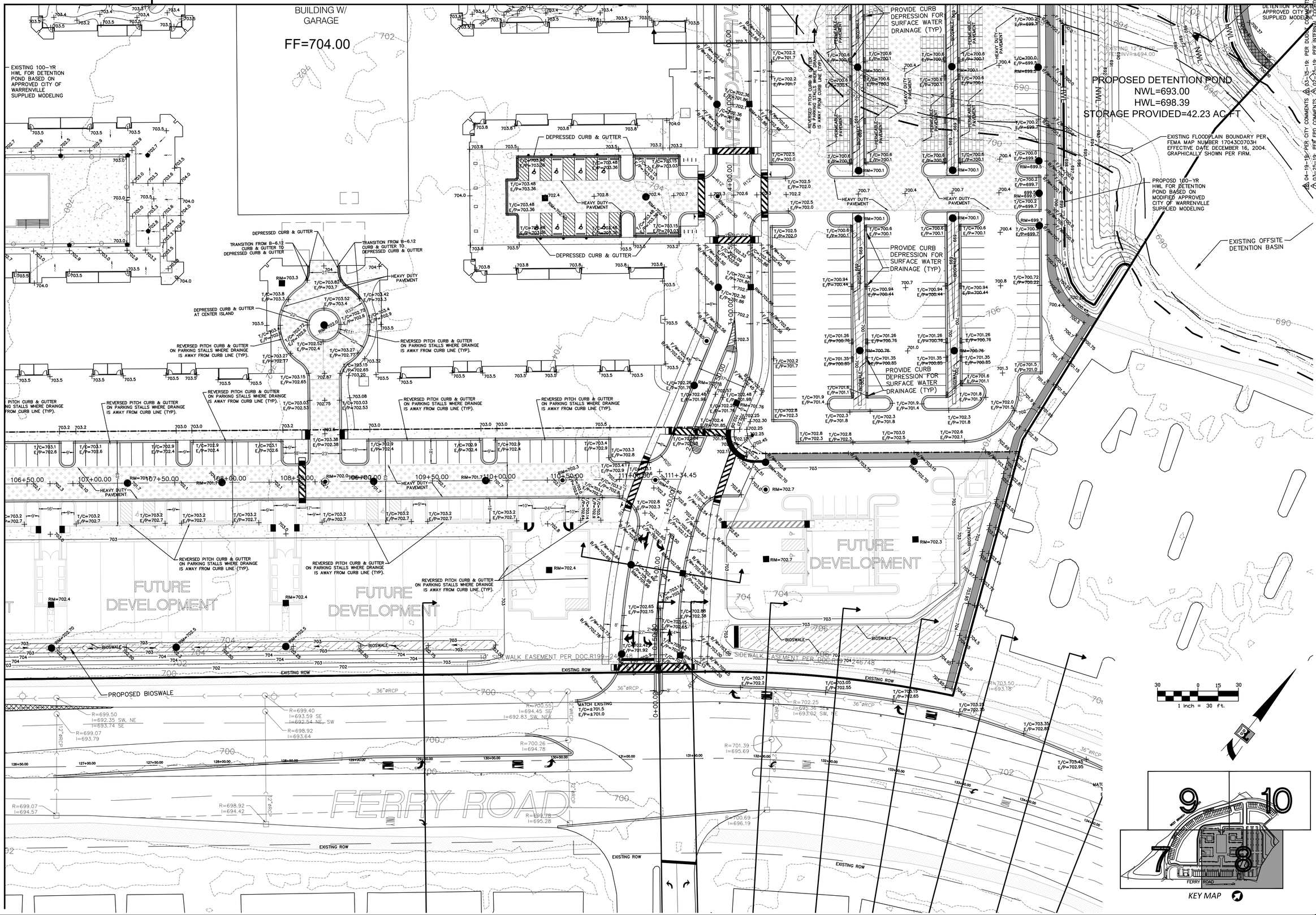
Design Firm License No. 184.001129

FILE: I:\080-020 Cantera Lot 2 Sub Area C\Engineering\Drawings\Final Engineering

SEE SHEET 9
FOR CONTINUATION

SEE SHEET 10 FOR CONTINUATION

SEE SHEET 7 FOR CONTINUATION



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JOB NO: 080-020
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GRADING PLAN
RIVER VIEW WEST
CITY OF WARRENVILLE, ILLINOIS

SHEET NUMBER
8
OF 71

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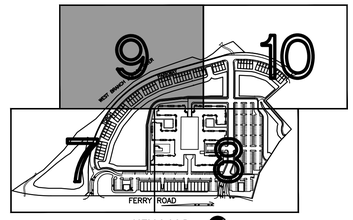
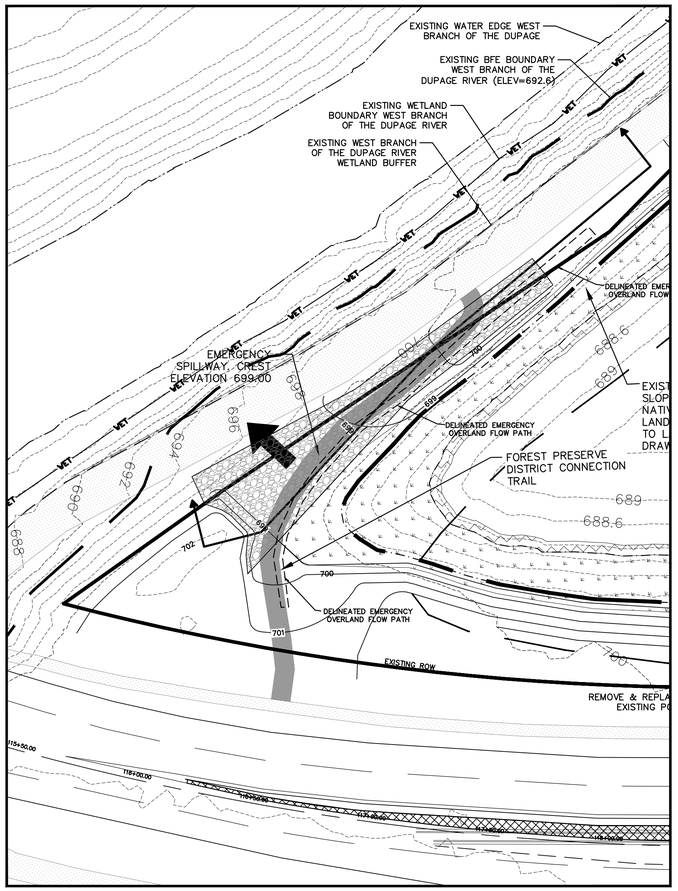
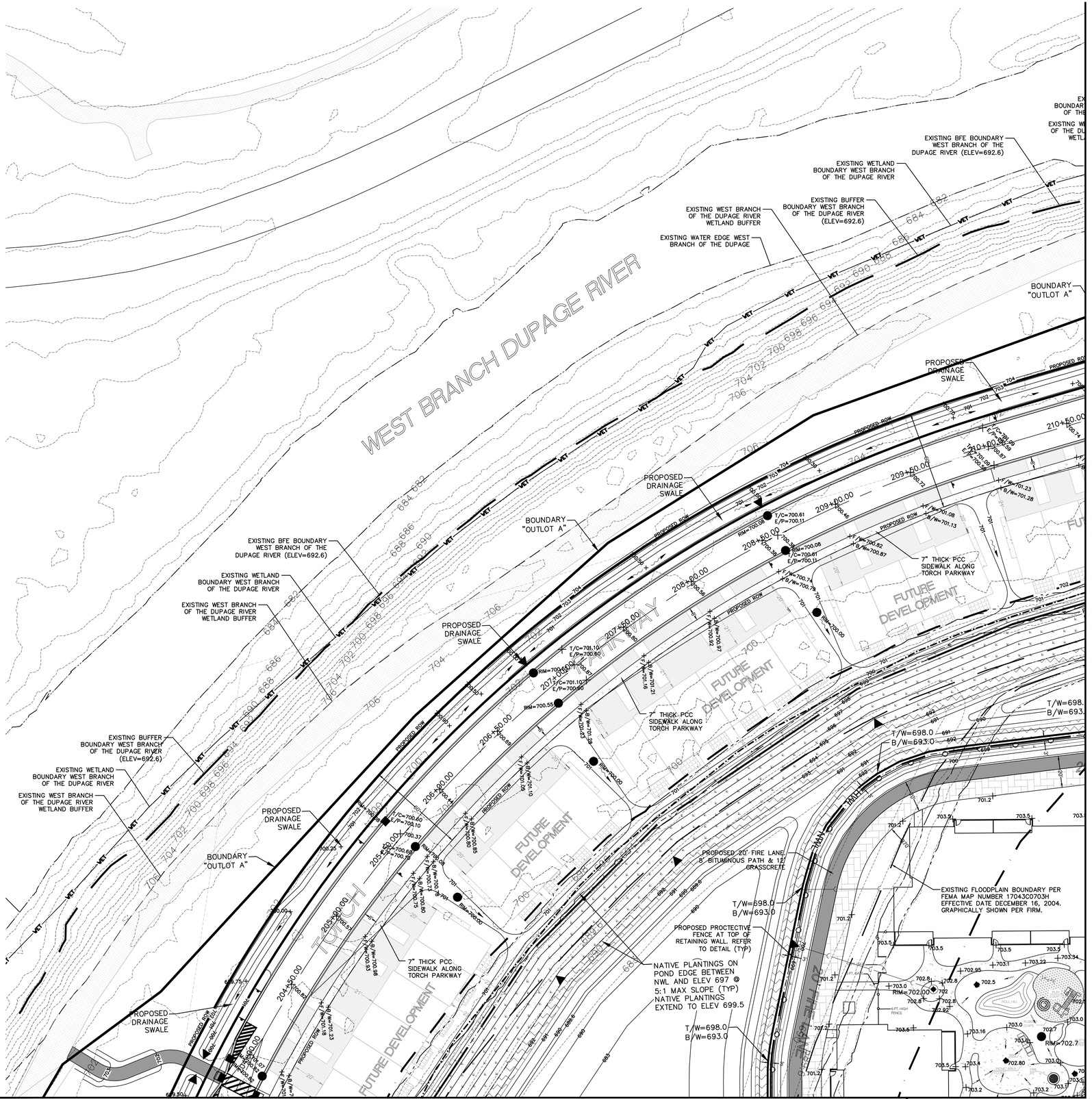
30 0 15 30
1 inch = 30 ft.



KEY MAP



OUTLOT A OVERFLOW SPILLWAY DETAIL
SEE CONTINUATION ON SHEET 7



SEE SHEET 7 FOR CONTINUATION

SEE SHEET 8
FOR CONTINUATION

SEE SHEET 10 FOR CONTINUATION

04-19-19: PER CITY COMMENTS
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JOB NO: 086-020
FIELD BOOK: N/A
FIELD BOOK: N/A
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COMPLETED: 04/07/18

FILE: I:\086-020 Cantera Lot 2 Site Area C\Engineering\Drawings\

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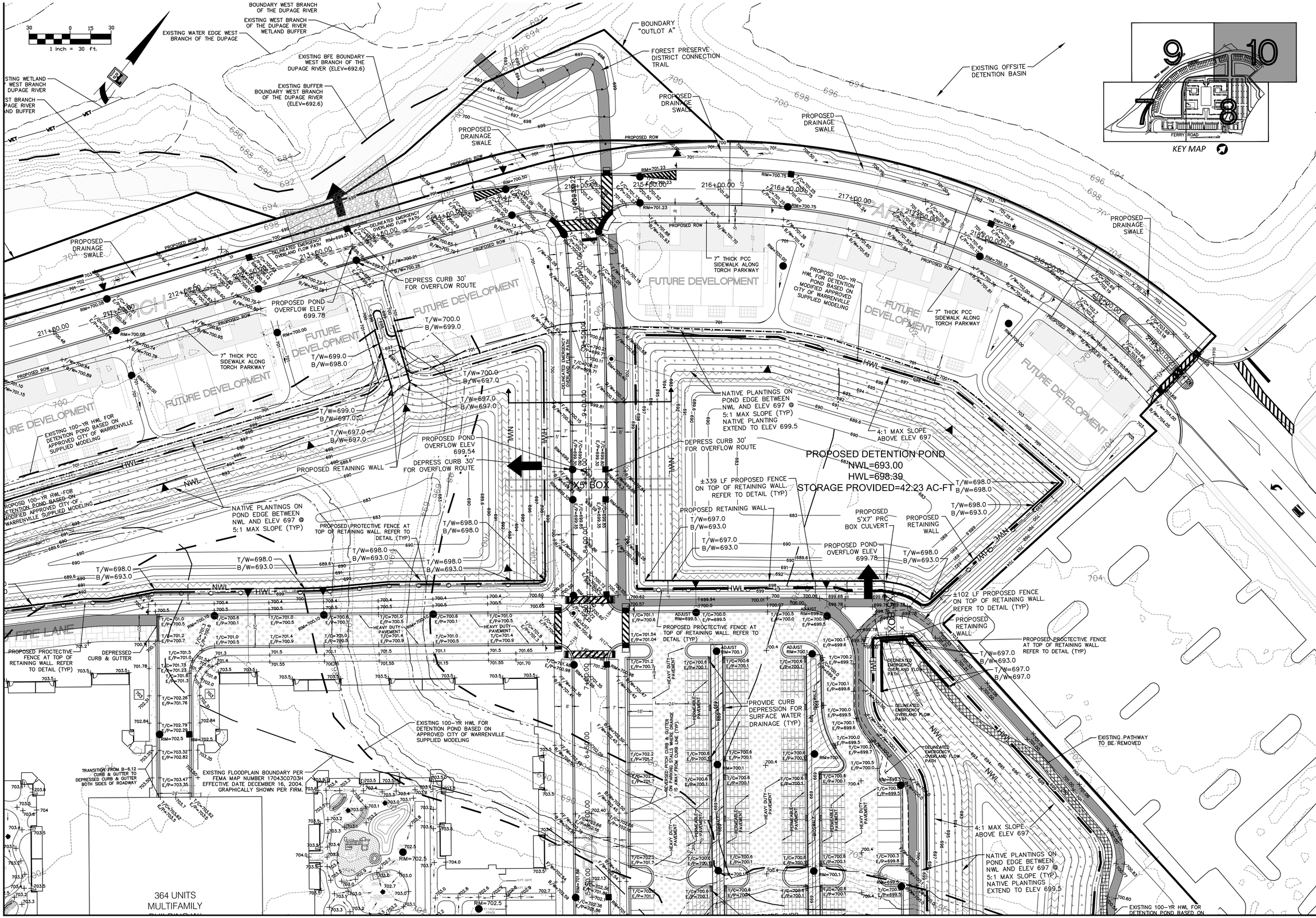
GRADING PLAN

RIVER VIEW WEST
CITY OF WARRENVILLE, ILLINOIS

SHEET NUMBER
9
OF 71



SEE SHEET 9 FOR CONTINUATION

SEE SHEET 8 FOR CONTINUATION

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GRADING PLAN

RIVER VIEW WEST
CITY OF WARRENVILLE, ILLINOIS

SHEET NUMBER
10
OF 71

Design Firm License No. 184-001129

60 0 30 60

1 inch = 60 ft.

NOTE:
1) CONNECTIONS TO EXISTING SANITARY SEWERS SHALL BE MADE USING AN INSERTA TEE OR APPROVED EQUAL/
2) ALL CONNECTIONS TO EXISTING SANITARY SEWER MANHOLES SHALL USE RUBBER BOOTS
3) REFER TO THE CITY OF WARRENVILLE STANDARD NOTES FOR INFORMATION REGARDING UTILITY MATERIALS.
4) REFER TO ARCHITECTURAL PLANS FOR DOWNSPOUT LOCATIONS.
5) GRANULAR TRENCH BACKFILL IS REQUIRED WHEN A SERVICE IS WITHIN THE 'ZONE OF INFLUENCE' (BASED UPON DEPTH) OR UNDER THE DRIVEWAY/SIDEWALK/CURB/ROAD. GRANULAR TRENCH BACKFILL SHALL BE PROVIDED ON UTILITY SERVICES TO THE PROPOSED BUILDING.
6) EXISTING SEWERS TO BE ABANDONED SHALL BE PLUGGED AND FILLED WITH CONTROLLED LOW STRENGTH MATERIAL (CLSM) WITH FLOW CHARACTERISTICS APPROPRIATE TO COMPLETELY FILL THE ABANDONED SEWER LINE. CLSM SHALL CONFORM TO SECTIONS 593 AND 1019 OF THE IDOT STANDARD SPECIFICATIONS. EXISTING STRUCTURES TO BE ABANDONED SHALL HAVE THE FRAME AND GRATE AND CONE OR BARREL SECTION REMOVED TO A MINIMUM DEPTH OF TWO (2) FEET BELOW FINISHED GRADE AND THE REMAINDER OF THE STRUCTURE SHALL BE FILLED WITH CLSM TO THE DEPTH OF THE STRUCTURE LEFT IN PLACE.
7) WATERMAIN SHALL BE PVC C-900 (DR-18).

WEST BRANCH DUPAGE RIVER
EXISTING OUTLET TO WEST BANCH OF DUPAGE RIVER
EXISTING WETLAND BOUNDARY WEST BRANCH OF THE DUPAGE RIVER
EXISTING BUFFER BOUNDARY WEST BRANCH OF THE DUPAGE RIVER
EXISTING WATER EDGE WEST BRANCH OF THE DUPAGE
EXISTING WEST BRANCH OF THE DUPAGE RIVER WETLAND BUFFER
EXISTING BFE BOUNDARY WEST BRANCH OF THE DUPAGE RIVER (ELEV=692.6)
EXISTING BUFFER BOUNDARY WEST BRANCH OF THE DUPAGE RIVER (ELEV=692.6)
EXISTING WETLAND BOUNDARY WEST BRANCH OF THE DUPAGE RIVER
EXISTING BFE BOUNDARY WEST BRANCH OF THE DUPAGE RIVER (ELEV=693.6)
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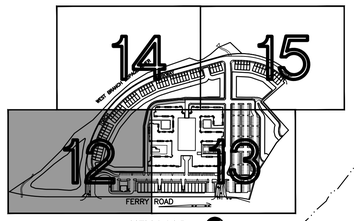
EXISTING WEST BRANCH OF THE DUPAGE RIVER WETLAND BUFFER
EXISTING BUFFER BOUNDARY WEST BRANCH OF THE DUPAGE RIVER (ELEV=693.6)
EXISTING WETLAND BOUNDARY WEST BRANCH OF THE DUPAGE RIVER
EXISTING WEST BRANCH OF THE DUPAGE RIVER WETLAND BUFFER
EXISTING WATER EDGE WEST BRANCH OF THE DUPAGE
EXISTING BFE

SEE SHEET 14 FOR CONTINUATION

30 0 15 30
1 inch = 30 ft.

NOTE:
1) CONNECTIONS TO EXISTING SANITARY SEWERS SHALL BE MADE USING AN INSERTA TEE OR APPROVED EQUAL/
2) ALL CONNECTIONS TO EXISTING SANITARY SEWER MANHOLES SHALL USE RUBBER BOOTS
3) REFER TO THE CITY OF WARRENVILLE STANDARD NOTES FOR INFORMATION REGARDING UTILITY MATERIALS.
4) REFER TO ARCHITECTURAL PLANS FOR DOWNSPOUT LOCATIONS.
5) GRANULAR TRENCH BACKFILL IS REQUIRED WHEN A SERVICE IS WITHIN THE 'ZONE OF INFLUENCE' (BASED UPON DEPTH) OR UNDER THE DRIVEWAY/SIDEWALK/CURB/ROAD. GRANULAR TRENCH BACKFILL SHALL BE PROVIDED ON UTILITY SERVICES TO THE PROPOSED BUILDING.
6) EXISTING SEWERS TO BE ABANDONED SHALL BE PLUGGED AND FILLED WITH CONTROLLED LOW STRENGTH MATERIAL (CLSM) WITH FLOW CHARACTERISTICS APPROPRIATE TO COMPLETELY FILL THE ABANDONED SEWER LINE. CLSM SHALL CONFORM TO SECTIONS 593 AND 1019 OF THE IDOT STANDARD SPECIFICATIONS. EXISTING STRUCTURES TO BE ABANDONED SHALL HAVE THE FRAME AND GRATE AND CONE OR BARREL SECTION REMOVED TO A MINIMUM DEPTH OF TWO (2) FEET BELOW FINISHED GRADE AND THE REMAINDER OF THE STRUCTURE SHALL BE FILLED WITH CLSM TO THE DEPTH OF THE STRUCTURE LEFT IN PLACE.
7) WATERMAIN SHALL BE PVC C-900 (DR-18).



KEY MAP

WEST BRANCH DUPAGE RIVER

EXISTING BFE BOUNDARY WEST BRANCH OF THE DUPAGE RIVER (ELEV=692.6)
EXISTING WETLAND BOUNDARY WEST BRANCH OF THE DUPAGE RIVER
EXISTING WEST BRANCH OF THE DUPAGE RIVER WETLAND BUFFER
12"ø RCP FES INV=685.50
EXISTING BUFFER BOUNDARY WEST BRANCH OF THE DUPAGE RIVER (ELEV=692.6)
STORM MH RIM=696.85 INV=685.65 6"ø PVC RESTRICTOR
EXISTING POND OUTLET TO REMAIN
12"ø RCP FES INV=691.40
REMOVE EXISTING FES & RESET AT INV=693.00. PROVIDE PERFORATED 12"ø RISER DURING CONSTRUCTION. SEE DETAIL
R=700.80 I=684.64 (N) I=684.54 (SW)
EXISTING WATER EDGE WEST BRANCH OF THE DUPAGE
EXISTING BFE BOUNDARY WEST BRANCH OF THE DUPAGE RIVER (ELEV=692.6)
EXISTING WETLAND BOUNDARY WEST BRANCH OF THE DUPAGE RIVER
EXISTING WEST BRANCH OF THE DUPAGE RIVER WETLAND BUFFER
PROPOSED NWL=693 HWL=698.39
PROVIDE 31 LF 22"Ø STEEL CASING PIPE FOR PROPOSED WATER MAIN UNDER BOX CULVERT
PROVIDE 30 LF 22"Ø STEEL CASING PIPE FOR PROPOSED SANITARY UNDER BOX CULVERT
246 LF 7'X5' PRECAST CONCRETE BOX CULVERT, I=693.0
12"Ø WATER MAIN PVC C900 (DR-18)
CONNECT TO EXISTING12" WATER MAIN STUB. REMOVE EXISTING VALVE AN VAULT AND REPLACE WITH PROPOSED VALVE AND VAULT AT CONNECTION POINT
REMOVE EXISTING 15"ø PIPE & REPLACE WITH 24"ø RCP.
EXISTING 15"ø SANITARY SEWER
ABANDON EXIST 12"ø PIPE
CONNECT TO EXIST STRUCTURE INV=695.83
CONNECT TO EXIST STRUCTURE INV=694.86
CONNECT TO EXISTING SANITARY SEWER INV=686.20 EXIST 15"Ø INV=687.03 PROP 8"Ø
CONNECT TO EXIST STRUCTURE INV=695.10
EXISTING 12"ø WATER MAIN
FERRY ROAD
EXISTING ROW
12"øRCP
15"øRCP
24"øRCP
NWL
HWL
7'X5' BOX
12"WM
8"WM
W
S
SAN
EXISTING BFE BOUNDARY WEST BRANCH OF THE DUPAGE RIVER (ELEV=692.6)
12"øINV=699.45
RCP @ 0.50%
CONNCET 18"ø STORM SEWER TO PROPOSED BOX CULVERT INV=693.08
246 LF 7'X5' PRECAST CONCRETE BOX CULVERT, I=693.0
8"Ø WATER MAIN PVC C900 (DR-18)
6"Ø SANITARY SEWER SERVICE @1.00% W/ CLEANOUT & 1" TYPE K COPPER WATER SERVICE (TYP). STUB AT ROW LINE.
3"Ø FIRE PROTECTION & DOMESTIC WATER SERVICE
36"ø FES INV=692.10
PROPOSED RETAINING WALL (TYP)
8"Ø WATER MAIN PVC C900 (DR-18)
PROPOSED RETAINING WALL (TYP)
PROVIDE 30 LF 22"Ø STEEL CASING PIPE FO PROPOSED SANITARY UNDER BOX CULVERT
8"Ø SANITARY BUILDIN SERVICE (TYP)
INTERCEPT EXISTING 36"Ø STORM SEWER AND ROUTE TO PROPOSED POND. REMOVE EXISTING RCP & FES.CONSTRUCT MANHOLE OVER EXISTING SEWER.
FUTURE DEVELOPMENT
P87 P87A P88 P89A P90 P84 P84A P85 P86 P82 P78 P78A P80 P81 P135 P136 P132 P134 P133 P131 P128 P127 P69 P68 P67 P66 P65 P74 P75 P77
W32 W31 W29 W30 W27 W28 W26 W2
S17 S16 S15 S14 S1 S2 S2A S10 S9 S18 S19
113 113A 114 110 110A 111 105 95 106 107 108 48 49 47 46 45 44 52 50 51 153 155 156 157 152 154 149 150 101 103 102 104 91 92 93 94 16 17 8 1 2
R=699.10 I=685.31 I=695.21
R=699.1 I=685.31 I=695.21
R=700.51 I=696.01
R=700.99 I=696.43
R=700.36 I=695.86
R=701.10 I=695.17 N, S I=695.33 SW
R=699.98 I=695.43
R=698.2 I=686.15 (NE) I=686.05 (SW)
R=699.77 I=694.86
R=700.30 I=692.41 N I=694.78 S I=693.10 E I=693.01 W
R=700.80 I=695.10
R=700.34 I=695.18
R=700.34 I=695.84
R=698.5 I=687.44 (NE) I=687.34 (SW)
R=700.3 I=694.53 S I=692.16 E, NW
R=699.82 I=694.59
R=699.82 I=695.32
201+00.00 200+00.00 203+50.00 202+00.00 204+00.00 103+00.00 102+00.00 101+00.00 100+00.00 104+00.00 104+50.00 105+00.00 105+50.00

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FILE: I:\080-020 Cantera Lot 2 Sub Area C\Engineering\Drawings

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UTILITY PLAN

RIVER VIEW WEST
CITY OF WARRENVILLE, ILLINOIS

SHEET NUMBER
12
OF 71

Design Firm License No. 184-001129

FILE: I:\080-020 Cantera Lot 2 Sub Area C\Engineering\Drawings\Final Engineering

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SEE SHEET 14 FOR CONTINUATION

SEE SHEET 15 FOR CONTINUATION

SEE SHEET 12 FOR CONTINUATION

364 UNITS MULTIFAMILY BUILDING W/ GARAGE

PROVIDE 10"Ø SOLID DRAIN PIPE WITH CLEANOUTS FOR CONNECTION TO ROOF DRAIN DOWNSPOUTS. REFER TO ARCHITECTURAL PLANS FOR DOWNSPOUT LOCATIONS.

PROVIDE 10"Ø SOLID DRAIN PIPE WITH CLEANOUTS FOR CONNECTION TO ROOF DRAIN DOWNSPOUTS. REFER TO ARCHITECTURAL PLANS FOR DOWNSPOUT LOCATIONS.

FIRE DEPARTMENT CONNECTION

FIRE DEPARTMENT CONNECTION

8"Ø FIRE PROTECTION & DOMESTIC WATER SERVICE

BUILDING SERVICE 8"Ø PVC SDR 26 @ 0.50%

PROVIDE 10"Ø SOLID DRAIN PIPE WITH CLEANOUTS FOR CONNECTION TO ROOF DRAIN DOWNSPOUTS. REFER TO ARCHITECTURAL PLANS FOR DOWNSPOUT LOCATIONS.

ROOF DRAIN DISCHARGE

BUILDING SERVICE 8"Ø PVC SDR 26 @ 0.50%

8"Ø WATER MAIN PVC C900 (DR-18)

8"Ø WATER MAIN PVC C900 (DR-18)

8"Ø WATER MAIN PVC C900 (DR-18)

PROPOSED BIO-SWALE

PROPOSED BIO-SWALE

REMOVE 20 LF EXISTING 12"ø RCP & FES. RESET PROPOSED FES AT INV=693.00.

EXISTING 12"ø RCP FES INV=±694.00

POOL DECK DRAINAGE BY OTHERS

DOMESTIC & FIRE PROTECTION SEREVICE (TYP)

CONNECT BUILDING SERVICE WITH WYE INV=691.03

8"Ø SANITARY BUILDING SERVICE (TYP)

CONNECT BUILDING SERVICE WITH WYE INV=691.81

8"Ø SANITARY BUILDING SERVICE (TYP)

DOMESTIC & FIRE PROTECTION SEREVICE (TYP)

3"Ø FIRE PROTECTION & DOMESTIC WATER SERVICE

FUTURE DEVELOPMENT

FUTURE DEVELOPMENT

FUTURE DEVELOPMENT

AUGER PUSH PIT ± 20' X 40'

AUGER RECEIVING PIT ± 10'X30'

AUGER AND ENCASE PROPOSED WATER MAIN UNDER FERRY ROAD WITH 1 LF 22"Ø STEEL CASING PIPE

CONNECT TO EXISTING SANITARY SEWER INV=689.85 EXIST 15"Ø INV=690.60 PROP. 6"Ø

REMOVE AND REPLACE APPROXIMATLEY 13 SYD BITUMINOUS PEDESTRIAN PATH.

EXISTING 15"ø SANITARY SEWER

EXISTING 12"ø WATER MAIN

EXISTING 15"ø SANITARY SEWER

10' SIDEWALK EASEMENT PER DOC.R199-24

EXISTING ROW

FERRY ROAD

NOTE:
1) CONNECTIONS TO EXISTING SANITARY SEWERS SHALL BE MADE USING AN INSERTA TEE OR APPROVED EQUAL/
2) ALL CONNECTIONS TO EXISTING SANITARY SEWER MANHOLES SHALL USE RUBBER BOOTS
3) REFER TO THE CITY OF WARRENVILLE STANDARD NOTES FOR INFORMATION REGARDING UTILITY MATERIALS.
4) REFER TO ARCHITECTURAL PLANS FOR DOWNSPOUT LOCATIONS.
5) GRANULAR TRENCH BACKFILL IS REQUIRED WHEN A SERVICE IS WITHIN THE 'ZONE OF INFLUENCE' (BASED UPON DEPTH) OR UNDER THE DRIVEWAY/SIDEWALK/CURB/ROAD. GRANULAR TRENCH BACKFILL SHALL BE PROVIDED ON UTILITY SERVICES TO THE PROPOSED BUILDING.
6) EXISTING SEWERS TO BE ABANDONED SHALL BE PLUGGED AND FILLED WITH CONTROLLED LOW STRENGTH MATERIAL (CLSM) WITH FLOW CHARACTERISTICS APPROPRIATE TO COMPLETELY FILL THE ABANDONED SEWER LINE. CLSM SHALL CONFORM TO SECTIONS 593 AND 1019 OF THE IDOT STANDARD SPECIFICATIONS. EXISTING STRUCTURES TO BE ABANDONED SHALL HAVE THE FRAME AND GRATE AND CONE OR BARREL SECTION REMOVED TO A MINIMUM DEPTH OF TWO (2) FEET BELOW FINISHED GRADE AND THE REMAINDER OF THE STRUCTURE SHALL BE FILLED WITH CLSM TO THE DEPTH OF THE STRUCTURE LEFT IN PLACE.
7) WATERMAIN SHALL BE PVC C-900 (DR-18).

30 0 15 30
1 inch = 30 ft.

KEY MAP

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03-19-19: PER IDOT COMMENTS
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UTILITY PLAN

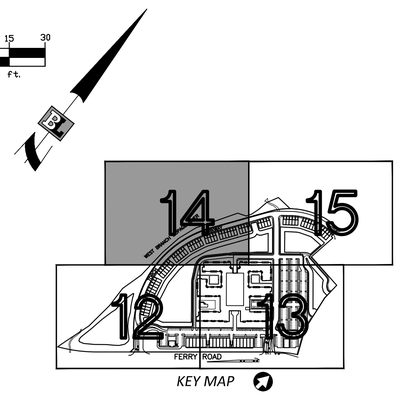
RIVER VIEW WEST
CITY OF WARRENVILLE, ILLINOIS

SHEET NUMBER 13 OF 71

FILE: I:\080-020 Cantera Lot 3 Sub Area 1\Engineering\Drawings\Final Engineering

Design Firm License No. 184-001129

30 0 15 30
1 inch = 30 ft.



KEY MAP

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2) ALL CONNECTIONS TO EXISTING SANITARY SEWER MANHOLES SHALL USE RUBBER BOOTS
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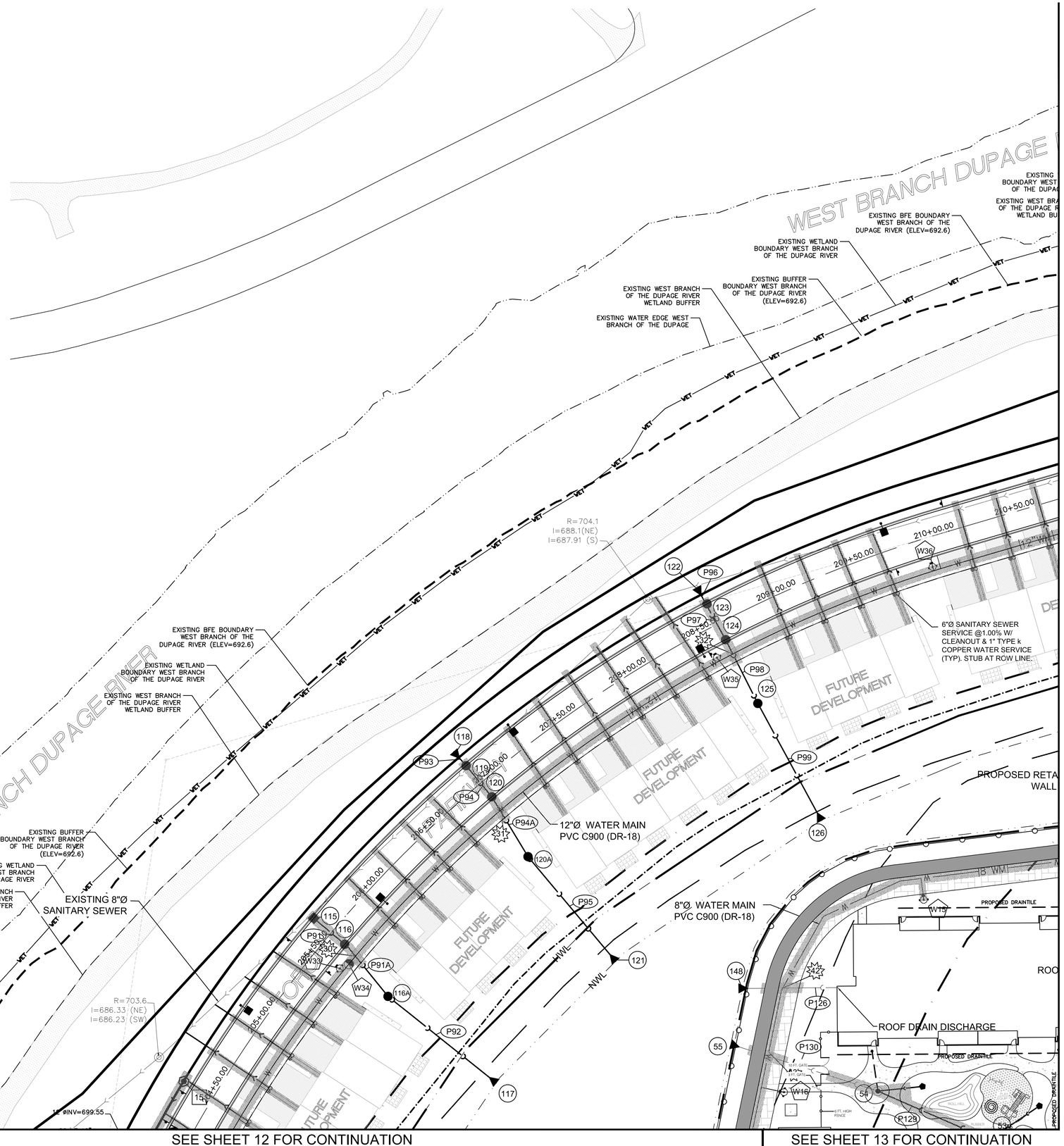
7) WATERMAIN SHALL BE PVC C-900 (DR-18).



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UTILITY PLAN

RIVER VIEW WEST
CITY OF WARRENVILLE, ILLINOIS

SHEET NUMBER
14
OF 71

Design Firm License No. 184-001129

SEE SHEET 14 FOR CONTINUATION

1 inch = 30 ft.

NOTE:
1) CONNECTIONS TO EXISTING SANITARY SEWERS SHALL BE MADE USING AN INSERTA TEE OR APPROVED EQUAL/
2) ALL CONNECTIONS TO EXISTING SANITARY SEWER MANHOLES SHALL USE RUBBER BOOTS
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7) WATERMAIN SHALL BE PVC C-900 (DR-18).

EXISTING WETLAND BOUNDARY WEST BRANCH OF THE DUPAGE RIVER
EXISTING WEST BRANCH OF THE DUPAGE RIVER WETLAND BUFFER
EXISTING WATER EDGE WEST BRANCH OF THE DUPAGE
EXISTING OUTLET TO WEST BANCH OF DUPAGE RIVER
EXISTING BFE BOUNDARY WEST BRANCH OF THE DUPAGE RIVER (ELEV=692.6)
EXISTING BUFFER BOUNDARY WEST BRANCH OF THE DUPAGE RIVER (ELEV=692.6)
R=700.0 I=690.58(NE) I=690.48 (SW)
R=700.0 I=689.69(NE) I=689.59 (SW)
R=699.90 I=691.58(NE) I=691.48 (SW)
EXISTING 8"Ø SANITARY SEWER
CONNECT TO EXISTING 8"Ø SANITARY SEWER
12"Ø WATER MAIN PVC C900 (DR-18)
6"Ø SANITARY SEWER SERVICE @1.00% W/ CLEANOUT & 1" TYPE k COPPER WATER SERVICE (TYP). STUB AT ROW LINE.
EXISTING MANHOLE TO REMAIN. EXISTING RIM =696.74
REMOVE AND RESET EXISTING OUTLET INV=693.00
CONNCET 15"ø STORM SEWER TO PROPOSED BOX CULVERT INV=694.61
90 LF 7'X5' PRECAST CONCRETE BOX CULVERT, I=693.0
EXISTING DRAINAGE EASEMENT FOR OUTLET
8"Ø WATER MAIN PVC C900 (DR-18)
ENCASE PROPOSED WATER MAIN UNDER BOX CULVERT WITH 40 LF 22"Ø STEEL CASING PIPE
43 LF 7'X5' PRECAST CONCRETE BOX CULVERT, I=693.0
PROPOSED RETAINING WALL (TYP)
42 LF 5'X7' PRECAST CONCRETE BOX CULVERT, I=693.0
CONNECT TO EXISTING 12"Ø WATER STUB. REMOVE EXISTNG VALVE AND VAULT. REMOVE APPROXIMATELY 35 LF OF EXISTING 12"Ø WATERMAIN. CONNECT OT EXISTING MAIN WITH NEW 12" VALVE AND VAULT.
EXISTING 12"Ø WATER MAIN
PROPOSED BIO-SWALE
PARKING GARAGE DOWNSPOUT DISCHARGE
ROOF DRAIN DOWNSPOUT CONNECTION (TYP)
FIRE DEPARTMENT CONNECTION
ROOF DRAIN DOWNSPOUT CONNECTION (TYP)
PROPOSED DRAINTILE
FUTURE DEVELOPMENT
NWL
HWL
KEY MAP
FERRY ROAD

SEE SHEET 13 FOR CONTINUATION

REVISIONS:	JOB NO: 080-020
09-18-18: REVISED PER CITY COMMENTS	FIELD BOOK: N/A
11-05-18: REVISED PER FPD COMMENTS	FIELD BOOK: N/A
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FILE: I:\080-020 Cantera Lot 2 Site Area C\Engineering\Drawings	COMPLETED: 04/07/18

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RIVER VIEW WEST
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OF 71

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STORM SEWER STRUCTURE

1 CB, TYA, 4'ø
NEENAH R-4340 F&G
RIM=700.76
INV=695.57
STA=2+79.13
OFF=94.24' RT

2 CB, TYA, 4'ø
NEENAH R-4340 F&G
RIM=700.10
INV=695.34
STA=3+65.06
OFF=94.59' RT

3 CB, TYA, 4'ø
NEENAH R-4340 F&G
RIM=700.76
INV=695.72
STA=2+80.19
OFF=164.72' RT

4 CB, TYA, 5'ø
NEENAH R-4340 F&G
RIM=700.10
INV=695.17
INV=695.42
INV=694.67
STA=3+64.37
OFF=164.21' RT

5 CB, TYA, 5'ø
NEENAH R-4340 F&G
RIM=699.70
INV=694.05
STA=2+80.79
OFF=218.40' RT

6 CB, TYA, 6'ø
NEENAH R-4340 F&G
RIM=699.50
INV=694.02
STA=3+67.31
OFF=216.41' RT

7 CB, TYA, 5'ø
NEENAH R-4340 F&G
RIM=699.50
INV=693.99
STA=4+02.75
OFF=218.18' RT

8 CB, TYA, 5'ø
NEENAH R-4340 F&G
RIM=699.50
INV=693.90
STA=4+80.38
OFF=218.18' RT

9 CB, TYA, 5'ø
NEENAH R-4340 F&G
RIM=699.50
INV=693.81
STA=5+56.86
OFF=218.18' RT

10 CB, TYA, 5'ø
NEENAH R-4340 F&G
RIM=699.50
INV=693.67
STA=6+28.61
OFF=218.18' RT

11 CB, TYA, 5'ø
NEENAH R-4340 F&G
ADJUST RIM=700.1
INV=693.72
INV=693.22
STA=7+15.46
OFF=164.48' RT

12 CB, TYA, 5'ø
NEENAH R-3275 F&G
ADJUST RIM=699.50
INV=693.10
STA=7+45.83
OFF=177.05

13 36"ø PRC FES
W/ GRATE
INV=693.00
STA=7+68.29
OFF=177.10' RT

14 CB, TYA, 4'ø
NEENAH R-4340 F&G
RIM=700.10
INV=695.70
STA=4+04.49
OFF=163.88' RT

15 CB, TYA, 4'ø
NEENAH R-4340 F&G
RIM=700.10
INV=695.31
STA=4+81.32
OFF=164.87' RT

16 CB, TYA, 5'ø
NEENAH R-4340 F&G
RIM=700.10
INV=694.92
STA=5+56.68
OFF=165.00' RT

17 CB, TYA, 5'ø
NEENAH R-4340 F&G
RIM=700.10
INV=693.15
INV=694.15
STA=6+42.35
OFF=169.07' RT

18 CB, TYA, 4'ø
NEENAH R-4340 F&G
RIM=700.10
INV=697.60
STA=4+04.71
OFF=94.82' RT

19 CB, TYA, 4'ø
NEENAH R-4340 F&G
RIM=700.10
INV=697.26
INV=697.01
STA=4+81.39
OFF=94.44' RT

20 CB, TYA, 4'ø
NEENAH R-4340 F&G
RIM=700.10
INV=696.76
INV=696.51
STA=5+57.45
OFF=94.78' RT

21 CB, TYA, 5'ø
NEENAH R-4340 F&G
RIM=700.10
INV=695.82
INV=696.32
STA=6+35.07
OFF=94.40' RT

22 CB, TYA, 5'ø
NEENAH R-4340 F&G
ADJUST RIM=700.10
INV=695.68
STA=7+17.96
OFF=94.56' RT

23 CB, TYA, 5'ø
NEENAH R-4340 F&G
ADJUST RIM=699.50
INV=695.64
INV=693.04
STA=7+46.34
OFF=79.83' RT

24 24"ø PRC FES
W/ GRATE
INV=693.00
STA=7+69.76
OFF=79.67' RT

25 CB, TYA, 4'ø
NEENAH R-4340 F&G
RIM=702.50
INV=694.81
STA=5+72.67
OFF=153.04' LT

26 CB, TYA, 4'ø
NEENAH R-4340 F&G
RIM=702.5
INV=694.61
STA=5+72.68
OFF=138.10' LT

27 INLET, TYA
NEENAH R-3275 F&G
RIM=701.86
INV=698.51
STA=4+54.61
OFF=12.00' RT

28 CB, TYA, 4'ø
NEENAH R-3275 F&G
RIM=701.86
INV=694.01
INV=694.51
INV=694.61
STA=4+54.61
OFF=12.00' LT

29 CB, TYA, 5'ø
NEENAH R-3275 F&G
RIM=701.86
INV=693.86
INV=693.38
INV=698.38
INV=694.61
STA=5+38.62
OFF=12.00' LT

30 INLET, TYA
NEENAH R-3275 F&G
RIM=701.86
INV=698.50
STA=5+38.62
OFF=12.00' RT

31 CB, TYA, 5'ø
NEENAH R-3275 F&G
RIM=700.98
INV=693.41
STA=7+08.72
OFF=12.00' LT

32 INLET, TY A
NEENAH R-3275 F&G
RIM=700.98
INV=698.15
STA=7+08.85
OFF=12.00' RT

33 CB, TYA, 4'ø
NEENAH R-3275 F&G
RIM=700.10
INV=693.54
STA=7+46.50
OFF=274.68' LT

34 CB, TYA, 5'ø
NEENAH R-3275 F&G
RIM=700.10
INV=693.28
INV=693.03
STA=7+46.50
OFF=194.68' LT

34A 18"ø PRC FES
W/ GRATE
INV=693.00
STA=105+50.24
OFF=88.21' LT

35 CB, TYA, 4'ø
NEENAH R-3275 F&G
RIM=700.10
INV=693.54
STA=7+46.49
OFF=114.68' LT

36 MH, TYA, 5'ø
NEENAH R-1713 F&G
ADJUST RIM=700.36
INV=693.10
STA=7+46.49
OFF=12.00' LT

37 INLET, TYA
NEENAH R-3275 F&G
RIM=700.22
INV=697.75
STA=7+59.96
OFF=12.00' RT

38 CB, TYA, 5'ø
NEENAH R-3275 F&G
RIM=700.22
INV=694.33
INV=697.63
INV=693.08
STA=7+59.48
OFF=12.00' LT

39 INLET, TYA
NEENAH R-3275 F&G
RIM=699.30
INV=697.05
STA=8+49.76
OFF=12.00' RT

40 CB, TYA, 4'ø
NEENAH R-3275 F&G
RIM=699.30
INV=696.94
INV=694.63
STA=8+49.32
OFF=12.00' LT

41 INLET, TYA
NEENAH R-3275 F&G
RIM=699.35
INV=697.05
STA=8+29.92
OFF=12.00' RT

42 CB, TYA, 4'ø
NEENAH R-3275 F&G
RIM=699.35
INV=696.94
INV=694.56
STA=8+29.51
OFF=12.00' LT

43 30"ø PRC FES
W/ GRATE
INV=693.00
STA=7+79.98
OFF=61.58' LT

44 INLET, TYA
NEENAH R-2502-A F&G
RIM=699.00
INV=695.39
STA=103+57.16
OFF=64.41' RT

45 12"ø PRC FES
W/ GRATE
INV=695.00
STA=101+09.66
OFF=84.70' RT

46 18"ø PRC FES
W/ GRATE
INV=695.00
STA=102+10.35
OFF=55.85' RT

•47 CB, TYA, 4'ø
NEENAH R-3275 F&G
RIM=698.65
INV=694.90
STA=102+29.52
OFF=19.59' RT

•48 CB, TYA, 4'ø
NEENAH R-3275 F&G
RIM=698.65
INV=694.85
STA=102+10.35
OFF=27.08' LT

49 MH, TYA, 4'ø
NEENAH R-3275 F&G
RIM=699.32
INV=694.81
STA=102+88.03
OFF=30.54' LT

50 CB, TYA, 4'ø
NEENAH R-3275 F&G
RIM=702.70
INV=695.16
STA=103+53.87
OFF=27.05' LT

51 CB, TYA, 5'ø
NEENAH R-3275 F&G
ADJUST RIM=700.40
INV=695.06
STA=100+53.50
OFF=26.91' RT

52 24"ø PRC FES
W/ GRATE
INV=695.00
STA=100+69.23
OFF=57.59' RT

53 CB, TYA, 4'ø
NEENAH R-4340 F&G
RIM=702.70
INV=699.70
STA=5+66.20
OFF=456.99' LT

54 CB, TYA, 4'ø
NEENAH R-4340 F&G
RIM=702.00
INV=699.00 (12"E)
INV=693.90 (15"W)
STA=5+95.62
OFF=522.94' LT

55 12"ø PRC FES
W/ GRATE
INV=693.00
STA=6+24.15
OFF=610.15' LT

56 12"ø PRC FES
W/ GRATE
INV=700.00
STA=215+71.40
OFF=26.40' LT

57 CB, TYA, 4'ø
NEENAH R-3275 F&G
RIM=701.23
INV=696.76
STA=215+42.84
OFF=13.50' LT

58 CB, TYA, 5'ø
NEENAH R-3275 F&G
RIM=701.23
INV=696.69
INV=696.19
STA=215+42.93
OFF=13.50' RT

59 CB, TYA, 5'ø
NEENAH R-3275 F&G
RIM=700.70
INV=696.12
INV=695.77
INV=695.27
STA=10+24.58
OFF=12.66' RT

60 12"ø PRC FES
W/ GRATE
INV=700.00
STA=214+47.90
OFF=25.77' LT

61 CB, TYA, 5'ø
NEENAH R-3275 F&G
RIM=700.50
INV=695.95
STA=214+46.00
OFF=13.50' LT

62 CB, TYA, 5'ø
NEENAH R-3275 F&G
RIM=700.50
INV=695.9
STA=214+46.00
OFF=13.50' RT

63 CB, TYA, 5'ø
NEENAH R-3275 F&G
RIM=700.70
INV=695.83
STA=10+24.58
OFF=12.68' LT

64 MH, TYA, 5'ø
NEENAH R-1713 F&G
RIM=700.40
INV=695.17
INV=693.05
STA=9+32.22
OFF=17.29' RT

65 36"ø PRC FES
W/ GRATE
INV=693.00
STA=9+18.95
OFF=60.76' RT

66 CB, TYA, 4'ø
NEENAH R-2502 F&G
RIM=702.40
INV=695.43
STA=3+86.40
OFF=139.69' LT

67 CB, TYA, 4'ø
NEENAH R-2502 F&G
RIM=702.40
INV=695.13
STA=3+86.39
OFF=65.19' LT

68 MH, TYA, 4'ø
NEENAH R-1713 F&G
RIM=702.30
INV=694.94
INV=694.69
STA=3+86.38
OFF=12.00' LT

69 CB, TYA, 5'ø
NEENAH R-3275 F&G
RIM=701.86
INV=695.03
INV=698.39
STA=3+18.91
OFF=12.00' LT

70 INLET, TYA
NEENAH R-3275 F&G
RIM=701.86
INV=698.50
STA=3+18.91
OFF=12.00' RT

71 MH, TYA, 5'ø
NEENAH R-1713 F&G
RIM=702.60
INV=694.98
STA=2+76.85
OFF=16.55' LT

72 CB, TYA, 5'ø
NEENAH R-3275 F&G
RIM=701.76
INV=694.93
INV=698.35
STA=2+36.86
OFF=17.07' LT

73 INLET, TYA
NEENAH R-3275 F&G
RIM=701.76
INV=698.51
STA=2+36.86
OFF=16.94' RT

74 MH, TYA, 5'ø
NEENAH R-1713 F&G
RIM=702.40
INV=694.81
INV=696.18
INV=693.81
STA=1+62.41
OFF=17.69' LT

75 MH, TYA, 5'ø
NEENAH R-1713 F&G
RIM=702.70
INV=694.95
INV=698.77
INV=698.21
STA=1+85.68
OFF=61.52' RT

76 CB, TYA, 4'ø
NEENAH R-3275 F&G
RIM=702.70
INV=698.26
STA=2+04.60
OFF=53.68' RT

77 INLET, TYA
NEENAH R-2502-A F&G
RIM=702.30
INV=699.05
STA=1+11.39
OFF=77.40' RT

78 CB, TYA, 4'ø
NEENAH R-3275 F&G
RIM=702.70
INV=698.54
INV=698.79
STA=2+47.67
OFF=155.05' RT

79 INLET, TYA
NEENAH R-2502-A F&G
RIM=702.30
INV=699.05
STA=1+55.27
OFF=185.92' RT

80 CB, TYA, 5'ø
NEENAH R-3275 F&G
RIM=701.90
INV=696.22
INV=698.22
INV=697.22
STA=1+11.14
OFF=21.42' LT

81 INLET, TYA
NEENAH R-3275 F&G
RIM=701.96
INV=698.44
STA=1+11.81
OFF=22.72' RT

82 CB, TYA, 5'ø
NEENAH R-3275 F&G
RIM=701.92
INV=697.39
STA=0+37.62
OFF=27.51' LT

83 CB, TYA, 5'ø
NEENAH R-3275 F&G
RIM=702.12
INV=697.50
STA=0+35.92
OFF=29.26' RT

84 MH, TYA, 5'ø
NEENAH R-1713 F&G
RIM=702.30
INV=693.74
INV=698.78
STA=110+46.75
OFF=0.24' RT

85 INLET, TYA
NEENAH R-2052-A F&G
RIM=702.40
INV=699.15
STA=110+46.75
OFF=76.00' RT

86 CB, TYA, 5'ø
NEENAH R-2502-A F&G
RIM=701.70
INV=693.68
STA=109+89.75
OFF=0.00

87 CB, TYA, 5'ø
NEENAH R-2052-A F&G
RIM=701.70
INV=693.59
STA=109+06.75
OFF=0.00

88 CB, TYA, 5'ø
NEENAH R-2502-A F&G
RIM=701.70
INV=693.47
STA=107+94.25
OFF=0.00

89 CB, TYA, 5'ø
NEENAH R-2502-A F&G
RIM=701.70
INV=693.39
STA=107+24.25
OFF=0.00

90 CB, TYA, 5'ø
NEENAH R-2502-A F&G
RIM=701.70
INV=693.27
STA=106+16.00
OFF=0.00

91 MH, TYA, 5'ø
NEENAH R-1713 F&G
RIM=701.70
INV=693.11
INV=696.72
STA=104+68.58
OFF=0.00

92 CB, TYA, 5'ø
NEENAH R-3275 F&G
RIM=700.70
INV=693.07
INV=696.86
INV=696.83
STA=104+69.25
OFF=31.43' LT

93 INLET, TYA
NEENAH R-3275 F&G
RIM=700.30
INV=697.05
STA=105+12.00
OFF=30.00' LT

94 INLET, TYA
NEENAH R-3275 F&G
RIM=700.30
INV=697.05
STA=104+20.49
OFF=30.00' LT

95 36"ø FES PRC
W/ GRATE
INV=693.00
STA=104+70.13
OFF=73.50' LT

96 INLET, TYA
NEENAH R-3275 F&G
RIM=702.40
INV=698.50
STA=108+46.50
OFF=89.50' RT

97 CB, TYA, 4'ø
NEENAH R-4340 F&G
RIM=702.50
INV=698.34
INV=698.09
STA=108+46.25
OFF=122.00' RT

98 CB, TYA, 4'ø
NEENAH R-4340 F&G
RIM=702.50
INV=697.81
STA=107+59.46
OFF=121.96' RT

99 INLET, TYA
NEENAH R-3275 F&G
RIM=702.40
INV=697.94
STA=106+72.50
OFF=89.50' RT

100 CB, TYA, 4'ø
NEENAH R-4340 F&G
RIM=702.70
INV=697.53
INV=696.78
STA=106+72.65
OFF=121.81' RT

101 CB, TYA, 4'ø
NEENAH R-4340 F&G
RIM=702.70
INV=697.31
INV=697.06
STA=105+03.34
OFF=123.00' RT

102 CB, TYA, 4'ø
NEENAH R-2502-A F&G
RIM=702.70
INV=696.88
STA=104+67.25
OFF=63.25' RT

103 CONSTRUCT 5'ø MH OVER
36"ø STORM
NEENAH R-1713 F&G
RIM=MATCH EXISTING
INV=±691.85
STA=105+06.89
OFF=139.34' RT

104 MH, TYA, 5'ø
NEENAH R-1713 F&G
RIM=701.83
INV=691.76
STA=104+55.25
OFF=63.98' RT

105 36"ø PRC FES
W/ GRATE
INV=691.62
STA=104+55.25
OFF=73.50' LT

106 INLET, TYA
NEENAH R-3275 F&G
RIM=698.78
INV=696.92
STA=200+60.04
OFF=12.00' RT

107 CB, TYA, 4'ø
NEENAH R-3275 F&G
RIM=698.78
INV=693.09
STA=200+60.04
OFF=12.00' LT

108 15"ø PRC FES
INV=693.00
STA=200+79.06
OFF=73.11' LT

109 INLET, TYA
NEENAH R-3275 F&G
RIM=700.55
INV=697.63
STA=202+60.00
OFF=13.50' LT

110 CB, TYA, 4'ø
NEENAH R-3275 F&G
RIM=700.55
INV=697.51
STA=202+60.00
OFF=13.50' RT

110A CB, TYA, 4'ø
NEENAH R-4340 F&G
RIM=700.00
INV=697.33
INV=693.26
STA=202+67.00
OFF=54.00' RT

111 15"ø PRC FES
INV=693.00
STA=202+66.00
OFF=132.00' RT

112 INLET, TYA
NEENAH R-3275 F&G
RIM=700.82
INV=697.63
STA=203+92.00
OFF=13.50' LT

113 CB, TYA, 4'ø
NEENAH R-3275 F&G
RIM=700.82
INV=697.5
STA=203+92.00
OFF=13.50' RT

113A CB, TYA, 4'ø
NEENAH R-4340 F&G
RIM=700.00
INV=697.33
INV=693.26
STA=203+92.00
OFF=49.00' RT

114 15"ø PRC FES
W/ GRATE
INV=693.00
STA=203+90.00
OFF=132.00' RT

115 INLET, TYA
NEENAH R-3275 F&G
RIM=700.08
INV=69686
STA=205+64.00
OFF=13.50' LT

116 CB, TYA, 4'ø
NEENAH R-3275 F&G
RIM=700.08
INV=696.74
INV=696.49
STA=205+64.00
OFF=13.50' RT

116A CB, TYA, 5'ø
NEENAH R-4340 F&G
RIM=700.00
INV=696.36
INV=693.14
STA=205+64.00
OFF=50.00' RT

117 24"ø PRC FES
W/ GRATE
INV=693.00
STA=205+62.00
OFF=132.00' RT

118 12"ø PRC FES
W/GRATE
INV=700.00
STA=206+90.00
OFF=25.00' LT

119 INLET, TYA
NEENAH R-3275 F&G
RIM=700.55
INV=697.63
STA=206+90.00
OFF=13.50' LT

120 CB, TYA, 4'ø
NEENAH R-3275 F&G
RIM=700.55
INV=697.51
STA=206+90.00
OFF=13.50' RT

120A CB, TYA, 4'ø
NEENAH R-4340 F&G
RIM=700.00
INV=697.33
INV=693.26
STA=206+89.00
OFF=57.6' RT

121 15"ø PRC FES
W/ GRATE
INV=693.00
STA=206+87.50
OFF=132.00' RT

122 12"ø PRC FES
W/ GRATE
INV=700.00
STA=208+60.00
OFF=25.00' LT

123 CB, TYA, 4'ø
NEENAH R-3275 F&G
RIM=700.08
INV=697.31
STA=208+60.00
OFF=13.50' LT

124 CB, TYA, 4'ø
NEENAH R-3275 F&G
RIM=700.08
INV=697.17 (12"N)
STA=208+60.00
OFF=13.50' RT

125 CB, TYA, 5'ø
NEENAH R-4340 F&G
RIM=700.00
INV=696.97 (12"W)
INV=693.40 (15"E)
STA=208+60.00
OFF=53.00' RT

126 24"ø PRC FES
W/ GRATE
INV=693.00
STA=208+60.00
OFF=132.20' RT

127 12"ø PRC FES
W/ GRATE
INV=700.00
STA=211+44.00
OFF=25.00' LT

128 CB, TYA, 4'ø
NEENAH R-3275 F&G
RIM=700.08
INV=696.99
INV=696.74
STA=211+44.00
OFF=13.50' LT

129 CB, TYA, 4'ø
NEENAH R-4340 F&G
RIM=700.08
INV=696.65
INV=696.40
STA=211+44.00
OFF=13.50' RT

130 CB, TYA, 5'ø
NEENAH R-4340 F&G
RIM=700.00
INV=696.30
INV=693.14
STA=211+44.00
OFF=43.50' RT

131 24"ø PRC FES
W/ GRATE
INV=693.00
STA=211+44.00
OFF=133.00' RT

132 NOT USED
STRUCTURE ELIMINATED

133 CB, TYA, 4'ø
NEENAH R-3275 F&G
RIM=700.12
INV=697.00
INV=696.75
STA=212+52.46
OFF=13.50' LT

134 CB, TYA, 4'ø
NEENAH R-3275 F&G
RIM=700.12
INV=696.66
INV=696.26
STA=212+52.46
OFF=13.50' RT

135 CB, TYA, 5'ø
NEENAH R-4340 F&G
RIM=700.00
INV=696.16
INV=693.14
STA=212+57.47
OFF=42.90' RT

136 24" W/ GRATE
INV=693.00
STA=212+52.47
OFF=133.00' RT

137 INLET, TYA
NEENAH R-3275 F&G
RIM=699.50
INV=696.75
STA=213+12.50
OFF=13.50' LT

138 CB, TYA, 4'ø
NEENAH R-3275 F&G
RIM=699.50
INV=696.66
INV=696.41
STA=213+12.50
OFF=13.50' RT

139 INLET, TYA
NEENAH R-3275 F&G
RIM=700.75
INV=697.32
STA=216+52.14
OFF=13.50' LT

140 CB, TYA, 4'ø
NEENAH R-3275 F&G
RIM=700.75
INV=697.21 (12"N)
STA=216+52.14
OFF=13.50' RT

140A CB, TYA, 4'ø
NEENAH R-4340 F&G
RIM=700.00
INV=697.05
INV=693.24
STA=216+51.00
OFF=53.70' RT

141 15"ø PRC FES
W/ GRATE
INV=693.00
STA=216+48.70
OFF=132.43' RT

142 INLET, TYA
NEENAH R-3275 F&G
RIM=701.15
INV=697.77
STA=218+17.30
OFF=14.10' LT

143 CB, TYA, 4'ø
NEENAH R-3275 F&G
RIM=701.15
INV=697.64
STA=218+19.00
OFF=15.60' RT

144 CB, TYA, 4'ø
NEENAH R-4340 F&G
RIM=700.00
INV=697.31
INV=693.29
STA=218+36.87
OFF=48.10' RT

145 15"ø PRC FES
W/ GRATE
INV=693.00
STA=218+30.62
OFF=137.87' RT

146 18"ø PRC FES
W/ GRATE
INV=693.00
STA=213+31.34
OFF=126.85' RT

147 12"ø PRC FES
W/ GRATE
INV=693.00
STA=7+65.53
OFF=250.17' LT

148 12"ø PRC FES
W/ GRATE
INV=693.00
STA=6+57.31
OFF=603.02' LT

149 12"ø PRC FES
W/ GRATE
INV=693.00
STA=105+50.24
OFF=88.21' LT

150 15"ø PRC FES
W/ GRATE
INV=693.00
STA=105+50
OFF=203.7" LT

151 MH, TYA, 5'ø
NEENAH R-1713 F&G
RIM=702.00
INV=693.36
STA=105+86.5
OFF=203.8' LT

33A CB, TYA, 4'ø
NEENAH R-3275 F&G
RIM=702.50
INV=699.39 (12"E)
INV=694.02 (12"N)
STA=6+60
OFF=315.45' LT

33B INLET, TYA
NEENAH R-3275 F&G
RIM=702.50
INV=699.50
STA=6+60
OFF=293.45' LT

152 MH, TYA, 5'ø
NEENAH R-1713 F&G
RIM=702.00
INV=693.55 (E,W 36")
INV=698.42 (N 12")
STA=108+70.81
OFF=0.00' LT

153 CB, TYA, 4'ø
NEENAH R-3275 F&G
RIM=702.00
INV=699.00 (12"N)
STA=108+70.81
OFF=116.17' LT

154 INLET, TYA
NEENAH R-3275 F&G
RIM=703.30
INV=700.30
STA=108+39.70
OFF=147.28' LT

UTILITY NOTES:

1. RIM GRADES FOR STORM STRUCTURES LOCATED IN CURB AND GUTTER ARE TO EDGE OF PAVEMENT.
2. OFFSETS FOR FLARED END SECTIONS ARE TO TOE END OF SECTION.
3. OFFSETS FOR STORM STRUCTURES LOCATED IN CURB AND GUTTER ARE TO EDGE OF PAVEMENT. OFFSETS FOR ALL OTHER STRUCTURES ARE TO CENTER OF STRUCTURE.
4. BUILDING SERVICE LOCATIONS SHOWN ON THIS PLAN ARE ASSUMED. REFER TO ARCHITECTURAL / MECHANICAL PLANS FOR BUILDING SERVICE LOCATIONS.
5. FRAMES AND GRATES SHLL BE:
   A) CLOSED LID MANHOLE: NEENAH R-1713
   B) BARRIER CURB AND GUTTER: NEENAH R-3275
   C) LAWN: NEENAH R-4340-B
   D) PARKING LOT PAVEMENT: NEENAH R-2502-A
6. ALL RCP PIPE SHALL BE "O-RING" CONSTRUCTION.
7. ALL PIPE 18" ø OR SMALLER SHALL BE PVC SDR26 W/ASTM D-3034 FITTINGS.
8. "•" DENOTES STRUCTURES WITH A 6" FRAME AND GRATE DUE TO COVER CONSTRAINTS
9. ALL WATERMAIN SHALL BE PVC C-900 (DR-18)
10. ALL FLARED END SECTIONS SHALL BE EQUIPPED WITH GRATES.

SHADED STRUCTURES INSTALLED AS PART OF MASS GRADING CONSTRUCTION

△ 04-19-19: PER CITY COMMENTS △ 03-15-19: PER DUDOT COMMENTS
△ 03-25-19: PER FPD COMMENTS △ 02-25-19: PER INTERNAL COORDINATION

JOB NO: 080-020
FIELD BOOK: N/A
FIELD BOOK: N/A
DRAWN BY: MK
CHECKED BY: KEK
COMPLETED: 04/07/19

REVISIONS:
△ 09-18-18: REVISED PER CITY COMMENTS
△ 11-05-18: REVISED PER FPD COMMENTS
△ 01-18-19: REVISED PER CITY COMMENTS
△ 02-18-19: REVISED PER CITY COMMENTS

FILE: I:\080-020 Cantera Lot 2 Sub Area C\Engineering\Drawings\Final Engineering

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UTILITY SCHEDULE

RIVER VIEW WEST
CITY OF WARRENVILLE, ILLINOIS

SHEET NUMBER
16
OF 71

Design Firm License No. 184-001129

STORM SEWER PIPES

- P1 93 LF 18"ø PVC SDR26 @ 0.25%
- P2 69 LF 18"ø PVC SDR26 @ 0.25%
- P3 93 LF 15"ø PVC SDR26 @ 0.32%
- P4 67 LF 24"ø RCP @ 0.18%
- P5 24 LF 30"ø RCP @ 0.13%
- P6 24 LF 30"ø RCP @ 0.13%
- P7 72 LF 30"ø RCP @ 0.13%
- P8 70 LF 30"ø RCP @ 0.13%
- P9 69 LF 30"ø RCP @ 0.13%
- P10 63 LF 36"ø RCP @ 0.11%
- P11 73 LF 36"ø RCP @ 0.11%
- P12 33 LF 36"ø RCP @ 0.11%
- P13 23 LF 36"ø RCP @ 0.11%
- P14 77 LF 15"ø PVC SDR26 @ 0.32%
- P15 77 LF 18"ø PVC SDR26 @ 0.25%
- P16 77 LF 24"ø RCP @ 0.18%
- P17 77 LF 12"ø PVC SDR26 @ 0.44%
- P18 77 LF 15"ø PVC SDR26 @ 0.32%
- P19 77 LF 18"ø PVC SDR26 @ 0.25%
- P20 77 LF 24"ø RCP @ 0.18%
- P21 23 LF 24"ø RCP @ 0.18%
- P22 24 LF 24"ø RCP @ 0.18%
- P23 79 LF 15"ø PVC SDR26 @ 0.32%
- P24 63 LF 15"ø PVC SDR26 @ 0.32%
- P25 24 LF 12"ø PVC SDR26 @ 0.71%
- P26 85 LF 18"ø RCP @ 0.26%
- P27 24 LF 12"ø PVC SDR26 @ 0.50%
- P28 170 LF 30"ø RCP @ 0.13%
- P29 24 LF 12"ø PVC SDR26 @ 0.50%
- P30 80 LF 15"ø PVC SDR26 @ 0.32%
- P31 80 LF 15"ø PVC SDR26 @ 0.32%
- P32 19 LF 18"ø PVC SDR26 @ 0.15%
- P33 34 LF 30"ø RCP @ 0.13%
- P34 12 LF 30"ø RCP @ 0.14%
- P35 24 LF 12"ø PVC SDR26 @ 0.50%
- P36 24 LF 12"ø PVC SDR26 @ 0.44%
- P37 20 LF 15"ø PVC SDR26 @ 0.33%
- P38 24 LF 12"ø PVC SDR26 @ 0.44%
- P39 70 LF 15"ø PVC SDR26 @ 0.33%
- P40 49 LF 30"ø RCP @ 0.16%
- P41 74 LF 15"ø PVC SDR26 @ 0.40%
- P42 48 LF 15"ø PVC SDR26 @ 0.40%
- P43 70 LF 18"ø PVC SDR26 @ 0.26%
- P44 24 LF 12"ø PVC SDR26 @ 0.44%
- P45 37 LF 24"ø RCP @ 0.16%
- P46 31 LF 24"ø RCP @ 0.16%
- P47 35 LF 12"ø PVC SDR26 @ 0.44%
- P48 75 LF 24"ø RCP @ 0.16%
- P49 79 LF 24"ø RCP @ 0.16%
- P50 56 LF 12"ø PVC SDR26 @ 0.50%
- P51 18 LF 18"ø PVC SDR26 @ 0.25%
- P52 110 LF 18"ø PVC SDR26 @ 0.25%
- P53 79 LF 15"ø PVC SDR26 @ 0.32%
- P54 36 LF 36"ø RCP @ 0.11%
- P55 43 LF 12"ø PVC SDR26 @ 0.50%
- P56 94 LF 24"ø RCP @ 0.18%
- P57 57 LF 24"ø RCP @ 0.18%
- P58 63 LF 36"ø RCP @ 0.11%
- P59 73 LF 12"ø PVC SDR26 @ 0.50%
- P60 54 LF 36"ø RCP @ 0.11%
- P61 83 LF 36"ø RCP @ 0.11%
- P62 36 LF 36"ø RCP @ 0.11%
- P62A 77 LF 36"ø RCP @ 0.11%
- P63 70 LF 36"ø RCP @ 0.11%
- P64 108 LF 36"ø RCP @ 0.11%
- P65 147 LF 36"ø RCP @ 0.11%
- P66 31 LF 36"ø RCP @ 0.14%
- P67 43 LF 12"ø PVC SDR26 @ 0.44%
- P68 49 LF 12"ø PVC SDR26 @ 0.44%
- P69 42 LF 36"ø RCP @ 0.16%
- P70 32 LF 12"ø PVC SDR26 @ 0.50%
- P71 87 LF 15"ø PVC SDR26 @ 0.32%
- P72 87 LF 15"ø PVC SDR26 @ 0.32%
- P73 32 LF 12"ø PVC SDR26 @ 0.50%
- P74 169 LF 15"ø PVC SDR26 @ 0.32%
- P75 70 LF 18"ø PVC SDR26 @ 0.25%
- P76 63 LF 18"ø PVC SDR26 @ 0.25%
- P77 91 LF 36"ø RCP @ 0.10%
- P78 137 LF 36"ø RCP @ 0.10%
- P78A 78 LF 12"ø PVC SDR26 @ 0.50%
- P79 97 LF 12"ø PVC SDR26 @ 0.40%
- P80 54 LF 24"ø RCP @ 0.18%
- P81 34 LF 24"ø RCP @ 0.18%
- P82 33 LF 24"ø RCP @ 0.17%
- P83 28 LF 24"ø RCP @ 0.17%
- P84 23 LF 24"ø RCP @ 0.17%
- P84A 11 LF 24"ø RCP @ 0.17%
- P85 27 LF 12"ø PVC SDR26 @ 0.40%
- P86 44 LF 15"ø PVC SDR26 @ 0.15%
- P87 27 LF 12"ø PVC SDR26 @ 0.44%
- P87A 40 LF 12"ø PVC SDR26 @ 0.44%
- P88 80 LF 15"ø PVC SDR26 @ 0.32%
- P89 27 LF 12"ø PVC SDR26 @ 0.44%
- P89A 40 LF 12"ø PVC SDR26 @ 0.44%
- P90 80 LF 15"ø PVC SDR26 @ 0.32%
- P91 27 LF 12"ø PVC SDR26 @ 0.44%
- P91A 40 LF 12"ø PVC SDR26 @ 0.32%
- P92 80 LF 24"ø PVC SDR26 @ 0.18%
- P93 12 LF 12"ø PVC SDR26 @ 19.75%
- P94 27 LF 12"ø PVC SDR26 @ 0.44%
- P94A 40 LF 12"ø PVC SDR26 @ 0.44%
- P95 80 LF 15"ø PVC SDR26 @ 0.32%
- P96 12 LF 12"ø PVC SDR26 @ 22.42%
- P97 27 LF 15"ø PVC SDR26 @ 0.32%
- P98 40 LF 18"ø PVC SDR26 @ 0.25%
- P99 80 LF 24"ø RCP @ 0.18%
- P100 12 LF 12"ø PVC SDR26 @ 22.42%
- P101 27 LF 15"ø PVC SDR26 @ 0.32%
- P102 40 LF 18"ø PVC SDR26 @ 0.25%
- P103 80 LF 24"ø RCP @ 0.18%
- P104 NOT USED / ELIMINATED
- P105 27 LF 15"ø PVC SDR26 @ 0.32%
- P106 40 LF 18"ø PVC SDR26 @ 0.25%
- P107 80 LF 24"ø RCP @ 0.18%
- P108 27 LF 15"ø PVC SDR26 @ 0.32%
- P109 60 LF 18"ø PVC SDR26 @ 0.25%
- P110 12 LF 12"ø PVC SDR26 @ 25.42%
- P111 27 LF 24"ø RCP @ 0.18%
- P112 38 LF 24"ø RCP @ 0.18%
- P113 34 LF 24"ø RCP @ 0.18%
- P114 31 LF 12"ø PVC SDR26 @ 9.52%
- P115 27 LF 18"ø PVC SDR26 @ 0.25%
- P116 37 LF 24"ø RCP @ 0.18%
- P117 84 LF 36"ø RCP @ 0.11%
- P118 45 LF 36"ø RCP @ 0.11%
- P119 27 LF 12"ø PVC SDR26 @ 0.40%
- P119A 40 LF 12"ø PVC SDR26 @ 0.40%
- P120 80 LF 15"ø PVC SDR26 @ 0.30%
- P121 30 LF 12"ø PVC SDR26 @ 0.44%
- P122 30 LF 15"ø PVC SDR26 @ 0.44%
- P123 90 LF 15"ø PVC SDR26 @ 0.32%
- P124 43 LF 18"ø RCP @ 0.50%
- P125 71 LF 12"ø PVC SDR26 @ 1.00%
- P126 57 LF 12"ø PVC SDR26 @ 1.00%
- P127 36 LF 12"ø PVC SDR26 @ 1.00%
- P128 36 LF 15"ø PVC SDR36 @ 1.00%
- P129 80 LF 12"ø PVC SDR26 @ 1.15%
- P130 70 LF 15"ø PVC SDR26 @ 1.15%
- P131 8 LF 12"ø PVC SDR26 @ 1.00%
- P132 57 LF 15"ø PVC SDR26 @ 0.33%
- P133 11 LF 15"ø PVC SDR26 @ 1.00%
- P134 59 LF 24"ø RCP @ 0.18%
- P135 47 LF 15"ø PVC SDR26 @ 0.33%
- P136 68 LF 24"ø RCP @ 0.18%
- P137 96 LF 12"ø PVC SDR26 @ 0.50%
- P138 22 LF 12"ø PVC SDR26 @ 0.50%
- P139 116 LF 12"ø PVC SDR26 @ 0.50%
- P140 44 LF 12"ø PVC SDR26 @ 2.95%

SANITARY SEWER STRUCTURE

- S1 MH TYPE A, 4'ø
  NEENAH R-1713 F&G
  CONSTRUCT OVER EXISTING
  RIM=MATCH EXISTING
  INV=687.00 (15"E,W)
  INV=687.83 (8"N)
  STA=103+65.80
  OFF=137.50' RT
- S2 MH TYPE A, 4'ø
  NEENAH R-1713 F&G
  RIM=700.76
  INV=688.45 (S)
  INV=688.55 (N)
  STA=103+57.03
  OFF=14.12' RT
- S3 MH TYPE A, 4'ø
  NEENAH R-1713 F&G
  RIM=702.20
  INV=689.91 (W)
  INV=690.01 (E)
  STA=106+05.11
  OFF=13.00' RT
- S4 MH TYPE A, 4'ø
  NEENAH R-1713 F&G
  RIM=702.20
  INV=691.22 (W)
  INV=691.32 (E)
  STA=108+46.25
  OFF=13.00' RT
- S5 MH TYPE A, 4'ø
  NEENAH R-1713 F&G
  RIM=702.20
  INV=692.17
  STA=110+16.09
  OFF=13.11' RT
- S6 MH TYPE A, 4'ø
  NEENAH R-1713 F&G
  RIM=703.40
  INV=691.90
  STA=108+05.85
  OFF=69.00' LT
- S7 MH TYPE A, 4'ø
  NEENAH R-1713 F&G
  RIM=703.40
  INV=692.00
  STA=109+44.23
  OFF=69.36' LT
- S8 MH TYPE A, 4'ø
  NEENAH R-1713 F&G
  RIM=701.80
  INV=688.24
  STA=100+84.49
  OFF=205.54' RT
- S9 MH TYPE A, 4'ø
  NEENAH R-1713 F&G
  RIM=703.20
  INV=691.23
  STA=1+00.05
  OFF=104.68' RT
- S10 MH TYPE A, 4'ø
  NEENAH R-1713 F&G
  RIM=702.90
  INV=691.20
  STA=1+10.75
  OFF=90.60' RT
- S11 MH TYPE A, 4'ø
  NEENAH R-1713 F&G
  CONSTRUCT OVER EXISTING
  15"ø MAIN
  RIM=698.30
  INV=687.03 (8")
  INV=686.20 (15")
  STA=100+21.53
  OFF=73.70' LT
- S12 MH TYPE A, 4'ø
  NEENAH R-1713 F&G
  RIM=700.00
  INV=687.28 (S)
  INV=687.38 (N)
  STA=100+57.30
  OFF=39.80' LT
- S13 MH TYPE A, 4'ø
  NEENAH R-1713 F&G
  RIM=699.00
  INV=688.42
  INV=688.32
  STA=200+89.94
  OFF=26.44' LT
- S14 MH TYPE A, 4'ø
  NEENAH R-1713 F&G
  RIM=701.50
  INV=689.67 (N)
  INV=689.57 (S)
  STA=203+05.88
  OFF=29.01' LT
- S15 MH TYPE A, 4'ø
  NEENAH R-1713 F&G
  RIM=701.00
  INV=690.37
  STA=204+42.31
  OFF=19.89' LT
- S16 MH TYPE A, 4'ø
  NEENAH R-1713 F&G
  RIM=701.80
  INV=689.28 (8" S,E)
  INV=689.19 (8"W)
  STA=104+80.31
  OFF=13.00' RT
- S17 MH TYPE A, 4'ø
  NEENAH R-1713 F&G
  RIM=702.30
  INV=689.46 (8"N)
  INV=689.56 (8"E)
  STA=104+80
  OFF=49.20' RT
- S18 MH TYPE A, 4'ø
  NEENAH R-1713 F&G
  RIM=702.70
  INV=689.46 (8"N)
  INV=689.56 (8"E)
  STA=108+46.25
  OFF=47.60' RT

SANITARY SEWER PIPES

- S1 124 LF 8"ø PVC SDR26 @ 0.50%
- S2 250 LF 8"ø PVC SDR26 @ 0.50%
- S3 204 LF 8"ø PVC SDR26 @ 0.50%
- S4 207 LF 8"ø PVC SDR26 @ 0.50%
- S5 82 LF 8"ø PVC SDR26 @ 0.50%
- S6 15 LF 8"ø PVC SDR26 @ 0.50%
- S7 82 LF 8"ø PVC SDR26 @ 0.50%
- S8 15 LF 8"ø PVC SDR26 @ 0.50%
- S9 14 LF 8"ø PVC SDR26 @ 1.00%
- S10 12 LF 8"ø PVC SDR26 @ 1.00%
- S11 60 LF 8"ø PVC SDR26 @ 1.00%
- S12 13 LF 8"ø PVC SDR26 @ 1.00%
- S13 10 LF 8"ø PVC SDR26 @ 1.00%
- S14 50 LF 8"ø PVC SDR26 @ 0.50%
- S15 189 LF 8"ø PVC SDR26 @ 0.50%
- S16 229 LF 8"ø PVC SDR26 @ 0.50%
- S17 140 LF 8"ø PVC SDR26 @ 0.50%
- S18 36 LF 8"ø PVC SDR26 @ 0.50%
- S19 31 LF 8"ø PVC SDR26 @ 0.50%
- S20 35 LF 8"ø PVC SDR26 @ 0.50%
- S21 10 LF 8"ø PVC SDR26 @ 0.50%
- S22 10 LF 8"ø PVC SDR26 @ 0.50%

WATER STRUCTURE

- W1 8" PRESSURE CONNECTION IN 60"ø VAULT
  RIM=700.00
  STA=132+87.54
  OFF=64.91' RT
- W2 8" VALVE AND VAULT
  RIM=702.38
  STA=105+73.15
  OFF=25.70' LT
- W3 8" VALVE AND VAULT
  RIM=702.13
  STA=1+97.59
  OFF=10.02' LT
- W4 8" VALVE AND VAULT
  RIM=702.30
  STA=2+06.00
  OFF=0.15' RT
- W5 FIRE HYDRANT
  FLANGE EL=703.80
  STA=1+87.58
  OFF=91.80' RT
- W6 6" VALVE AND VAULT
  RIM=703.00
  STA=1+17.23
  OFF=172.82' RT
- W7 FIRE HYDRANT
  FLANGE EL=703.40
  STA=3+68.47
  OFF=31.37' LT
- W8 FIRE HYDRANT
  FLANGE EL=702.06
  STA=4+00.43
  OFF=86.20' RT
- W9 FIRE HYDRANT
  FLANGE EL=702.63
  STA=4+99.60
  OFF=16.99' LT
- W10 8" VALVE AND VAULT
  RIM=702.42
  STA=6+20.12
  OFF=0.10' RT
- W11 FIRE HYDRANT
  FLANGE EL=702.15
  STA=6+87.46
  OFF=17.00' RT
- W12 FIRE HYDRANT
  FLANGE EL=701.70
  STA=7+21.03
  OFF=87.89' RT
- W13 8" VALVE AND VAULT
  RIM=700.70
  STA=7+33.65
  OFF=77.51' LT
- W14 FIRE HYDRANT
  FLANGE EL=701.10
  STA=6+72.10
  OFF=324.82' LT
- W15 FIRE HYDRANT
  FLANGE EL=701.30
  STA=7+09.31
  OFF=494.79' LT
- W16 FIRE HYDRANT
  FLANGE EL=701.30
  STA=5+95.38
  OFF=578.75' LT
- W17 8" VALVE AND VAULT
  RIM=701.00
  STA=4+49.69
  OFF=602.63' LT
- W18 FIRE HYDRANT
  FLANGE EL=701.30
  STA=1+53.45
  OFF=566.61' LT
- W19 8" VALVE AND VAULT
  RIM=701.80
  STA=105+84.77
  OFF=46.49' LT
- W20 FIRE HYDRANT
  FLANGE EL=702.80
  STA=106+79.84
  OFF=19.09' RT
- W21 FIRE HYDRANT
  FLANGE EL=703.00
  STA=105+89.94
  OFF=17.87' LT
- W22 FIRE HYDRANT
  FLANGE EL=702.80
  STA=108+18.42
  OFF=18.15' RT
- W23 8" VALVE AND VAULT
  RIM=703.40
  STA=108+92.40
  OFF=71.74' LT
- W23A 8" VALVE AND VAULT
  RIM=703.30
  STA=109+02.41
  OFF=46.50' LT
- W24 FIRE HYDRANT
  FLANGE EL=702.70
  STA=108+82.31
  OFF=116.17' LT
- W25 FIRE HYDRANT
  FLANGE EL=703.50
  STA=110+93.82
  OFF=17.00' LT
- W26 6" VALVE AND VAULT
  RIM=701.48
  STA=104+06.49
  OFF=5.47' LT
- W27 FIRE HYDRANT
  FLANGE EL=702.60
  STA=103+81.44
  OFF=18.93' RT
- W28 12" VALVE AND VAULT
  RIM=700.50
  STA=100+31.39
  OFF=113.75' LT
- W29 12" VALVE AND VAULT
  RIM=701.55
  STA=200+32.14
  OFF=36.81' LT
- W30 8" VALVE AND VAULT
  RIM=701.51
  STA=200+24.93
  OFF=38.22' LT
- W31 FIRE HYDRANT
  FLANGE EL=700.96
  STA=200+83.00
  OFF=14.56' RT
- W32 FIRE HYDRANT
  FLANGE EL=700.99
  STA=202+52.37
  OFF=18.00' RT
- W33 FIRE HYDRANT
  FLANGE EL=700.98
  STA=205+51.00
  OFF=17.50' RT
- W34 12" VALVE AND VAULT
  RIM=700.72
  STA=205+56.15
  OFF=20.00' RT
- W35 FIRE HYDRANT
  FLANGE EL=700.91
  STA=208+50.00
  OFF=17.60' RT
- W36 FIRE HYDRANT
  FLANGE EL=700.87
  STA=209+92.95
  OFF=17.65' RT
- W36A 12" VALVE AND VAULT
  RIM=700.70
  STA=211+51.33
  OFF=20.00' RT
- W37 FIRE HYDRANT
  FLANGE EL=700.93
  STA=212+63.16
  OFF=17.55' RT
- W38 FIRE HYDRANT
  FLANGE EL=700.84
  STA=214+45.59
  OFF=17.50' RT
- W39 12" VALVE AND VAULT
  RIM=701.20
  STA=214+90.85
  OFF=21.73' RT
- W40 12" VALVE AND VAULT
  RIM=700.85
  STA=10+12.54
  OFF=0.52' LT
- W41 FIRE HYDRANT
  FLANGE EL=701.24
  STA=216+68.00
  OFF=17.70' RT
- W41A 12" VALVE AND VAULT
  RIM=701.35
  STA=216+44.8
  OFF=20.00' RT
- W42 FIRE HYDRANT
  FLANGE EL=701.84
  STA=218+54.00
  OFF=20.69' RT
- W43 12" VALVE AND VAULT
  RIM=±704 (MATCH EXISTING)
  STA=219+77.85
  OFF=45.31' RT

UTILITY NOTES:

1. RIM GRADES FOR STORM STRUCTURES LOCATED IN CURB AND GUTTER ARE TO EDGE OF PAVEMENT.
2. OFFSETS FOR FLARED END SECTIONS ARE TO TOE END OF SECTION.
3. OFFSETS FOR STORM STRUCTURES LOCATED IN CURB AND GUTTER ARE TO EDGE OF PAVEMENT. OFFSETS FOR ALL OTHER STRUCTURES ARE TO CENTER OF STRUCTURE.
4. BUILDING SERVICE LOCATIONS SHOWN ON THIS PLAN ARE ASSUMED. REFER TO ARCHITECTURAL / MECHANICAL PLANS FOR BUILDING SERVICE LOCATIONS.
5. FRAMES AND GRATES SHLL BE:
   A) CLOSED LID MANHOLE: NEENAH R-1713
   B) BARRIER CURB AND GUTTER: NEENAH R-3275
   C) LAWN: NEENAH R-4340-B
   D) PARKING LOT PAVEMENT: NEENAH R-2502-A
6. ALL RCP PIPE SHALL BE "O-RING" CONSTRUCTION.
7. ALL PIPE 18" ø OR SMALLER SHALL BE PVC SDR26 W/ASTM D-3034 FITTINGS.
8. "*" DENOTES STRUCTURES WITH A 6" FRAME AND GRATE DUE TO COVER CONSTRAINTS
9. ALL WATERMAIN SHALL BE PVC C-900 (DR-18)
10. ALL FLARED END SECTIONS SHALL BE EQUIPPED WITH GRATES.

SHADED STRUCTURES INSTALLED AS PART OF MASS GRADING CONSTRUCTION

△04-19-19: PER CITY COMMENTS △03-15-19: PER DUDOT COMMENTS
△03-25-19: PER FPD COMMENTS △02-25-19: PER INTERNAL COORDINATION

JOB NO. 080-020

REVISIONS:	FIELD BOOK: N/A
△09-18-18: REVISED PER CITY COMMENTS	FIELD BOOK: N/A
△11-05-18: REVISED PER FPD COMMENTS	DRAWN BY: MK
△01-18-19: REVISED PER CITY COMMENTS	CHECKED BY: KEK
△02-18-19: REVISED PER CITY COMMENTS	COMPLETED: 04/07/19

FILE: V:\080-020 Cantera Lot 2 Sub Area C\Engineering\Drawings\Final Engineering

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UTILITY SCHEDULE

RIVER VIEW WEST
CITY OF WARRENVILLE, ILLINOIS

SHEET NUMBER 17 OF 71

Design Firm License No. 184-001129

UTILITY CONFLICTS

1 EXIST 36" ø STORM & PROPOSED 8" WTR
T/P WTR=698.04
B/P WTR=697.23
36" ø STORM INV=693.11
T/P STORM=696.44
B/P STORM=692.81
STORM UNDER WATER
SEPARATION=0.83'
(±4.5' DEEP WATER, WATER ENCASED IN STEEL CASING PIPE)

2 PROPOSED 8" WTR & EXIST. 15" SAN
T/P WATER=698.04
B/P WATER=697.23
15" SAN INV=690.11
T/P SAN=691.50
SANITARY UNDER WATER
SEPARATION=5.73'
(±4.5' DEEP WATER)

3 CONFLICT ELIMINATED

4 PROPOSED 12" ø STORM & PROPOSED 8" ø WTR
T/P WTR=691.96
B/P WTR=691.19
12" ø INV=693.61
B/P STORM=693.56
SEPARATION=1.6'
(8.34' DEEP WATER)

5 PROPOSED 12" ø STORM & PROPOSED 8" ø WTR
T/P WTR=695.00
B/P WTR=694.06
12" ø INV=697.97
B/P STORM=696.77
SEPARATION=1.77'
(7' DEEP WATER)

6 PROP. 12" ø STORM & PROP. 8" ø WTR
T/P WTR=696.60
B/P WTR=695.66
12" ø STORM INV=698.42
B/P STORM=698.22
SEPARATION=1.62'
(5.5' DEEP WATER)

7 PROPOSED 12" ø STORM & PROP. 8" ø WTR
T/P WTR=696.60
B/P WTR=695.66
12" ø STORM INV=698.61
B/P STORM=698.41
SEPARATION=1.81'
(5.5' DEEP WATER)

8 PROPOSED 12" ø STORM & PROPOSED 8" ø WTR
T/P WTR=696.60
B/P WTR=695.66
12" ø STORM INV=698.42
B/P STORM=698.22
SEPARATION=1.62'
(5.5' DEEP WATER)

9 PROP. 12" ø STM & PROP. 8" ø WTR
T/P WTR=696.20
B/P WTR=695.26
12" ø STM INV=698.07
B/P STM=697.87
SEPARATION=1.67'
(5.5' DEEP WATER)

10 PROP. 12" ø STORM & PROP. 8" ø WTR
T/P WTR=695.70
B/P WTR=694.76
12" ø STM INV=697.66
B/P STM=697.46
SEPARATION=1.70'
(5.5' DEEP WATER)

11 PROPOSED 12" ø STORM & PROPOSED 8" WTR
T/P WTR=689.00
B/P WTR=688.06
12" ø STORM INV=695.04
B/P STORM=694.24
SEPARATION=5.24

12 PROPOSED 12" ø STM & 8" WTR
T/P WTR=689.00
B/P WTR=688.06
12" ø STM INV=695.14
B/P STM=694.74
SEPARATION=5.94

13 PROP. 12" ø STM & PROP. 8" ø WTR
T/P WTR=695.14
B/P WTR=694.20
12" ø STM INV=694.88
B/P STM=694.68
DIP WTR. T/T WTR=693.08
SEPARATION=1.60'
PROVIDE WATER PROTECTION 10' EITHER SIDE OF CROSSING

14 PROPOSED 12" ø STORM & 8" WTR
T/P WTR=697.40
B/P WTR=696.46
12" ø STORM INV=697.51
B/P STM=697.31
DIP WTR. T/P=695.71
SEPARATION=1.60
PROVIDE WATER PROTECTION 10' EITHER SIDE OF CROSSING

15 PROPOSED 6" ø SAN. SERVICE & 8" WTR
T/P WTR=697.70
B/P WTR=696.76
6" ø SAN INV=690.70
B/P SAN=690.57
T/P SAN=691.33
SEPARATION=5.43'

16 PROP. 24" ø STORM & 6" WTR
T/P WTR=696.80
B/P WTR=695.86
24" ø STORM INV=695.08
B/P STM=694.84
T/P STM=697.33
DIP WTR T/P=695.73
SEPARATION=1.60'

17 PROP. 12" ø STM & PROP. 8" ø WTR
T/P WTR=697.00
B/P WTR=696.23
12" ø STM INV=698.65
B/P STM=698.60
SEPARATION=1.6'
(5.68' DEEP WATER)

18 12" ø SAN & 24" ø STORM
24" ø STORM INV=694.83
24" ø B/P=694.58
T/P STM=697.08
12" ø SAN INV=690.85
B/P SAN=690.65
T/P SAN=692.05
SEPARATION=2.53'

19 PROP. 30" ø STM & 6" WTR
T/P WTR=696.80
B/P WTR=696.05
30" ø STM INV=694.09
B/P STM=693.80
T/P STM=696.89
DIP WTR T/P WTR=692.20
SEPARATION=1.60'
PROVIDE WATER PROTECTION 10' EITHER SIDE OF CROSSING

20 8" ø SAN & 6" WTR
T/P WTR=693.17
B/P WTR=692.42
8" SAN INV=690.17
B/P SAN=690.05
T/P SAN=690.92
SEPARATION=1.50'

21 8" ø SAN & 36" STORM
8" SAN INV=689.05
B/P SAN=688.91
T/P SAN=689.99
36" STM INV=691.71
B/P STM=691.41
T/P STM=695.01
SEPARATION=1.42'

22 8" SAN & 15 ø STORM
8" SAN INV=689.11
B/P SAN=688.97
T/P SAN=690.05
15" ø STM INV=694.94
B/P STM=694.75
T/P STM=696.38
SEPARATION=4.70'

23 PROPOSED 36" ø STORM & EXIST. 15" ø SAN
36" ø STORM INV=±691
B/P STM=690.67
T/P STM=694.33
15" SAN INV=687.52
B/P SAN=687.38
T/P SAN=688.96
SEPARATION=1.71'

24 36" ø WTR & 8" SAN
8" ø SAN=688.85
B/P SAN=688.71
T/P SAN=689.79
T/P WTR=696.29
B/P WTR=695.83
SEPARATION=6.04'

25 6" WTR & 8" SAN
T/P WTR=696.30
B/P WTR=695.55
8" SAN INV=689.80
B/P SAN=689.66
T/P SAN=690.74
SEPARATION=4.81'

26 15" ø STORM & 8" ø WTR
T/P WTR=696.00
B/P WTR=695.06
15" ø STM INV=694.50
B/P STM=694.36
T/P STM=695.94
DIP WTR T/P=692.76
SEPARATION=1.60'
PROVIDE WATER PROTECTION 10' EITHER SIDE OF CROSSING

27 PROP. 8" ø SAN & PROP. 12" ø WTR
T/P WTR=695.50
B/P WTR=694.10
8"SAN INV=687.38
B/P SAN=687.34
T/P SAN=688.32
SEPARATION=5.78'

28 12" ø STORM & 12" WTR
T/P WTR=695.50
B/P WTR=694.17
12" ø STORM INV=697.38
B/P STM=697.18
T/P STM=698.58
SEPARATION=1.88'
(6.0' DEEP WATER)

29 12" ø STM & 12" WTR
T/P WTR=695.50
B/P WTR=694.17
12" ø STM INV=697.38
B/P STM=697.18
T/P STM=698.58
SEPARATION=1.88'
(6.0' DEEP WATER)

30 12" ø STM & 12" WTR
T/P WTR=695.50
B/P WTR=694.17
12" ø STM INV=697.38
B/P STM=697.18
T/P STM=698.58
SEPARATION=1.88'
(6.0' DEEP WATER)

31 12" ø STM & 12" ø WTR
T/P WTR=695.50
B/P WTR=694.17
12" ø STM INV=697.38
B/P STM=697.18
T/P STM=698.58
SEPARATION=1.88'
(6.0' DEEP WATER)

32 12" ø STM & 12" ø WTR
T/P WTR=694.91
B/P WTR=693.57
12" ø STM INV=697.07
B/P STM=696.87
T/P STM=698.27
SEPARATION=1.96'
(6.0' DEEP WATER)

33 12" ø STM & 12" ø WTR
T/P WTR=694.91
B/P WTR=693.57
12" ø STM INV=697.07
B/P STM=696.87
T/P STM=698.27
SEPARATION=1.96'
(6.0' DEEP WATER)

34 12" ø STM & 12" ø WTR
T/P WTR=694.60
B/P WTR=693.55
12" ø STORM INV=696.40
B/P STM=696.20
T/P STM=697.60
SEPARATION=1.60'

35 18" ø STORM & EXIST. 66"ø STORM
18" ø STORM INV=696.41
T/P 18" STM=698.12
B/P 18" STM=696.20
EXIST 66" ø STM INV=±683.87
EXIST 66" T/P=±689.91
EXIST 66" B/P=±683.33
SEPARATION=6.29'

36 EXIST. 66" ø STORM & PROPOSED 12" ø WTR
T/P WTR=695.20
B/P WTR=693.87
60" ø STORM INV=683.50
B/P STORM=682.96
T/P STORM=689.54
SEPARATION=4.33'

37 12" ø STORM & 12" ø WTR
T/P WTR=695.20
B/P WTR=693.86
12" ø STORM INV=696.66
B/P STM=696.46
T/P STM=697.86
DIP WTR T/P=694.86
SEPARATION=1.60'
PROVIDE WATER PROTECTION 10' EITHER SIDE OF CROSSING

38 12" ø STM & 12" WTR
T/P WTR=695.50
B/P WTR=694.17
12" ø STM INV=696.81
B/P STM=696.61
T/P STM=698.01
DIP WTR T/P=695.01
PROVIDE WATER PROTECTION 10' EITHER SIDE OF CROSSING

39 12" ø STM & 12" ø WTR
T/P WTR=695.27
B/P WTR=693.94
12" STM INV=697.12
B/P STM=696.92
T/P STM=698.32
SEPARATION=1.65'

40 12" ø STORM & 12" WTR
T/P WTR=694.74
B/P WTR=693.41
12" STM INV=696.57
B/P STM=696.37
T/P STM=697.77
SEPARATION=1.63'

41 12" STM DOWNSPOUT & 12" WTR
T/P WTR=695.20
B/P WTR=693.87
12" ø STM INV=693.35
B/P STM=693.15
T/P STM=694.55
DIP WTR=691.55
SEPARATION=1.60'
PROVIDE WATER PROTECTION 10' EITHER SIDE OF CORSSING

41A 12" ø STM & 12" DOWNSPOUT
12" ø STM INV=695.94
B/P TM=695.74
T/P WTR=697.14
12" DOWNSPOUT=693.25
B/P STM=693.15
T/P STM=694.45
SEPARATION=1.29'

42 12" ø STM & 12" WTR
T/P WTR=695.60
B/P WTR=694.27
12" ø DOWNSPOUT=693.25
B/P STM=693.05
T/P STM=694.45
DIP WTR T/P=691.45
SEPARATION=1.60'
PROVIDE WATER PROTECTION 10' EITHER SIDE OF CROSSING

43 12" ø STM & 12" ø WTR
T/P WTR=659.60
B/P WTR=694.27
12" ø STM INV=693.28
B/P STM=693.08
T/P STM=694.48
DIP WTR T/P WTR=691.48
SEPARATION=1.60'
PROVIDE WATER PROTECTION 10' EITHER SIDE OF CROSSING

44 12" ø STM & 12" ø WTR
T/P WTR=659.60
B/P WTR=694.27
12" ø STM INV=693.28
B/P STM=693.08
T/P STM=694.48
DIP WTR T/P WTR=691.48
SEPARATION=1.60'
PROVIDE WATER PROTECTION 10' EITHER SIDE OF CROSSING

45 36" ø STM & 8" WTR
T/P WTR=695.33
B/P WTR=694.00
36" ø STM INV=691.68
B/P STM=691.35
T/P STM=695.01
DIP WTR T/P WTR=689.75
SEPARATION=1.60'
PROVIDE WATER PROTECTION 10' EITHER SIDE OF CROSSING

46 12" ø STM & 36" ø WTR
T/P WTR=695.38
B/P WTR=694.00
36" STM INV=693.09
B/P STM=692.76
T/P STM=696.42
DIP WTR T/P WTR=691.16
SEPARATION=1.60'
PROVIDE WATER PROTECTION 10' EITHER SIDE OF CROSSING

47 12" SAN & 8" WTR
T/P WTR=697.75
B/P WTR=696.35
12" ø SAN INV=691.09
B/P SAN=690.89
T/P SAN=692.29
SEPARATION=4.06'

48 12" SAN & 8" WTR
T/P WTR=697.75
B/P WTR=696.35
12" ø SAN INV=691.90
B/P SAN=691.70
T/P SAN=693.10
SEPARATION=3.25'

49 12" ø SAN & 24" ø STM
12" ø SAN INV=691.65
B/P SAN=691.45
T/P WTR=692.85
24" ø STM INV=695.31
B/P STM=695.06
T/P SAN=697.56
SEPARATION=2.21'

50 8" WTR & 12" STORM
T/P WTR=697.50
B/P WTR=696.00
12" ø STM INV=697.24
B/P STM=697.04
T/P STM=698.44
DIP WTR T/P WTR=695.44
SEPARATION=1.60'
PROVIDE WATER PROTECTION 10' EITHER SIDE OF CROSSING

51 8" SAN & 24" ø STM
T/P WTR=695.80
B/P WTR=694.86
24" ø STM INV=693.71
B/P STM=693.46
T/P SAN=695.96
DIP WTR T/P WTR=691.86
SEPARATION=1.60'
PROVIDE WATER PROTECTION 10' EITHER SIDE OF CROSSING

52 15" ø STM & 8" ø SAN
15" STM INV=693.20
B/P STM=697.75
T/P STM=694.84
8" ø SAN INV=688.57
B/P SAN=688.53
T/P SAN=689.47
SEPARATION=.73'

53 6" ø WTR & 18" ø STM
T/P WTR=696.44
B/P WTR=695.68
18" ø STM INV=694.73
18" ø STM B/P=694.52
B/P SAN=690.89
T/P STM=696.44
DIP WTR T/P WTR=691.95
SEPARATION=1.60'
PROVIDE WATER PROTECTION 10' EITHER SIDE OF CROSSING

54 CONFLICT ELIMINATED

55 15" STM & 15" ø SAN
15"ø INV STM=693.17
15"ø B/P STM=692.98
15" ø SAN INV=685.44
15" ø T/P=686.88
SEPARATION=6.10'

56 24" STM & 15" ø SAN
24"ø INV STM=693.07
24"ø B/P STM=692.82
15" ø SAN INV=685.88
15" ø T/P=687.32
SEPARATION=5.50'

57 24" STM & PROPOSED 8" ø SAN
24"ø INV STM=693.10
24"ø B/P STM=692.85
8" ø SAN INV=687.21
8" ø T/P=688.02
SEPARATION=4.83'

58 PROPOSED 12" WTR & 24" ø STM
T/P WTR=695.50
B/P WTR=694.10
24" ø STM INV=693.05
24" ø B/P=692.80
DIP WTR T/P WTR=691.20
SEPARATION=1.60'
PROVIDE WATER PROTECTION 10' EITHER SIDE OF CROSSING

UTILITY NOTES:

1. RIM GRADES FOR STORM STRUCTURES LOCATED IN CURB AND GUTTER ARE TO EDGE OF PAVEMENT.
2. OFFSETS FOR FLARED END SECTIONS ARE TO TOE END OF SECTION.
3. OFFSETS FOR STORM STRUCTURES LOCATED IN CURB AND GUTTER ARE TO EDGE OF PAVEMENT. OFFSETS FOR ALL OTHER STRUCTURES ARE TO CENTER OF STRUCTURE.
4. BUILDING SERVICE LOCATIONS SHOWN ON THIS PLAN ARE ASSUMED. REFER TO ARCHITECTURAL / MECHANICAL PLANS FOR BUILDING SERVICE LOCATIONS.
5. FRAMES AND GRATES SHLL BE:
   A) CLOSED LID MANHOLE: NEENAH R-1713
   B) BARRIER CURB AND GUTTER: NEENAH R-3275
   C) LAWN: NEENAH R-4340-B
   D) PARKING LOT PAVEMENT: NEENAH R-2502-A
6. ALL RCP PIPE SHALL BE "O-RING" CONSTRUCTION.
7. ALL PIPE 18" ø OR SMALLER SHALL BE PVC SDR26 W/ASTM D-3034 FITTINGS.
8. "*" DENOTES STRUCTURES WITH A 6" FRAME AND GRATE DUE TO COVER CONSTRAINTS
9. ALL WATERMAIN SHALL BE PVC C-900 (DR-18)
10. ALL FLARED END SECTIONS SHALL BE EQUIPPED WITH GRATES.

SHADED STRUCTURES INSTALLED AS PART OF MASS GRADING CONSTRUCTION

△ 04-19-19: PER CITY COMMENTS △ 03-15-19: PER DUDOT COMMENTS.
△ 03-25-19: PER PPD COMMENTS △ 02-25-19: PER INTERNAL COORDINATION

JOB NO: 080-020

REVISIONS:
△ 09-18-18: REVISED PER CITY COMMENTS — FIELD BOOK: N/A
△ 11-05-18: REVISED PER PPD COMMENTS — FIELD BOOK: N/A
△ 01-18-19: REVISED PER CITY COMMENTS — DRAWN BY: MK
△ 02-18-19: REVISED PER CITY COMMENTS — CHECKED BY: KEK
FILE: I:\080-020 Cantera Lot 2 Sub Area 4\Engineering\Drawings — COMPLETED:04/07/18

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UTILITY SCHEDULE

RIVER VIEW WEST
CITY OF WARRENVILLE, ILLINOIS

SHEET NUMBER
18
OF 71

FILE: I:\080-020 Cantera Lot 2 Sub Area 4\Engineering\Drawings\Final Engineering

Design Firm License No. 184-001129

60 0 30 60
1 inch = 60 ft.

NOTE:

1. SEE THE GENERAL NOTES AND DETAILS SHEETS IN THESE PLANS FOR EROSION AND SEDIMENT CONTROL NOTES, MAINTENANCE, INSPECTIONS AND DETAILS.
2. NATIVE SEEDING SHALL BE PER THE SEEDING MIX TABLES CONTAINED IN THE DETAIL SHEETS.
3. TEMPORARY SEEDING SHALL BE PER IDOT SECTION 250 & SEEDING CLASS 2A.
4. AREAS INDICATED AS FUTURE DEVELOPMENT SHALL RECEIVE TEMPORARY SEEDING AND MULCH OR HYDROSEED UPON COMPLETION OF MASS GRADING OPERATIONS.

NATIVE SEEDING AND EROSION CONTROL BLANKET BROAD SPECTRUM PRAIRIE W/ FLOWER MIX

NATIVE SEEDING AND EROSION CONTROL BLANKET LOW PROFILE DRY MESIC PRAIRIE W/ FLOWER MIX

NATIVE SEEDING AND EROSION CONTROL BLANKET TOUGH SHORELINE MIX

SODDING

TEMPORARY SEEDING AND MULCH OR HYDROSEED

WEST BRANCH DUPAGE RIVER

FERRY ROAD

PARKWAY

FUTURE DEVELOPMENT

TORCH

PROPOSED DETENTION POND
NWL=693.00
HWL=698.39
STORAGE PROVIDED=42.23 AC-FT

364 UNITS MULTIFAMILY BUILDING W/ GARAGE

PROPOSED MATERIALS STORAGE & STAGING AREA

PROPOSED SITE TRAILER LOCATION

PROPOSED TOPSOIL STOCKPILE LOCATION

CONCRETE WASHOUT

DUMPSTER LOCATION

PROPOSED RETAINING WALL

CONSTRUCTION FENCE (TYP)

SILT FENCE (TYP)

SODDING (TYP)

EXISTING ROW

STABILIZED CONSTRUCTION ENTRANCE

PROPOSED PRIVATE CONSTRUCTION ACCESS POINT

BIORETENTION FACILITY FACILITY SIDE SLOPES AND BOTTOM SHALL RECEIVE NATIVE SEEDING AND NORTH AMERICAN GREEN STORM EROSION CONTROL BLANKET, 4.5 ± 0.5 ACRES OF NATIVE SEEDING

PROPOSED 20' FIRE LANE, 6" BITUMINOUS PATH & 12" GRANSHORE

PROPOSED RETAINING WALL

DETENTION POND BOTTOM SHALL BE UTILIZED AS SEDIMENT BASINS DURING CONSTRUCTION

REVISIONS:
△ 09-18-18: REVISED PER CITY COMMENTS
△ 11-05-18: REVISED PER PPD COMMENTS
△ 01-18-19: REVISED PER CITY COMMENTS
△ 02-18-19: REVISED PER CITY COMMENTS
FILE: I:\PRO-DOS\107 2 CANTERA SUMMER\Engineering\Drawings
△ 03-25-19: PER PPD COMMENTS
△ 03-15-19: PER IDOT REVIEW

JOB NO: 080-020
FIELD BOOK: N/A
FIELD BOOK: N/A
DRAWN BY: MK
CHECKED BY: KEK
COMPLETED: 02/22/17

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EROSION CONTROL PLAN

RIVERVIEW WEST DEVELOPMENT
CITY OF WARRENVILLE, ILLINOIS

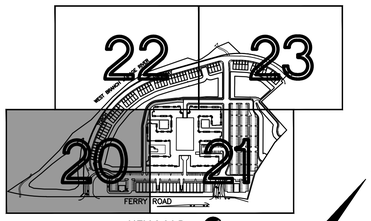
SHEET NUMBER
19
OF 71

Design Firm License No. 184-001129

SEE SHEET 23 FOR CONTINUATION

NOTE:

1. SEE THE GENERAL NOTES AND DETAILS SHEETS IN THESE PLANS FOR EROSION AND SEDIMENT CONTROL NOTES, MAINTENANCE, INSPECTIONS AND DETAILS.
2. NATIVE SEEDING SHALL BE PER THE SEEDING MIX TABLES CONTAINED IN THE DETAIL SHEETS.
3. TEMPORARY SEEDING SHALL BE PER IDOT SECTION 250 & SEEDING CLASS 2A.
4. AREAS INDICATED AS FUTURE DEVELOPMENT SHALL RECEIVE TEMPORARY SEEDING AND MULCH OR HYDROSEED UPON COMPLETION OF MASS GRADING OPERATIONS



30 0 15 30
1 inch = 30 ft.

NATIVE SEEDING AND EROSION CONTROL BLANKET BROAD SPECTRUM PRAIRIE W/ FLOWER MIX

NATIVE SEEDING AND EROSION CONTROL BLANKET LOW PROFILE DRY MESIC PRAIRIE W/ FLOWER MIX

NATIVE SEEDING AND EROSION CONTROL BLANKET TOUGH SHORELINE MIX

SODDING

TEMPORARY SEEDING AND MULCH OR HYDROSEED

EXISTING WATER EDGE WEST BRANCH OF THE DUPAGE

EXISTING BFE BOUNDARY WEST BRANCH OF THE DUPAGE RIVER (ELEV=692.6)

EXISTING WETLAND BOUNDARY WEST BRANCH OF THE DUPAGE RIVER

EXISTING WEST BRANCH OF THE DUPAGE RIVER WETLAND BUFFER

N FENCE TO BE A EXISTING FOREST ISTRICT TRAIL 4' BETWEEN EXISTING ISTRUCTION FENCE ED AND BLANKET

443 SYD A4 RIPRAP.

CLASS 2A BLANKET

EXISTING BUFFER BOUNDARY WEST BRANCH OF THE DUPAGE RIVER (ELEV=692.6)

WEST BRANCH DUPAGE RIVER

POND SIDE SLOPES SHALL RECEIVE NATIVE SEEDING AND NORTH AMERICAN GREEN S75BN EROSION CONTROL BLANKET. ±0.90 ACRES OF NATIVE SEEDING

18" BELOW NWL SHALL RECIEVE NATIVE SEEDING AND EROSION CONTROL BALNKET. ± 0.14 ACRES.

DOUBLE ROW SILT FENCE (TYP)

ROLLED / STAKED SEDIMENT LOG (TYP)

18" BELOW NWL SHALL RECIEVE NATIVE SEEDING AND EROSION CONTROL BALNKET. ± 0.44 ACRES.

SILT FENCE (TYP)

PROPOSED 20' FIRE LANE. 8' BITUMINOUS PATH & 12' GRASSCRETE

7 SYD A4 RIPRAP.

MASS GRADED BUILDING PAD SHALL RECEIVE TEMPORARY SEEDING AND MULCH OR HYDROSEED

PROPOSED 60" RCP

PROPOSED DETENTION POND
NWL=693.00
HWL=698.39
STORAGE PROVIDED=42.23 AC-FT

10 SYD A4 RIPRAP.

PROPOSED RETAINING WALL

DETENTION POND BOTTOM SHALL BE UTILIZED AS SEDIMENT BASINS DURING CONSTRUCTION

3 SYD A4 RIPRAP.

47 SYD A4 RIPRAP

36 SYD A4 RIPRAP.

INV=692.10

INV=692.15

INV=693.77

INV=694.86

INV=695.10

INV=695.18

INV=695.84

INV=695.86

INV=695.99

INV=696.01

INV=696.43

INV=695.48

INV=695.17 N, S
INV=695.33 SW

INV=695.83

INV=695.93

INV=701.90

INV=700.51

INV=700.99

INV=700.36

INV=701.10

INV=699.98

INV=700.80

INV=700.34

INV=699.82
INV=694.59

INV=700.3
INV=692.55 S
INV=692.16 E, NW

INV=699.82
INV=695.32

CONSTRUCTION FENCE WITH GATE (TYP)

PRIMARY CONSTRUCTION ACCESS POINT

STABILIZED CONSTRUCTION ENTRANCE

BIORETENTION FACILITY FACILITY SIDE SLOPES AND BOTTOM SHALL RECEIVE NATIVE SEEDING AND NORTH AMERICAN GREEN S75BN EROSION CONTROL BLANKET. ± 0.19 ACRES OF NATIVE SEEDING

FUTURE DEVELOPMENT

FUTURE DEVELOPMENT ARE SHALL RECEIVE TEMPORA SEEDING AND MULCH OR HYDROSEED

36"ø FES INV=692.10

CONSTRUCTION FENCE (TYP)

EXISTING ROW

FERRY ROAD

PARKWAY

TORCH

SEE SHEET 21 FOR CONTINUATION

REVISIONS:
- 03-25-19: PER FPD COMMENTS
- 04-19-19: PER CITY COMMENTS
- 03-15-19: PER IDOT REVIEW

JOB NO.	085-020
FIELD BOOK:	N/A
FIELD BOOK:	N/A
DRAWN BY:	MK
CHECKED BY:	KEK
COMPLETED:	02/22/17

09-18-18: REVISED PER CITY COMMENTS
11-05-18: REVISED PER FPD COMMENTS
01-18-19: REVISED PER CITY COMMENTS
02-18-19: REVISED PER CITY COMMENTS

FILE: V:\085-020 LOT 2 CANTERA SUBMKS C\Engineering\Drawings

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EROSION CONTROL PLAN

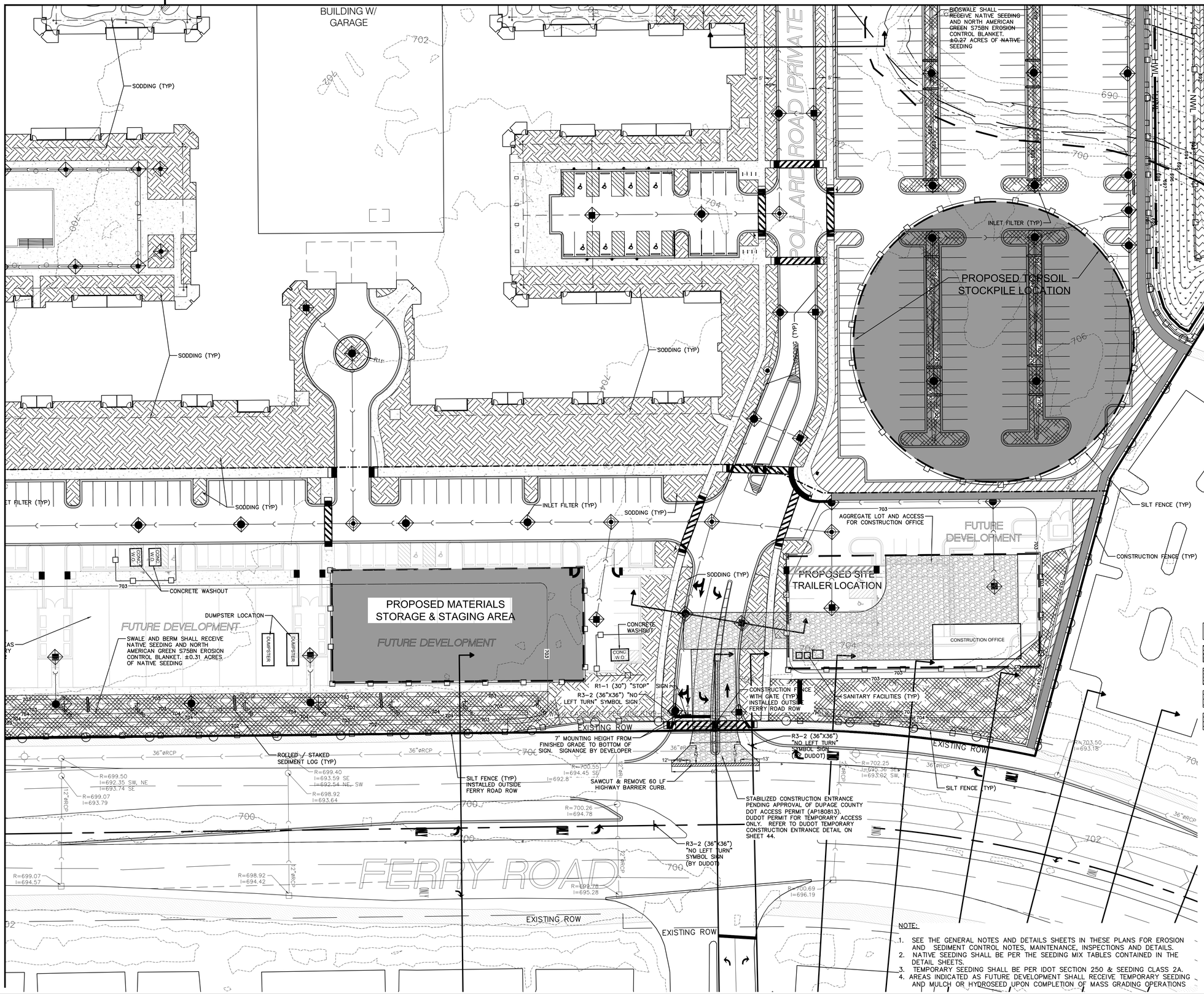
RIVERVIEW WEST DEVELOPMENT
CITY OF WARRENVILLE, ILLINOIS

SHEET NUMBER
20
OF 71

SEE SHEET 22
FOR CONTINUATION

SEE SHEET 23 FOR CONTINUATION

Design Firm License No. 184-001129



SEE SHEET 20 FOR CONTINUATION

NATIVE SEEDING AND EROSION CONTROL BLANKET BROAD SPECTRUM PRAIRIE W/ FLOWER MIX

NATIVE SEEDING AND EROSION CONTROL BLANKET LOW PROFILE DRY MESIC PRAIRIE W/ FLOWER MIX

NATIVE SEEDING AND EROSION CONTROL BLANKET TOUGH SHORELINE MIX

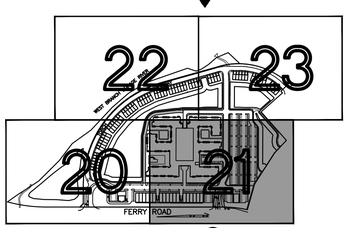
SODDING

TEMPORARY SEEDING AND MULCH OR HYDROSEED

30 0 15 30
1 inch = 30 ft.

NOTE:

1. SEE THE GENERAL NOTES AND DETAILS SHEETS IN THESE PLANS FOR EROSION AND SEDIMENT CONTROL NOTES, MAINTENANCE, INSPECTIONS AND DETAILS.
2. NATIVE SEEDING SHALL BE PER THE SEEDING MIX TABLES CONTAINED IN THE DETAIL SHEETS.
3. TEMPORARY SEEDING SHALL BE PER IDOT SECTION 250 & SEEDING CLASS 2A.
4. AREAS INDICATED AS FUTURE DEVELOPMENT SHALL RECEIVE TEMPORARY SEEDING AND MULCH OR HYDROSEED UPON COMPLETION OF MASS GRADING OPERATIONS



KEY MAP

REVISIONS:
09-18-18: REVISED PER CITY COMMENTS
11-05-18: REVISED PER FPD COMMENTS
01-18-19: REVISED PER CITY COMMENTS
02-18-19: REVISED PER CITY COMMENTS
04-19-19: PER CITY COMMENTS
03-25-19: PER FPD COMMENTS
03-15-19: PER DUDOT REVIEW

JOB NO: 080-020
FIELD BOOK: N/A
FIELD BOOK: N/A
DRAWN BY: MK
CHECKED BY: KEK
COMPLETED: 02/22/17

PREPARED FOR:
CANTERA DEVELOPMENT HOLDINGS, LLC.
TWO NORTHFIELD PLAZA, SUITE 320
NORTHFIELD, IL 60093
TEL :(847) 562-2001

Bollinger, Lach & Associates, Inc.
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CONSULTING ENGINEERS

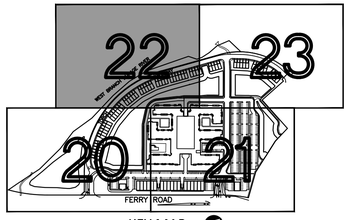
EROSION CONTROL PLAN

RIVERVIEW WEST DEVELOPMENT
CITY OF WARRENVILLE, ILLINOIS

SHEET NUMBER
21
OF 71

Design Firm License No. 184-001129

30 0 15 30
1 inch = 30 ft.



KEY MAP

NOTE:

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NATIVE SEEDING AND EROSION CONTROL BLANKET BROAD SPECTRUM PRAIRIE W/ FLOWER MIX

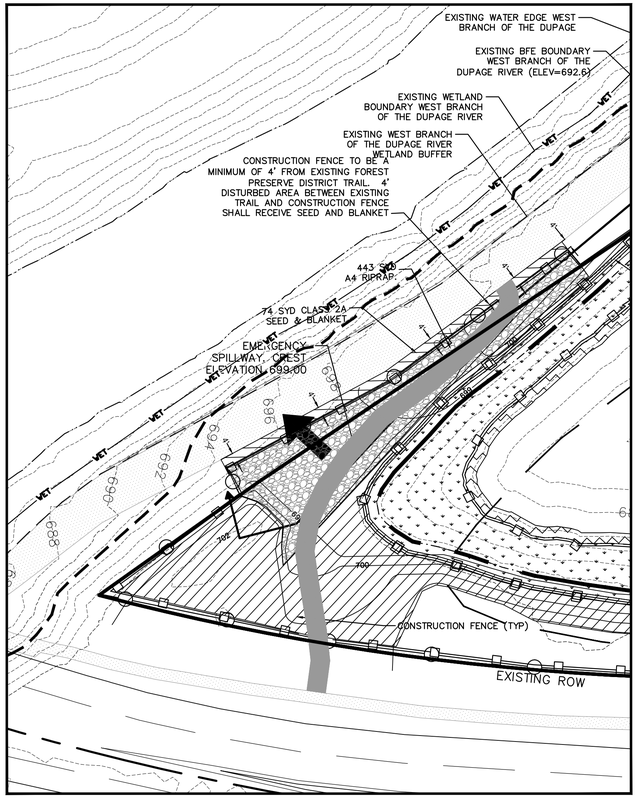
NATIVE SEEDING AND EROSION CONTROL BLANKET LOW PROFILE DRY MESIC PRAIRIE W/ FLOWER MIX

NATIVE SEEDING AND EROSION CONTROL BLANKET TOUGH SHORELINE MIX

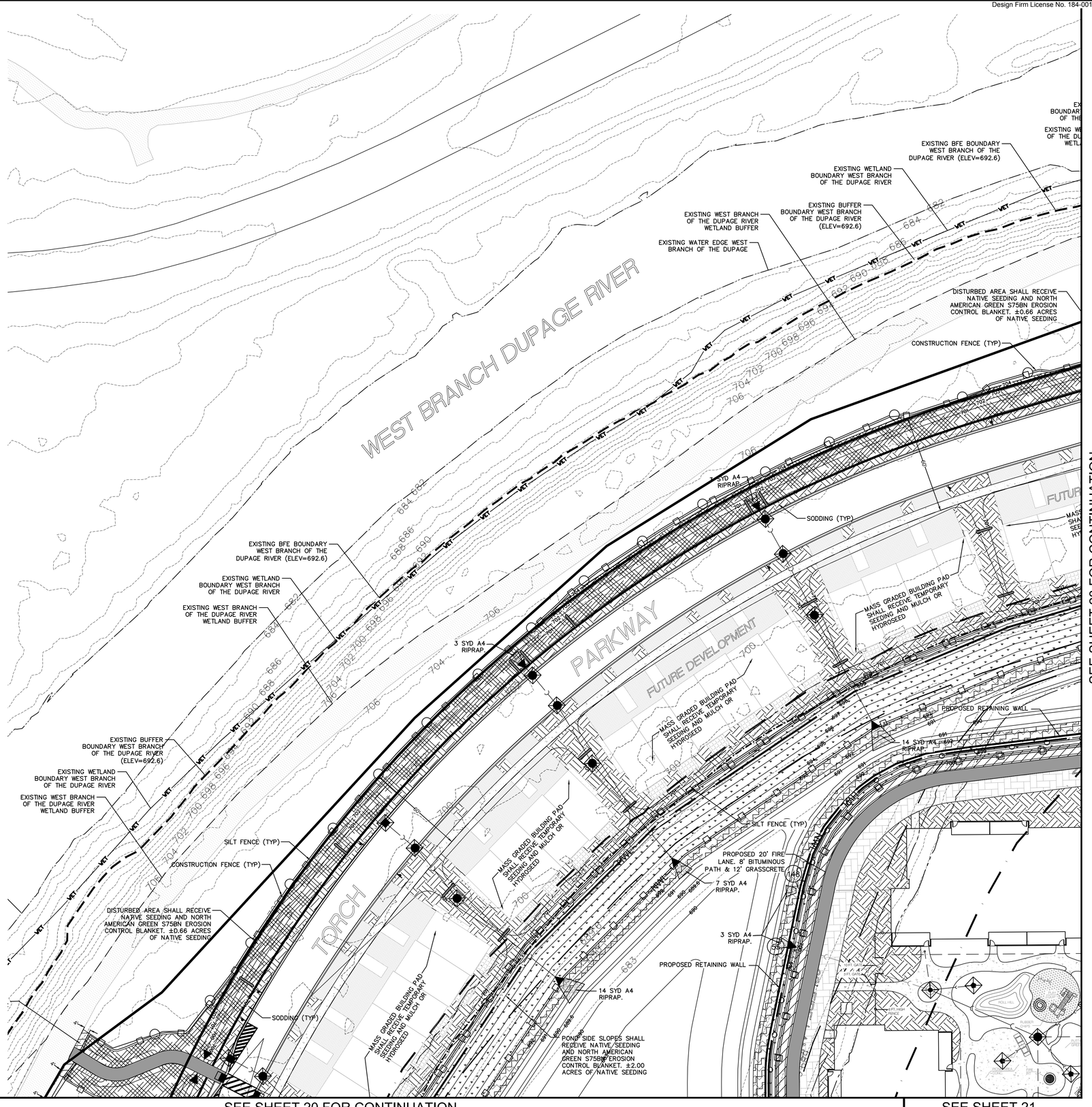
SODDING

TEMPORARY SEEDING AND MULCH OR HYDROSEED

AREAS INDICATED AS FUTURE DEVELOPMENT SHALL RECEIVE TEMPORARY SEEDING AND MULCH OR HYDROSEED UPON COMPLETION OF MASS GRADING OPERATIONS



OUTLOT A OVERFLOW SPILLWAY DETAIL
SEE CONTINUATION ON SHEET 20



SEE SHEET 20 FOR CONTINUATION

SEE SHEET 21 FOR CONTINUATION

SEE SHEET 23 FOR CONTINUATION

△ 03-25-19: PER FPD COMMENTS
△ 03-15-19: PER DUDOT REVIEW
△ 04-19-19: PER CITY COMMENTS

REVISIONS:
△ 09-18-18: REVISED PER CITY COMMENTS
△ 11-05-18: REVISED PER FPD COMMENTS
△ 01-18-19: REVISED PER CITY COMMENTS
△ 02-18-19: REVISED PER CITY COMMENTS
FILE: V:\060-020 LOT 2 CANTERA SUBAREA C\Engineering\Drawings

JOB NO: 060-020
FIELD BOOK: N/A
FIELD BOOK: N/A
DRAWN BY: MK
CHECKED BY: KEK
COMPLETED: 02/22/17

PREPARED FOR:
CANTERA DEVELOPMENT HOLDINGS, LLC.
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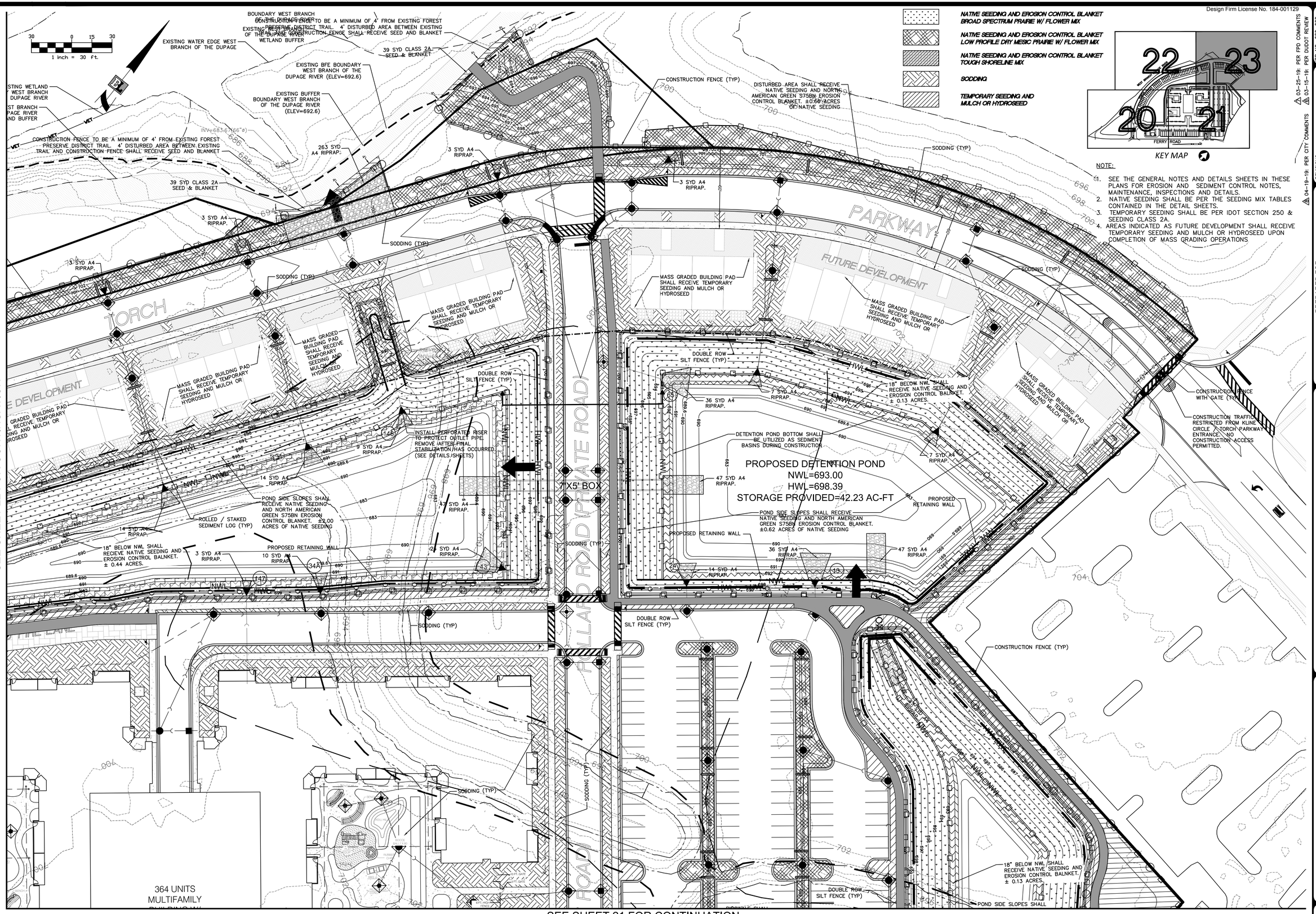
EROSION CONTROL PLAN

RIVERVIEW WEST DEVELOPMENT
CITY OF WARRENVILLE, ILLINOIS

SHEET NUMBER
22
OF 71

Design Firm License No. 184-001129



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REVISIONS:
- 03-25-19: PER FPD COMMENTS
- 03-15-19: PER IDOT REVIEW
- 04-19-19: PER CITY COMMENTS
- 09-18-18: REVISED PER CITY COMMENTS
- 11-05-18: REVISED PER FPD COMMENTS
- 01-18-19: REVISED PER CITY COMMENTS
- 02-18-19: REVISED PER CITY COMMENTS

FILE: V:\90-020 LOT 2 CANTERA SUBMKS \Engineering\Drawings

JOB NO: 090-020
FIELD BOOK: N/A
FIELD BOOK: N/A
DRAWN BY: MK
CHECKED BY: KEK
COMPLETED: 02/22/17

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TEL.:(847) 562-2001

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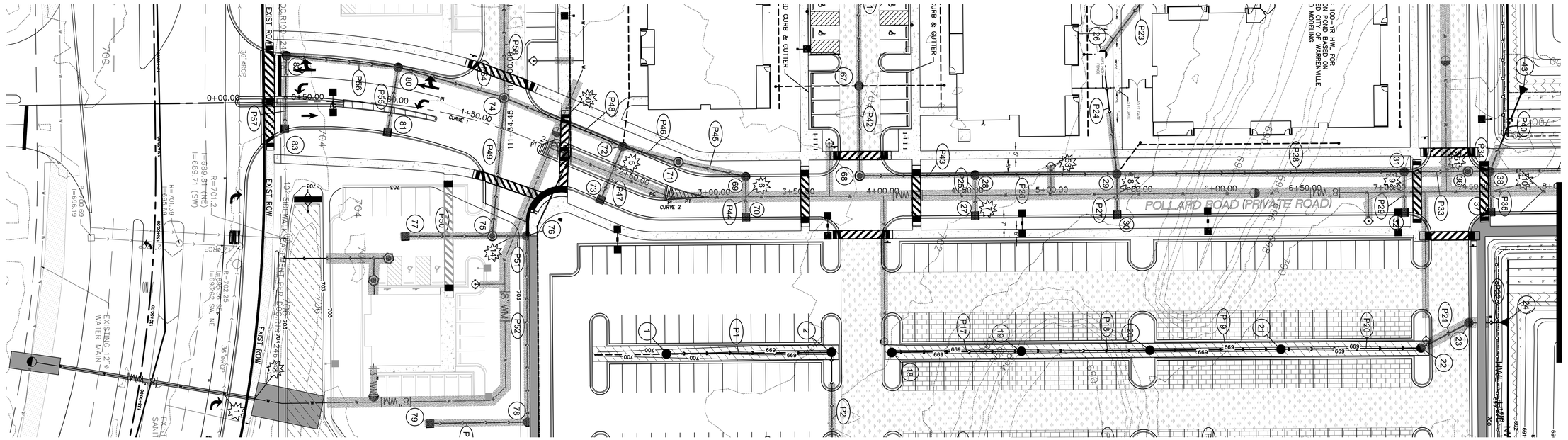
EROSION CONTROL PLAN

RIVERVIEW WEST DEVELOPMENT
CITY OF WARRENVILLE, ILLINOIS

SHEET NUMBER
23
OF 71

CURVE 1
PC: STA 0+65.17
PI: STA 1+26.08
PT: STA 1+86.98
RADIUS: 300'
DELTA: 23.2049°
CHORD: 120.98'

CURVE 2
PC: STA 2+65.23
PI: STA 2+74.15
PT: STA 2+86.69
RADIUS: 42.04'
DELTA: 23.8106°
CHORD: 17.34'



SCALE:
1" = 30' HORIZ
1" = 2' VERT

REVISIONS:	JOB NO: 080-020
04-19-19: PER CITY COMMENTS	
03-15-19: PER DUDOT COMMENTS	
09-18-18: REVISED PER CITY COMMENTS	FIELD BOOK: N/A
11-05-18: REVISED PER PPD COMMENTS	FIELD BOOK: N/A
01-18-19: REVISED PER CITY COMMENTS	DRAWN BY: KL
02-18-19: REVISED PER CITY COMMENTS	CHECKED BY: KK
FILE: 080-020 Centers Lot 2 Sub Area C/Engineering/Drawings/Base	COMPLETED: 02/07/19

PREPARED FOR:
CANTER DEVELOPMENT HOLDINGS, LLC.
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NORTHFIELD, IL 60093
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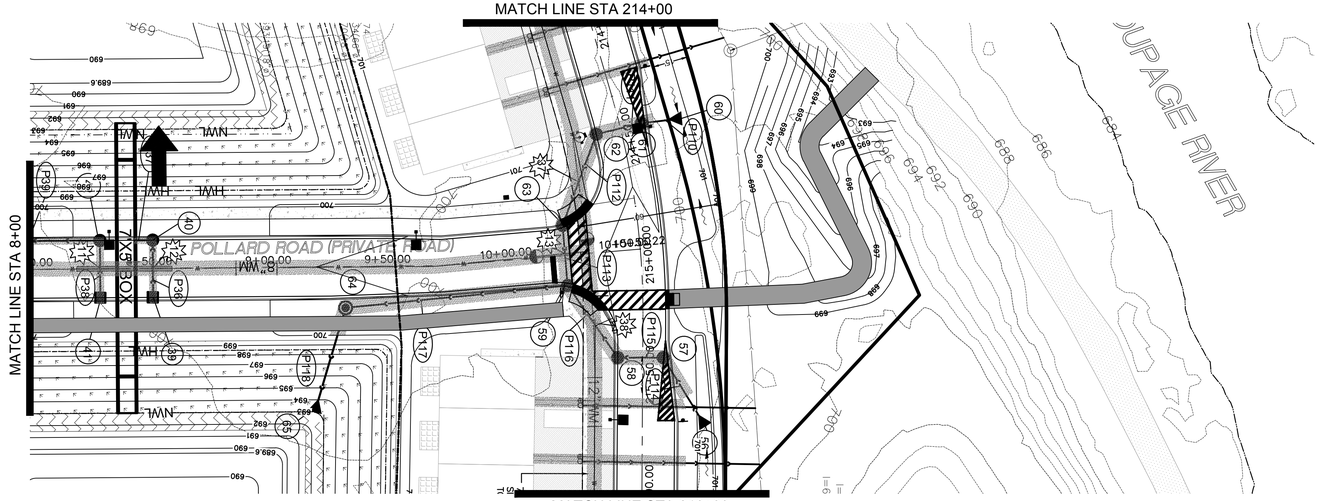
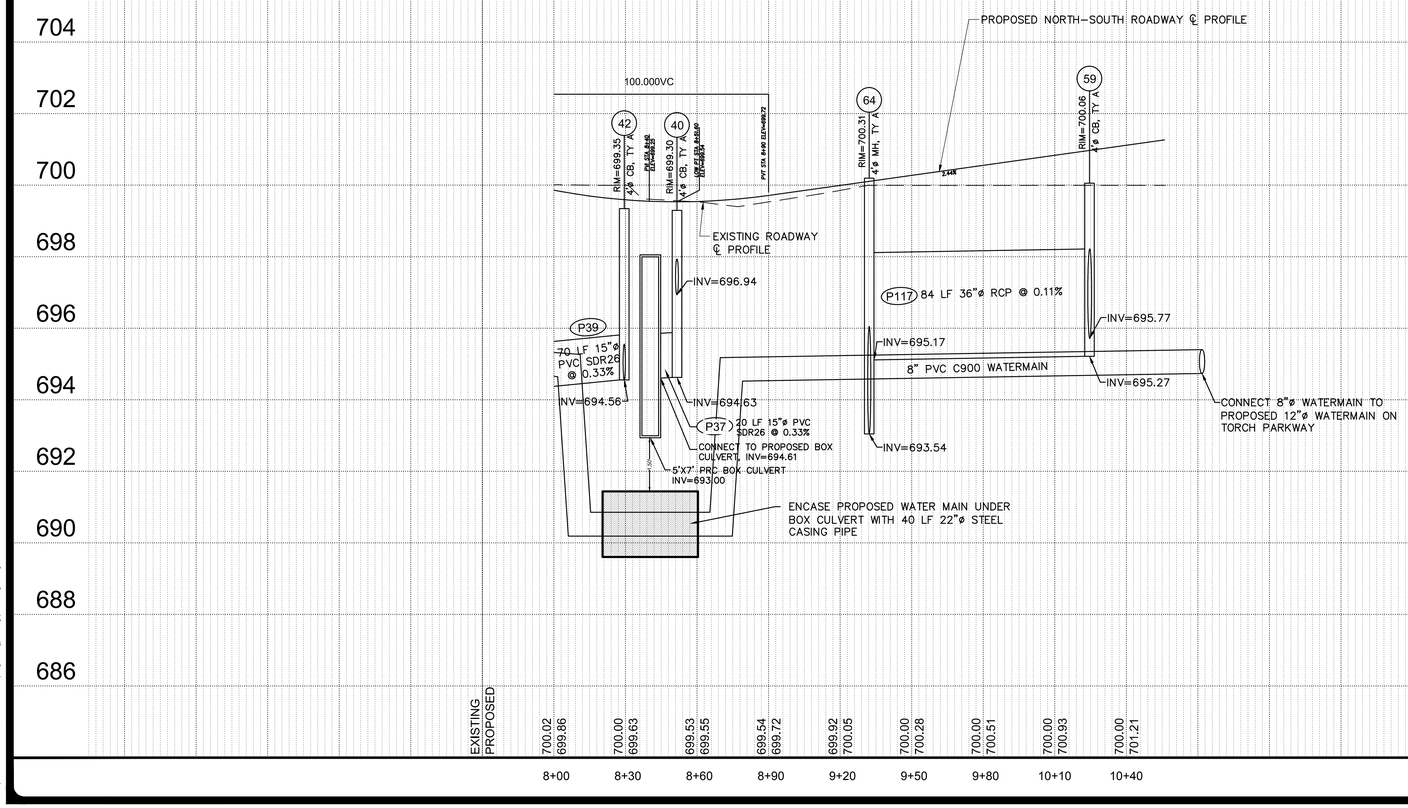
PLAN & PROFILE STA 0+00 - STA 8+00

RIVER VIEW WEST
CITY OF WARRENVILLE, ILLINOIS

SHEET NUMBER
24
OF 71

FILE: I:\080-020 Centers Lot 2 Sub Area C\Engineering\Drawings\Final Engineering





SCALE:
1" = 30' HORIZ
1" = 2' VERT

04-19-19: PER CITY COMMENTS
03-15-19: PER IDOT COMMENTS

REVISIONS:
09-18-18: REVISED PER CITY COMMENTS
11-05-18: REVISED PER FPD COMMENTS
01-18-19: REVISED PER CITY COMMENTS
02-18-19: REVISED PER CITY COMMENTS
FILE: I:\000-020 Canters Lot 2 Sub Area C\Engineering\Drawings

JOB NO: 080-020
FIELD BOOK: N/A
FIELD BOOK: N/A
DRAWN BY: KL
CHECKED BY:KK
COMPLETED:02/07/18

PREPARED FOR:
CANTER DEVELOPMENT HOLDINGS, LLC.
TWO NORTHFIELD PLAZA, SUITE 320
NORTHFIELD, IL 60093
TEL :(847) 562-2001

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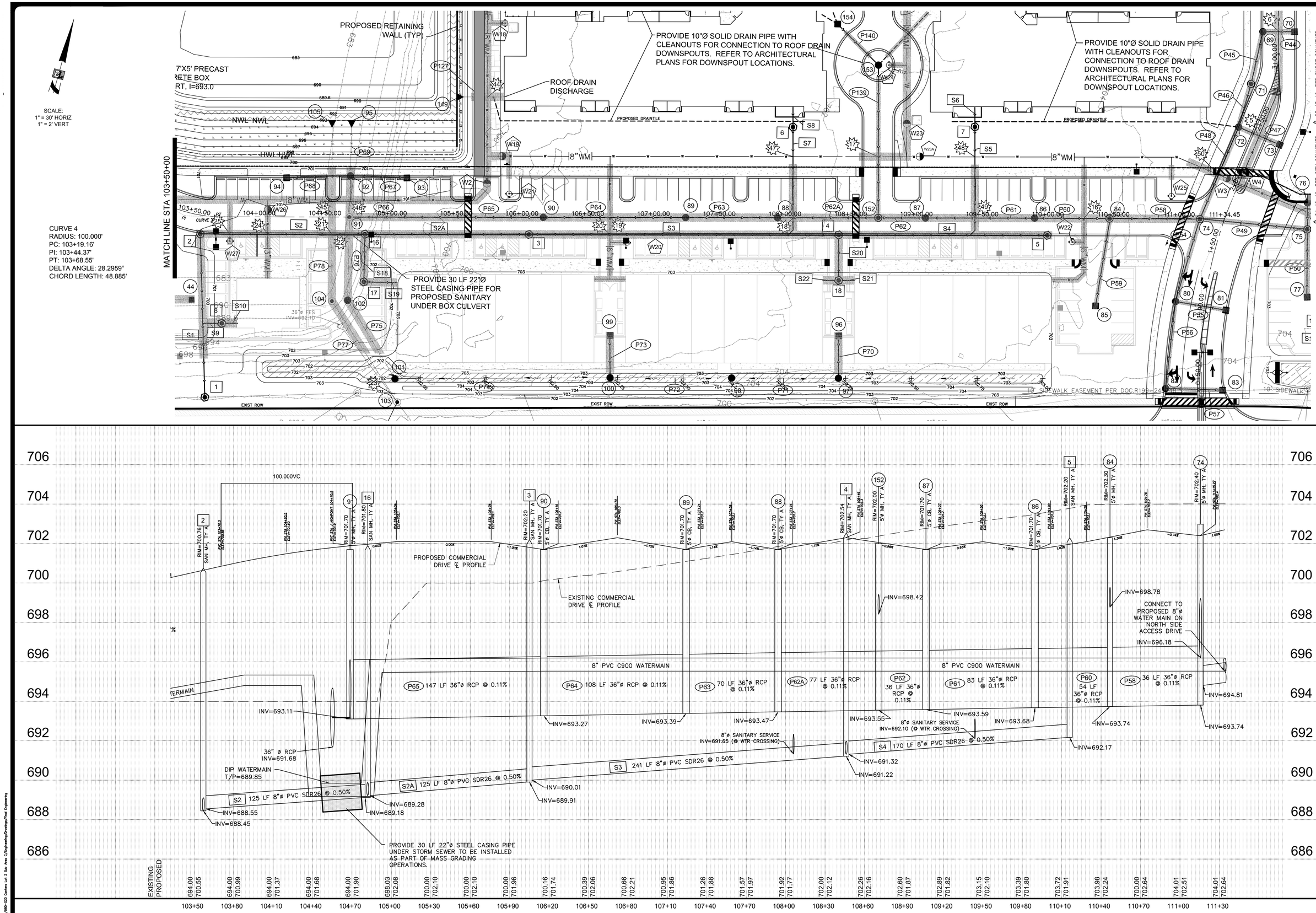
PLAN & PROFILE STA 8+00 - STA 10+70

RIVER VIEW WEST
CITY OF WARRENVILLE, ILLINOIS

SHEET NUMBER
25
OF 71

FILE: I:\000-020 Canters Lot 2 Sub Area C\Engineering\Drawings\Final Engineering



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TEL:(847) 562-2001

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PLAN & PROFILE STA 103+50 - STA 111+34.45
RIVER VIEW WEST
CITY OF WARRENVILLE, ILLINOIS

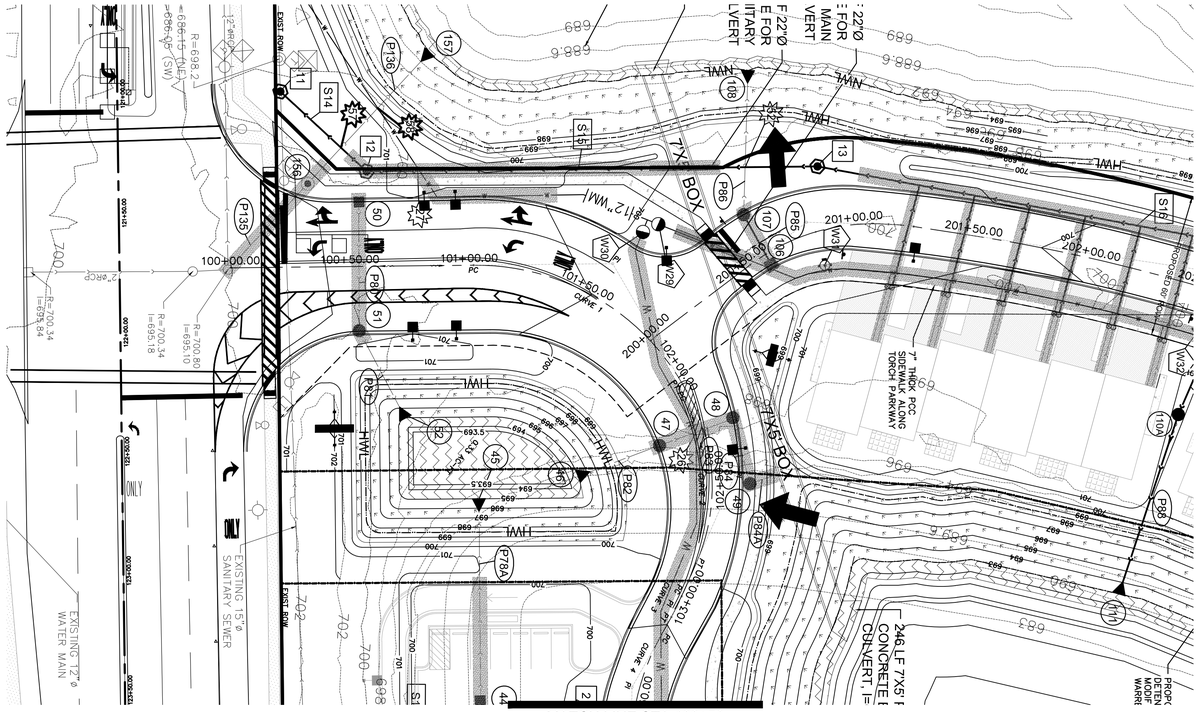
SHEET NUMBER
26
OF 71

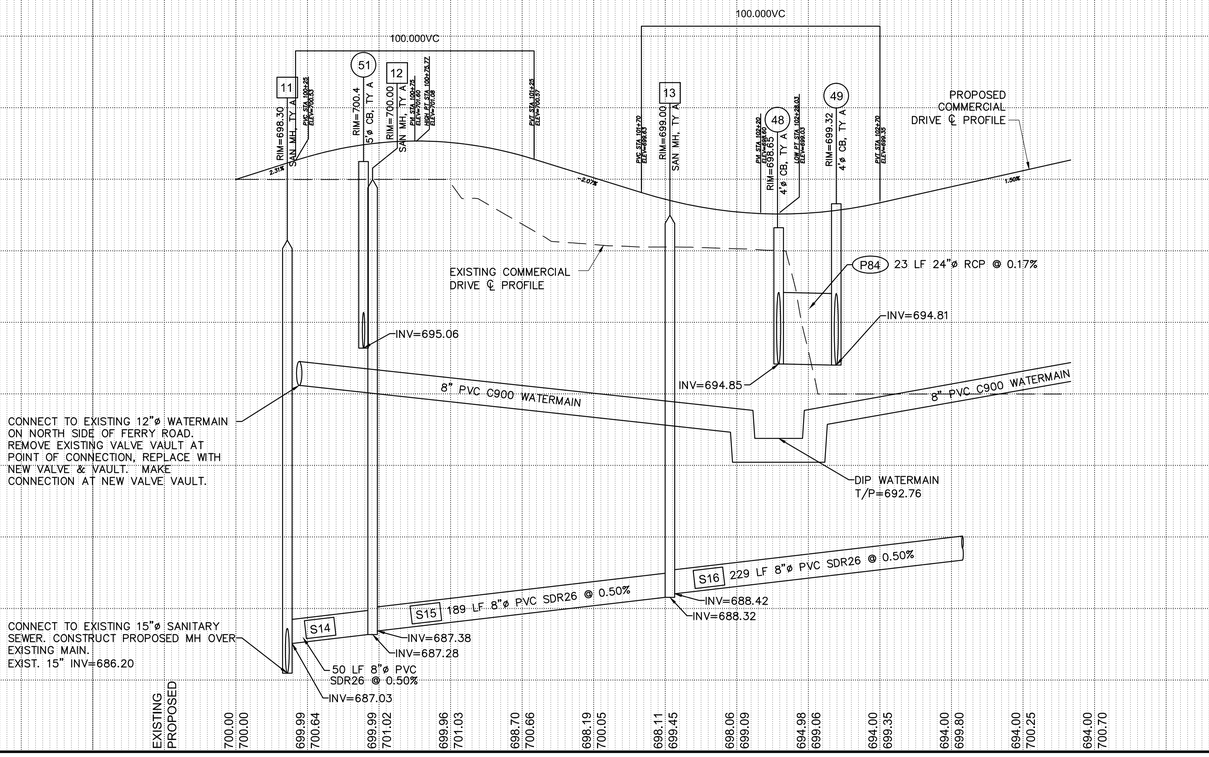
CURVE 1
RADIUS: 100'
PC: 101+01.73'
PI: 101+60.07'
PT: 102+07.36
DELTA: 60.5238°
CHORD LENGTH: 100.791'

CURVE 2
RADIUS: 80.000'
PC: 102+10.71'
PI: 02+51.29'
PT: 102+85.82'
DELTA ANGLE: 53.7986°
CHORD LENGTH: 72.388'

CURVE 3
RADIUS: 100.000'
PC: 103+00.88'
PI: 103+05.74'
PT: 103+10.60'
DELTA ANGLE: 5.5683°
CHORD LENGTH: 9.715'

CURVE 4
RADIUS: 100.000'
PC: 103+19.16'
PI: 103+44.37'
PT: 103+68.55'
DELTA ANGLE: 28.2959°
CHORD LENGTH: 48.885'





SCALE:
1" = 30' HORIZ
1" = 2' VERT

REVISIONS:	JOB NO: 080-020
09-18-18: REVISED PER CITY COMMENTS	FIELD BOOK: N/A
11-05-18: REVISED PER PDD COMMENTS	FIELD BOOK: N/A
01-18-19: REVISED PER CITY COMMENTS	DRAWN BY: KL
02-18-19: REVISED PER CITY COMMENTS	CHECKED BY:KK
FILE: I:\080-020 Canters Lot 2 Site Area C\Engineering\Drawings\	COMPLETED:02/07/18

03-15-19: PER DUDOT COMMENTS
04-19-19: PER CITY COMMENTS

PREPARED FOR:
CANTER DEVELOPMENT HOLDINGS, LLC.
TWO NORTHFIELD PLAZA, SUITE 320
NORTHFIELD, IL 60093
TEL.:(847) 562-2001

Bollinger, Lach & Associates, Inc.
CONSULTING ENGINEERS SCIENTISTS & LAND SURVEYORS
333 PIERCE ROAD SUITE 200 ITASCA, IL 60143
P:(630) 438 6400 F:(630) 438 6444 www.bollingerlach.com
ITASCA * CHICAGO * ALGONQUIN * LAKE GENEVA * SOUTH BEND * INDIANAPOLIS

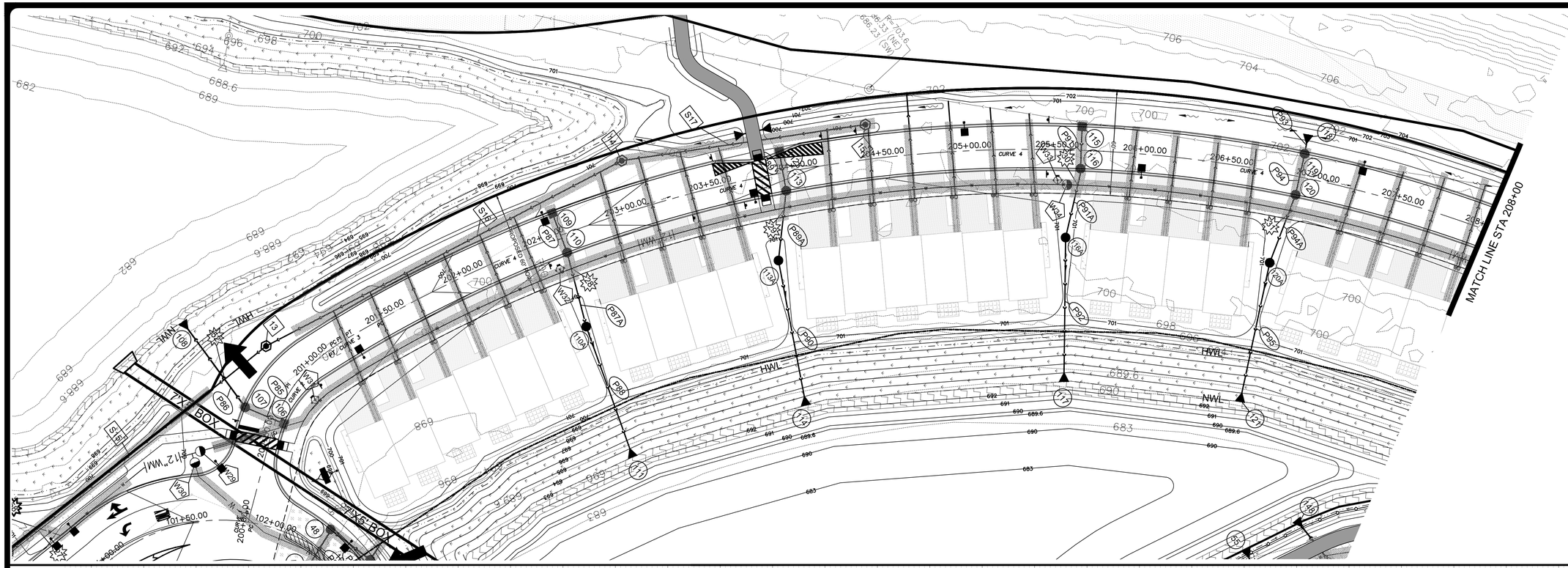
PLAN & PROFILE STA 100+00 - STA 103+50

RIVER VIEW WEST
CITY OF WARRENVILLE, ILLINOIS

SHEET NUMBER
27
OF 71

FILE: I:\080-020 Canters Lot 2 Site Area C\Engineering\Drawings\Final Engineering

Design Firm License No. 184-001129



04-19-19: PER CITY COMMENTS
03-15-19: PER DUDOT COMMENTS

REVISIONS:
1 09-18-18: REVISED PER CITY COMMENTS
2 11-05-18: REVISED PER FPD COMMENTS
3 01-18-19: REVISED PER CITY COMMENTS
4 02-18-19: REVISED PER CITY COMMENTS
FILE: I:/080-020 Canters Lot 2 Sub Area C/Engineering/Drawings

JOB NO: 080-020
FIELD BOOK: N/A
FIELD BOOK: N/A
DRAWN BY: KL
CHECKED BY: KK
COMPLETED: 02/07/18

PREPARED FOR:
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TWO NORTHFIELD PLAZA, SUITE 320
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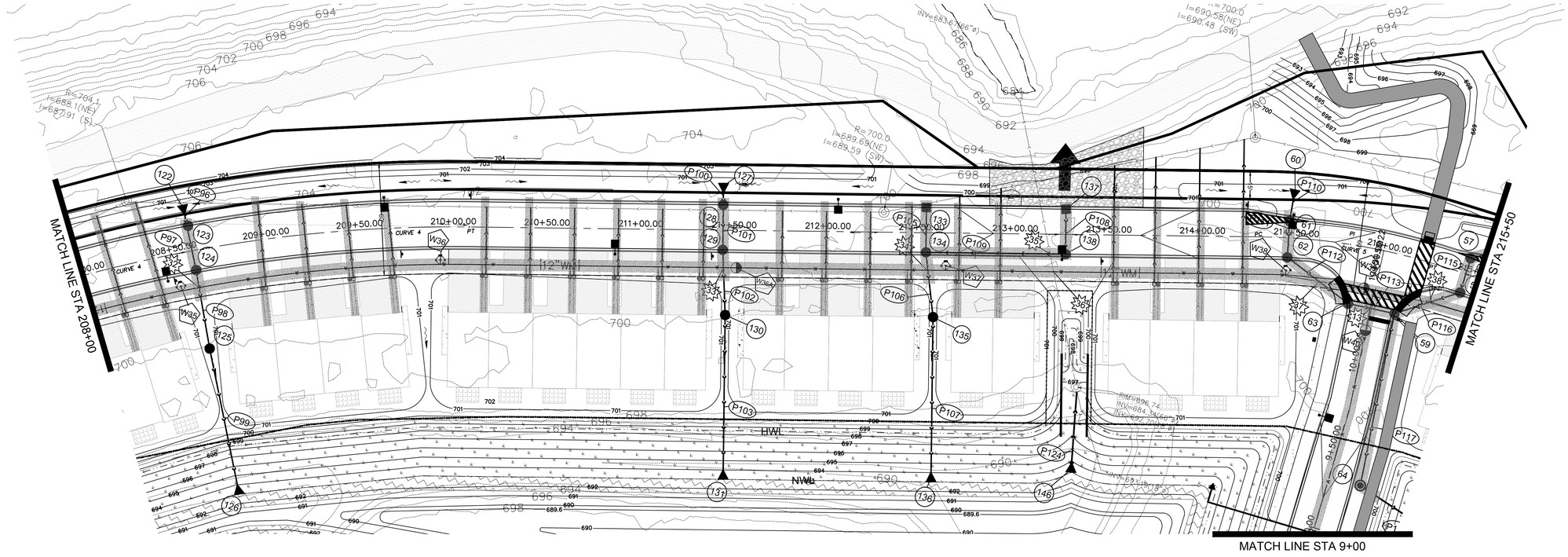
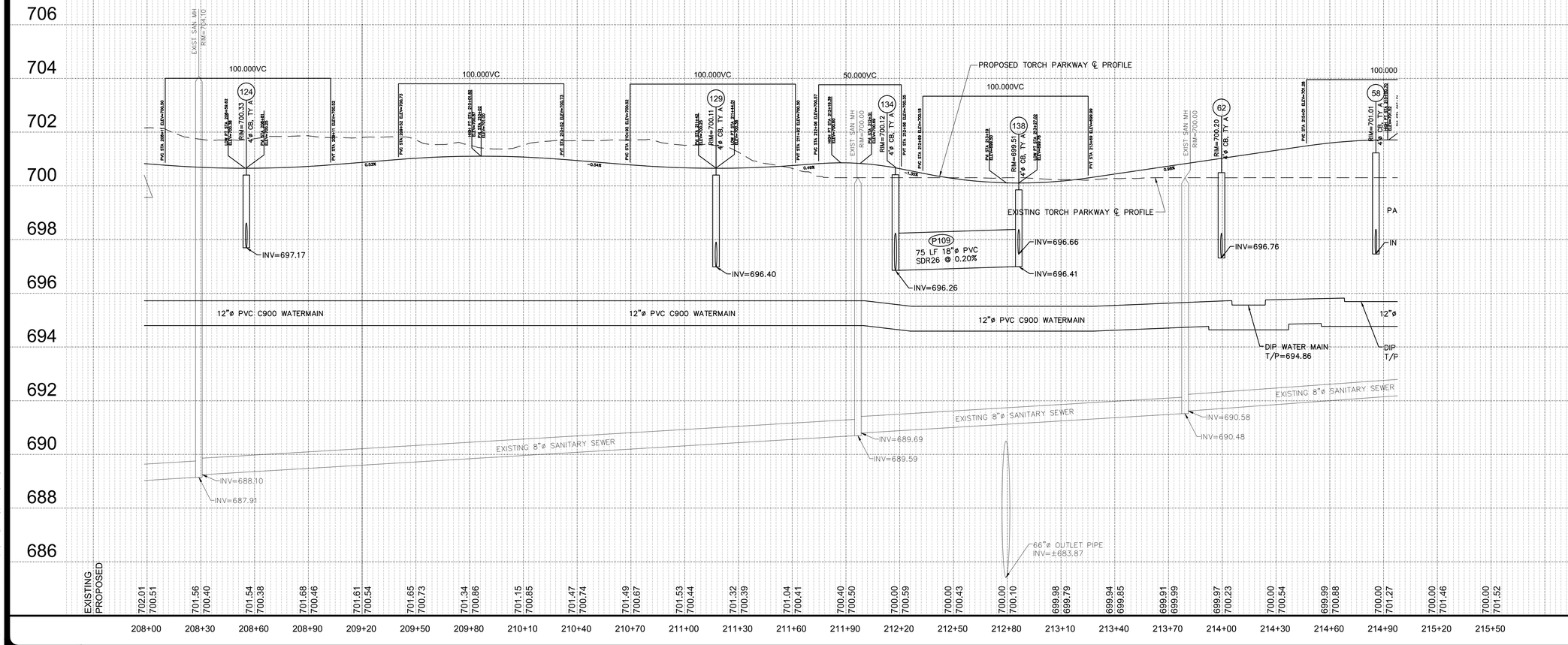
PLAN & PROFILE STA 200+00 - STA 208+00

RIVER VIEW WEST
CITY OF WARRENVILLE, ILLINOIS





SCALE:
1"=30' HORIZ
1"=2' VERT

CURVE 5
RADIUS: 325.001'
PC STA: 214+32.13'
PI STA: 214+79.62'
PT STA: 215+26.44'
DELTA: 016.6270 (D)
CHORD LENGTH: 93.983'

REVISIONS:
04-19-19: PER CITY COMMENTS
03-15-19: PER DUDOT COMMENTS
09-18-18: REVISED PER CITY COMMENTS
11-05-18: REVISED PER PDD COMMENTS
01-18-19: REVISED PER CITY COMMENTS
02-18-19: REVISED PER CITY COMMENTS
FILE: V:\060-020 Centers Lot 2 Sub Area C\Engineering\Drawings\Cover.dwg

JOB NO. 060-020
FIELD BOOK: N/A
FIELD BOOK: N/A
DRAWN BY: KL
CHECKED BY: KK
COMPLETED: 02/07/18

PREPARED FOR:
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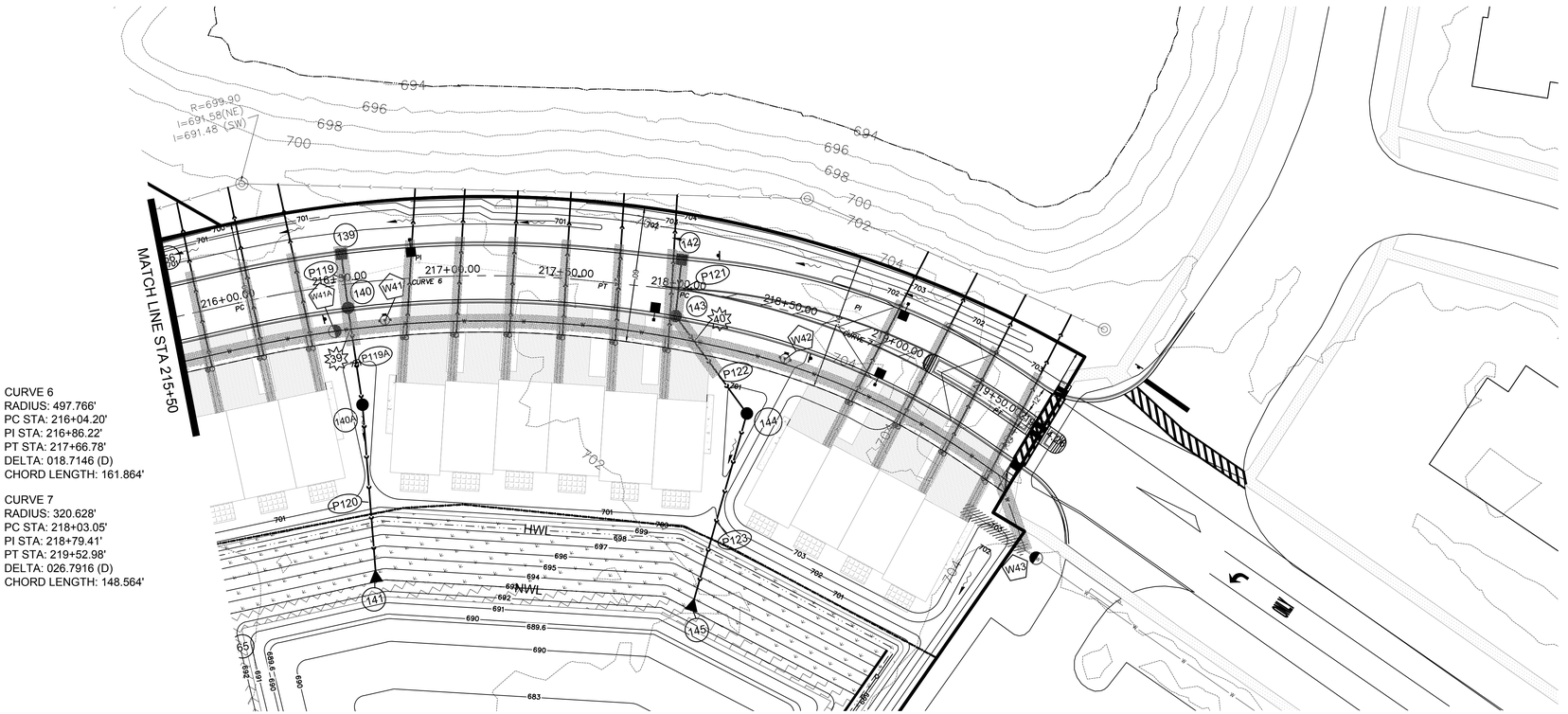
PLAN & PROFILE STA 208+00 - STA 215+50

RIVER VIEW WEST
CITY OF WARRENVILLE, ILLINOIS

SHEET NUMBER
29
OF 71

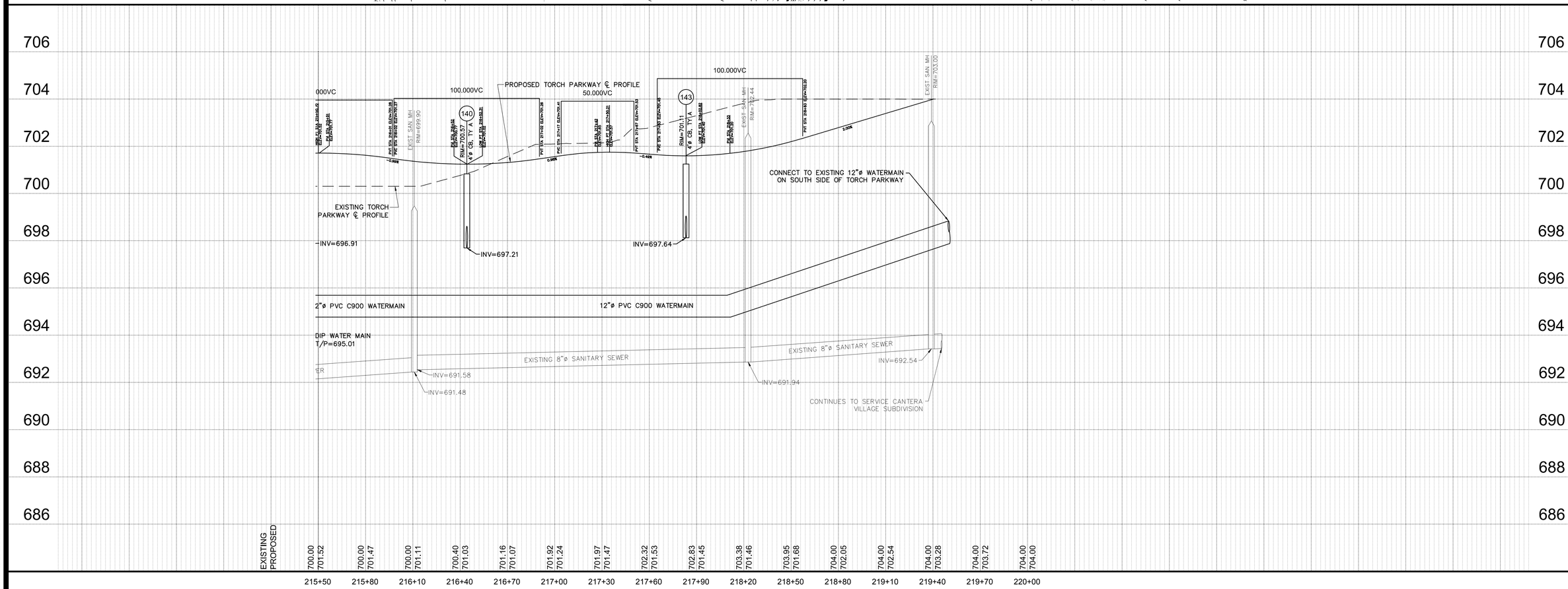
FILE: V:\060-020 Centers Lot 2 Sub Area C\Engineering\Drawings\Final Engineering



CURVE 6
RADIUS: 497.766'
PC STA: 216+04.20'
PI STA: 216+86.22'
PT STA: 217+66.78'
DELTA: 018.7146 (D)
CHORD LENGTH: 161.864'

CURVE 7
RADIUS: 320.628'
PC STA: 218+03.05'
PI STA: 218+79.41'
PT STA: 219+52.98'
DELTA: 026.7916 (D)
CHORD LENGTH: 148.564'

SCALE:
1"=30' HORIZ
1"=2' VERT



REVISIONS:
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2. 11-05-18: REVISED PER FPD COMMENTS
3. 01-18-19: REVISED PER CITY COMMENTS
4. 02-18-19: REVISED PER CITY COMMENTS
5. 04-19-19: PER CITY COMMENTS
6. 03-15-19: PER DUDOT COMMENTS

JOB NO: 080-020
FIELD BOOK: N/A
FIELD BOOK: N/A
DRAWN BY: KL
CHECKED BY: KK
COMPLETED: 02/07/18

PREPARED FOR:
CANTER DEVELOPMENT HOLDINGS, LLC.
TWO NORTHFIELD PLAZA, SUITE 320
NORTHFIELD, IL 60093
TEL: (847) 562-2001

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CONSULTING ENGINEERS SCIENTISTS & LAND SURVEYORS

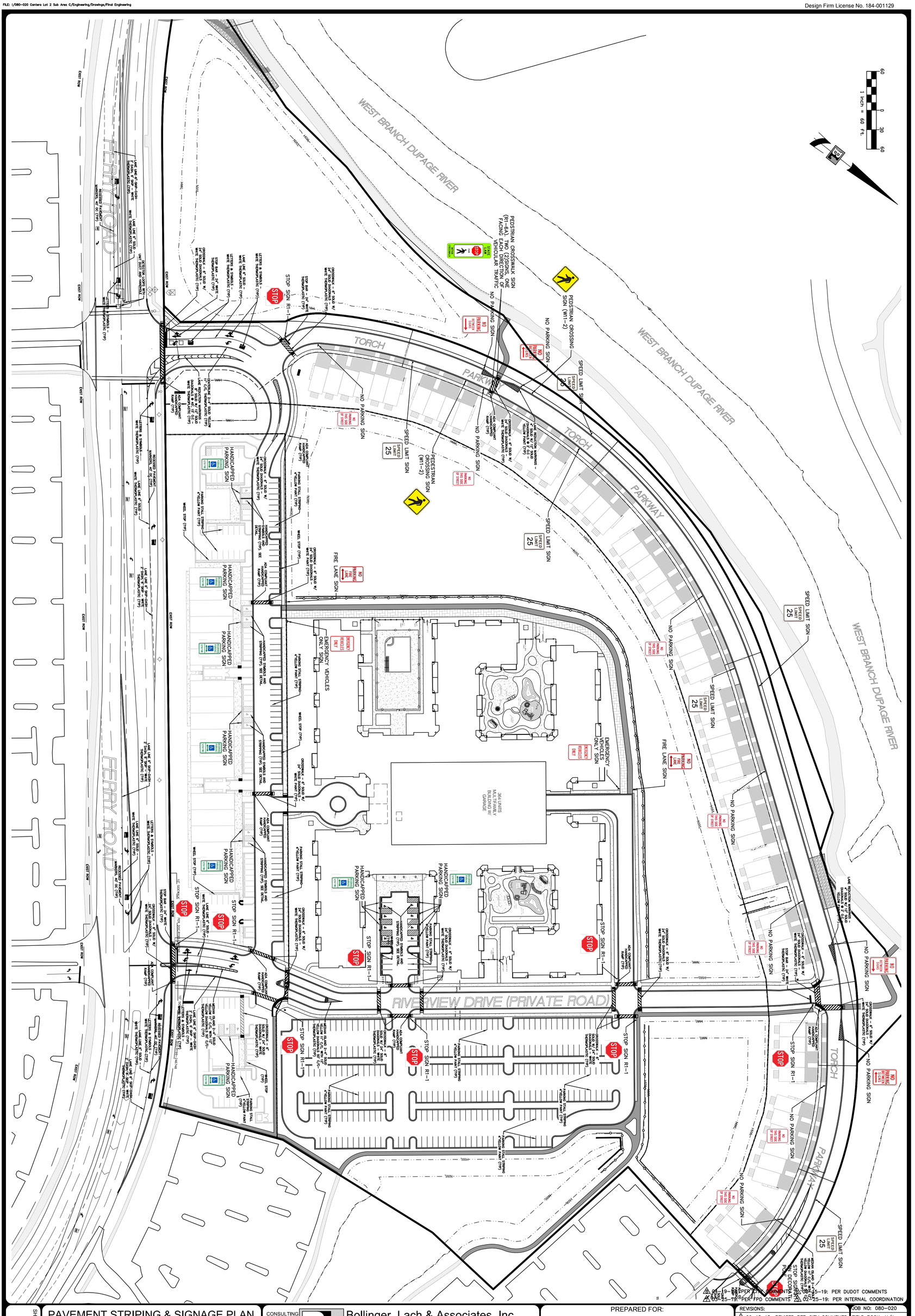
PLAN & PROFILE STA 215+50 - STA 219+74.26

RIVER VIEW WEST
CITY OF WARRENVILLE, ILLINOIS

SHEET NUMBER
30
OF 71

FILE: I/080-020 Cantera Lot 2 Sub Area C/Engineering/Drawings/Final Engineering

Design Firm License No. 184-001129



8	09-19-18: PER CITY COMMENTS	02-25-19: PER DUDOT COMMENTS	
7	05-25-19: PER FPD COMMENTS	02-25-19: PER INTERNAL COORDINATION	

SHEET NUMBER 31 OF 71

PAVEMENT STRIPING & SIGNAGE PLAN

RIVER VIEW WEST
CITY OF WARRENVILLE, ILLINOIS

CONSULTING ENGINEERS

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PREPARED FOR:
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TWO NORTHFIELD PLAZA, SUITE 320
NORTHFIELD, IL 60093
TEL :(847) 562-2001

REVISIONS:	
1 09-18-18: REVISED PER CITY COMMENTS	JOB NO: 080-020
2 11-05-18: REVISED PER FPD COMMENTS	FIELD BOOK: N/A
3 01-18-19: REVISED PER CITY COMMENTS	FIELD BOOK: N/A
4 02-18-19: REVISED PER CITY COMMENTS	DRAWN BY: MK
FILE: I/080-020 Cantera Lot 2 Sub Area C/Engineering/Drawings	CHECKED BY: KEK
	COMPLETED: 04/07/18

Design Firm License No. 184.001129

SEE SHEET 34 FOR CONTINUATION

30 0 15 30
1 inch = 30 ft.

KEY MAP

34 35 32 33 WEST BRANCH DUPAGE RIVER FERRY ROAD

WEST BRANCH DUPAGE RIVER

PEDSTRIAN CROSSWALK SIGN (R1-6A). TWO (2)SIGNS, ONE FACING EACH DIRECTION OF VEHICULAR TRAFFIC

STATE LAW STOP FOR WITHIN CROSSWALK

NO PARKING SIGN

NO PARKING BETWEEN SIGNS

CROSSWALK – 6" SOLID W/ 24" SOLID DIAGONALS – WHITE THERMOPLASTIC (TYP)

ADA COMPLIANT HANDICAPPED RAMP (TYP)

NO PARKING SIGN

NO PARKING THIS SIDE OF STREET

PARKWAY

HWL

PEDESTRIAN CROSSING SIGN (W11-2)

PROPOSED 60' ROW

SPEED LIMIT SIGN

SPEED LIMIT 25

NWL

NO PARKING SIGN

NO PARKING THIS SIDE OF STREET

TORCH

NO PARKING FIRE LANE

FIRE LANE SIGN

CROSSWALK – 6" SOLID W/ 24" SOLID DIAGONALS – WHITE THERMOPLASTIC (TYP)

STOP BAR – 24" WHITE THERMOPLASTIC (TYP)

STOP SIGN R1-1

STOP

ADA COMPLIANT HANDICAPPED RAMP (TYP)

PARKING STALL STRIPING 4"YELLOW PAINT (TYP)

WHEEL STOP (TYP)

CROSSWALK – 6" SOLID W/ 24" SOLID DIAGONALS – WHITE PAINT (TYP)

EMERGENCY SPILLWAY. CREST ELEVATION 699.00

LETTERS & SYMBOLS – WHITE THERMOPLASTIC (TYP)

LANE LINE 6" SOLID – WHITE THERMOPLASTIC (TYP)

LETTERS & SYMBOLS – WHITE THERMOPLASTIC (TYP)

STOP BAR – 24" WHITE THERMOPLASTIC (TYP)

CROSSWALK – 6" SOLID W/ 24" SOLID DIAGONALS – WHITE THERMOPLASTIC (TYP)

CROSSWALK – 6" SOLID W/ 24" SOLID DIAGONALS – WHITE THERMOPLASTIC (TYP)

HANDICAPPED SYMBOLS AND STRIPPING (TYP). SEE DETAIL.

ADA COMPLIANT HANDICAPPED RAMP (TYP)

HWL

HANDICAPPED PARKING SIGN

RESERVED PARKING $250 FINE

HANDICAPPED PARKING SIGN

RESERVED PARKING $250 FINE

CENTERLINE 2-4" SOLID YELLOW 11' C/C, THERMOPLASTIC (TYP)

LANE REDUCTION MARKINGS – 8" SOLID W/ 12" SOLID DIAGONALS @ 45', 15' O.C – WHITE THERMOPLASTIC (TYP)

ADA COMPLIANT HANDICAPPED RAMP (TYP)

PARKING STALL STRIPING 4"YELLOW PAINT (TYP)

WHEEL STOP (TYP)

NWL

HWL

EXIST ROW

EXIST ROW

RECESSED PAVEMENT MARKERS, 40' OC (TYP)

LETTERS & SYMBOLS – WHITE THERMOPLASTIC (TYP)

LANE LINE 6" SOLID – WHITE THERMOPLASTIC (TYP)

LANE LINE 6" SKIP-DASH 2' DASH, 6' SKIP – WHITE THERMOPLASTIC (TYP)

DETECTOR LOOPS WITH UNIT DUCT AND HANDHOLE

LANE LINE 6" SKIP-DASH 2' DASH, 6' SKIP – WHITE THERMOPLASTIC (TYP)

LANE LINE 6" SOLID – WHITE THERMOPLASTIC (TYP)

FERRY ROAD

LETTERS & SYMBOLS – WHITE THERMOPLASTIC (TYP)

RECESSED PAVEMENT MARKERS, 40' OC (TYP)

SEE SHEET 33 FOR CONTINUATION

REVISIONS:
△ 04-19-19: PER CITY COMMENTS △ 03-15-19: PER DUDOT COMMENTS
△ 03-25-19: PER FPD COMMENTS △ 02-25-19: PER INTERNAL COORDINATION
△ 09-18-18: REVISED PER CITY COMMENTS
△ 11-05-18: REVISED PER FPD COMMENTS
△ 01-18-19: REVISED PER CITY COMMENTS
△ 02-18-19: REVISED PER CITY COMMENTS

JOB NO: 080-020
FIELD BOOK: N/A
FIELD BOOK: N/A
DRAWN BY: MK
CHECKED BY: KEK
COMPLETED: 04/07/19

FILE: I:\080-020 Cantera Lot 2 Sub Area C\Engineering\Drawings\Final Engineering

PREPARED FOR:
CANTERA DEVELOPMENT HOLDINGS, LLC.
TWO NORTHFIELD PLAZA, SUITE 320
NORTHFIELD, IL 60093
TEL: (847) 562-2001

Bollinger, Lach & Associates, Inc.
CONSULTING ENGINEERS
333 PIERCE ROAD SUITE 200 ITASCA, IL 60143
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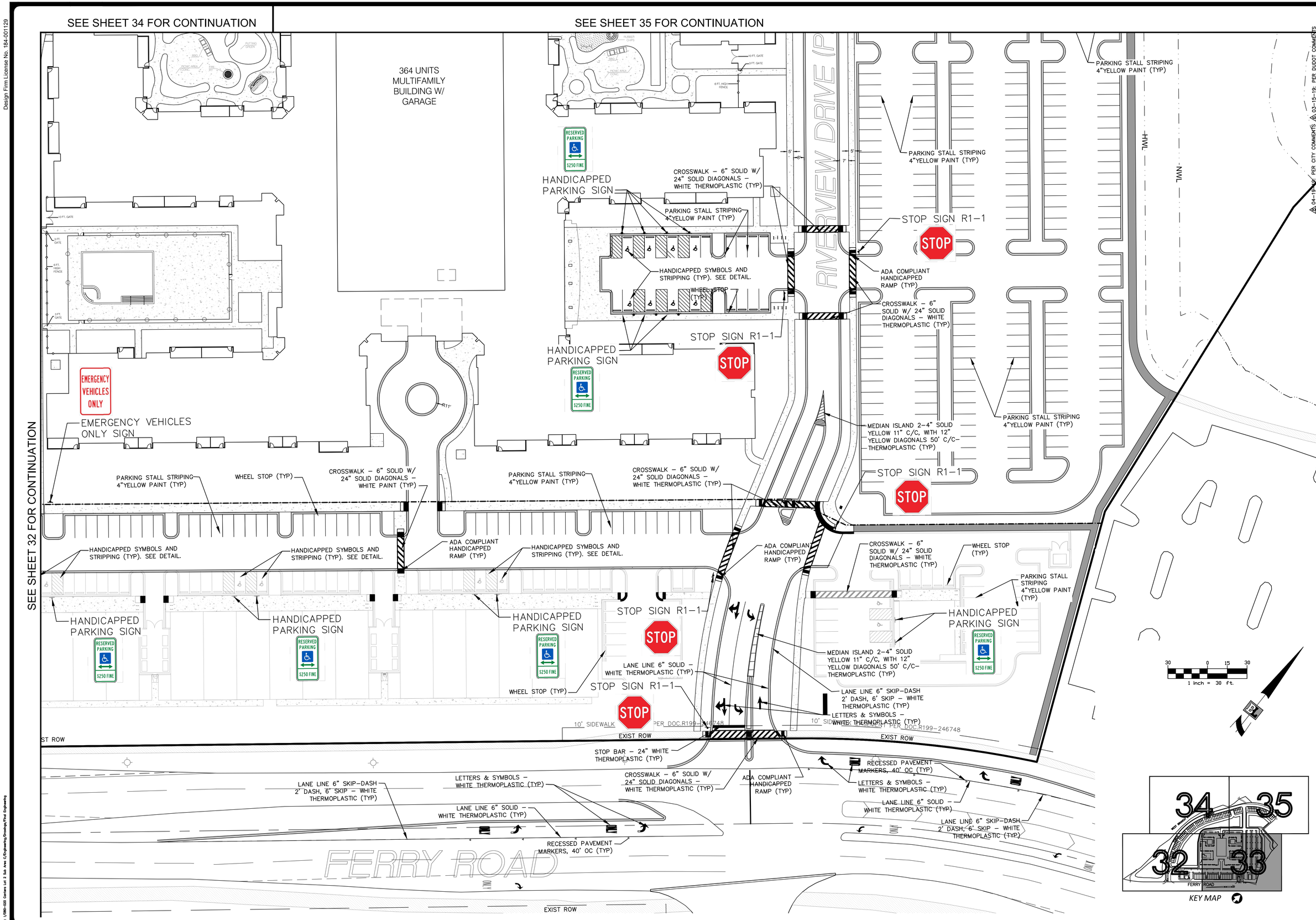
ITASCA * CHICAGO * ALGONQUIN * LAKE GENEVA * SOUTH BEND * INDIANAPOLIS

PAVEMENT STRIPING & SIGNAGE PLAN

RIVER VIEW WEST
CITY OF WARRENVILLE, ILLINOIS

SHEET NUMBER
32
OF 71



Design Firm License No. 184-001129

FILE: I/080-020 Cantera Lot 2 Sub Area C/Engineering/Drawings/Final Engineering

REVISIONS:	
1 09–18–18: REVISED PER CITY COMMENTS	JOB NO: 080–020
2 11–05–18: REVISED PER FPD COMMENTS	FIELD BOOK: N/A
3 01–18–19: REVISED PER CITY COMMENTS	FIELD BOOK: N/A
4 02–18–19: REVISED PER CITY COMMENTS	DRAWN BY: MK
FILE: I/080-020 Cantera Lot 2 Sub Area C/Engineering/Drawings	CHECKED BY: KEK
	COMPLETED: 04/07/18

03–15–19: PER DUDOT COMMENTS
04–19–19: PER CITY COMMENTS
03–25–19: PER FPD COMMENTS
02–25–19: PER INTERNAL COORDINATION

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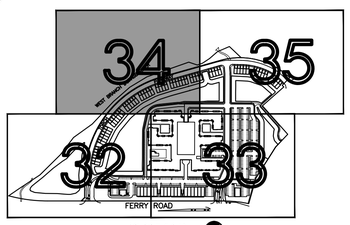
PAVEMENT STRIPING & SIGNAGE PLAN

RIVER VIEW WEST
CITY OF WARRENVILLE, ILLINOIS

SHEET NUMBER
33
OF 71

Design Firm License No. 184-001129

30 0 15 30
1 inch = 30 ft.



KEY MAP

WEST BRANCH DUPAGE RIVER

WEST BRANCH DUPAGE RIVER

PARKWAY

TORCH

SPEED LIMIT SIGN
SPEED LIMIT 25

SPEED LIMIT SIGN
SPEED LIMIT 25

NO PARKING SIGN
NO PARKING THIS SIDE OF STREET

SPEED LIMIT SIGN
SPEED LIMIT 25

PEDESTRIAN CROSSING SIGN (W11-2)

SPEED LIMIT SIGN
SPEED LIMIT 25

NO PARKING SIGN
NO PARKING BETWEEN SIGNS

LANE REDUCTION MARKINGS – 4" SOLID W/ 12" SOLID DIAGONALS @ 2' O.C – YELLOW PAINT (TYP)

HWL

NWL

SEE SHEET 35 FOR CONTINUATION

SEE SHEET 32 FOR CONTINUATION

SEE SHEET 33 FOR CONTINUATION

△04-19-19: PER CITY COMMENTS △03-15-19: PER DUDOT COMMENTS
△03-25-19: PER FPD COMMENTS △02-25-19: PER INTERNAL COORDINATION

REVISIONS:
△09-18-18: REVISED PER CITY COMMENTS
△11-05-18: REVISED PER FPD COMMENTS
△01-18-19: REVISED PER CITY COMMENTS
△02-18-19: REVISED PER CITY COMMENTS

FILE: V:\060-020 Cantera Lot 2 Sub Area 1\Engineering\Drawings

JOB NO: 060-020
FIELD BOOK: N/A
FIELD BOOK: N/A
DRAWN BY: MK
CHECKED BY: KEK
COMPLETED: 04/07/19

PREPARED FOR:
CANTERA DEVELOPMENT HOLDINGS, LLC.
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CONSULTING ENGINEERS

PAVEMENT STRIPING & SIGNAGE PLAN

RIVER VIEW WEST
CITY OF WARRENVILLE, ILLINOIS

SHEET NUMBER
34
OF 71

Design Firm License No. 184-001129

1 inch = 30 ft.

SEE SHEET 34 FOR CONTINUATION

SEE SHEET 33 FOR CONTINUATION

NO PARKING BETWEEN SIGNS

NO PARKING SIGN

CROSSWALK – 6" SOLID W/ 24" SOLID DIAGONALS – WHITE THERMOPLASTIC (TYP)

LANE REDUCTION MARKINGS – 4" SOLID W/ 12" SOLID DIAGONALS @ 2' O.C – YELLOW PAINT (TYP)

TORCH PARKWAY

SPEED LIMIT SIGN

SPEED LIMIT 25

ADA COMPLIANT HANDICAPPED RAMP (TYP)

MEDIAN ISLAND 2–4" SOLID YELLOW 11" C/C, WITH 12" YELLOW DIAGONALS 50' C/C– THERMOPLASTIC (TYP)

STOP SIGN R1–1

STOP

STOP SIGN R1–1 ON DECORATIVE POLE

STOP BAR – 24" WHITE THERMOPLASTIC (TYP)

STOP BAR – 24" WHITE THERMOPLASTIC

NO PARKING THIS SIDE OF STREET

HWL

NWL

NO PARKING FIRE LANE

FIRE LANE SIGN

EMERGENCY VEHICLES ONLY SIGN

EMERGENCY VEHICLES ONLY

PRIVATE ROAD

CROSSWALK – 6" SOLID W/ 24" SOLID DIAGONALS – WHITE THERMOPLASTIC (TYP)

PARKING STALL STRIPING 4"YELLOW PAINT (TYP)

CENTERLINE 2–4" SOLID YELLOW 11" C/C, PAINT (TYP)

LETTE WHITE

KEY MAP

34 35 32 33 FERRY ROAD

04-19-19: PER CITY COMMENTS
03-25-19: PER FPD COMMENTS
03-15-19: PER DUPDT COMMENTS
02-25-19: PER INTERNAL COORDINATION

REVISIONS:
09-18-18: REVISED PER CITY COMMENTS
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DRAWN BY: MK
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COMPLETED: 04/07/18

FILE: I:\080-020 Cantera Lot 2 Site Area C\Engineering\Drawings\Final

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PAVEMENT STRIPING & SIGNAGE PLAN

RIVER VIEW WEST
CITY OF WARRENVILLE, ILLINOIS

SHEET NUMBER
35
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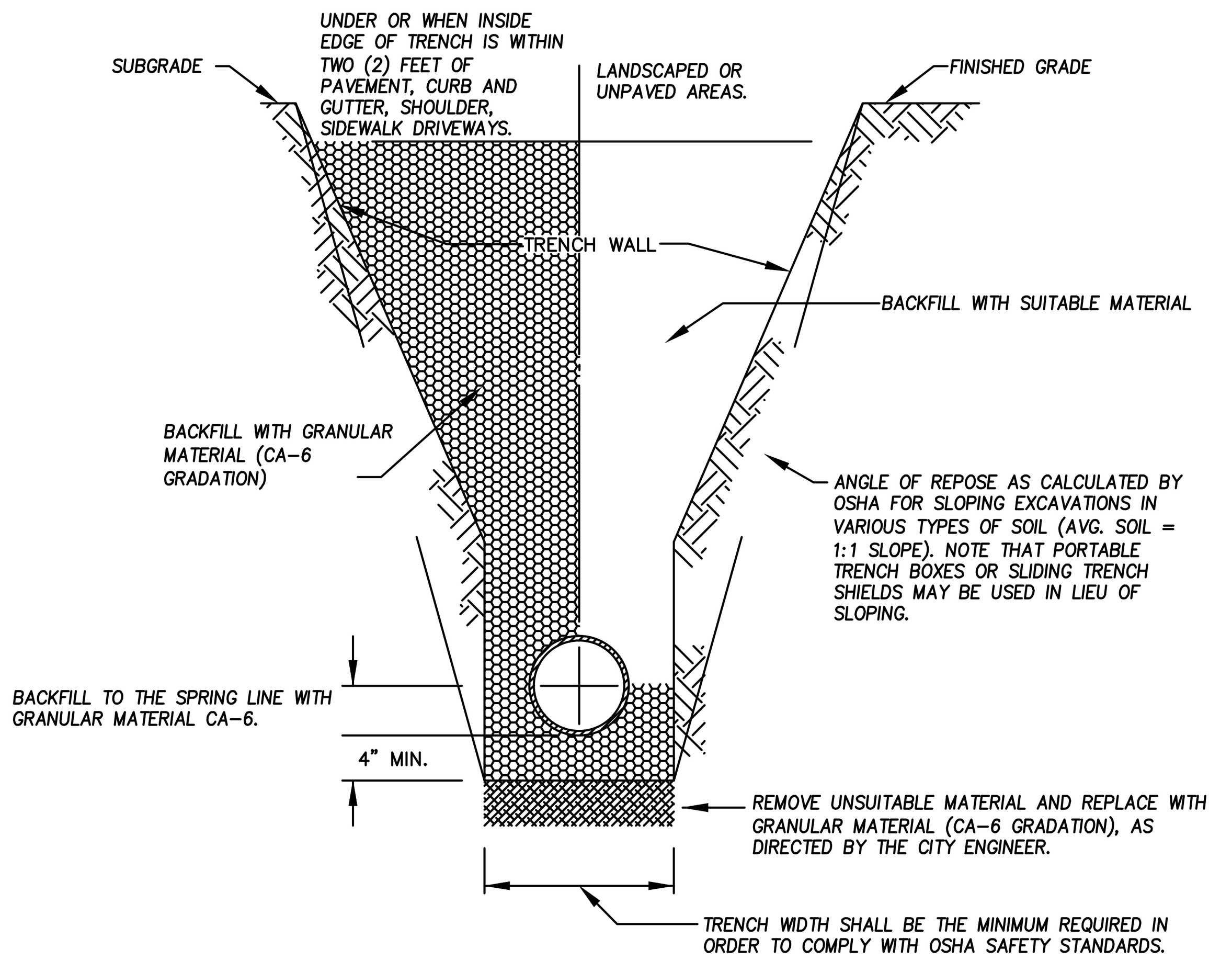
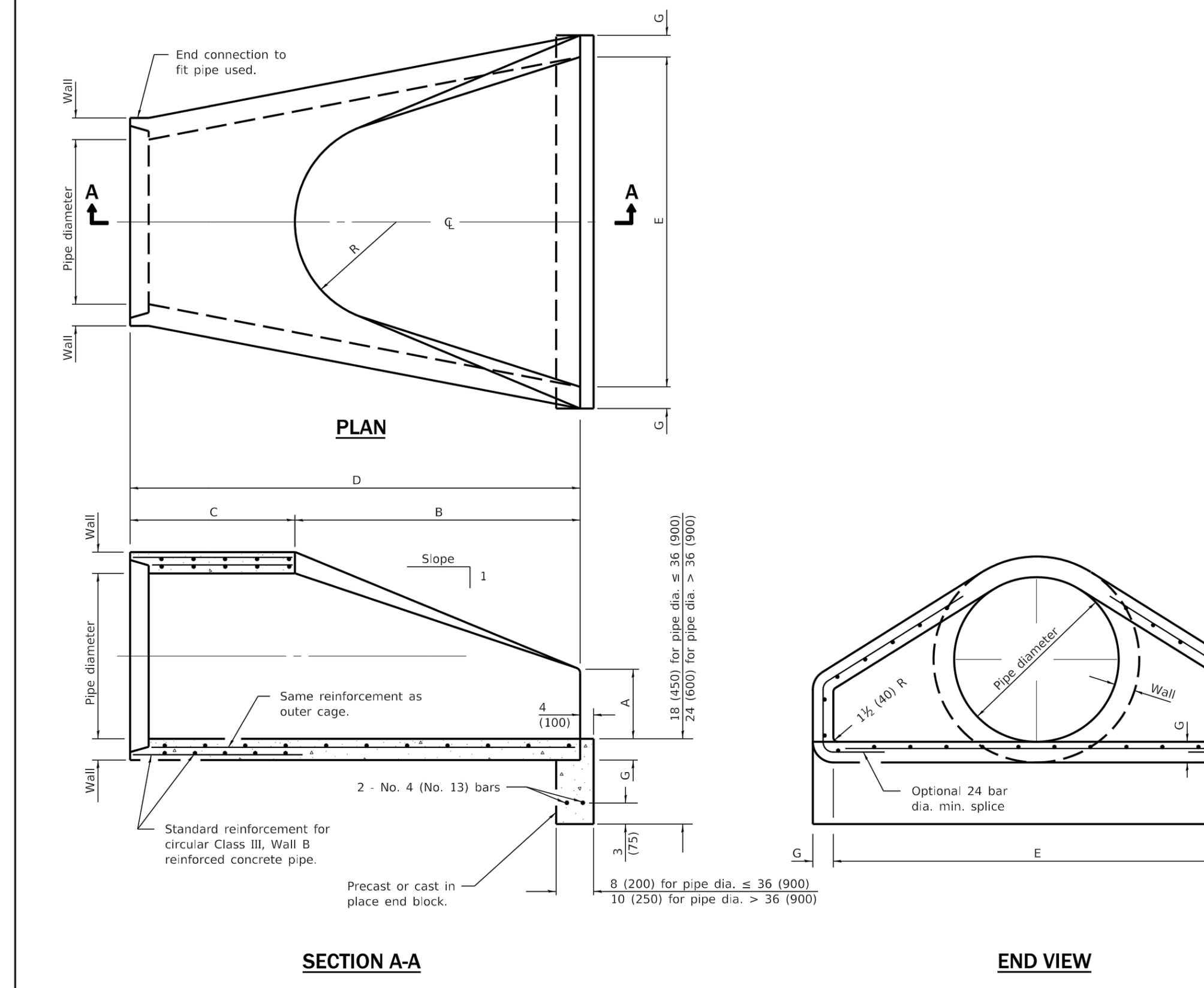


GENERAL NOTES:

1. CONTRACTOR SHALL CONDUCT HIS OPERATIONS IN A SAFE MANNER AT ALL TIMES AND SHALL COMPLY WITH ALL APPLICABLE GOVERNING REGULATIONS, INCLUDING BUT NOT LIMITED TO OSHA SAFETY STANDARDS.
2. ALL BACKFILL MATERIAL UP TO A HEIGHT OF 12 INCHES ABOVE THE PIPE SHALL BE CAREFULLY DEPOSITED IN UNIFORM LAYERS NOT EXCEEDING 8 INCHES THICK (LOOSE MEASURE). THE MATERIAL IN EACH LAYER SHALL BE FIRMLY COMPACTED BY RAMMING OR TAMPING WITH TOOLS APPROVED BY THE CITY ENGINEER IN SUCH A MANNER AS NOT TO DISTURB OR INJURE THE PIPE. THE BACKFILLING ABOVE THIS HEIGHT SHALL BE DONE AS NOTED BELOW.
3. GRANULAR BACKFILL MATERIAL SHALL BE PLACED AND COMPACTED AS SPECIFIED IN NOTE 2, ABOVE. THE USE OF JETTING SHALL NOT BE ALLOWED UNLESS AUTHORIZED IN WRITING BY THE CITY ENGINEER. IT SHALL BE THE DESIGN ENGINEER OR CONTRACTOR'S RESPONSIBILITY TO PROVIDE APPROPRIATE JUSTIFICATION AND DOCUMENTATION (SOIL INVESTIGATION REPORTS. ETC.) TO THE CITY ENGINEER WITH THE REQUEST FOR APPROVAL OF JETTING.

STORM SEWER TRENCH SECTION



PIPE DIA.	APPROX. QTY. lbs. (kg)	WALL	A	B	C	D	E	G	R	APPROX. SLOPE
12 (300)	530 (240)	2 (51)	4 (102)	24 (610)	4'-0⅞" (1.241 m)	6'-0⅞" (1.851 m)	24 (610)	2 (51)	9 (229)	1:2.4
15 (375)	740 (335)	2¼ (57)	6 (152)	27 (686)	3'-10" (1.168 m)	6'-1" (1.854 m)	30 (762)	2¼ (57)	11 (280)	1:2.4
18 (450)	990 (450)	2½ (64)	9 (229)	27 (686)	3'-10" (1.168 m)	6'-1" (1.854 m)	36 (914)	2½ (64)	12 (305)	1:2.4
21 (525)	1280 (580)	2¾ (70)	9 (229)	35 (889)	38 (965)	6'-1" (1.854 m)	3'-6" (1.067 m)	2¾ (70)	13 (330)	1:2.4
24 (600)	1520 (690)	3 (76)	9½ (241)	3'-7½" (1.105 m)	30 (762)	6'-1½" (1.867 m)	4'-0" (1.219 m)	3 (76)	14 (356)	1:2.5
27 (675)	1930 (875)	3¼ (83)	10½ (267)	4'-0" (1.219 m)	25½ (648)	6'-1½" (1.867 m)	4'-6" (1.372 m)	3¼ (83)	14½ (368)	1:2.4
30 (750)	2190 (995)	3½ (89)	12 (305)	4'-6" (1.375 m)	19¾ (502)	6'-1¾" (1.874 m)	5'-0" (1.524 m)	3½ (89)	15 (381)	1:2.5
33 (825)	3200 (1450)	3¾ (95)	13½ (343)	4'-10½" (1.486 m)	39¼ (997)	8'-1¾" (2.483 m)	5'-6" (1.676 m)	3¾ (95)	17½ (445)	1:2.5
36 (900)	4100 (1860)	4 (102)	15 (381)	5'-3" (1.6 m)	34¾ (883)	8'-1¾" (2.483 m)	6'-0" (1.829 m)	4 (102)	20 (508)	1:2.5
42 (1050)	5380 (2440)	4½ (114)	21 (533)	5'-3" (1.6 m)	35 (889)	8'-2" (2.489 m)	6'-6" (1.981 m)	4½ (114)	22 (559)	1:2.5
48 (1200)	6550 (2970)	5 (127)	24 (610)	6'-0" (1.829 m)	26 (660)	8'-2" (2.489 m)	7'-0" (2.134 m)	5 (127)	22 (559)	1:2.5
54 (1350)	8240 (3740)	5½ (140)	27 (686)	5'-5" (1.651 m)	35 (889)	8'-4" (2.54 m)	7'-6" (2.286 m)	5½ (140)	24 (610)	1:2.0
60 (1500)	8730 (3960)	6 (152)	35 (889)	5'-0" (1.524 m)	39 (991)	8'-3" (2.515 m)	8'-0" (2.438 m)	5 (127)	*	1:1.9
66 (1650)	10710 (4860)	6½ (165)	30 (762)	6'-0" (1.829 m)	27 (686)	8'-3" (2.515 m)	8'-6" (2.591 m)	5½ (140)	*	1:1.7
72 (1800)	12520 (5680)	7 (178)	36 (914)	6'-6" (1.981 m)	21 (533)	8'-3" (2.514 m)	9'-0" (2.743 m)	6 (152	*	1:1.8
78 (1950)	14770 (6700)	7½ (191)	36 (914)	7'-6" (2.286 m)	21 (533)	9'-3" (2.819 m)	9'-6" (2.896 m)	6½ (165)	*	1:1.8
84 (2100)	18160 (8240)	8 (203)	36 (914)	7'-6½" (2.299 m)	21 (533)	9'-3½" (2.832 m)	10'-0" (3.048 m)	6½ (165)	*	1:1.6

* Radius as furnished by manufacturer

GENERAL NOTES

All slope ratios are expressed as units of vertical displacement to units of horizontal displacement (V:H).

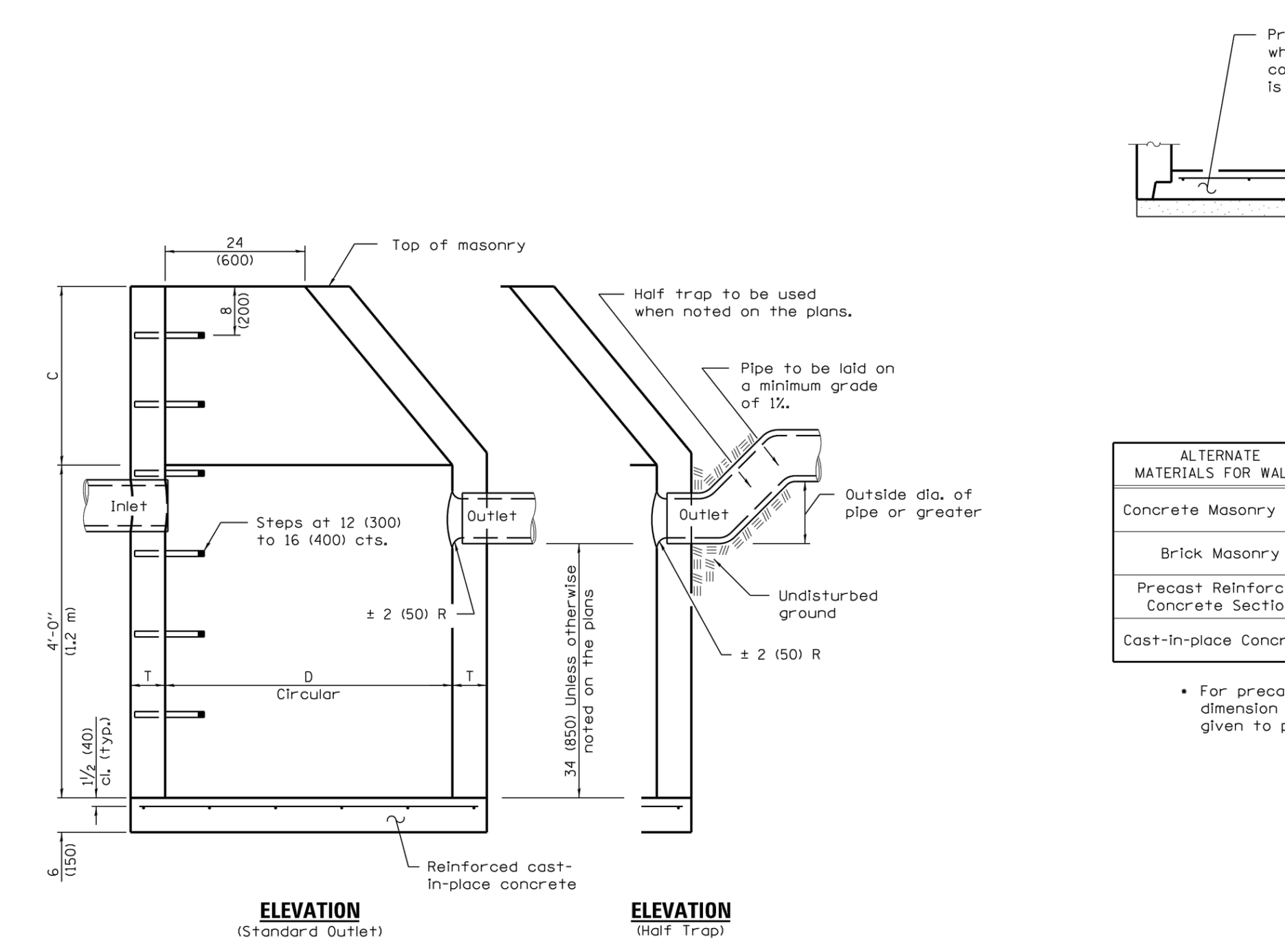
All dimensions are in inches (millimeters) unless otherwise shown.

DATE	REVISIONS
1-1-11	Clarified ref. to pipe dia. on Section A-A. Changed 'inner' to 'outer' cage ref.
1-1-09	Switched units to English (metric).

Illinois Department of Transportation — APPROVED January 1, 2011, ENGINEER OF BRIDGES AND STRUCTURES; APPROVED January 1, 2011, ENGINEER OF DESIGN AND ENVIRONMENT; ISSUED 1-1-97

PRECAST REINFORCED CONCRETE FLARED END SECTION

STANDARD 542301-03



ALTERNATE MATERIALS FOR WALLS	D	C•	T (min.)
Concrete Masonry Unit	4'-0" (1.2 m) 5'-0" (1.5 m)	30 (750) 3'-9" (1.15 m)	5 (125) 5 (125)
Brick Masonry	4'-0" (1.2 m) 5'-0" (1.5 m)	30 (750) 3'-9" (1.15 m)	8 (200) 8 (200)
Precast Reinforced Concrete Section	4'-0" (1.2 m) 5'-0" (1.5 m)	30 (750) 3'-9" (1.15 m)	4 (100) 5 (125)
Cast-in-place Concrete	4'-0" (1.2 m) 5'-0" (1.5 m)	30 (750) 3'-9" (1.15 m)	6 (150) 6 (150)

• For precast reinforced concrete sections, dimension "C" may vary from the dimension given to plus 6 (150).

GENERAL NOTES

Bottom slabs shall be reinforced with a minimum of 0.20 sq. in./ft (420 sq. mm/m) in both directions with a maximum spacing of 12 (300).

Bottom slabs may be connected to the riser as determined by the fabricator; however, only a single row of reinforcement around the perimeter may be utilized.

See Standard 602601 for optional precast reinforced concrete flat slab top.

See Standard 602701 for details of steps.

All dimensions are in inches (millimeters) unless otherwise shown.

DATE	REVISIONS
1-1-11	Added 'Outside' to half trap note. Detail rein. in slabs. Revised general notes.
1-1-09	Switched units to English (metric).

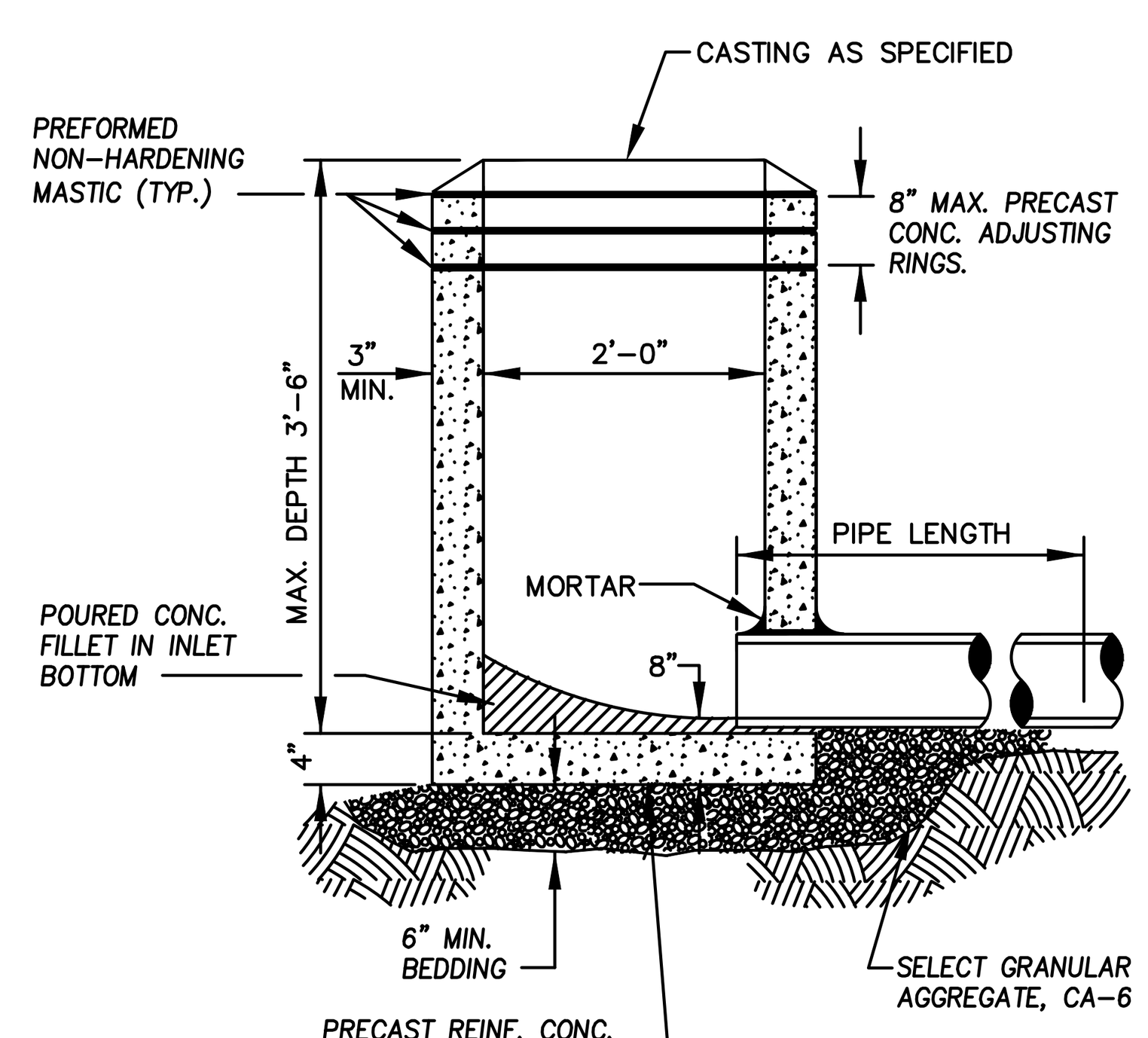
Illinois Department of Transportation — PASSED January 1, 2011, ENGINEER OF POLICY AND PROCEDURES; APPROVED January 1, 2011, ENGINEER OF DESIGN AND ENVIRONMENT; ISSUED 1-1-97

CATCH BASIN TYPE A

STANDARD 602001-02

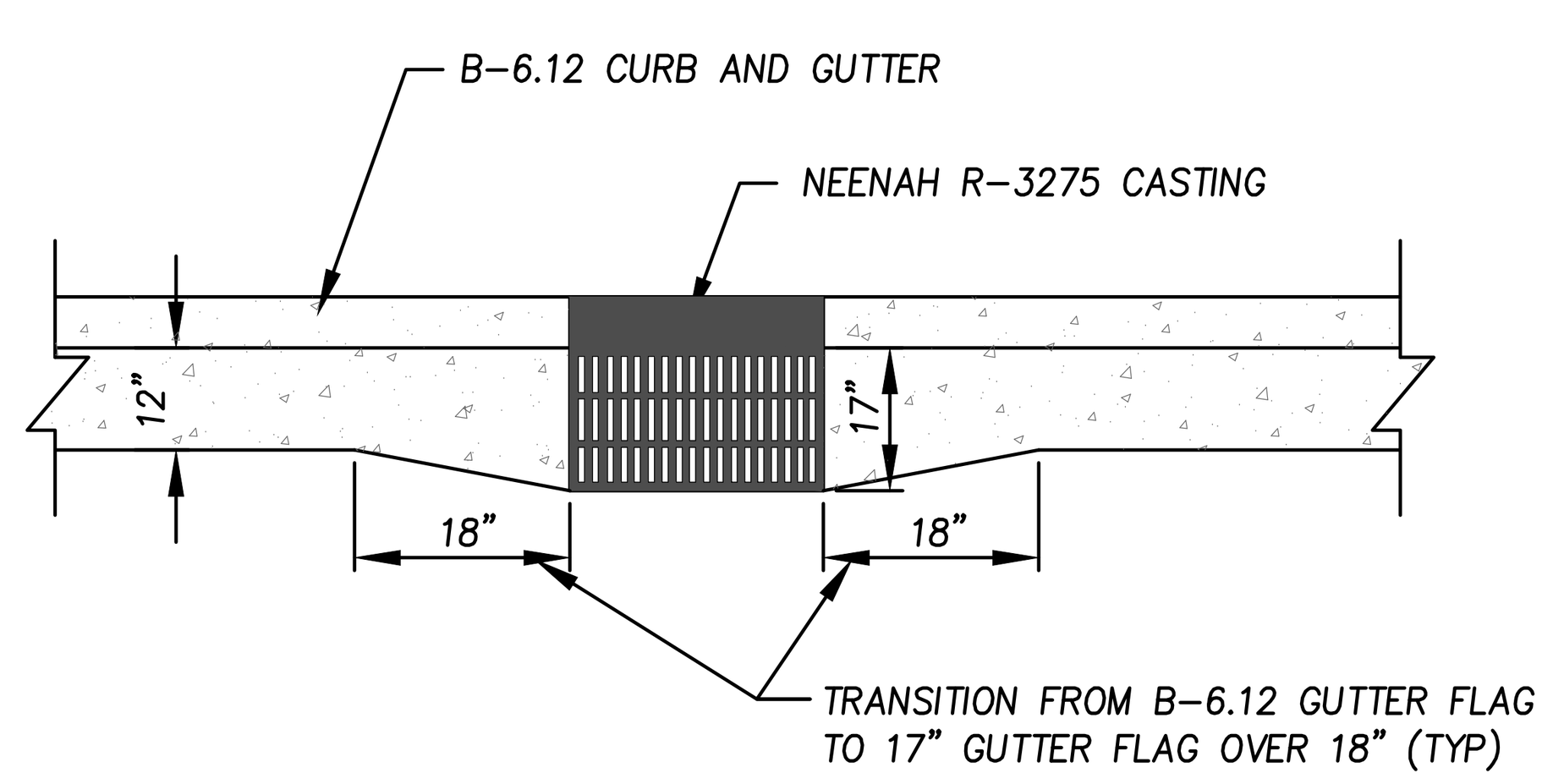
NOTE:

1. PROVIDE SELECT GRANULAR BACKFILL AROUND INLET TO SUBGRADE ELEVATION IN PAVED AREAS.
2. ALTERNATE INLET BOTTOM - PRECAST REINFORCED CONCRETE BASE
3. CONCRETE FILLETS SHALL BE MADE WITH NON-SHRINK MOTAR TO PROVIDE A SMOOTH TRANSITION BETWEEN THE CASTING AND ADJUSTING RING (ON TOP OF STRUCTURE). SEE STORM 6 & 7.
4. WHEN ADJUSTMENT ARE NECESSARY, THEY WILL BE PERFORMED WITH A MAXIMUM OF TWO PRECAST CONCRETE RINGS SET IN A BED OF PREFORMED NON-HARDENING MASTIC (RUB-R-NEK OR APPROVED EQUAL) TO A MAXIMUM HEIGHT OF EIGHT INCHES. TWO INCH RINGS SHALL ONLY BE USED WHEN ADJUSTMENT IS LESS THE THREE INCHES.
5. NO MORTAR SHALL BE USED TO DRESS UP INSIDE ADJUSTING RINGS.
6. A MINIMUM OF FOUR (4), TWO (2) INCH DIAMETER HOLES SHALL BE PROVIDED WITHIN ONE (1) FOOT OF THE LOWEST PIPE INVERT. THE HOLES SHALL BE DISTRIBUTED EQUIDISTANT AROUND THE PERIMETER OF THE STRUCTURE. A ONE (1) FOOT BY ONE (1) FOOT SECTION OF UNDERDRAIN FILTER CLOTH MATERIAL SHALL BE SUFFICIENTLY FIXED TO THE OUTSIDE OF THE MANHOLE WITH MASTIC MATERIALS TO PREVENT SLIPPAGE DUING BACKFILLING.

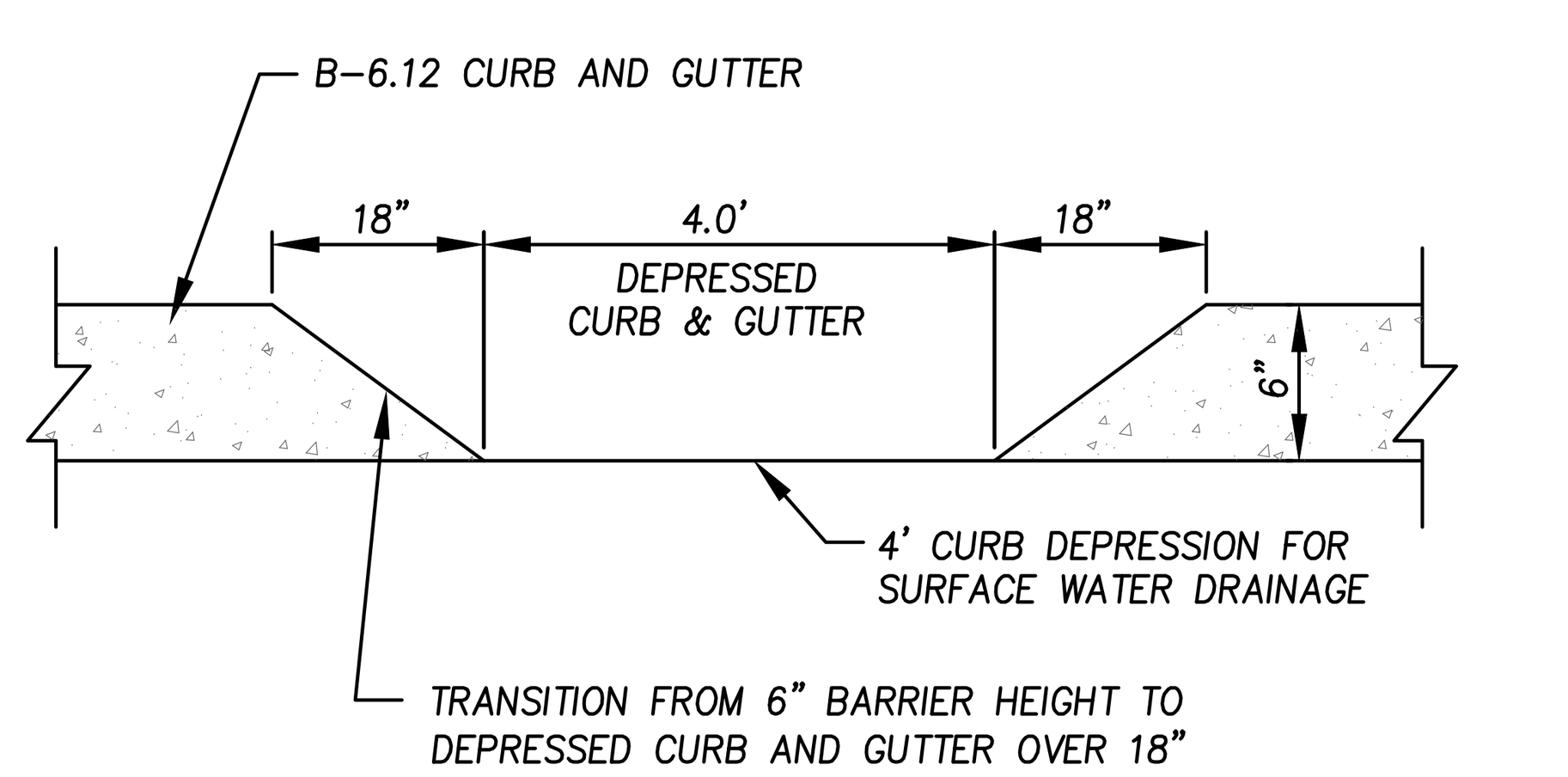


INLET TYPE A

N.T.S.



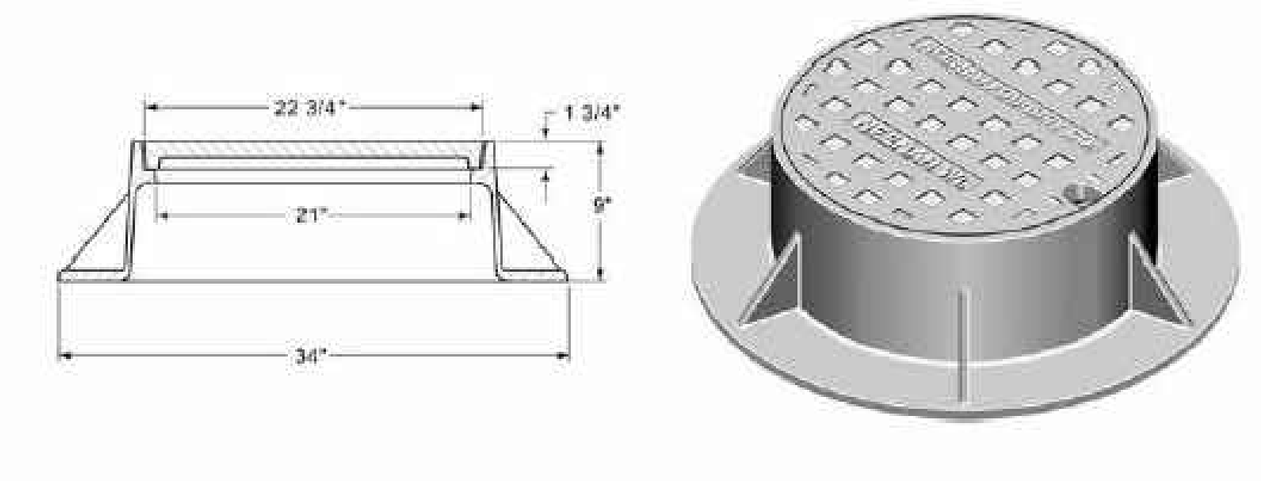
B-6.12 GUTTER TRANSITION



B-6.12 BARRIER TRANSITION FOR SURFACE DARINGAE

R-1713
Manhole Frame, Solid Lid

Heavy Duty

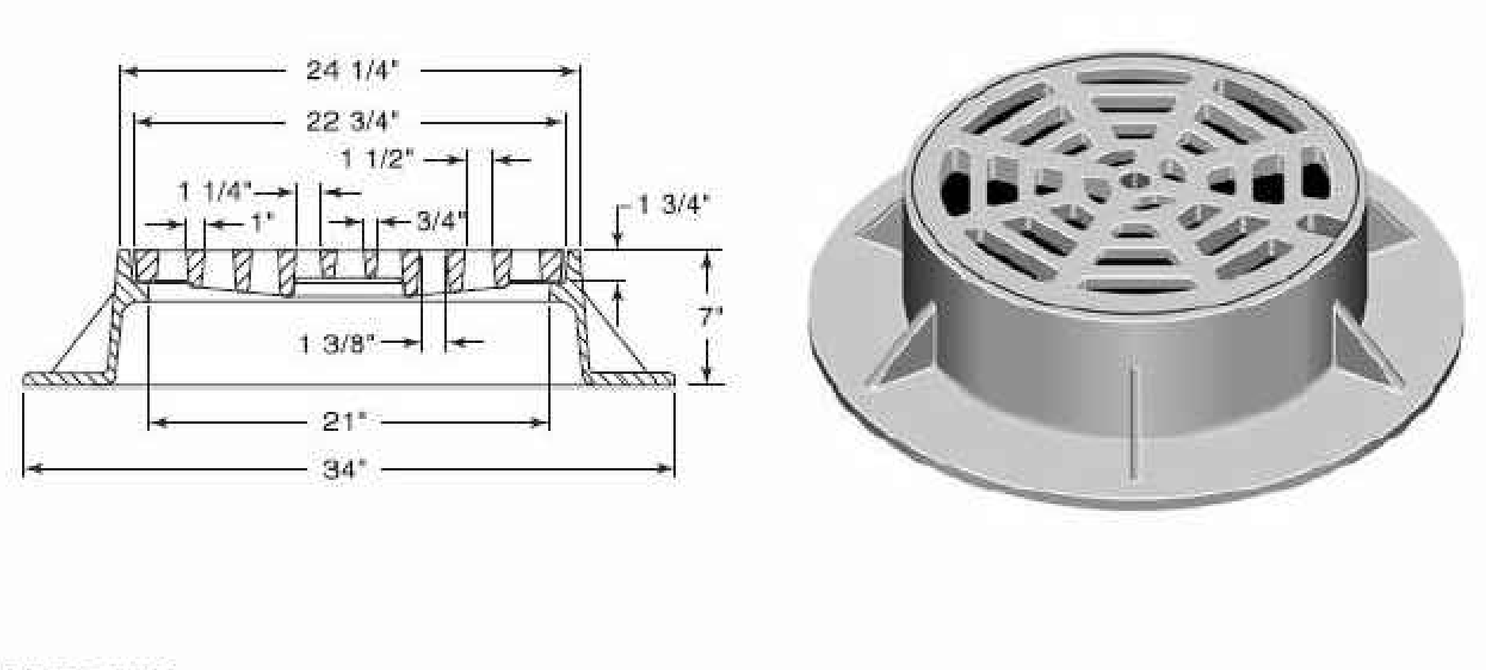


Available Grate: R-2504

R-2502
Inlet Frame, Grate

Heavy Duty

CATALOG NUMBER	GRATE TYPE	SQ. FT. OPEN	WEIR PERIMETER LINEAL FEET
R-2502	D	0.9	6.0
R-2502	G	1.3	6.0
R-2502	C	1.2	6.0
R-2502	E	1.5	6.0

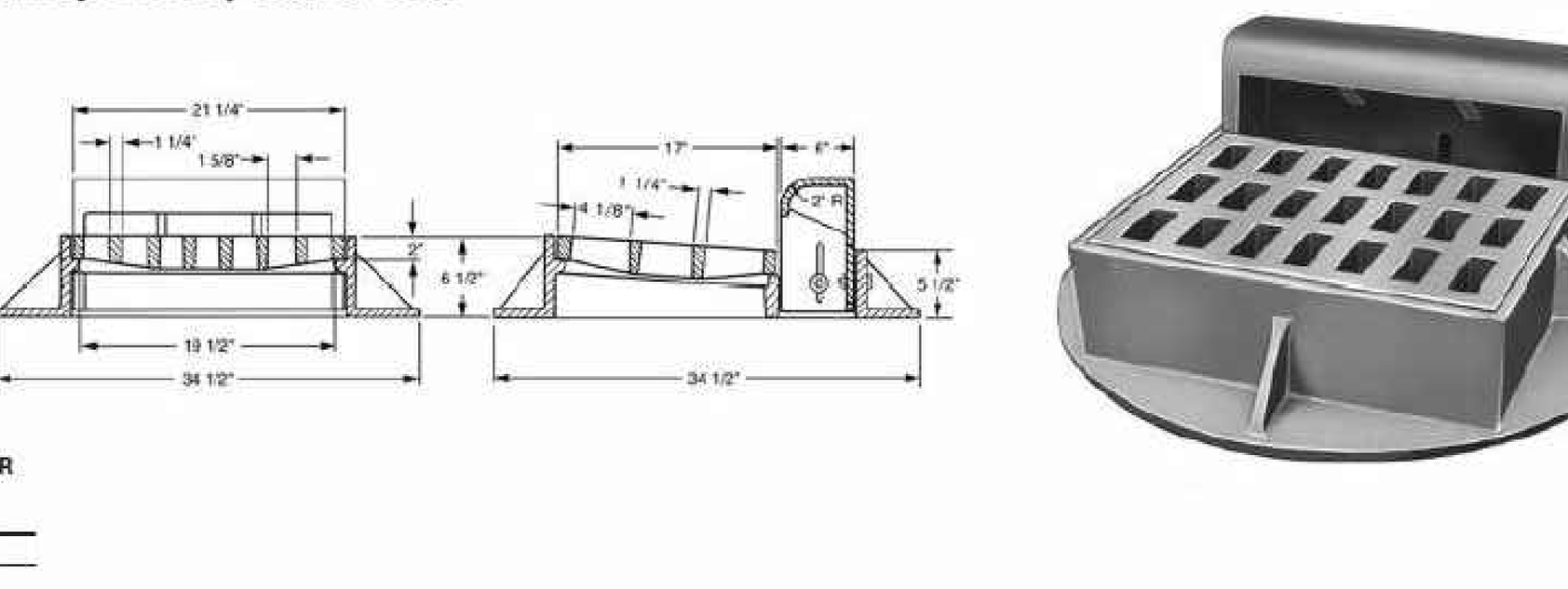


Standard Grate (shown): Type D
Alternate Grate(s): Type C, Type E, Type G

Available Lid: R-1772

R-3275
Combination Inlet Frame, Grate, Curb Box

Heavy Duty

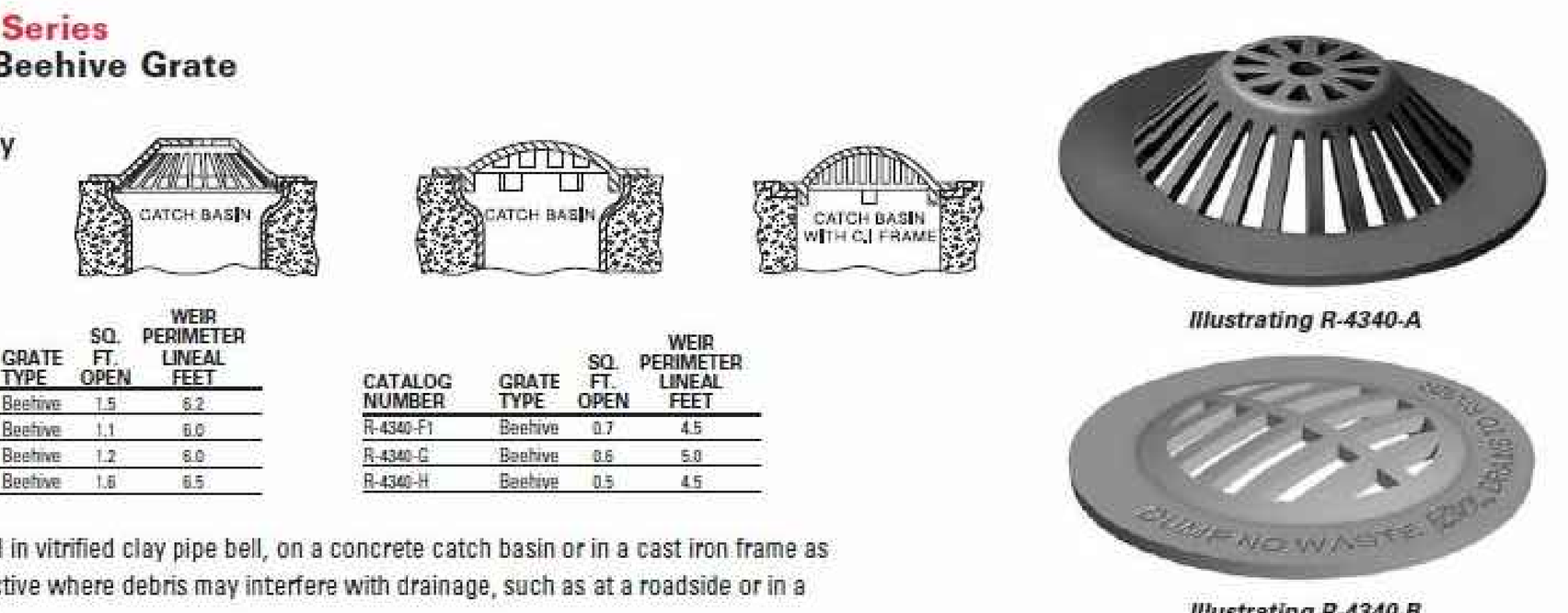


CATALOG NUMBER	GRATE TYPE	SQ. FT. OPEN	WEIR PERIMETER LINEAL FEET
R-3275	A	1.0	4.6

Available with barred curb box.

R-4340 Series
Round Beehive Grate

Light Duty



CATALOG NUMBER	GRATE TYPE	SQ. FT. OPEN	WEIR PERIMETER LINEAL FEET
R-4340-A	Beehive	1.5	6.2
R-4340-B	Beehive	1.1	6.0
R-4340-C	Beehive	1.2	6.0
R-4340-F	Beehive	1.6	6.5

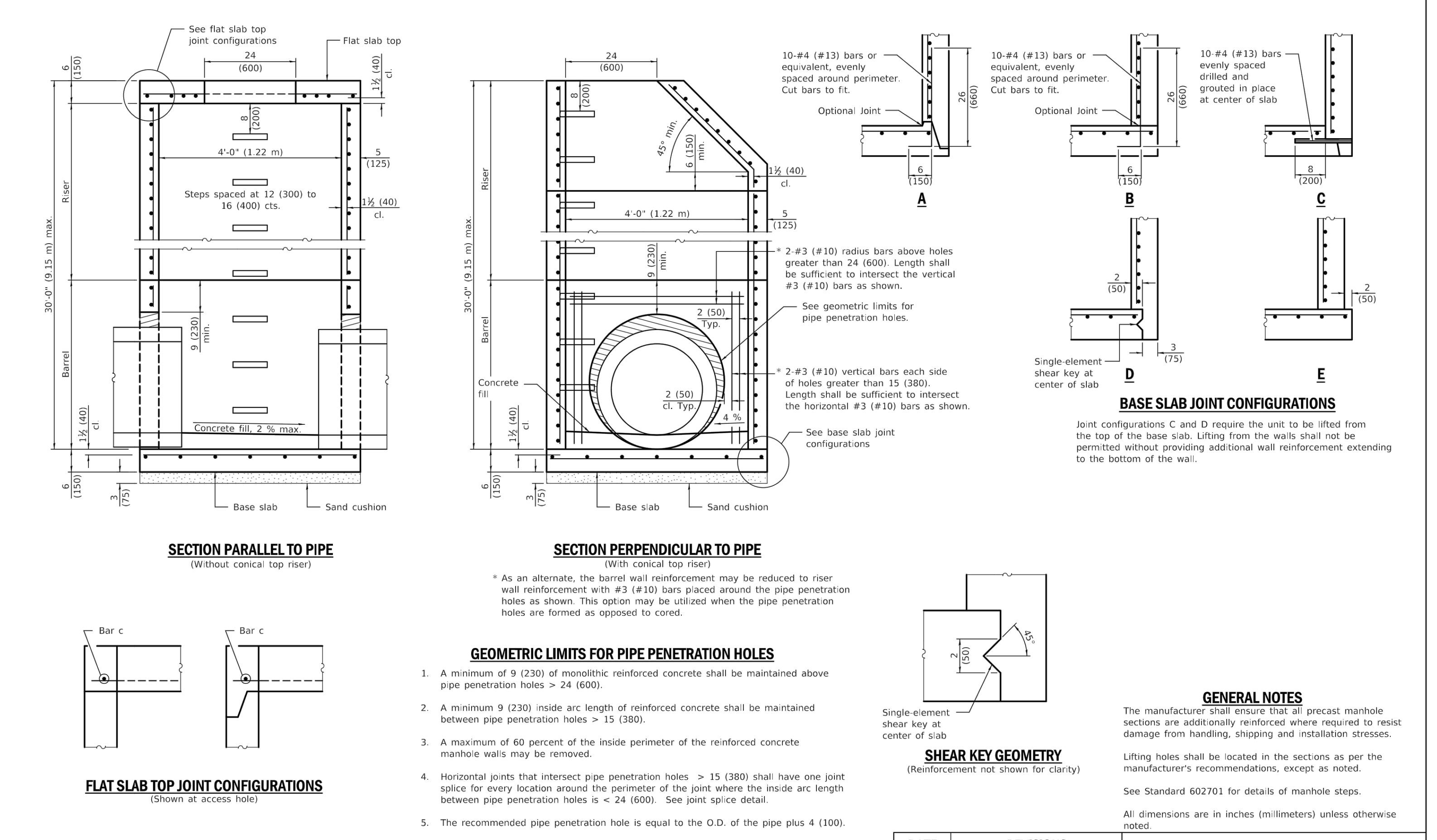
CATALOG NUMBER	GRATE TYPE	SQ. FT. OPEN	WEIR PERIMETER LINEAL FEET
R-4340-F1	Beehive	0.7	4.5
R-4340-G	Beehive	0.6	5.0
R-4340-H	Beehive	0.5	4.5

May be used in vitrified clay pipe bell, on a concrete catch basin or in a cast iron frame as shown. Effective where debris may interfere with drainage, such as at a roadside or in a median strip.
Bell and spigot vitrified clay and concrete pipe are made under many specifications and dimensions vary. Check the grate sizes in the table to be sure they will fit the pipe you are using.

Dimensions in inches

Catalog No.	O Dia.	O.D. Lugs	Dia. Bhv.	Ht. Bhv.	No. Lugs	Size Bars	Size Op.	Pipe Size
R-4340-A	34	26 1/4	23 7/8	6	*	1 1/2	1	24
R-4340-B	33	23	23	2	6	2	1 1/2	24
R-4340-C	33	29	23	5 3/4	4	1	1 1/4	24
R-4340-F	33	28	25	5	4	1	1	24
R-4340-F1 **	25 1/2	21 3/4	17	3	4	1	1	18
R-4340-G **	28	18	19	3	3	1 3/4	2	15
R-4340-H	25	15	17	3	3	1 5/8	1 3/4	12

* Furnished with ring instead of lugs.
** Frame not available.
Grate flange lettered "DUMP NO WASTE – DRAINS TO RIVER"



* As an alternate, the barrel wall reinforcement may be reduced to riser wall reinforcement with #3 (#10) bars placed around the pipe penetration holes as shown. This option may be utilized when the pipe penetration holes are formed as opposed to cored.

Joint configurations C and D require the unit to be lifted from the top of the base slab. Lifting from the walls shall not be permitted without providing additional wall reinforcement extending to the bottom of the wall.

GEOMETRIC LIMITS FOR PIPE PENETRATION HOLES

1. A minimum of 9 (230) of monolithic reinforced concrete shall be maintained above pipe penetration holes > 24 (600).
2. A minimum 9 (230) inside arc length of reinforced concrete shall be maintained between pipe penetration holes > 15 (380).
3. A maximum of 60 percent of the inside perimeter of the reinforced concrete manhole walls may be removed.
4. Horizontal joints that intersect pipe penetration holes > 15 (380) shall have one joint splice for every location around the perimeter of the joint where the inside arc length between pipe penetration holes is < 24 (600). See joint splice detail.
5. The recommended pipe penetration hole is equal to the O.D. of the pipe plus 4 (100).
6. Only pipe penetration holes ≤ 15 (380) are allowed in riser sections.

GENERAL NOTES

The manufacturer shall ensure that all precast manhole sections are additionally reinforced where required to resist damage from handling, shipping and installation stresses.

Lifting holes shall be located in the sections as per the manufacturer's recommendations, except as noted.

See Standard 602701 for details of manhole steps.

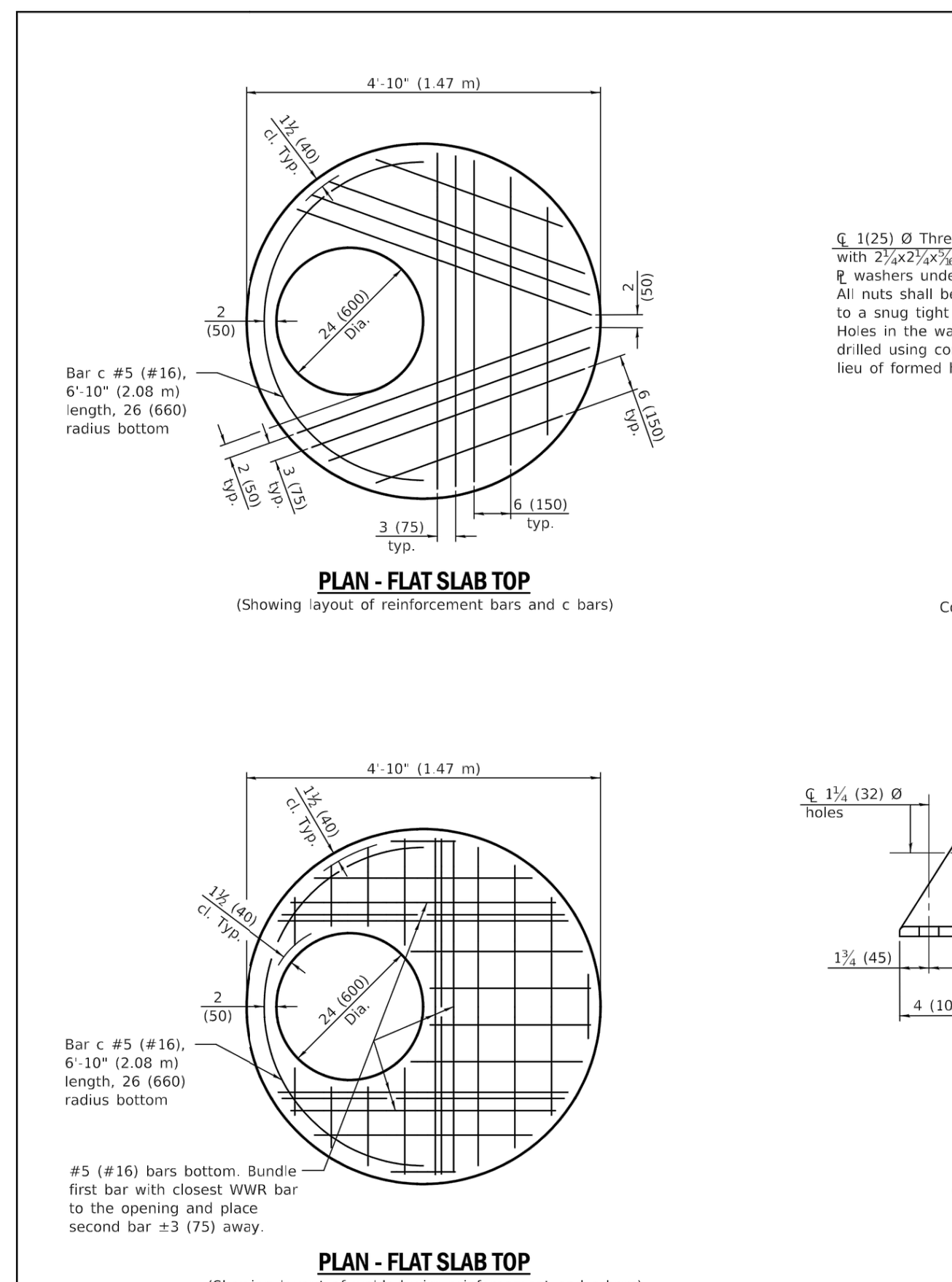
All dimensions are in inches (millimeters) unless otherwise noted.

DATE	REVISIONS
1-1-19	Expanded / refined reinforcement options. Increased manhole depths.
1-1-18	Expanded / revised base slab connections; included geometric limits. Renamed standard.

Illinois Department of Transportation — PASSED January 1, 2019, ENGINEER OF POLICY AND PROCEDURES; APPROVED January 1, 2019, ENGINEER OF DESIGN AND ENVIRONMENT; ISSUED 1-1-97

PRECAST MANHOLE TYPE A 4' (1.22 m) DIAMETER (Sheet 1 of 2)

STANDARD 602401-05



FLAT SLAB TOP REINFORCEMENT

Location	WWR (each direction) A_s (min.)	WWR Spacing (max.)	Rebar A_s (min.)	Rebar Spacing (max.)	Bar Size
Bottom Mat	** 0.62 sq. in./ft. (1312 sq. mm/m)	6 (150)	See plan view for rebar orientation and spacing and this table for bar size		#5 (#16)

** Only one layer of WWR permitted to avoid congestion.

WALL REINFORCEMENT

Location	Orientation	WWR or Rebar A_s (min.)	Spacing (max.)
Riser - Inside Mat	Circumferential	0.12 sq. in./ft. (254 sq. mm/m)	6 (150)
	Vertical	0.045 sq. in./ft. (95 sq. mm/m)	8 (200)
Barrel - Inside Mat	Circumferential	0.12 sq. in./ft. (254 sq. mm/m)	6 (150)
	Vertical	0.16 sq. in./ft. (339 sq. mm/m)	3 (75)

BASE SLAB REINFORCEMENT

Location	Total Height	WWR or Rebar (each direction) A_s (min.)	Spacing (max.)
Top Mat	≤ 20 ft. (6.10 m)	0.24 sq. in./ft. (508 sq. mm/m)	10 (250)
	> 20 ft. (6.10 m)	0.24 sq. in./ft. (508 sq. mm/m)	10 (250)

Illinois Department of Transportation — PASSED January 1, 2019, ENGINEER OF POLICY AND PROCEDURES; APPROVED January 1, 2019, ENGINEER OF DESIGN AND ENVIRONMENT; ISSUED 1-1-97

PRECAST MANHOLE TYPE A 4' (1.22 m) DIAMETER (Sheet 2 of 2)

STANDARD 602401-05

JOB NO: 080-020	REVISIONS:
FIELD BOOK: N/A	1 09-18-18: REVISD PER CITY COMMENTS
FIELD BOOK: N/A	2 11-05-18: REVISD PER FPD COMMENTS
DRAWN BY: MK	3 01-18-19: REVISD PER CITY COMMENTS
CHECKED BY: KEK	4
COMPLETED: 04/07/18	FILE: I/080-020 Cantera Lot 2 Sub Area C/Engineering/Drawings

8 04-19-19: PER CITY COMMENTS

PREPARED FOR:
CANTERA DEVELOPMENT HOLDINGS, LLC.
TWO NORTHFIELD PLAZA, SUITE 320
NORTHFIELD, IL 60093
TEL :(847) 562-2001

CONSULTING ENGINEERS
Bollinger, Lach & Associates, Inc.
333 PIERCE ROAD SUITE 200 ITASCA, IL 60143
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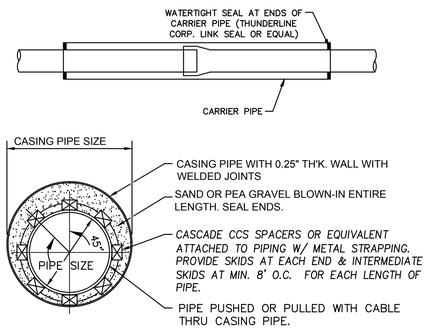
ITASCA * CHICAGO * ALGONQUIN * LAKE GENEVA * SOUTH BEND * INDIANAPOLIS

DETAILS

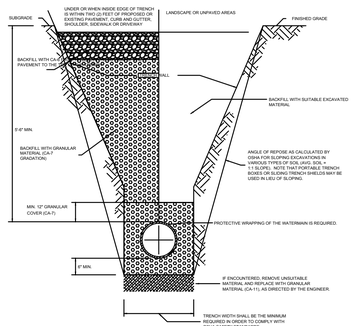
RIVER VIEW WEST
CITY OF WARRENVILLE, ILLINOIS

SHEET NUMBER 36 OF 71

Design Firm License No. 184-001129



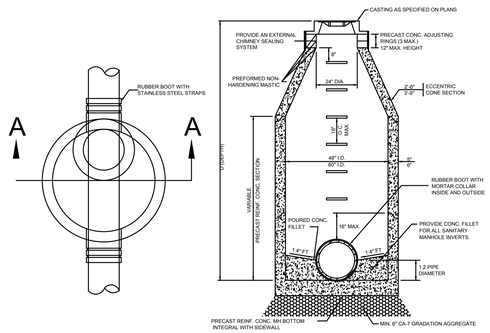
STEEL CASING PIPE



GENERAL NOTES:

1. CONTRACTOR SHALL CONDUCT HIS OPERATIONS IN A SAFE MANNER AT ALL TIMES AND SHALL COMPLY WITH ALL APPLICABLE GOVERNING REGULATIONS, INCLUDING BUT NOT LIMITED TO OSHA SAFETY STANDARDS.
2. ALL BACKFILL MATERIAL UP TO A HEIGHT OF 12 INCHES ABOVE THE PIPE SHALL BE CAREFULLY DEPOSITED IN UNIFORM LAYERS NOT EXCEEDING 6 INCHES THICK (LOOSE MEASURE). THE MATERIAL IN EACH LAYER SHALL BE FIRMLY COMPACTED BY RAMMING OR TAMPING IN SUCH A MANNER AS NOT TO DISTURB OR INJURE THE PIPE. THE BACKFILLING ABOVE THIS HEIGHT SHALL BE DONE AS NOTED BELOW.
3. GRANULAR BACKFILL MATERIAL SHALL BE PLACED AND COMPACTED AS SPECIFIED IN NOTE 2, ABOVE. THE USE OF JETTING SHALL NOT BE ALLOWED.
4. BACKFILL MATERIAL CONSISTING OF SUITABLE EXCAVATED MATERIAL SHALL BE PLACED IN LIFTS NOT EXCEEDING TWELVE (12) INCHES THICK (LOOSE MEASURE) AND EACH LAYER SHALL BE COMPACTED BY RAMMING OR TAMPING TO ACHIEVE THE REQUIRED COMPACTION.

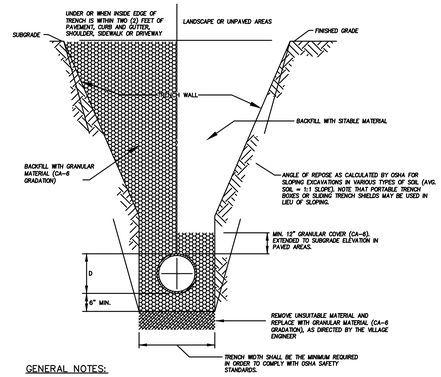
SANITARY MANHOLE



PLAN SECTION A–A

GENERAL NOTES:

1. PROVIDE PRECAST REINFORCED CONCRETE BARREL AND RISER SECTION CONCRETE BLOCK CONSTRUCTION IS NOT PERMITTED.
2. PROVIDE SELECT GRANULAR BACKFILL AROUND MANHOLE TO SUBGRADE ELEVATION IN PAVED AREAS. MATERIAL SHALL MEET THE REQUIREMENT OF IDOT "STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION" COARSE AGGREGATE CA–7 GRADATION UP TO 12" FROM THE BOTTOM OF THE PAVEMENT, THEN PLACE CA–6 FROM 12" BELOW THE BOTTOM OF PAVEMENT TO THE TOP OF THE TRENCH, OR AS OTHERWISE DIRECTED BY THE ENGINEER.
3. APPLY A CONTINUOUS LAYER OF NON–HARDENING PREFORMED BITUMINOUS MASTIC MATERIAL (RUB–R–NEK OR EZ STICK) TO EACH JOINT TO PREVENT INFLOW.
4. WHEN THE FRAME DOES NOT MEET PROPOSED ELEVATION, A MAXIMUM OF THREE PRECAST CONCRETE RINGS MAY BE USED TO A MAXIMUM HEIGHT OF 12 INCHES. EACH RING AND THE FRAME SHALL BE SET ON A BED OF PREFORMED NON–HARDENING MASTIC (RUB–R–NEK OR APPROVED EQUAL).
5. PRECAST ADJUSTING RINGS SHALL BE REINFORCED WITH NO. 3 GAUGE WIRE OR EQUIVALENT.
6. MORTAR SHALL NOT BE USED TO DRESS UP ADJUSTING RINGS AND/OR FRAME.
7. ONLY PLASTIC POLYMER STEPS SHALL BE USED.
8. WHEN MANHOLE DEPTH IS OVER 12 FEET, THE THICKNESS OF THE BASE SHALL BE A MINIMUM OF 10 INCHES. WHEN MANHOLE DEPTH IS LESS THAN 12 FEET, THE THICKNESS SHALL BE A MINIMUM OF 8 INCHES.
9. DRESS UP INTERIOR JOINTS WITH THE HYDRAULIC CEMENT.
10. SANITARY MANHOLES SHALL BE CONSTRUCTED WITH A CHIMNEY SEALING SYSTEM BY CRETEX OR AN EQUAL APPROVED BY THE CITY, WHEN IN PAVEMENT OR SUBJECT TO INUNDATION.



GENERAL NOTES:

CONTRACTOR SHALL CONDUCT HIS OPERATIONS IN A SAFE MANNER AT ALL TIMES AND SHALL COMPLY WITH ALL APPLICABLE GOVERNING REGULATIONS, INCLUDING BUT NOT LIMITED TO OSHA SAFETY STANDARDS.

ALL BACKFILL MATERIAL UP TO A HEIGHT OF 12 INCHES ABOVE THE PIPE SHALL BE CAREFULLY DEPOSITED IN UNIFORM LAYERS NOT EXCEEDING 6 INCHES THICK (LOOSE MEASURE). THE MATERIAL IN EACH LAYER SHALL BE FIRMLY COMPACTED BY RAMMING OR TAMPING WITH TOOLS APPROVED BY THE CITY ENGINEER IN SUCH A MANNER AS NOT TO DISTURB OR INJURE THE PIPE. THE BACKFILLING ABOVE THIS HEIGHT SHALL BE DONE AS NOTED BELOW.

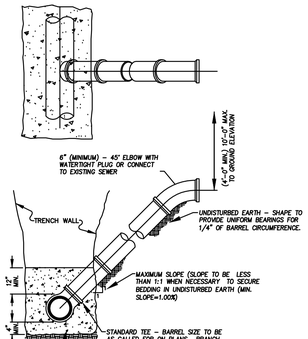
GRANULAR BACKFILL MATERIAL SHALL BE PLACED AND COMPACTED AS SPECIFIED IN NOTE 2, ABOVE. THE USE OF JETTING SHALL NOT BE ALLOWED UNLESS AUTHORIZED IN WRITING BY THE CITY ENGINEER. IT SHALL BE THE DESIGN ENGINEER OR CONTRACTOR'S RESPONSIBILITY TO PROVIDE APPROPRIATE JUSTIFICATION AND DOCUMENTATION (SOIL INVESTIGATION REPORTS, ETC.) TO THE CITY ENGINEER WITH THE REQUEST FOR APPROVAL OF JETTING.

BACKFILL MATERIAL CONSISTING OF SUITABLE EXCAVATED MATERIAL SHALL BE PLACED IN LIFTS NOT EXCEEDING TWELVE (12) INCHES THICK (LOOSE MEASURE) AND EACH LAYER SHALL BE COMPACTED BY RAMMING OR TAMPING TO ACHIEVE THE REQUIRED COMPACTION. JETTING OF THIS MATERIAL MAY BE PERMITTED WHEN AUTHORIZED IN WRITING BY THE CITY ENGINEER. IT SHALL BE THE DESIGN ENGINEER OR THE CONTRACTOR'S RESPONSIBILITY TO SUBMIT APPROPRIATE JUSTIFICATION AND DOCUMENTATION (SOIL INVESTIGATION REPORTS, ETC.) TO THE CITY ENGINEER WITH THE REQUEST FOR APPROVAL OF JETTING.

GRANULAR MATERIAL FOR BACKFILL AND BEDDING SHALL BE GRAVEL, CRUSHED GRAVEL OR STONE MEETING THE REQUIREMENTS OF THE IDOT "STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION" FOR COARSE AGGREGATE (CA–6 GRADATION).

THE BEDDING THICKNESS SHALL BE EQUAL TO ONE–QUARTER (1/4) OF THE OUTSIDE DIAMETER OF THE PIPE BUT NOT LESS THAN SIX (6) INCHES.

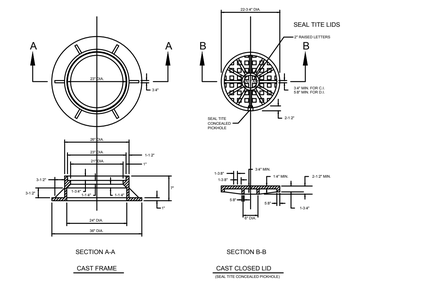
SANITARY SEWER TRENCH DETAIL



NOTES:

1. THE OPEN ENDS OF LATERAL SHALL BE PROTECTED WITH EITHER POLYESTEROR WITHIFIED CLAY COVER.
2. STAKES SHALL BE USED IF NECESSARY TO HOLD LATERAL IN PLACE.
3. MISSION COUPLING OR APPROVED EQUAL TO BE USED WHERE DIFFERENT MATERIALS ARE TO BE CONNECTED.

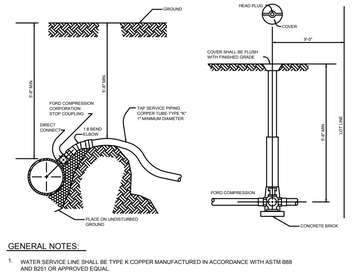
SANITARY SERVICE RISER



GENERAL NOTES:

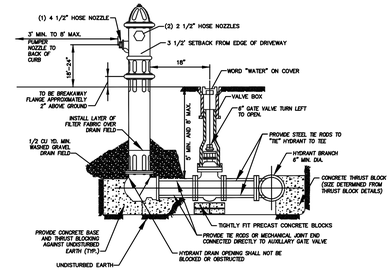
1. DUCTILE IRON CASTING SHALL BE TESTED IN ACCORDANCE WITH FEDERAL SPECIFICATIONS.
2. ALL FRAMES AND COVERS SHALL HAVE A MACHINED HORIZONTAL AND VERTICAL BEARING SURFACES. PICK HOLES IN THE COVER SHALL NOT BE OPEN.
3. THE MANHOLE COVERS SHALL BE STAMPED WITH "SANITARY".
4. DIMENSIONS FOR CASTINGS ARE COMPARABLE TO EAST JORDAN 1022 OR NEENAH FOUNDRY 1772 FURNISHED WITH TYPE F CONCEALED PICK HOLES.
5. WATERPROOF, BOLTDOWN FRAME AND COVER SHALL BE USED IN ANY LOCATION SUBJECT TO INUNDATION. (NEENAH R-1916-I, EAST JORDAN 1022 WT WITH TYPE S CLOSED PICK HOLES OR APPROVED EQUAL).
6. LIDS SHALL BE "WATERTITE" OR "SELF-SEALING" WITH A FACTORY INSTALLED GASKET.

SANITARY MANHOLE FRAME AND LID



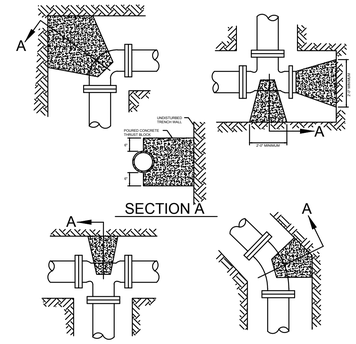
GENERAL NOTES:

1. WATER SERVICE LINE SHALL BE TYPE K COPPER MANUFACTURED IN ACCORDANCE WITH ASTM B88 AND B251 OR APPROVED EQUAL.
2. FOR 1" SERVICE LINES CORPORATION STOPS SHALL BE EITHER MUELLER H-15008N OR FORD F600-NL OR APPROVED EQUAL.
3. FOR 1" & 2" SERVICE LINES CORPORATION STOPS SHALL BE EITHER MUELLER B-25008N OR FORD FB600-NL OR APPROVED EQUAL.
4. SERVICE LINES GREATER THAN 1" IN DIAMETER SHALL HAVE A STAINLESS STEEL SADDLE (SMITH BLAIR 238 FULL CIRCLE REPAIR CLAMP OR APPROVED EQUAL).
5. B-BOX SHALL BE MUELLER H-10302 OR APPROVED EQUAL.
6. CORPORATION STOPS SHALL BE INSTALLED A MINIMUM OF 18" FROM BELL SECTIONS AND OR PIPE FITTINGS. MULTIPLE INSTALLATIONS SHALL BE STAGGERED AROUND THE MAIN BY 90 ° AND SEPARATED BY 18".



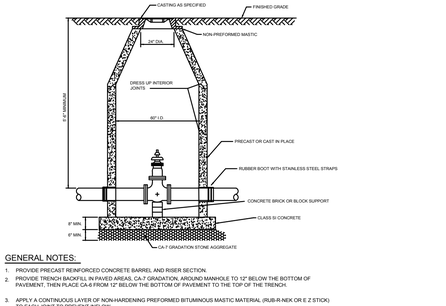
GENERAL NOTES:

1. ALL HYDRANTS ARE TO BE SUPPLIED WITH A 6" FLANGED AND MECHANICAL JOINT AUXILIARY VALVE THAT CONFORMS TO AWWA C615. TRIM BOLTS ARE TO BE STAINLESS STEEL.
2. THE HYDRANT WILL EXCEED ALL THE REQUIREMENTS OF AWWA C502.
3. RESTRAINED JOINTS ARE REQUIRED THROUGHOUT THE FIRE HYDRANT ASSEMBLY.
4. FIRE HYDRANT COLOR SHALL BE VERIFIED WITH DUPAGE COUNTY BY THE CONTRACTOR.



GENERAL NOTES:

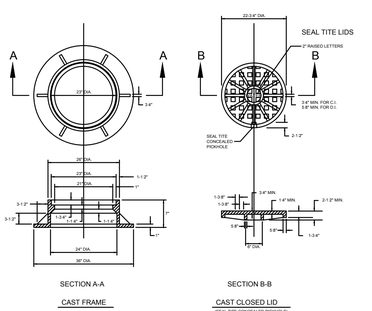
1. THRUST BLOCKING IS USED TO PREVENT MOVEMENT OF LINES UNDER PRESSURE BENDS, TEES, CAPS, VALVES, HYDRANTS, AND AT POINTS SPECIFIED BY THE ENGINEER. CONCRETE SHALL BE CLASS SI AND BE A MINIMUM OF TWELVE (12) INCHES THICK PLUS THE SIZE OF THE WATERMAIN. IT SHALL BE PLACED BETWEEN UNDISTURBED GROUND AND FITTINGS. FITTINGS WILL BE ACCESSIBLE FOR REPAIRS. THRUST BLOCK SHALL BE PLACED AT BENDS OF 11-1/4 DEGREES OR MORE. THE AREA OF BEARING SHALL BE SUFFICIENT TO RESIST THE APPLIED FORCES. USE OF 90 DEGREE BENDS REQUIRE APPROVAL FROM THE ENGINEER PRIOR TO INSTALLATION.
2. USE OF WOOD MATERIAL FOR THRUST BLOCKING IS PROHIBITED.



GENERAL NOTES:

1. PROVIDE PRECAST REINFORCED CONCRETE BARREL AND RISER SECTION.
2. PROVIDE TRENCH BACKFILL IN PAVED AREAS, CA-7 GRADATION, AROUND MANHOLE TO 12" BELOW THE BOTTOM OF PAVEMENT, THEN PLACE CA-6 FROM 12" BELOW THE BOTTOM OF PAVEMENT TO THE TOP OF THE TRENCH.
3. APPLY A CONTINUOUS LAYER OF NON-HARDENING PREFORMED BITUMINOUS MASTIC MATERIAL (RUB-R-NEK OR E Z STICK) TO EACH JOINT TO PREVENT INFLOW.
4. WHEN THE FRAME DOES NOT MEET PROPOSED ELEVATION, PRECAST CONCRETE ADJUSTING RINGS SHALL BE USED FOR FINAL ADJUSTMENT. A MAXIMUM OF THREE ADJUSTING RINGS MAY BE USED TO A MAXIMUM HEIGHT OF 12 INCHES. EACH RING AND THE FRAME SHALL BE SET ON A BED OF NON-PREFORMED MASTIC.
6. WITHIN NON-PAVED AREAS, MORTAR SHALL ONLY BE USED TO DRESS UP ADJUSTING RINGS AND OR FRAME ON THE EXTERIOR OF THE STRUCTURE. MORTAR IS NOT PERMITTED ON THE INSIDE OF THE RINGS AND OR FRAME.
7. PLASTIC POLYMER STEPS SHALL NOT BE INSTALLED.
8. DRESS UP INTERIOR JOINTS WITH HYDRAULIC CEMENT.
9. VALVE MUST ALIGN WITH CENTER OF VAULT OPENING.
10. CONES MUST BE CONCENTRIC WITH VALVES 12" AND SMALLER.
11. BUTTERFLY VALVES REQUIRE ECCENTRIC CONES.
12. ALL VALVE VAULTS REQUIRE RUBBER BOOTS WITH STAINLESS STEEL STRAPS WITH THE EXCEPTION OF PRESSURE CONNECTION VALVE VAULTS.

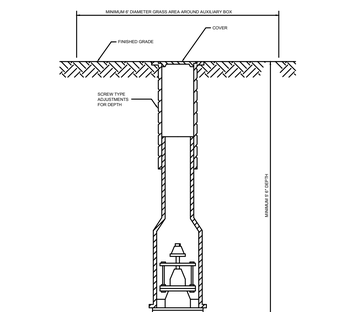
WATERMAIN TRENCH



GENERAL NOTES:

1. DUCTILE IRON CASTING SHALL BE TESTED IN ACCORDANCE WITH FEDERAL SPECIFICATIONS.
2. ALL FRAMES AND COVERS SHALL HAVE A MACHINED HORIZONTAL AND VERTICAL BEARING SURFACES. PICK HOLES IN THE COVER SHALL NOT BE OPEN.
3. THE MANHOLE COVERS SHALL BE STAMPED WITH "WATER".
4. DIMENSIONS FOR CASTINGS ARE COMPARABLE TO EAST JORDAN 1022 OR NEENAH FOUNDRY 1772.
5. WATERPROOF, BOLTDOWN FRAME AND COVER SHALL BE USED IN ANY LOCATION SUBJECT TO INUNDATION. (NEENAH R-1916-C, EAST JORDAN 1022 WT OR APPROVED EQUAL).
6. LIDS SHALL BE "WATERTITE" OR "SELF-SEALING" WITH A FACTORY INSTALLED GASKET.

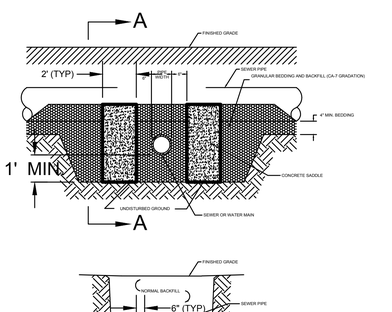
WATER VALVE VAULT FRAME AND LID



GENERAL NOTES:

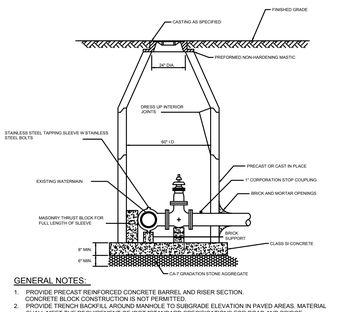
1. ALL VALVES 2-1/2" OR LARGER SHALL BE PLACED IN A VALVE VAULT, UNLESS APPROVED BY DUPAGE COUNTY.
2. VALVES SHALL BE MUELLER A-2360 RESILIENT WEDGE GATE VALVE WITH STAINLESS STEEL TRIM BOLTS OR WATEROUS 2500 RESILIENT WEDGE GATE VALVE WITH STAINLESS STEEL TRIM BOLTS OR APPROVED EQUAL.
3. VALVES THAT REQUIRE RESTRAINT JOINTS, MAY USE FIELD-LOK OR MEGA LUG BRANDS.

WATER SERVICE CONNECTION



FIRE HYDRANT ASSEMBLY

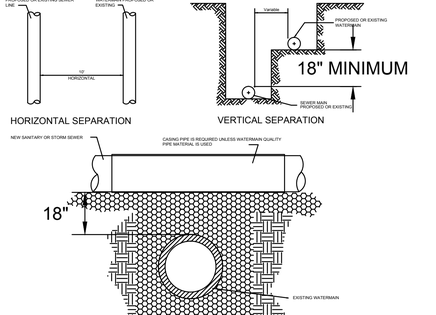
CONCRETE SADDLE SUPPORT



GENERAL NOTES:

1. PROVIDE PRECAST REINFORCED CONCRETE BARREL AND RISER SECTION CONCRETE BLOCK CONSTRUCTION IS NOT PERMITTED.
2. PROVIDE TRENCH BACKFILL AROUND MANHOLE TO SUBGRADE ELEVATION IN PAVED AREAS. MATERIAL SHALL MEET THE REQUIREMENT OF IDOT "STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION" COARSE AGGREGATE CA-7 GRADATION UP TO 12" BELOW THE BOTTOM OF THE PAVEMENT, THEN PLACE CA-6 FROM 12" BELOW THE BOTTOM OF PAVEMENT TO THE TOP OF TRENCH.
3. APPLY A CONTINUOUS LAYER OF NON-HARDENING PREFORMED BITUMINOUS MASTIC MATERIAL (RUB-R-NEK OR E Z STICK) TO EACH JOINT TO PREVENT INFLOW.
4. WHEN THE FRAME DOES NOT MEET PROPOSED ELEVATION, PRECAST CONCRETE ADJUSTING RINGS SHALL BE USED FOR FINAL ADJUSTMENT. A MAXIMUM OF THREE ADJUSTING RINGS MAY BE USED TO A MAXIMUM HEIGHT OF 12 INCHES. THE RING(S) AND FRAME SHALL BE SET ON A BED OF PREFORMED NON-HARDENING MASTIC (RUB-R-NEK OR APPROVED EQUAL).
5. PRECAST ADJUSTING RINGS SHALL BE REINFORCED WITH NO. 3 GUAGE WIRE OR EQUIVALENT.
6. MORTAR SHALL NOT BE USED TO DRESS UP ADJUSTING RINGS AND OR FRAME.
7. PLASTIC POLYMER STEPS SHALL NOT BE INSTALLED, UNLESS APPROVED BY THE DUPAGE COUNTY OR HIS HER DESIGNEE.
8. DRESS UP INTERIOR JOINTS WITH HYDRAULIC CEMENT.
9. VALVE MUST ALIGN WITH CENTER OF VAULT OPENING.
10. CONES MUST BE CONCENTRIC WITH VALVES 12" AND SMALLER.
11. BUTTERFLY VALVES REQUIRE ECCENTRIC CONES.

WATER PRESSURE CONNECTION IN VAULT



GENERAL NOTES:

1. WHEN THE MINIMUM 10 FEET HORIZONTAL SEPARATION CANNOT BE ACHIEVED, AN 18 INCH VERTICAL SEPARATION MAY BE PERMITTED. THE VERTICAL SEPARATION SHALL BE MAINTAINED FOR ALL PORTIONS OF THE WATERMAIN THAT ARE WITHIN 10 HORIZONTAL FEET OF ANY SEWER OR DRAIN.
2. WHEN THE WATERMAIN MUST PASS UNDER A SEWER OR DRAIN, BOTH THE WATERMAIN AND SEWER SHALL BE CONSTRUCTED OF SLIP-ON OR MECHANICAL JOINT DUCTILE IRON PIPE, PRE-STRESSED CONCRETE PIPE, OR PVC PIPE MEETING WATERMAIN STANDARDS. (SEE STANDARD SPECIFICATIONS FOR WATER AND SEWER MAIN CONSTRUCTION IN ILLINOIS).
3. WHEN THE WATERMAIN CROSSES UNDER A SEWER GREATER THAN 24 INCH IN DIAMETER, OR WHEN DIRECTED BY THE ENGINEER, THE SEWER SHALL BE SUPPORTED TO PREVENT SETTLING AND BREAKING OF THE WATER MAIN. (SEE CONCRETE SADDLE SUPPORT DETAIL)

WATER VALVE VAULT

WATER VALVE BOX (B-BOX)

WATER AND SEWER SEPARATION

04–19–19: PER CITY COMMENTS

REVISIONS:
- 09–18–18: REVISD PER CITY COMMENTS
- 11–05–18: REVISD PER FPD COMMENTS
- 01–18–19: REVISD PER CITY COMMENTS

FILE: I:\080–020 Cantera Lot 2 Sub Area C\Engineering\Drawings\Final Engineering

JOB NO: 080–020
FIELD BOOK: N/A
FIELD BOOK: N/A
DRAWN BY: MK
CHECKED BY: KEK
COMPLETED:04/07/19

PREPARED FOR:
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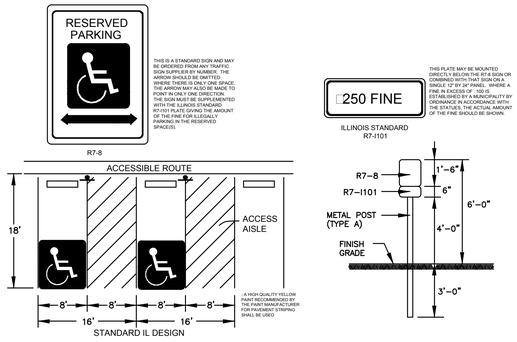
DETAILS

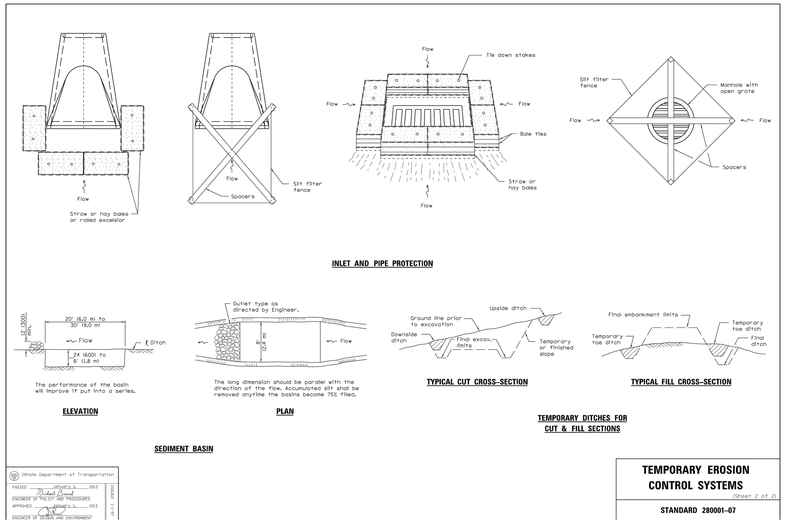
RIVER VIEW WEST
CITY OF WARRENVILLE, ILLINOIS

SHEET NUMBER
37
OF 71

Design Firm License No. 184-001129



HANDICAPPED PARKING DETAIL



INLET AND PIPE PROTECTION

ELEVATION **PLAN** **SEDIMENT BASIN**

TYPICAL CUT CROSS-SECTION **TYPICAL FILL CROSS-SECTION**

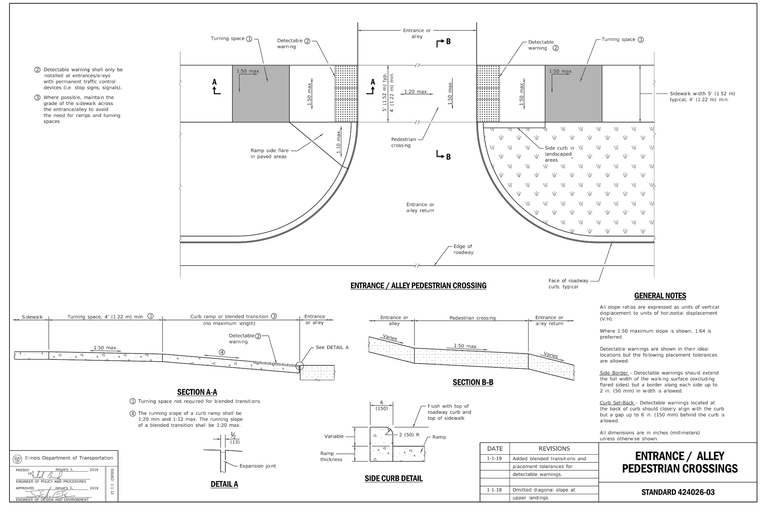
TEMPORARY DITCHES FOR CUT & FILL SECTIONS

Illinois Department of Transportation
PASSED January 1, 2019
ENGINEER OF POLICY AND PROCEDURES
APPROVED January 1, 2019
ENGINEER OF DESIGN AND ENVIRONMENT
BDE 2310 (Sheet 1 of 2)

TEMPORARY EROSION CONTROL SYSTEMS

(Sheet 2 of 2)

STANDARD 280001-07



① Detectable warning shall only be installed at entrances/exits with permanent traffic control devices (i.e. stop signs, signals).

② Where possible, maintain the grade of the sidewalk across the entrance/alley to avoid the need for ramps and turning spaces

ENTRANCE / ALLEY PEDESTRIAN CROSSING

SECTION A-A

① Turning space not required for blended transitions

② The running slope of a curb ramp shall be 1:20 min. and 1:12 max. The running slope of a blended transition shall be 1:20 max.

SECTION B-B

DETAIL A **SIDE CURB DETAIL**

GENERAL NOTES

All slope ratios are expressed as units of vertical displacement to units of horizontal displacement (V:H).

Where 1:50 maximum slope is shown, 1:64 is preferred.

Detectable warnings are shown in their ideal locations but the following placement tolerances are allowed.

Side Border - Detectable warnings should extend the full width of the walking surface (excluding flared sides) but a border along each side up to 2 in. (50 mm) in width is allowed.

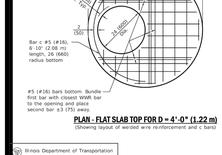
Curb Set-Back - Detectable warnings located at the back of curb should closely align with the curb but a gap up to 6 in. (150 mm) behind the curb is allowed.

All dimensions are in inches (millimeters) unless otherwise shown.

DATE	REVISIONS
1-1-19	Added blended transitions and placement tolerances for detectable warnings.
1-1-18	Omitted diagonal slope at upper landings.

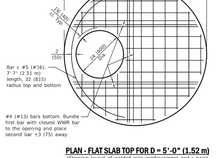
ENTRANCE / ALLEY PEDESTRIAN CROSSINGS

STANDARD 424026-03

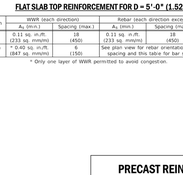


FLAT SLAB TOP JOINT CONFIGURATIONS FOR D = 36 (900) AND D = 4'-0" (1.22 m)

(Shown at access hole)



SECTION THRU FLAT SLAB TOP FOR D = 36 (900) AND D = 4'-0" (1.22 m)



PLAN - FLAT SLAB TOP FOR D = 36 (900)

(Showing layout of reinforcement bars and c bars)

FLAT SLAB TOP JOINT CONFIGURATIONS D = 5'-0" (1.52 m)

(Shown at access hole)

SECTION THRU FLAT SLAB TOP FOR D = 5'-0" (1.52 m)

#4 (#13) bars bottom. Bundle with closest WWR bar to the opening.

PLAN - FLAT SLAB TOP FOR D = 36 (900)

(Showing layout of welded wire reinforcement and c bars)

TABLE

D	T	D_1 (min.)	t
36 (900)	4'-0" (1.2 m)	See applicable Standard 602001	6 (150)
5'-0" (1.5 m)			6 (150)
			8 (200)

GENERAL NOTES

The flat slab top may be used in lieu of the tapered tops shown on Standards 602001, 602016, or 602306 at the option of the Contractor or when field conditions prohibit the use of tapered tops.

Lifting holes shall be located in the sections as per the manufacturer's recommendations.

All dimensions are in inches (millimeters) unless otherwise shown.

DATE	REVISIONS
1-1-19	Expanded / refined reinforcement options.
1-1-18	Revised for compliance with LRFD

PRECAST REINFORCED CONCRETE FLAT SLAB TOP

(Sheet 1 of 2)

STANDARD 602601-06

Illinois Department of Transportation
PASSED January 1, 2019
ENGINEER OF POLICY AND PROCEDURES
APPROVED January 1, 2019
ENGINEER OF DESIGN AND ENVIRONMENT
BDE 2310 (Sheet 1 of 2)

PLAN
ADJACENT TO PCC PAVEMENT OR PCC BASE COURSE

DETAIL (A) EXPANSION JOINT

DEPRESSED CURB ADJACENT TO CURB RAMP ACCESSIBLE TO THE DISABLED

DEPRESSED CURB (TYPICAL)

GENERAL NOTES

The bottom slope of combination curb and gutter constructed adjacent to pcc pavement shall be the same slope as the subbase or 6% when subbase is omitted.

t = Thickness of pavement.

Longitudinal joint tie bars shall be No. 6 (No. 19) at 36 (900) centers in accordance with details for longitudinal construction joint shown on Standard 420001.

A minimum clearance of 2 (50) between the end of the tie bar and the back of the curb shall be maintained.

The dowel bars shown in contraction jointa will only be required for monolithic construction.

See Standard 606301 for details of corner islands.

All dimensions are in inches (millimeters) unless otherwise shown.

BARRIER CURB

TABLE OF DIMENSIONS BARRIER CURB						
TYPE	A	B	C	D	R_1	
B-6.06 ★	6	1	6	1		
(B-15.15)	15	1	9	2	5	(25)
B-6.12	12	1	6	1	1	
(B-15.30)	15	1	9	2	5	(25)
(B-15.45)	15	1	12	2	5	(25)
B-6.24	24	1	6	1	1	
(B-15.60)	15	1	12	2	5	(25)
B-6.36	36	1	6	1	1	
(B-22.60)	22	1	12	2	5	(25)
B-6.48	48	1	6	1	1	
(B-22.60)	22	1	12	2	5	(25)
B-6.60	60	1	6	1	1	
(B-22.60)	22	1	12	2	5	(25)

★ For corner islands only.

MOUNTABLE CURB

TABLE OF DIMENSIONS MOUNTABLE CURB							
TYPE	A	B	C	D	R_1	R_2	
M-2.06	6	2	4	2	3	2	
(M-5.15)	15	2	10	3	10	3	(75)
M-2.12	12	2	8	2	5	3	
(M-5.30)	30	3	20	5	20	5	(75)
(M-5.45)	15	3	10	3	10	3	(75)
(M-10.30)	30	3	20	5	20	5	(75)
M-4.18	18	3	14	3	6	3	NA
(M-10.45)	45	3	30	5	30	5	(75)
(M-10.60)	60	3	40	5	40	5	(75)
M-6.06	6	2	4	2	3	2	NA
(M-15.15)	15	2	10	3	10	3	(50)
M-6.12	12	2	8	2	5	3	NA
(M-15.30)	30	3	20	5	20	5	(50)
M-6.18	18	3	14	3	6	3	NA
(M-15.45)	45	3	30	5	30	5	(50)
M-6.24	24	3	20	5	20	5	(50)
(M-15.60)	60	3	40	5	40	5	(50)

ADJACENT TO PCC BASE COURSE WITH HMA SURFACING

M-2.06 (M-5.15) and M-2.12 (M-5.30)

DATE	REVISIONS
1-1-18	Revised General Note for tie bar spacing to 36 (900) cts.
1-1-15	Added B-6.06 (B-15.15) barrier
	curb and gutter to table
	(corner islands only).

CONCRETE CURB TYPE B AND COMBINATION CONCRETE CURB AND GUTTER

(Sheet 1 of 2)

STANDARD 606001-07

RAMPS IN LANDSCAPED AREA SETBACK ≤ 5'

RAMPS IN PAVED AREA SETBACK ≤ 5'

SECTION A-A

① The running slope of a curb ramp shall be 1:20 min. and 1:12 max. The running slope of a blended transition shall be 1:20 max.

SECTION B-B

DETAIL A **SIDE CURB DETAIL**

DATE	REVISIONS
1-1-19	Removed "15-foot rule", added "Blended transitions" and placement tolerances for detectable warnings.
1-1-18	Omitted diagonal slope at turning spaces and lower landings.

See Sheet 2 for GENERAL NOTES.

PERPENDICULAR CURB RAMPS FOR SIDEWALKS

(Sheet 1 of 2)

STANDARD 424001-11

PLAN - FLAT SLAB TOP FOR D = 4'-0" (1.22 m)

(Showing layout of reinforcement bars and c bars)

PLAN - FLAT SLAB TOP FOR D = 5'-0" (1.52 m)

(Showing layout of reinforcement bars and c bars)

PLAN - FLAT SLAB TOP FOR D = 4'-0" (1.22 m)

(Showing layout of welded wire reinforcement and c bars)

PLAN - FLAT SLAB TOP FOR D = 5'-0" (1.52 m)

(Showing layout of welded wire reinforcement and c bars)

FLAT SLAB TOP REINFORCEMENT FOR D = 36 (900)

Location	WWR (each direction)		Rebar		
	A_s (min.)	Spacing (max.)	A_s (min.)	Spacing (max.)	Bar Size
Bottom Mat	* 0.60 sq. in./ft. (1270 sq. mm/m)	6 (150)	See plan view for rebar orientation and spacing and this table for bar size		#4 (#13)

FLAT SLAB TOP REINFORCEMENT FOR D = 4'-0" (1.22 m)

Location	WWR (each direction)		Rebar		
	A_s (min.)	Spacing (max.)	A_s (min.)	Spacing (max.)	Bar Size
Bottom Mat	* 0.62 sq. in./ft. (1312 sq. mm/m)	6 (150)	See plan view for rebar orientation and spacing and this table for bar size		#5 (#16)

FLAT SLAB TOP REINFORCEMENT FOR D = 5'-0" (1.52 m)

Location	WWR (each direction)		Rebar (each direction except as noted)		
	A_s (min.)	Spacing (max.)	A_s (min.)	Spacing (max.)	Bar Size
Top Mat	0.11 sq. in./ft. (233 sq. mm/m)	18 (450)	0.11 sq. in./ft. (233 sq. mm/m)	18 (450)	#3 or #4 (#10 (#13)
Bottom Mat	* 0.40 sq. in./ft. (847 sq. mm/m)	6 (150)	See plan view for rebar orientation and spacing and this table for bar size		#4 (#13)

* Only one layer of WWR permitted to avoid congestion.

PRECAST REINFORCED CONCRETE FLAT SLAB TOP

(Sheet 2 of 2)

STANDARD 602601-06

Illinois Department of Transportation
PASSED January 1, 2019
ENGINEER OF POLICY AND PROCEDURES
APPROVED January 1, 2019
ENGINEER OF DESIGN AND ENVIRONMENT
BDE 2310 (Sheet 2 of 2)

PLAN

ON DISTURBED SUBGRADE **ON UNDISTURBED SUBGRADE**

ADJACENT TO FLEXIBLE PAVEMENT

DEPRESSED CURB **BARRIER CURB**

ADJACENT TO FLEXIBLE PAVEMENT

DEPRESSED CURB **BARRIER CURB**

ADJACENT TO PCC PAVEMENT OR PCC BASE COURSE

CONCRETE CURB TYPE B

CONCRETE CURB TYPE B AND COMBINATION CONCRETE CURB AND GUTTER

(Sheet 2 of 2)

STANDARD 606001-07

Illinois Department of Transportation
PASSED January 1, 2019
ENGINEER OF POLICY AND PROCEDURES
APPROVED January 1, 2019
ENGINEER OF DESIGN AND ENVIRONMENT
BDE 2310 (Sheet 2 of 2)

RAMP IN LANDSCAPED AREA SETBACK > 5'

RAMP IN PAVED AREA SETBACK > 5'

SECTION C-C

① This turning space not required for blended transitions.

② The running slope of a curb ramp shall be 1:20 min. and 1:12 max. The running slope of a blended transition shall be 1:20 max.

GENERAL NOTES

All slope ratios are expressed as units of vertical displacement to units of horizontal displacement (V:H).

Where the turning space is constrained on a side opposite a ramp, the minimum length of the turning space in the direction of the ramp run shall be 5' (1.52 m).

Where 1:50 maximum slope is shown, 1:64 is preferred

Detectable warnings are shown in their ideal locations but the following placement tolerances are allowed.

Side Border - Detectable warnings should extend the full width of the walking surface (excluding flared sides) but a border along each side up to 2 in. (50 mm) in width is allowed.

Curb Set-Back - Detectable warnings located at the back of curb should closely align with the curb but a gap up to 6 in. (150 mm) behind the curb is allowed.

See Standard 606001 for details of depressed curb adjacent to curb ramp

All dimensions are in inches (millimeters) unless otherwise shown.

PERPENDICULAR CURB RAMPS FOR SIDEWALKS

(Sheet 2 of 2)

STANDARD 424001-11

04-19-19: PER CITY COMMENTS

REVISIONS:
09-18-18: REVISD PER CITY COMMENTS
11-05-18: REVISD PER FPD COMMENTS
01-18-19: REVISD PER CITY COMMENTS

JOB NO: 080-020
FIELD BOOK: N/A
FIELD BOOK: N/A
DRAWN BY: MK
CHECKED BY: KEK
COMPLETED:04/07/19

FILE: I:\080-020 Cantera Lot 2 Sub Area 4\Engineering\Drawings\Final Engineering

PREPARED FOR:
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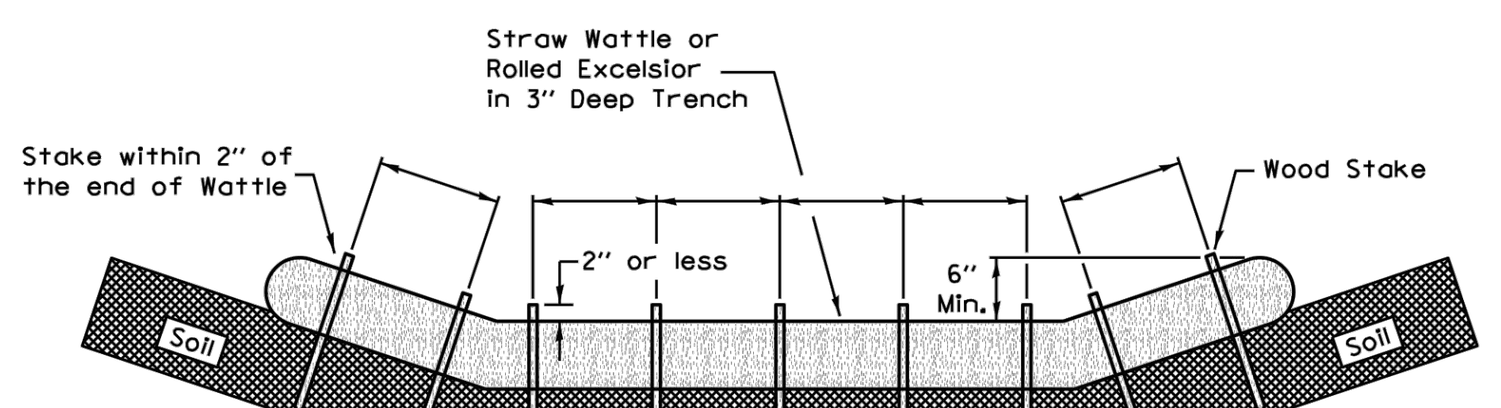
DETAILS
RIVER VIEW WEST
CITY OF WARRENVILLE, ILLINOIS

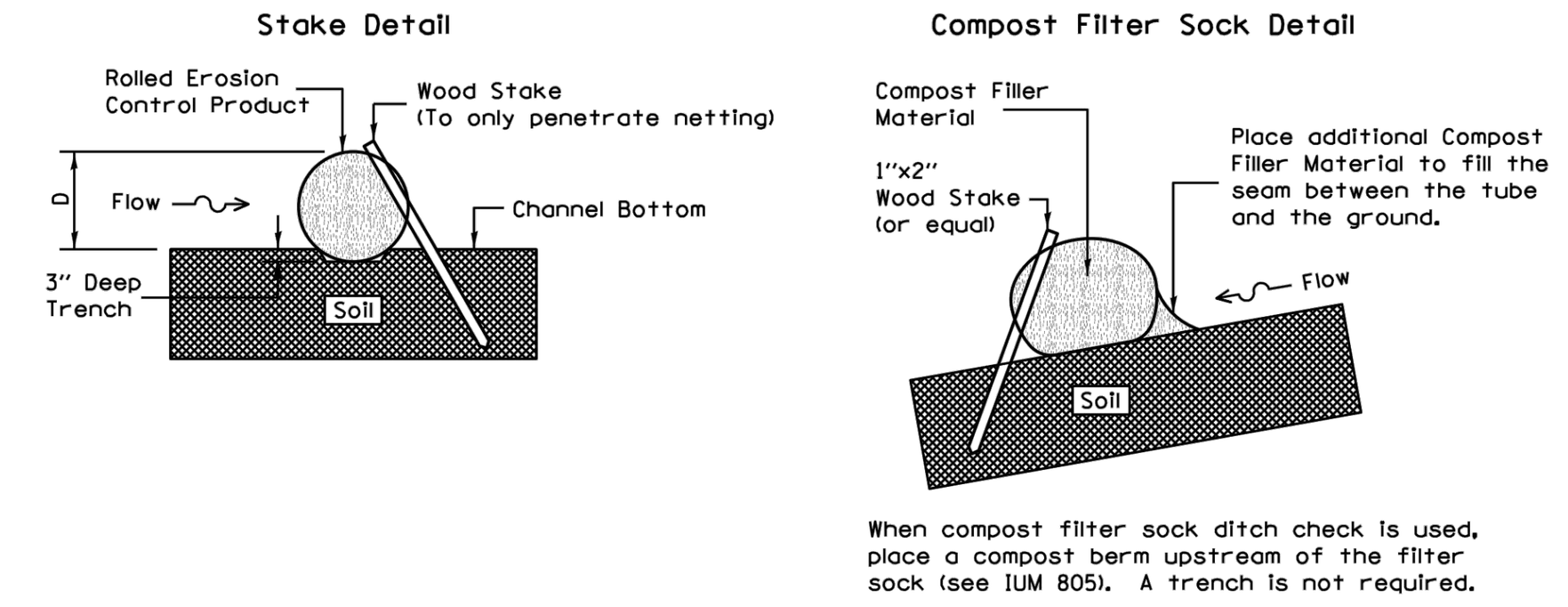
Design Firm License No. 184-001129

ROLLED EROSION CONTROL PRODUCTS



Notes:

1. Overlap minimum is the diameter of the roll.
2. 4' spacing for wattles.
3. 2' spacing for rolled excelsior.
4. Or space according to manufacturer's specifications.



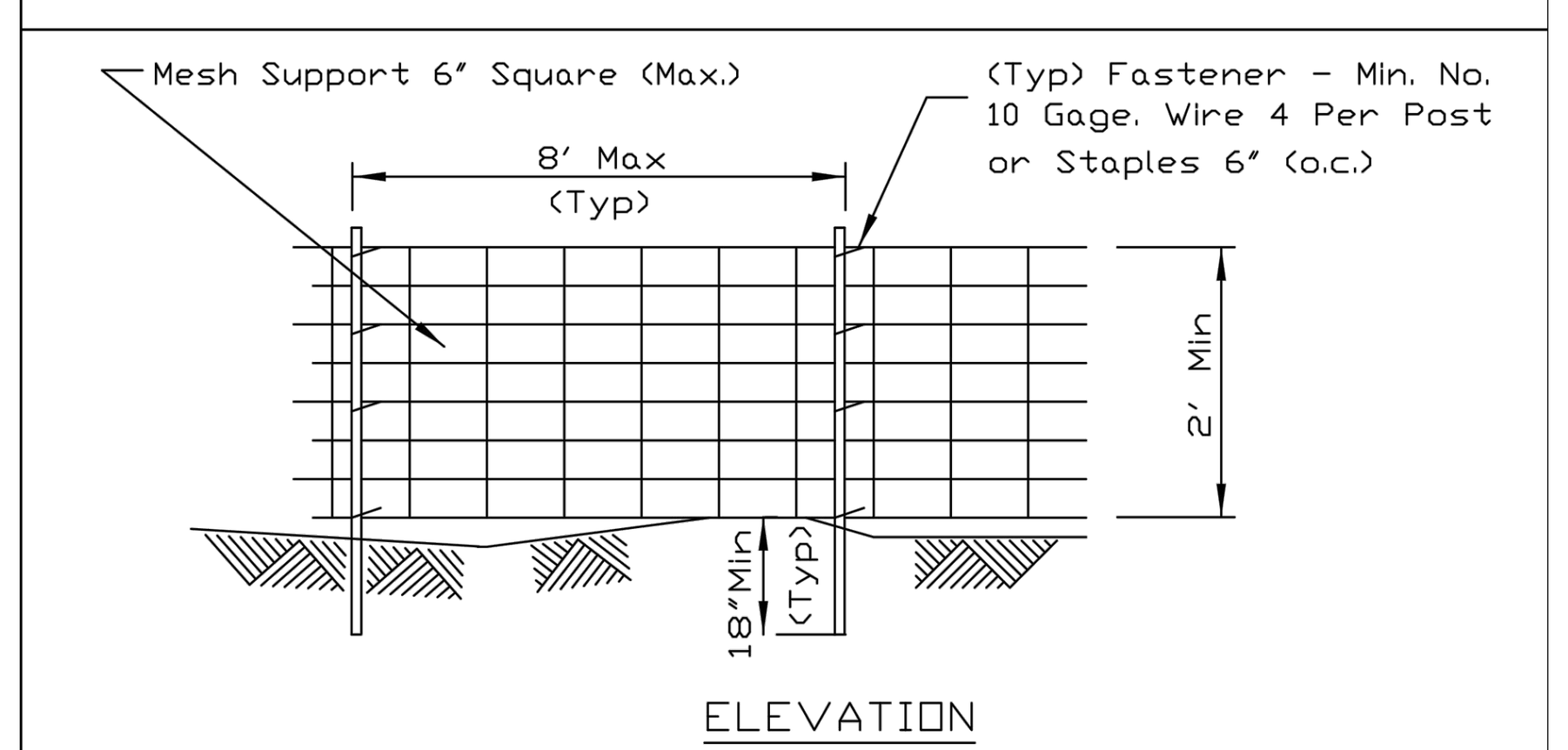
When compost filter sock ditch check is used, place a compost berm upstream of the filter sock (see IUM 805). A trench is not required.

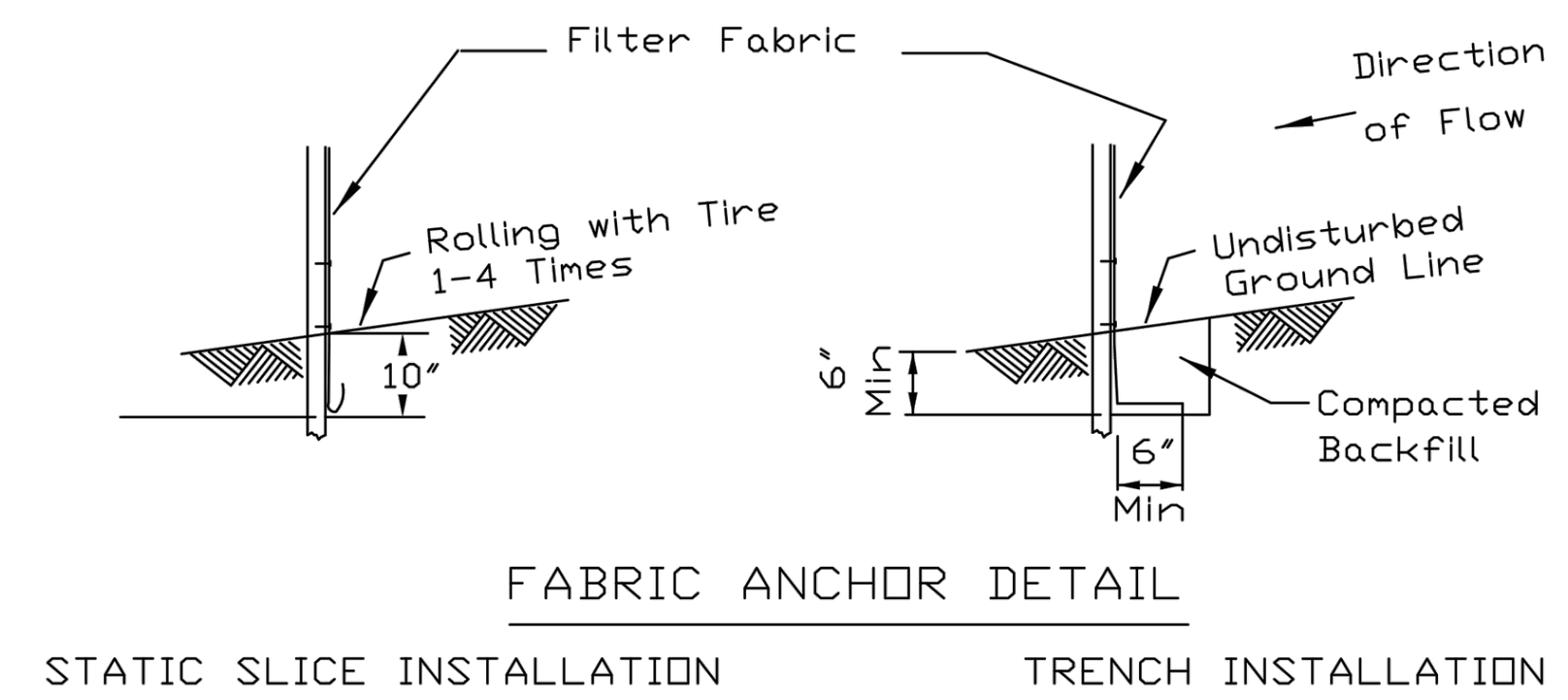
Notes:

1. Drawings are not to scale.
2. Ends of wattles or rolled excelsior shall be turned at least 6" upslope.
3. Recommended stakes are 1 1/8" wide x 1 1/8" thick x 30" long
4. Stakes shall not extend above the straw wattle more than 2".
5. Spacing: The toe of the upstream ditch check shall create a horizontal line with the top of the downstream ditch check.
6. When compost filter sock ditch check is used, place a compost berm upstream of the filter sock (see IUM 805). A trench is not required.

REFERENCE		STANDARD DWG. NO.
Project ____		IUM-514
Designed ____ Date ____		SHEET 1 OF 1
Checked ____ Date ____		DATE 8-19-11
Approved ____ Date ____		

SILT FENCE WITH WIRE SUPPORT PLAN

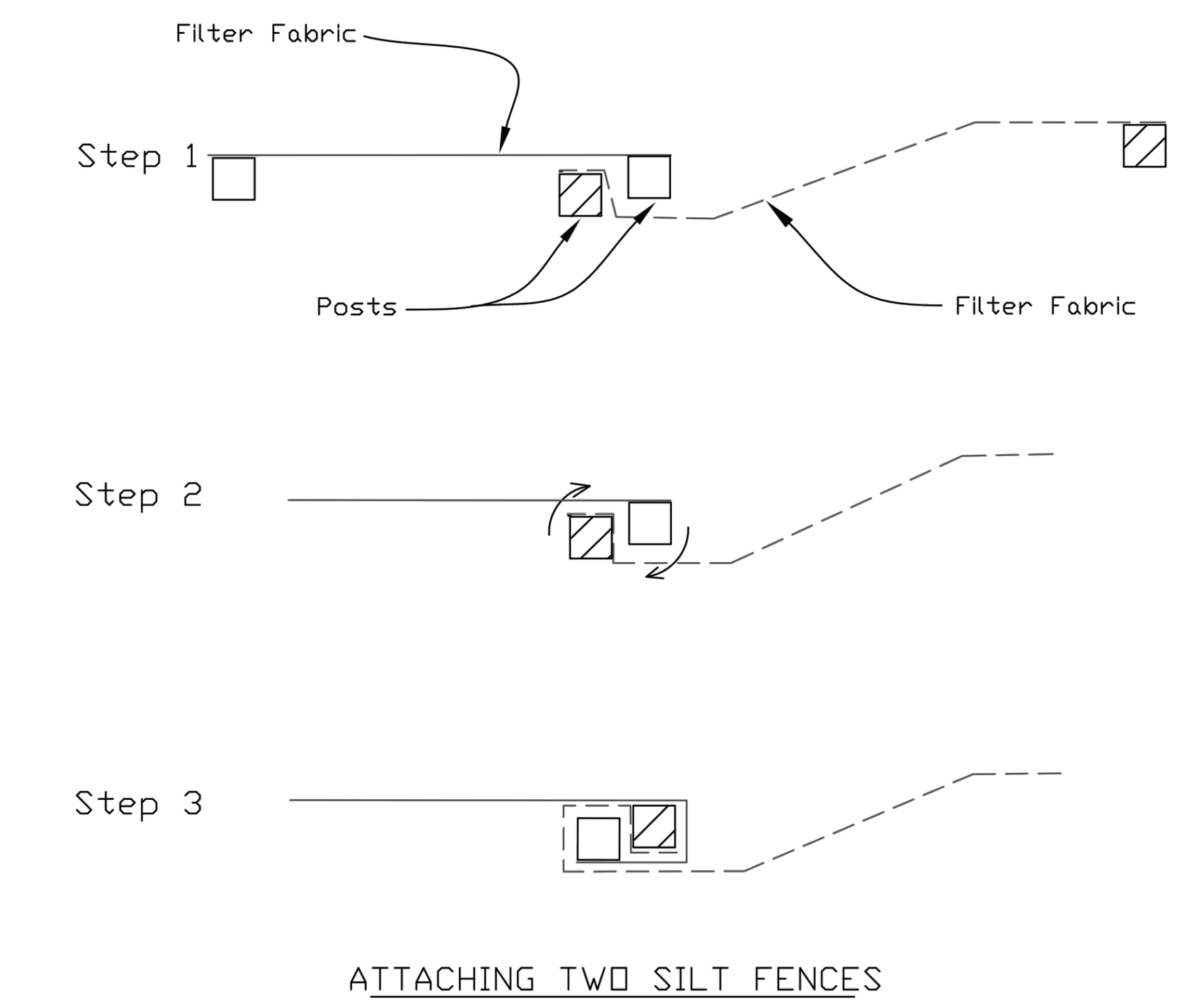




NOTES:
1. Silt Fence shall be installed prior to any grading work in the area to be protected. They shall be maintained throughout the construction period and removed in conjunction with the final grading and site stabilization. Silt fence shall be placed on the flattest area available.
2. Filter fabric shall meet the requirements of material specification 592 Geotextile Table 1 or 2, Class I with equivalent opening size of at least 30 for nonwoven and 40 for woven.
3. Fence posts shall be either standard steel post or wood post with a minimum cross-sectional area of 3.0 sq. in.

REFERENCE		STANDARD DWG. NO.
Project ____		IUM-620A(W)
Designed ____ Date ____		SHEET 1 OF 2
Checked ____ Date ____		DATE 3-16-2012
Approved ____ Date ____		

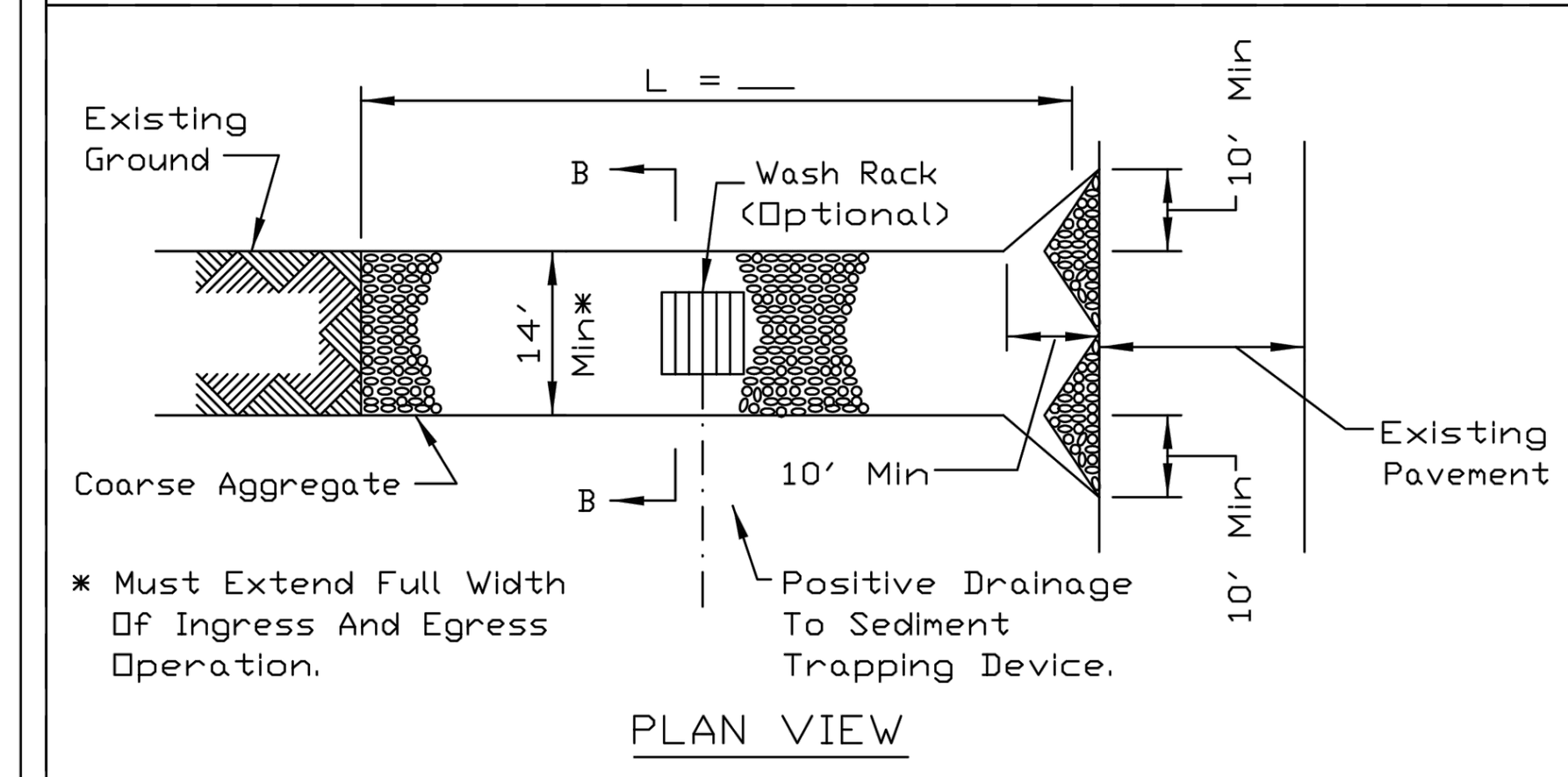
SILT FENCE - SPLICING TWO FENCES

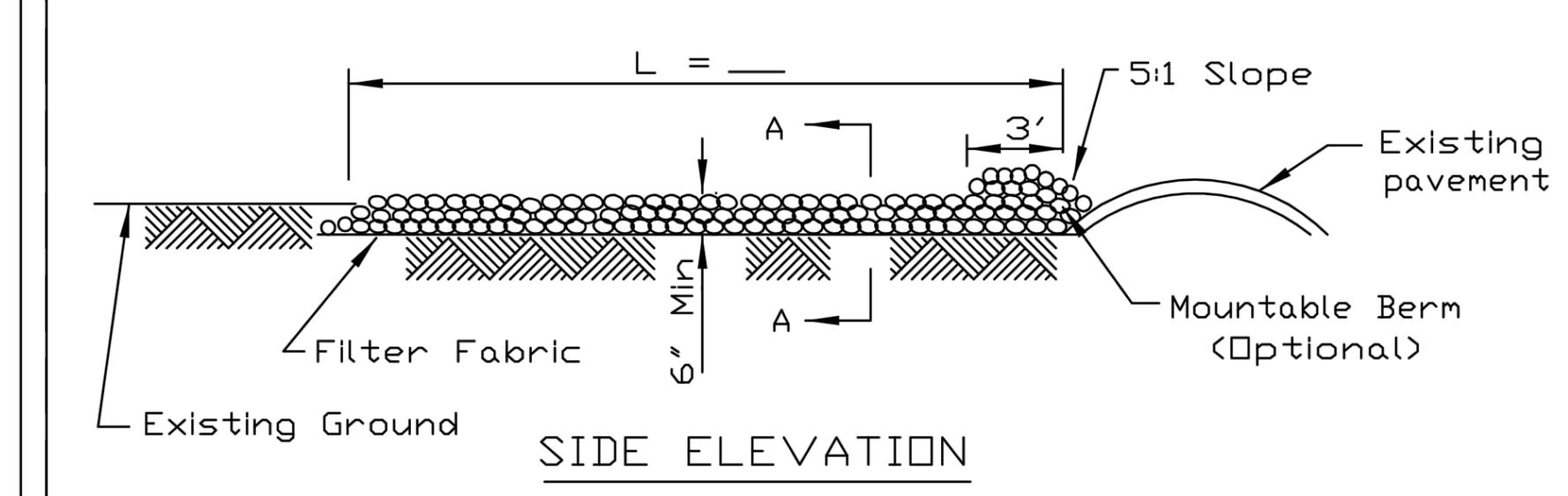


1. Place the end post of the second fence inside the end post of the first fence.
2. Rotate both posts at least 180 degrees in a clockwise direction to create a tight seal with the fabric material.
3. Cut the fabric near the bottom of the stakes to accommodate the 6" flap.
4. Drive both posts a minimum of 18 inches into the ground and bury the flap.
5. Compact backfill (particularly at splices) completely to prevent stormwater piping.

REFERENCE		STANDARD DWG. NO.
Project ____		IUM-620B(W)
Designed ____ Date ____		SHEET 1 OF 1
Checked ____ Date ____		DATE 3-16-2012
Approved ____ Date ____		

STABILIZED CONSTRUCTION ENTRANCE PLAN

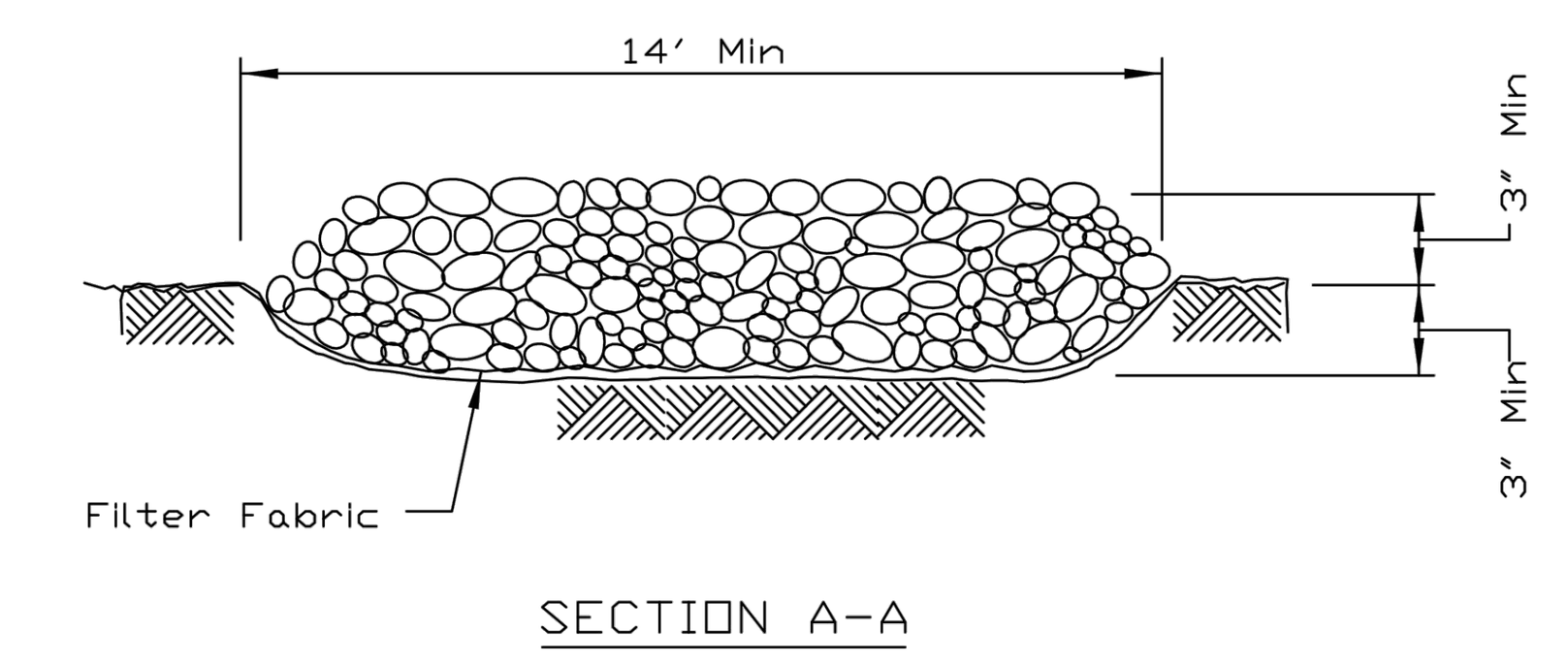


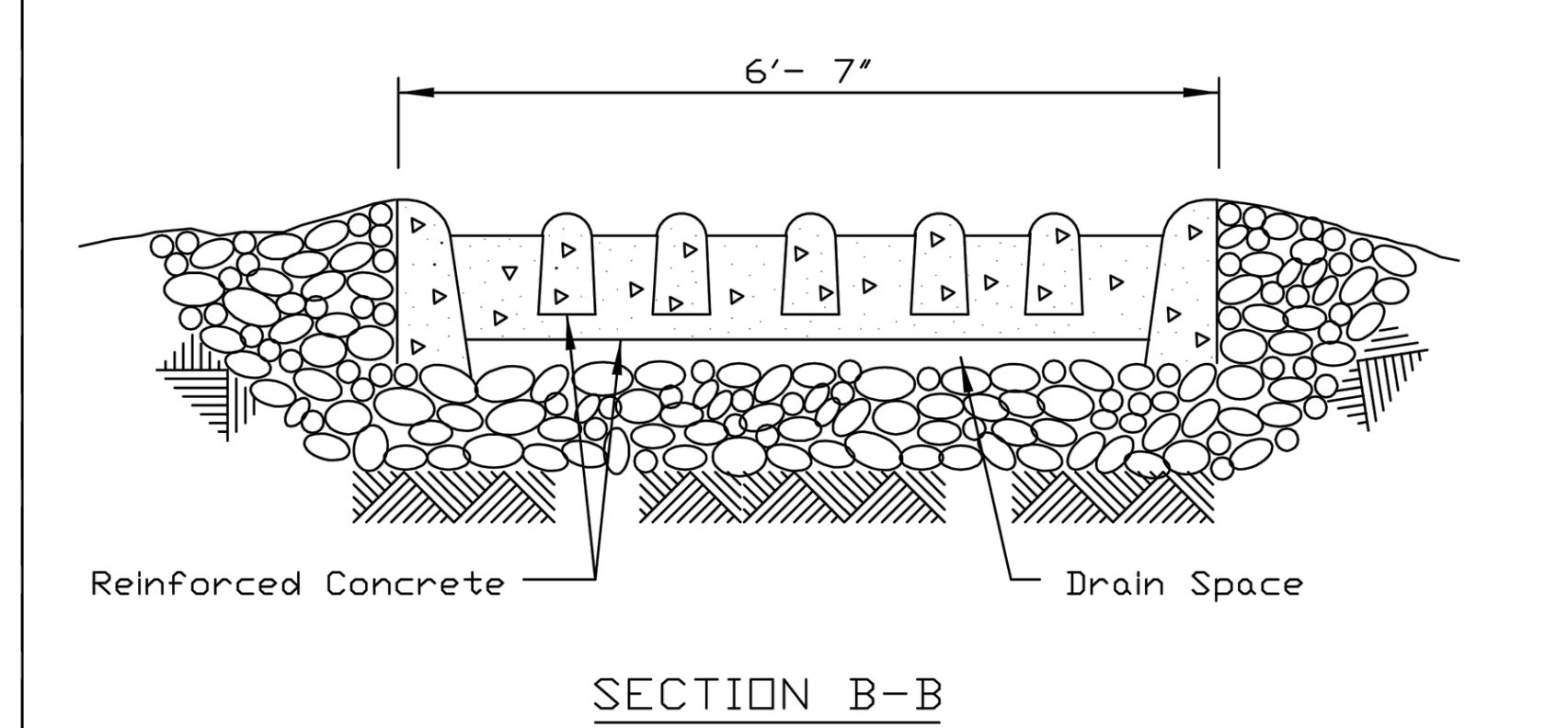


NOTES:
1. Filter fabric shall meet the requirements of material specification 592 GEOTEXTILE, Table I or 2, Class I, II or IV and shall be placed over the cleared area prior to the placing of rock.
2. Rock or reclaimed concrete shall meet one of the following IDOT coarse aggregate gradation, CA-1, CA-2, CA-3 or CA-4 and be placed according to construction specification 25 ROCKFILL using placement Method 1 and Class III compaction.
3. Any drainage facilities required because of washing shall be constructed according to manufacturers specifications.
4. If wash racks are used they shall be installed according to the manufacturer's specifications.

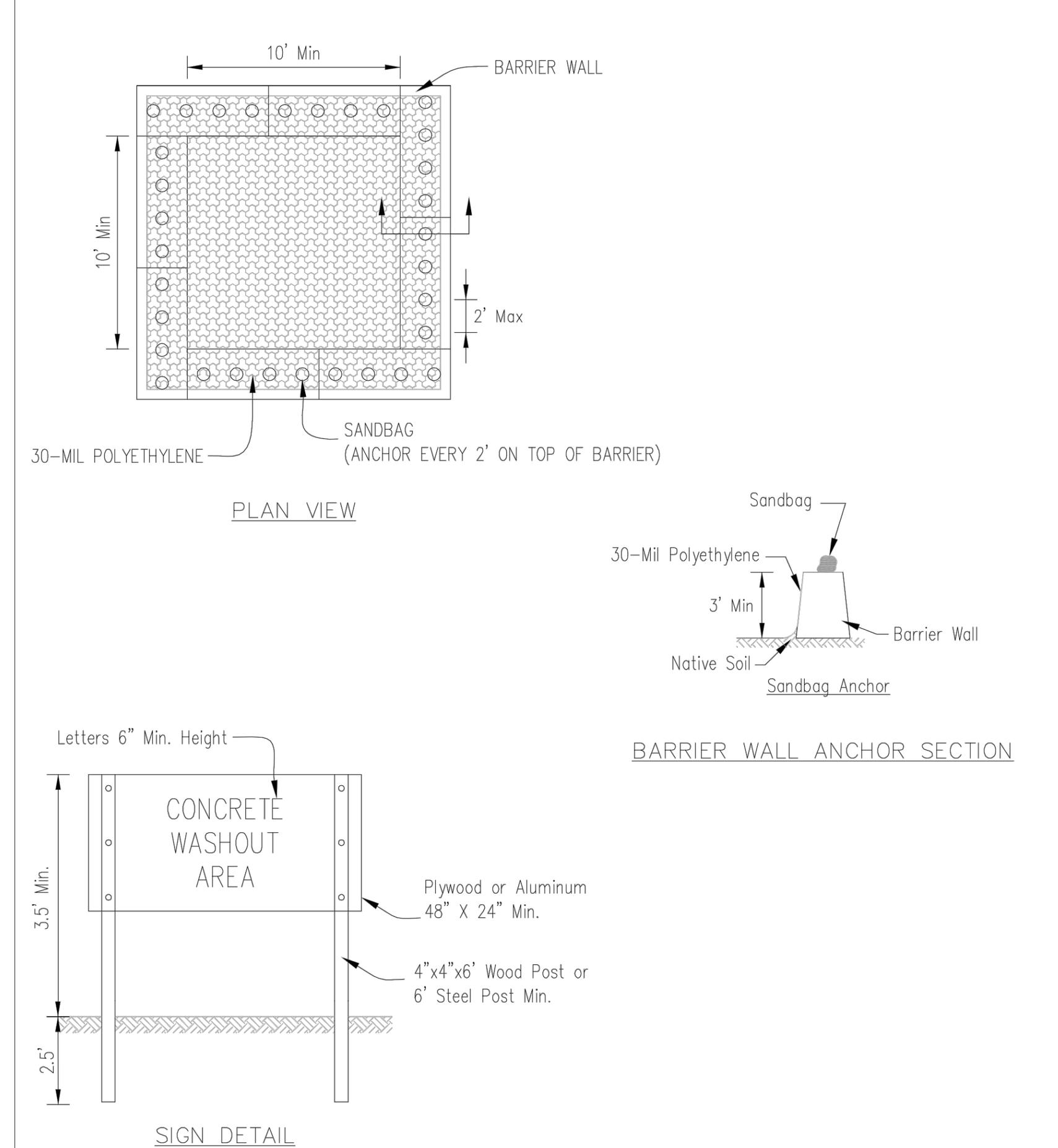
REFERENCE	NRCS Natural Resources Conservation Service	STANDARD DWG. NO.
Project ____		IL-630
Designed ____ Date ____		SHEET 1 OF 2
Checked ____ Date ____		DATE 8-18-94
Approved ____ Date ____		

STABILIZED CONSTRUCTION ENTRANCE PLAN





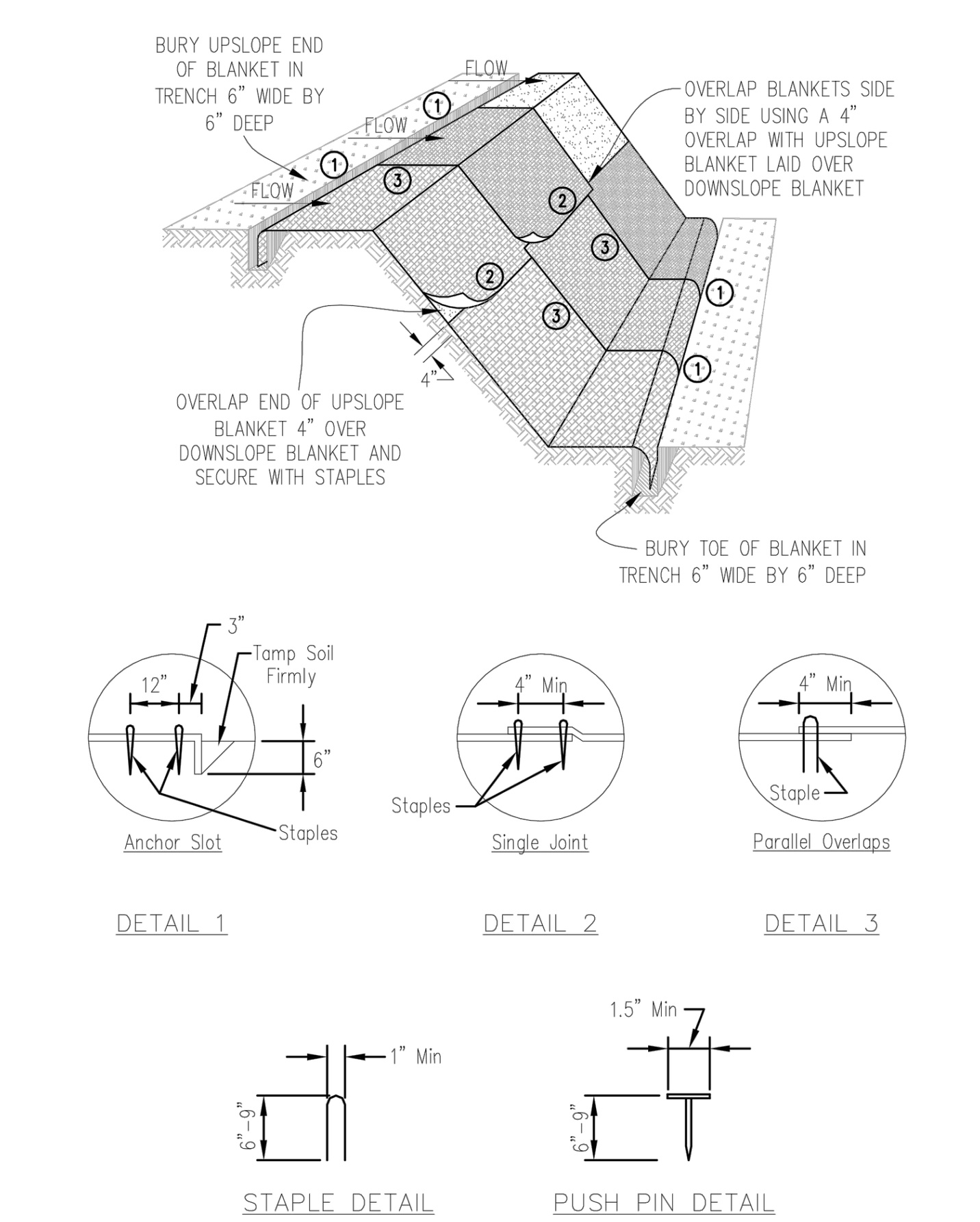
REFERENCE	NRCS Natural Resources Conservation Service	STANDARD DWG. NO.
Project ____		IL-630
Designed ____ Date ____		SHEET 2 OF 2
Checked ____ Date ____		DATE 8-18-94
Approved ____ Date ____		



NOTES:

1. Maintaining temporary concrete washout facilities shall include removing and disposing of hardend concrete and/or slurry and returning the faciliities to a functional condition.
2. Facility shall be cleaned or reconstructed in a new area once washout becomes two-thirds full.

Sheet 3 of 3 | Drawing No. | File No. IUM-654BW | TEMPORARY CONCRETE WASHOUT FACILITY – BARRIER WALL | Designed ____ | Drawn B. JOHNSON 6/08 | Checked ____ | Approved ____

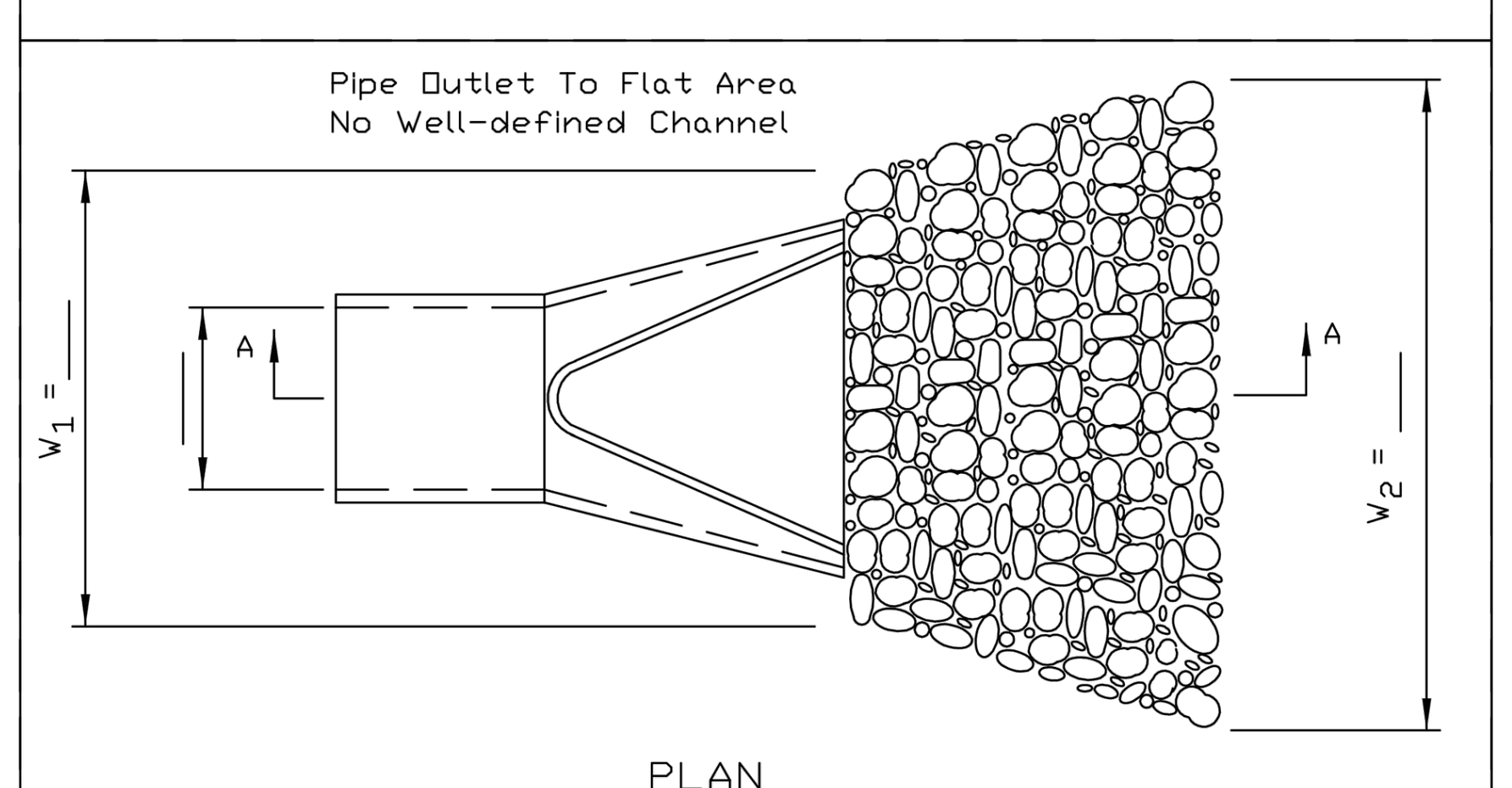


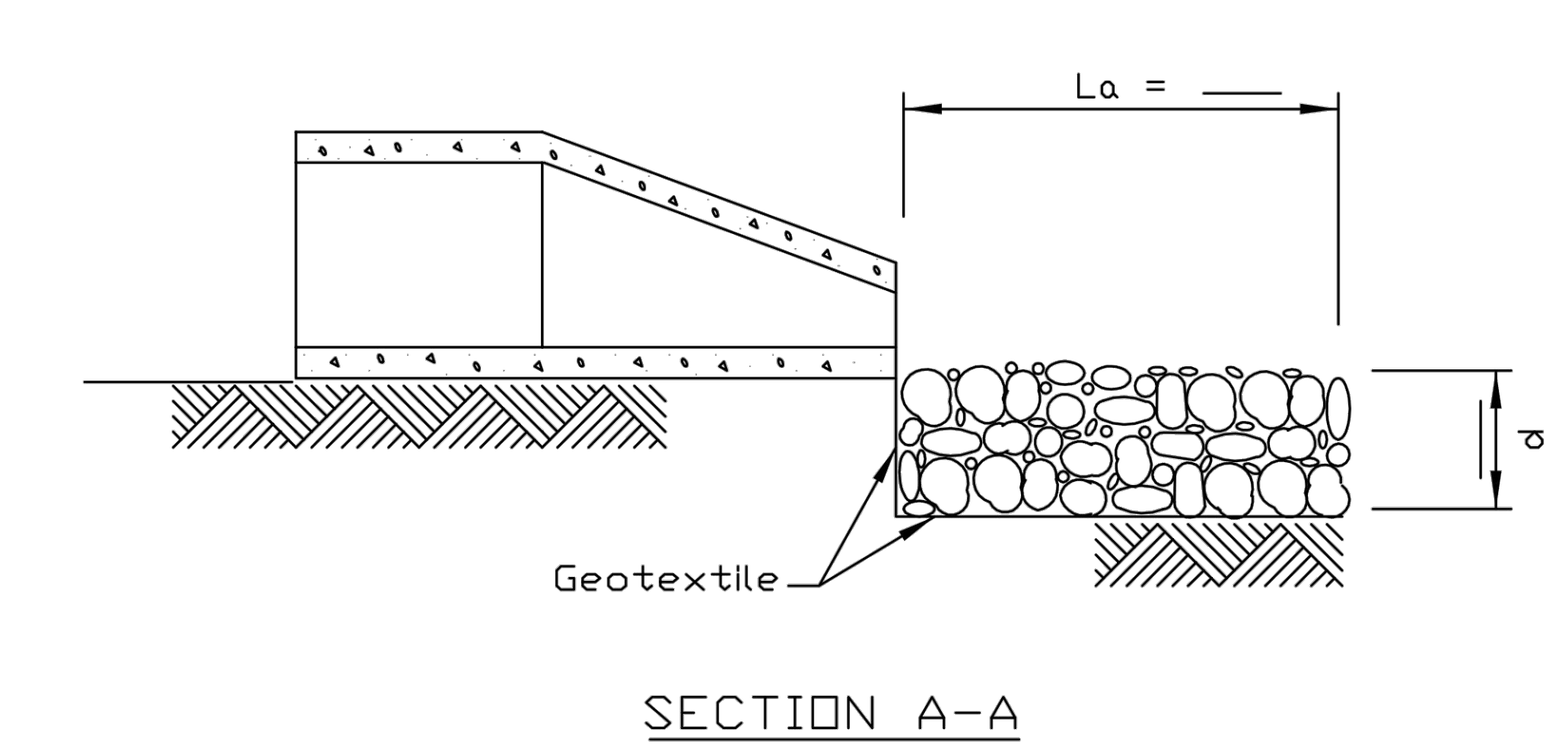
NOTES:

1. Staples shall be placed in a diamond pattern at 2 per s.y. for stiched blankets. Non-stiched shall use 4 staples per s.y. of material. This equates to 200 staples with stiched blanket and 400 stapels with non-stiched blanket per 100 s.y. of material.
2. Staple or push pin lengths shall be selected based on soil type and conditions. (minimum staple length is 6")
3. Erosion control material shall be placed in contact with the soil over a prepared seedbed.
4. All anchor slots shall be stapled at approximately 12" intervals.

Sheet 1 of 1 | Drawing No. | File No. IUM-530 | EROSION CONTROL BLANKET INSTALLATION DETAILS | Designed ____ | Drawn B. JOHNSON 11/08 | Checked ____ | Approved ____

PIPE OUTLET TO FLAT AREA



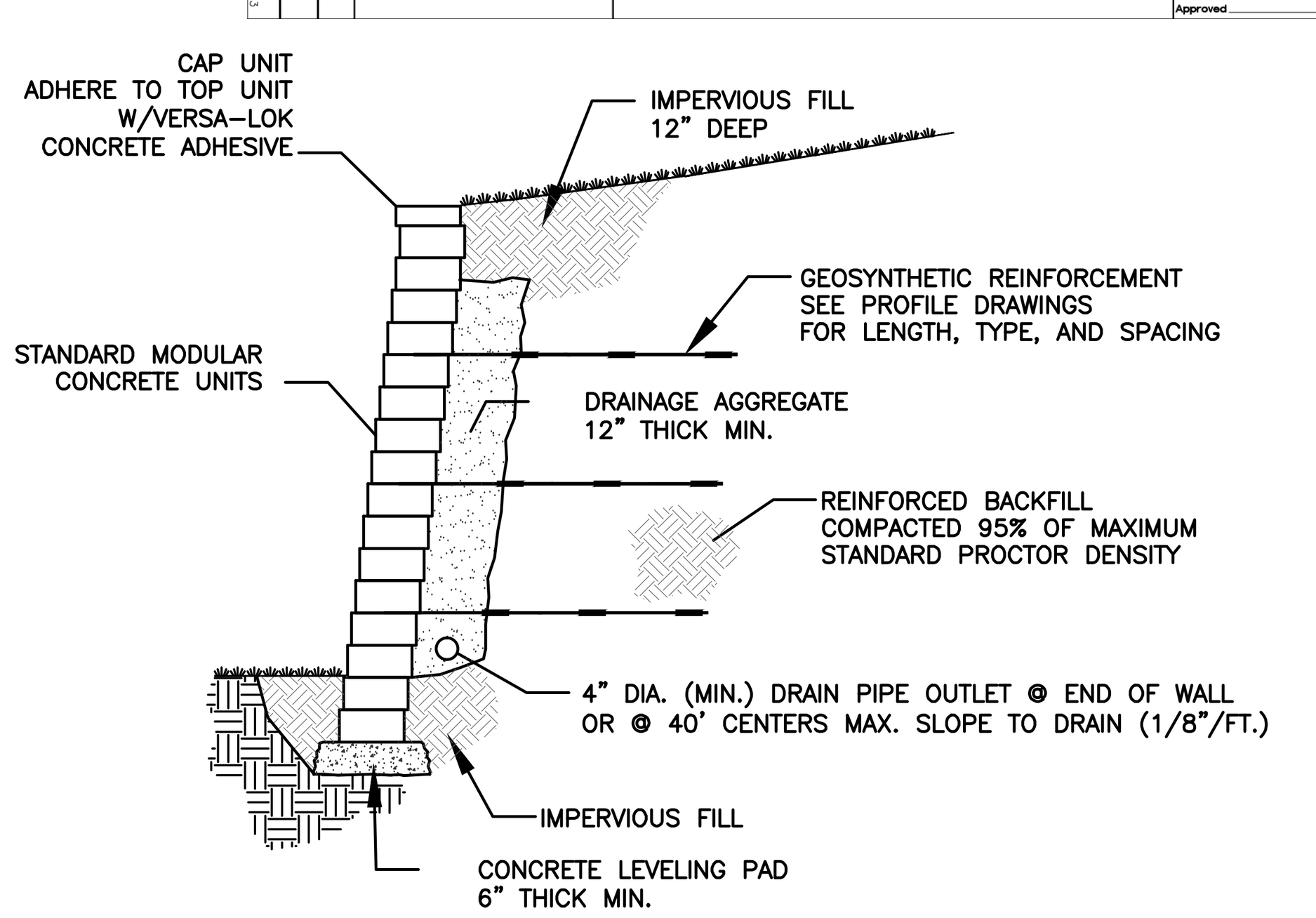


NOTES:
1. The filter fabric shall meet the requirements in material specifications 592 GEOTEXTILE Table 1 or 2, class I, II or III.
2. The rock riprap shall shall meet the IDOT requirements for the following gradation: RR 4, Quality A.
3. The riprap shall be placed according to construction specification 61 LOOSE ROCK RIPRAP. The rock may be equipment placed.

REFERENCE	NRCS Natural Resources Conservation Service	STANDARD DWG. NO.
Project ____		IL-610
Designed ____ Date ____		SHEET 1 OF 1
Checked ____ Date ____		DATE 9-15-93
Approved ____ Date ____		

RIPRAP OUTLET DIMENSIONS

STRUCTURE #	PIPE ø	LENGTH La (FT)	WIDTH W1 (FT)	WIDTH W2 (FT)	DEPTH d (FT)
13	24	13	6	15	3.4
24	24	13	6	15	3.4
43	30	16	8	19	3.4
45	12	6	3	7	3.4
46	18	10	5	12	3.4
49	18	10	5	12	3.4
52	24	13	6	15	3.4
55	15	8	4	10	3.4
56	12	6	3	7	3.4
60	12	6	3	7	3.4
65	36	20	9	23	3.4
95	36	20	9	23	3.4
105	36	20	9	23	3.4
108	15	8	4	10	3.4
111	15	8	4	10	3.4
114	15	8	4	10	3.4
117	24	13	6	15	3.4
118	12	6	3	7	3.4
121	15	8	4	10	3.4
122	12	6	3	7	3.4
126	24	13	6	15	3.4
127	12	6	3	7	3.4
131	24	13	6	15	3.4
132	12	6	3	7	3.4
136	24	13	6	15	3.4
141	15	8	4	10	3.4
145	15	8	4	10	3.4
146	18	10	5	12	3.4
147	12	6	3	7	3.4
148	12	6	3	7	3.4
149	12	6	3	7	3.4
34A	18	10	5	12	3.4



TYPICAL SECTION-REINFORCED RETAINING WALL
MODULAR CONCRETE UNIT
SCALE: NONE

ESTIMATED CONSTRUCTION SCHEDULE:

INSTALL E&S CONTROL ITEMS	08/18
CLEARING AND TOPSOIL STRIPPING	08/18
MASS EARTHWORK	08/18
UNDERGROUND IMPROVEMENTS	09/18
BUILDING FOUNDATION	09/18
PAVEMENT & CURBS	04/19
BUILDING CONTRUCTION	04/19
FINAL GRADING	05/19
BMP/BIOSWALE CONSTRUCTION	06/19
FINAL LANDSCAPING	07/19
REMOVE TEMP. E&S CONTROL ITEMS	08/19

NOTE:
THESE DATES AND ACTIVITIES ASSUME ALL IMPROVEMENTS WILL BE COMPLETED JOINTLY. IF THE PROPOSED DEVELOPMENT IS SPLIT INTO SEPARATE PHASES, THIS SCHEDULE SHALL BE USED FOR EACH PHASE.

MAINTENANCE NOTES:

1. SEE THE GENERAL NOTES AND DETAILS SHEETS IN THESE PLANS FOR ADDITIONAL EROSION AND SEDIMENT CONTROL NOTES AND DETAILS.
2. RESPONSIBLE PARTIES: THE CONTRACTOR SHALL BE RESPONSIBLE TO PROVIDE QUALIFIED PERSONELL FOR ALL INSPECTION, MAINTENANCE AND REPAIR OF TEMPORARY AND PERMANENT EROSION AND SEDIMENT CONTROL MEASURES DURING CONSTRUCTION. THE OWNER SHALL BE RESPONSIBLE FOR ALL INSPECTION, MAINTENANCE AND REPAIR OF PERMANENT EROSION CONTROL MEASURES AFTER CONSTRUCTION. QUALIFIED PERSONNEL MEANS A PERSON KNOWLEDGEABLE IN THE PRINCIPLES AND PRACTICES OF EROSION AND SEDIMENT CONTROLS MEASURES, SUCH AS A LICENSED PROFESSIONAL ENGINEER (P.E.), A CERTIFIED PROFESSIONAL IN EROSION AND SEDIMENT CONTROL (CPESC), A CERTIFIED EROSION SEDIMENT AND STORM WATER INSPECTOR (CESSWI) OR OTHER KNOWLEDGEABLE PERSON WHO POSSESSES THE SKILLS TO ASSESS CONDITIONS AT THE CONSTRUCTION SITE THAT COULD IMPACT STORM WATER QUALITY AND TO ASSESS THE EFFECTIVENESS OF ANY SEDIMENT AND EROSION CONTROL MEASURES SELECTED TO CONTROL THE QUALITY OF STORM WATER DISCHARGES FROM THE CONSTRUCTION ACTIVITIES.
3. THE FOLLOWING IS A DESCRIPTION OF PROCEDURES THAT SHOULD BE USED TO MAINTAIN, IN GOOD AND EFFECTIVE OPERATION CONDITIONS, VEGETATION, EROSION AND SEDIMENT CONTROL MEASURES AND OTHER PROTECTIVE MEASURES IDENTIFIED IN THIS PLAN AND THE STANDARD SPECIFICATIONS. ALL EROSION AND SEDIMENT CONTROL MEASURES MUST BE MAINTAINED AND IMMEDIATELY REPLACED AS NEEDED AND AS DIRECTED BY THE ENGINEER. THE CONTRACTOR SHALL INSPECT AND COMPLETE MAINTENANCE OF ALL ITEMS A MINIMUM OF EVERY 7 DAYS AND WITHIN 24 HOURS OF A 0.5-INCH RAINFALL. ALL TEMPORARY EROSION AND SEDIMENT CONTROL ITEMS MUST BE REMOVED WITHIN 30 DAYS AFTER FINAL STABILIZATION IS COMPLETE.
4. STABILIZED CONSTRUCTION ENTRANCE: THE ENTRANCES SHOULD BE MAINTAINED TO PREVENT TRACKING OF SEDIMENT ONTO PUBLIC STREETS. MAINTENANCE INCLUDES TOP DRESSING WITH ADDITIONAL STONE AND REMOVING TOP LAYERS OF STONE AND SEDIMENT. THE SEDIMENT RUN-OFF INTO THE PUBLIC RIGHT-OF-WAY SHOULD BE REMOVED IMMEDIATELY.
5. CONCRETE WASHOUT AREA: EXISTING AREAS SHOULD BE CLEANED OUT, OR NEW FACILITIES SHOULD BE CONSTRUCTED AND OPERATIONAL ONCE THE EXISTING WASHOUT IS 75% FULL. WASHOUT SHOULD BE INSPECTED FREQUENTLY TO ENSURE THAT PLASTIC LININGS ARE INTACT AND SIDEWALLS HAVE NOT BEEN DAMAGED BY CONSTRUCTION ACTIVITIES. WHEN THE WASHOUT AREA IS ADJACENT TO A PAVED ROAD, THE PAVED ROAD SHOULD BE INSPECTED FOR ACCUMULATED CONCRETE WASTE. ANY ACCUMULATED CONCRETE WASTE ON THE ROAD, CURB OR GUTTER SHOULD BE REMOVED AND PROPERLY DISPOSED.
6. SILT FENCE: SILT FENCES SHOULD BE INSPECTED REGULARLY FOR UNDERCUTTING, WHERE THE FENCE MEETS THE GROUND, OVERTOPPING, AND TEARS ALONG THE LENGTH OF THE FENCE. DEFICIENCIES SHOULD BE REPAIRED IMMEDIATELY. REMOVE ACCUMULATED SEDIMENTS FROM THE FENCE BASE WHEN THE SEDIMENT REACHES 50% OF THE FENCE HEIGHT. DURING FINAL STABILIZATION, PROPERLY DISPOSE OF ANY SEDIMENT THAT HAS ACCUMULATED ON THE SILT FENCE. INSTANCES WHEN AREAS OF SILT FENCE CONTINUALLY FAIL, REPLACE SILT FENCE WITH ANOTHER BMP AS SEEN FIT.
7. INLET FILTERS: INLET FILTERS SHOULD BE INSPECTED FOR PROPER FILTERING, IF FILTER BAGS ARE USED, REMOVE SEDIMENT FROM THE FILTER BAGS WHEN 50% OF THE STORAGE VOLUME HAS BEEN FILLED, UNLESS OTHERWISE INSTRUCTED BY THE MANUFACTURER. REMOVE TRASH AND DEBRIS DURING INSPECTIONS. ACCUMULATED MATERIAL IN THE FILTERS SHOULD BE DISPOSED PROPERLY. DO NOT PUNCTURE HOLES IN FILTERS IF PONDING OCCURS.
8. SEDIMENT BASIN/TRAP: THE BOTTOM OF THE PROPOSED DETENTION PONDS SHALL BE USED AS A SEDIMENT BASIN DURING CONSTRUCTION. SEDIMENT SHALL BE REMOVED WHEN BASIN IS 75% FULL. ALL PERFORATED RISERS SHALL BE PERIODICALLY INSPECTED AND CLEANED IF CLOGGED. IMMEDIATELY PRIOR TO END OF CONSTRUCTION, THE BOTTOMS OF PROPOSED DETENTION PONDS SHALL BE EXCAVATED TO THE GRADES AS SHOWN ON THE PLANS.
9. OUTLET PIPE AND RESTRICTOR STRUCTURE: ALL OUTLET PIPES AND RESTRICTOR STRUCTURES SHALL BE CLEANED IF CLOGGED OR PARTIALLY BLOCKED.
10. DEBRIS MANAGEMENT: ALL TRASH, BRUSH, GRASS, CLIPPING DEBRIS ETC. SHOULD BE REMOVED AT LEAST EVERY TWO WEEKS FROM THE EXISTING PROJECT STARTING DATE THROUGHOUT AND DURING THE WHOLE OF THE MAINTENANCE PERIOD. THIS INCLUDES ALL AREAS WITHIN THE PROJECT LIMIT. ALL CONSTRUCTION DEBRIS AND MACHINERY SHALL BE REMOVED FROM THE SITE PRIOR TO FINAL ACCEPTANCE AND PROJECT CLOSE OUT

INSPECTIONS NOTES:

1. THE OWNER SHALL DESIGNATE A QUALIFIED PERSON TO BE RESPONSIBLE FOR SEDIMENT AND EROSION CONTROL OBSERVATION REPORTING. THIS QUALIFIED PERSON SHALL MEET THE REQUIREMENTS NOTED IN THE ILR10 PERMIT CONDITIONS AND/OR THE WMO REGULATIONS. SITE OBSERVATIONS SHOULD OCCUR AT LEAST ONCE EVERY 7 DAYS AND WITHIN 24 HOURS AFTER A RAINFALL OF 0.5-INCHES OR GREATER, OR EQUIVALENT SNOWFALL. SITE OBSERVATION REPORTS SHOULD BE MAINTAINED ONSITE AS PART OF THE SWPPP.

EACH SITE OBSERVATION SHALL INCLUDE:
A. DISTURBED AREAS AND AREAS USED FOR THE STORAGE OF MATERIALS THAT ARE EXPOSED TO PRECIPITATION SHALL BE CHECKED FOR EVIDENCE OF, OR POTENTIAL FOR, POLLUTANTS ENTERING THE DRAINAGE SYSTEM. THE EROSION AND SEDIMENT CONTROL MEASURES IDENTIFIED IN THE PLAN SHALL BE OBSERVED TO ENSURE THAT THEY HAVE BEEN INSTALLED AND ARE OPERATING CORRECTLY. WHERE DISCHARGE POINTS ARE ACCESSIBLE, THEY SHOULD BE CHECKED TO ASCERTAIN WHETHER EROSION CONTROL MEASURES ARE EFFECTIVE IN PREVENTING SIGNIFICANT IMPACTS TO THE RECEIVING WATERS. LOCATIONS WHERE VEHICLES ENTER AND EXIST THE SITE SHOULD BE CHECKED FOR OFF-SITE SEDIMENT TRACKING. ALL PUMPING OPERATIONS AND OTHER POTENTIAL NON-STORM WATER DISCHARGES SHOULD BE OBSERVED.
B. BASED ON THE RESULTS OF THE SITE OBSERVATION, THE DESCRIPTION OF POTENTIAL POLLUTANT SOURCES IDENTIFIED, AND THE POLLUTION PREVENTION MEASURES DESCRIBED IN THIS PLAN SHALL BE REVISED AS APPROPRIATE, AS SOON AS PRACTICABLE AFTER THE OBSERVATION. THE MODIFICATIONS, IF ANY, SHALL PROVIDE FOR TIMELY IMPLEMENTATION OF ANY CHANGES TO THE PLAN WITHIN 7 CALENDAR DAYS FOLLOWING THE SITE OBSERVATION.
C. A REPORT SUMMARIZING THE SCOPE OF THE OBSERVATION, NAME(S) AND QUALIFICATIONS OF PERSONNEL MAKING THE OBSERVATION, THE DATE(S) OF THE OBSERVATION, MAJOR OBSERVATIONS RELATING TO THE IMPLEMENTATION OF THE STORM WATER POLLUTION PREVENTION, AND ACTIONS TAKEN IN ACCORDANCE WITH PARAGRAPH B ABOVE SHALL BE MADE AND RETAINED AS PART OF THE STORM WATER POLLUTION PREVENTION PLAN FOR AT LEAST 3 YEARS FROM THE DATE OF FINAL STABILIZATION OR PERMIT COVERAGE IS TERMINATED. THE REPORT SHALL BE SIGNED IN ACCORDANCE WITH PART VI.G (SIGNATORY REQUIREMENTS) OF THE ILR10 NPDES PERMIT.
D. THE OWNER SHALL NOTIFY THE APPROPRIATE AGENCY FIELD OPERATIONS SECTION OFFICE BY EMAIL AT EPA.SWNONCOMP@ILLINOIS.GOV, TELEPHONE OR FAX WITHIN 24 HOURS OF ANY INCIDENCE OF NONCOMPLIANCE FOR ANY VIOLATION OF THE STORM WATER POLLUTION PREVENTION PLAN OBSERVED DURING A SITE OBSERVATION, OR FOR VIOLATIONS OF ANY CONDITION OF THE PERMIT. THE OWNER SHALL COMPLETE AND SUBMIT WITHIN 5 DAYS OF INCIDENCE OF NONCOMPLIANCE (ION) REPORT FOR ANY VIOLATION OF THE STORM WATER POLLUTION PREVENTION PLAN OBSERVED DURING AN INSPECTION CONDUCTED. SUBMISSION SHALL BE ON FORMS PROVIDED BY THE AGENCY AND INCLUDE SPECIFIC INFORMATION ON THE CAUSE OF NONCOMPLIANCE, ACTIONS WHICH WERE TAKEN TO PREVENT ANY FURTHER CAUSES OF NONCOMPLIANCE, AND A STATEMENT DETAILING ANY ENVIRONMENTAL IMPACT WHICH MAY HAVE RESULTED FROM THE NONCOMPLIANCE.
E. ALL REPORTS OF NONCOMPLIANCE SHALL BE SIGNED BY A RESPONSIBLE AUTHORITY AS DEFINED IN PART VI.G OF THE ILR10 NPDES PERMIT (SIGNATORY REQUIREMENTS)
F. ALL REPORTS OF NONCOMPLIANCE SHALL BE MAILED TO THE AGENCY AT THE FOLLOWING ADDRESS:
ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
DIVISION OF WATER POLLUTION CONTROL
COMPLAINCE ASSURANCE #19
POST OFFICE BOX 19276
SPRINGFIELD, IL 62794-9276

JOB NO: 080-020
FIELD BOOK: N/A
FIELD BOOK: N/A
DRAWN BY: MK
CHECKED BY: KEK
COMPLETED: 04/07/18

REVISIONS:
1. 09-18-18: REVISD PER CITY COMMENTS
2. 11-05-18: REVISD PER FPD COMMENTS
3. 01-18-19: REVISD PER CITY COMMENTS
4.
8. 04-19-19: PER CITY COMMENTS

FILE: I/080-020 Cantera Lot 2 Sub Area C/Engineering/Drawings

PREPARED FOR:
CANTERA DEVELOPMENT HOLDINGS, LLC.
TWO NORTHFIELD PLAZA, SUITE 320
NORTHFIELD, IL 60093
TEL :(847) 562-2001

CONSULTING ENGINEERS
Bollinger, Lach & Associates, Inc.
333 PIERCE ROAD SUITE 200 ITASCA, IL 60143
P:(630) 438 6400 F:(630) 438 6444 www.bollingerlach.com
ITASCA * CHICAGO * ALGONQUIN * LAKE GENEVA * SOUTH BEND * INDIANAPOLIS

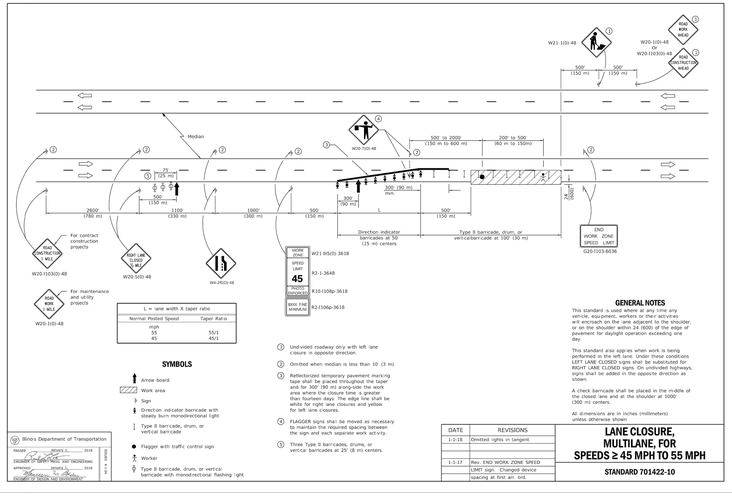
DETAILS

RIVER VIEW WEST
CITY OF WARRENVILLE, ILLINOIS

SHEET NUMBER
39
OF 71

FILE: I/080-020 Cantera Lot 2 Sub Area C/Engineering/Drawings/Final Engineering

Design Firm License No. 184-001129



L = lane width X taper ratio	
Normal Posted Speed	Taper Ratio
40 mph or less	55/1
45 mph	45/1

SYMBOLS

- Arrow board
- Work area
- Sign
- Direction indicator barricade with steady burn monodirectional light
- Type II barricade, drum, or vertical barricade
- Flagger with traffic control sign
- Worker
- Type II barricade, drum, or vertical barricade with monodirectional flashing light

1. Undivided roadway only with left lane closure in opposite direction.
2. Omitted when median is less than 10' (3 m).
3. Reflectorized temporary pavement marking tape shall be placed throughout the taper and for 300' (90 m) along-side the work area where the closure time is greater than fourteen days. The edge line shall be placed on the right measures and yellow for left lane closures.
4. FLAGGER signs shall be moved as necessary to maintain the required spacing between the sign and each separate work activity.
5. Three Type II barricades, drums, or vertical barricades at 25' (8 m) centers

GENERAL NOTES

This standard is used where at any time any vehicle, equipment, workers or ther activities will encroach on the lane adjacent to the shoulder, or on the shoulder within 24 (600) of the edge of pavement for daylight operation exceeding one day.

This standard also applies when work is being performed in the left lane. Under these conditions the ROAD WORK AHEAD sign shall be replaced by RIGHT LANE CLOSED signs. On undivided highways, signs shall be added in the opposite direction as shown.

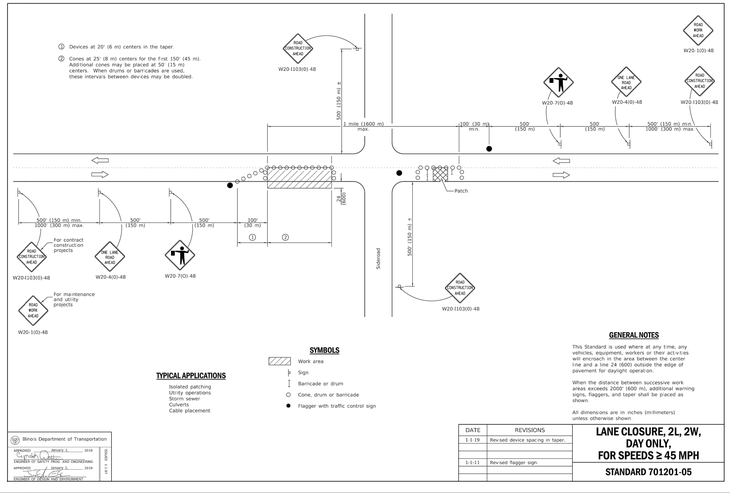
A check barricade shall be placed in the middle of the closed lane and at the shoulder at 1000' (300 m) centers.

All dimensions are in inches (millimeters) unless otherwise shown.

DATE	REVISIONS
1-3-18	Omitted rights in tangent.
1-1-17	Rev. END WORK ZONE SPEED LIMIT sign. Changed device spacing at first arr. tnt.

LANE CLOSURE, MULTILANE, FOR SPEEDS ≥ 45 MPH TO 55 MPH

STANDARD 701422-10



1. Devices at 20' (6 m) centers in the taper.
2. Cones at 25' (8 m) centers for the first 150' (45 m). Additional cones may be placed at 50' (15 m) centers. When drums or barricades are used, these intervals between devices may be doubled.

TYPICAL APPLICATIONS

Isolated patching
Utility operations
Storm sewer
Culverts
Cable placement

SYMBOLS

- Work area
- Sign
- Barricade or drum
- Cone, drum or barricade
- Flagger with traffic control sign

GENERAL NOTES

This Standard is used where at any time, any vehicles, equipment, workers or their activities will encroach in the area between the center line and a line 24 (600) outside the edge of pavement for daylight operation.

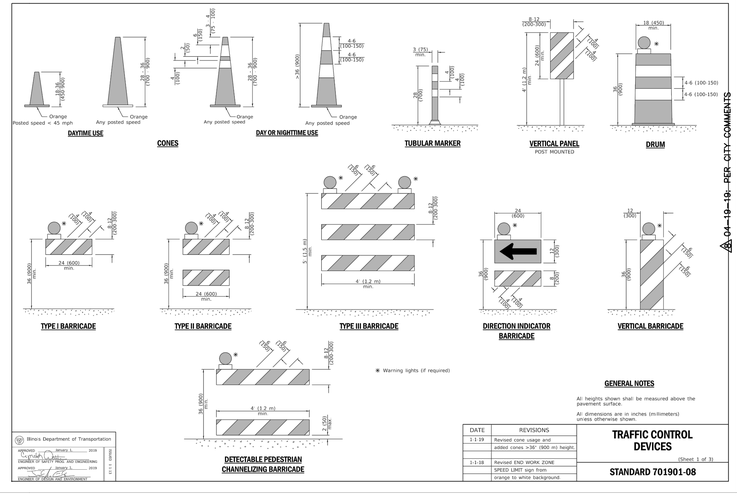
When the distance between successive work areas exceeds 2000' (600 m), additional warning signs, flaggers, and taper shall be placed as shown.

All dimensions are in inches (millimeters) unless otherwise shown.

DATE	REVISIONS
1 1 19	Revised device spacing in taper.
1-1-11	Revised flagger sign.

LANE CLOSURE, 2L, 2W, DAY ONLY, FOR SPEEDS ≥ 45 MPH

STANDARD 701201-05



✱ Warning lights (if required)

GENERAL NOTES

All heights shown shall be measured above the pavement surface.

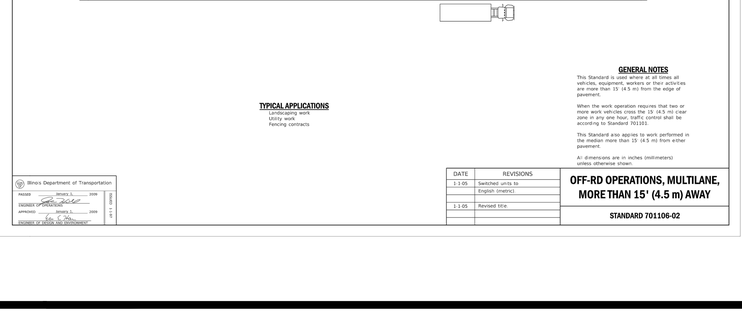
All dimensions are in inches (millimeters) unless otherwise shown.

DATE	REVISIONS
1 1 19	Revised cone usage and added cones >36" (900 m) height.
1-1-18	Revised END WORK ZONE SPEED LIMIT sign from orange to white background.

TRAFFIC CONTROL DEVICES

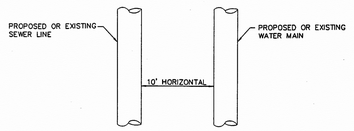
(Sheet 1 of 3)

STANDARD 701901-08


Edge of pavement
White
Yellow
2 (50)
10' (3.05 m)
30' (9.15 m)
2 (50)
4 (100)
4 (100)
2 (50)
2 (50)
2 (50

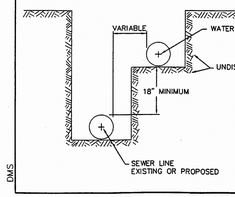
Design Firm License No. 184-001129

WHEN **PROPOSED** SEWER (OR WATER) IS LOCATED 10 FEET OR MORE FROM EXISTING WATER (OR SEWER), NO SPECIAL CONSTRUCTION REQUIRED. SEE SECTION 41-2.01B (1)



PLAN VIEW

WHEN **PROPOSED** SEWER (OR WATER) IS LOCATED **LESS THAN 10 FEET** FROM EXISTING WATER (OR SEWER), DETAILS BELOW SHALL APPLY. SEE SECTION 41-2.01B (2)



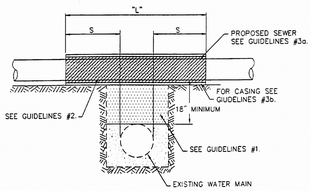
WATER AND SEWER SEPARATION REQUIREMENTS
HORIZONTAL SEPARATION

DMS

DIV.V/STANDARD DRAWING NO.18
DIV: V
PAGE: 160

PROPOSED SEWER LINE **WITH** 18" MINIMUM VERTICAL SEPARATION **ABOVE** EXISTING WATER MAIN.

NOTE: COMPACTION REQUIREMENTS REFER TO 20-2.20B



NOTE: "S" THE LENGTH NECESSARY TO PROVIDE 10 FEET OF SEPARATION AS MEASURED PERPENDICULAR TO TO EXISTING WATER MAIN

GUIDELINES

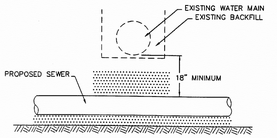
1. IF SELECT GRANULAR BACKFILL EXISTS: REMOVE WITHIN WIDTH OF PROPOSED SEWER TRENCH AND REPLACE WITH SELECT EXCAVATED MATERIAL (CLASS IV) AND COMPACT.
2. OMIT SELECT GRANULAR EMBEDMENT AND GRANULAR BACKFILL TO ONE (1) FOOT OVER TOP OF SEWER AND USE SELECT EXCAVATED MATERIAL (CLASS IV) AND COMPACT THE LENGTH OF "L" FEET.
3. a. CONSTRUCT "L" FEET OF PROPOSED SEWER OF WATER MAIN MATERIAL AND PRESSURE TEST. OR;
   b. USE "L" FEET OF WATER MAIN MATERIAL FOR CASING OF PROPOSED SEWER AND SEAL ENDS OF CASING.

WATER AND SEWER SEPARATION REQUIREMENTS
(VERTICAL SEPARATION)

DMS

DIV.V/STANDARD DRAWING NO.19
DIV: V
PAGE: 162

PROPOSED SEWER LINE **BELOW EXISTING** WATER MAIN WITH 18" MINIMUM VERTICAL SEPARATION.



GUIDELINES

1. PROVIDE ADEQUATE SUPPORT FOR EXISTING WATER MAIN TO PREVENT DAMAGE DUE TO SETTLEMENT OF SEWER TRENCH.

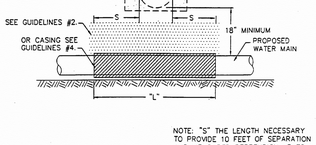
WATER AND SEWER SEPARATION REQUIREMENTS
(VERTICAL SEPARATION)

DMS

DIV.V/STANDARD DRAWING NO.20
DIV: V
PAGE: 164

PROPOSED WATER MAIN **BELOW EXISTING** SEWER LINE WITH 18" MINIMUM VERTICAL SEPARATION.

NOTE: COMPACTION REQUIREMENTS REFER TO 20-2.20B



NOTE: "S" THE LENGTH NECESSARY TO PROVIDE 10 FEET OF SEPARATION AND MEASURED PERPENDICULAR TO EXISTING SEWER LINE.

GUIDELINES

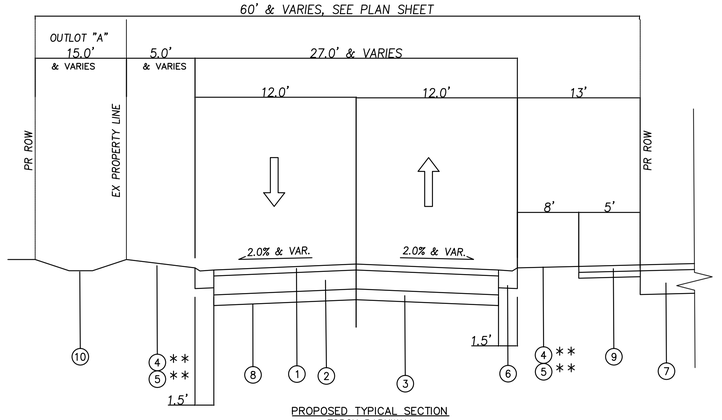
1. OMIT SELECT GRANULAR EMBEDMENT AND GRANULAR BACKFILL TO ONE (1) FOOT OVER TOP OF WATER MAIN AND USE SELECT EXCAVATED MATERIAL (CLASS IV) AND COMPACT THE LENGTH OF "L".
2. IF SELECT GRANULAR BACKFILL EXISTS, REMOVE WITHIN WIDTH OF EXISTING SEWER LINE TRENCH AND REPLACE WITH SELECT EXCAVATED MATERIAL (CLASS IV) AND COMPACT.
3. PROVIDE ADEQUATE SUPPORT FOR EXISTING SEWER LINE TO PREVENT DAMAGE DUE TO SETTLEMENT.
4. USE "L" FEET OF WATER MAIN MATERIAL FOR CASING OF PROPOSED WATER MAIN AND SEAL ENDS OF CASING.

WATER AND SEWER SEPARATION REQUIREMENTS
(VERTICAL SEPARATION)

DMS

DIV.V/STANDARD DRAWING NO.23
DIV: V
PAGE: 170

TORCH PARKWAY
60' & VARIES, SEE PLAN SHEET

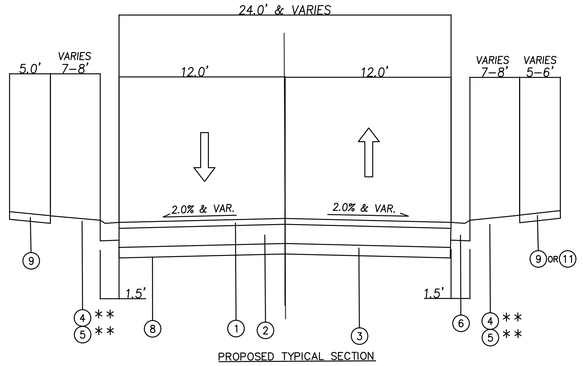


PROPOSED TYPICAL SECTION
TORCH PARKWAY

LEGEND

1. HMA SURFACE COURSE, MIX "D", N50 , 2.0"
2. HMA BINDER COURSE, IL-19.0, N50, 7"
3. SUBBASE GRANULAR MATERIAL, TYPE B, 4"
4. TOPSOIL FURNISH AND PLACE, 6"
5. SODDING, SALT TOLERANT
6. COMBINATION CURB AND GUTTER, B-6.12 (DEPRESSED CURB THROUGH DRIVEWAYS)
7. DRIVEWAY PAVEMENT
8. GEOTECHNICAL FABRIC
9. 5" PCC SIDEWALK ON 4" COMPACTED CA-6 SUBBASE
10. DRAINAGE SWALE (DEPTH VARIES)

PROPOSED POLLARD ROAD
24.0' & VARIES

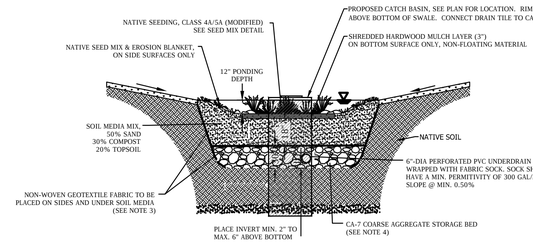


PROPOSED TYPICAL SECTION

LEGEND

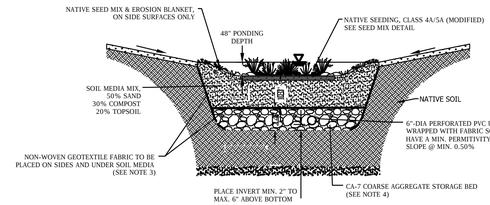
1. HMA SURFACE COURSE, MIX "D", N50 , 2.0"
2. HMA BINDER COURSE, IL-19.0, N50, 7"
3. SUBBASE GRANULAR MATERIAL, TYPE B, 4"
4. TOPSOIL FURNISH AND PLACE, 6"
5. SODDING, SALT TOLERANT
6. COMBINATION CURB AND GUTTER, B-6.12
7. DRIVEWAY PAVEMENT, SEE DRIVEWAY DETAIL
8. GEOTECHNICAL FABRIC
9. 5'- 5" PCC SIDEWALK ON 4" COMPACTED CA-6 SUBBASE
11. 6' - BITUMINOUS PATH

BIOSWALE DETAIL



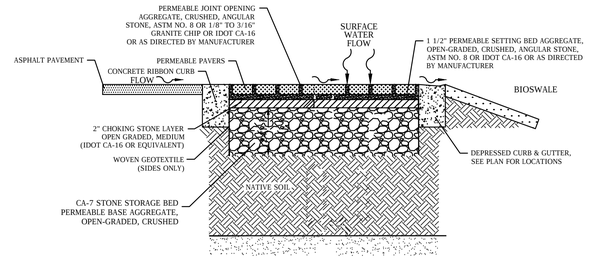
NOTES:
1. DO NOT COMPACT NATIVE SOIL BENEATH PROPOSED BIOSWALE.
2. AFTER CONSTRUCTING BIOSWALE, CARE MUST BE TAKEN TO PREVENT COMPACTION OF INSTALLED AGGREGATE AND SOIL MEDIA LAYERS FROM EITHER PEDESTRIAN OR MECHANICAL MEANS.
3. NON-WOVEN GEOTEXTILE FABRIC SHALL MEET REQUIREMENTS OF ILLINOIS URBAN MANUAL MATERIAL SPECIFICATION 592 GEOTEXTILE, TABLE 2, CLASS I, WITH A MIN. PERMITIVITY OF 110 GAL/MIN/SF.
4. STONE STORAGE BED AGGREGATE MUST BE CA-7 COARSE AGGREGATE. NO RECYCLED MATERIALS.

BIORETENTION FACILITY DETAIL

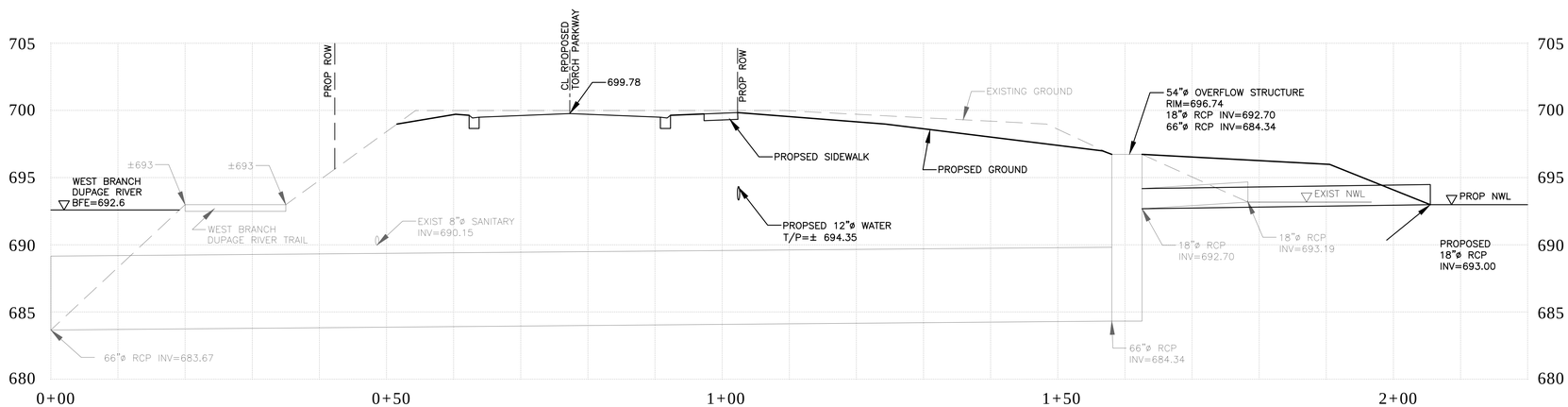


NOTES:
1. DO NOT COMPACT NATIVE SOIL BENEATH PROPOSED BIOSWALE.
2. AFTER CONSTRUCTING BIOSWALE, CARE MUST BE TAKEN TO PREVENT COMPACTION OF INSTALLED AGGREGATE AND SOIL MEDIA LAYERS FROM EITHER PEDESTRIAN OR MECHANICAL MEANS.
3. NON-WOVEN GEOTEXTILE FABRIC SHALL MEET REQUIREMENTS OF ILLINOIS URBAN MANUAL MATERIAL SPECIFICATION 592 GEOTEXTILE, TABLE 2, CLASS I, WITH A MIN. PERMITIVITY OF 110 GAL/MIN/SF.
4. STONE STORAGE BED AGGREGATE MUST BE CA-7 COARSE AGGREGATE. NO RECYCLED MATERIALS.

PERMEABLE PAVERS DETAIL



NOTES:
1. WOVEN GEOTEXTILE FABRIC SHALL MEET REQUIREMENTS OF ILLINOIS URBAN MANUAL MATERIAL SPECIFICATION 592 GEOTEXTILE, TABLE 2, CLASS I, WITH A MIN. PERMITIVITY OF 110 GAL/MIN/SF.
2. STONE STORAGE BED AGGREGATE MUST BE CA-7 COARSE AGGREGATE, NO RECYCLED MATERIALS.
3. MAINTENANCE REQUIREMENTS INCLUDE ANNUAL VACUUMING AND LOW-PRESSURE POWER WASHING OF PAVEMENT SURFACE. DO NOT SEALCOAT, SEAL, OR COVER SURFACE OF PAVERS OR JOINTS.
4. CLEANOUTS SHALL BE LOCATED AT ENDS OF UNDERDRAINS AND OUTSIDE OF PAVEMENT AREA.



POND OUTLET PROFILE

04-19-19: PER CITY COMMENTS

REVISIONS:
09-18-18: REVISD PER CITY COMMENTS
11-05-18: REVISD PER FPD COMMENTS
01-18-19: REVISD PER CITY COMMENTS

FILE: V:\080-020 Cantera Lot 2 Sub Area C\Engineering\Drawings

JOB NO: 080-020
FIELD BOOK: N/A
FIELD BOOK: N/A
DRAWN BY: MK
CHECKED BY: KEK
COMPLETED:04/07/19

PREPARED FOR:
CANTERA DEVELOPMENT HOLDINGS, LLC.
TWO NORTHFIELD PLAZA, SUITE 320
NORTHFIELD, IL 60093
TEL: (847) 562-2001

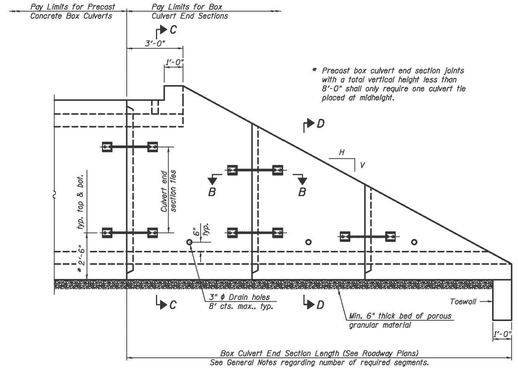
Bollinger, Lach & Associates, Inc.
CONSULTING ENGINEERS
333 PIERCE ROAD SUITE 200 ITASCA, IL 60143
P:(630) 438 6400 F:(630) 438 6444 www.bollingerlach.com
ITASCA * CHICAGO * ALGONQUIN * LAKE GENEVA * SOUTH BEND * INDIANAPOLIS

DETAILS

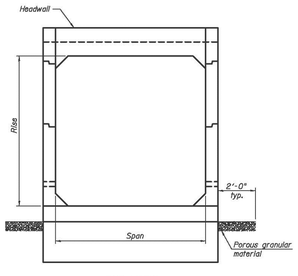
RIVER VIEW WEST
CITY OF WARRENVILLE, ILLINOIS

SHEET NUMBER
41
OF 71

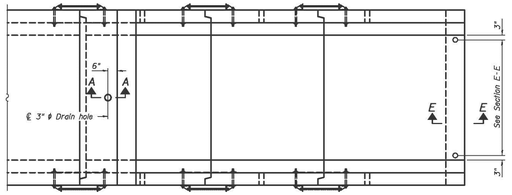
Design Firm License No. 184-001129



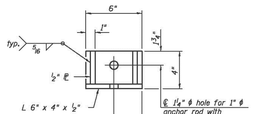
ELEVATION



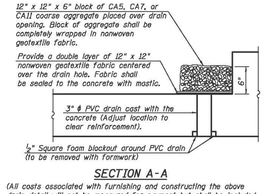
END VIEW



PLAN

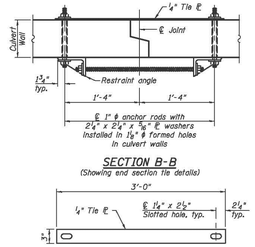


RESTRAINT ANGLE DETAIL



SECTION A-A

(All costs associated with furnishing and constructing the above drain detail will not be measured for payment but shall be included in the contract unit price for the associated work.)



SECTION B-B

(Showing end section tile details)

TIE PLATE DETAIL

GENERAL NOTES

Box Culvert End Sections shall be constructed according to the requirements of Section 540 of the Standard Specifications except as modified herein. This work will be measured for payment as each, with each end of each culvert being one each. End sections will be paid for at the contract unit price per each for Box Culvert End Sections of the culvert number specified.

Typical box section dimensions, materials, and reinforcement details for Box Culvert End Sections shall be according to the requirements of ASTM C 1577 as required for the design of the portion of the culvert within the limits of Precast Concrete Box Culverts except as modified herein.

Number of segments shown in Elevation is for example only. Length and number of precast box sections required to construct Box Culvert End Sections shall be determined by the Contractor.

See roadway plans for embankment slope (V:H).

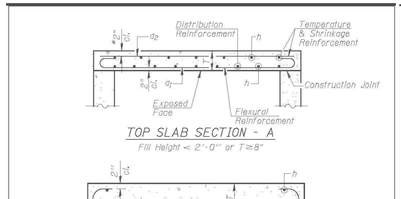
1" ϕ anchor rods for the culvert ties shall conform to the requirements of ASTM F1554, Grade 105. Structural steel for tie plate and restraint angle shall conform to the requirements of Article 1006.04 of the Standard Specifications. All components of the culvert tie detail shall be galvanized according to the requirements of AASHTO M 111 or M 232 as applicable. 2 1/4" x 2 1/4" x 5/16" plate washers shall be provided under each nut required for the anchor rods. Anchor rods connecting precast sections shall be brought to a snug tight condition followed by an additional 1/2 turn on one of the nuts for anchor rods installed in the walls. Match marks shall be provided on the bolt and nut to verify relative rotation between the bolt and the nut. Holes in the walls for the culvert tie assembly may be drilled using core bits in lieu of using formed holes.

All costs associated with furnishing and installing or constructing the toewall and culvert ties will not be measured for payment but shall be included in the contract unit price for Box Culvert End Sections of the culvert number specified.

Drain holes shall conform to the requirements of Article 503.11 of the Standard Specifications unless noted otherwise.

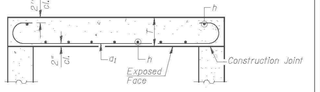
Nonwoven geotextile fabric shall conform to the requirements of Article 1080.01. The minimum weight of the fabric shall be 6 oz. / sq. yd..

For end sections with traversable pipe grate systems, see grate detail sheet for required modifications.



TOP SLAB SECTION - A

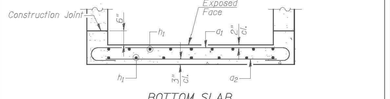
Fill Height < 2'-0" or T ≥ 8"



TOP SLAB SECTION - B

Fill Height ≥ 2'-0" & T < 8"

NOTE: Number of h bars in top slab includes 2 bars in top of the slab as shown.



BOTTOM SLAB

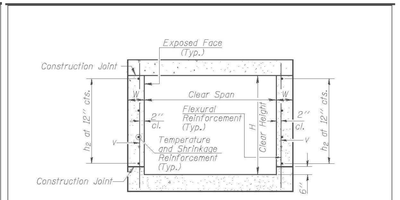
* Provide 2 1/2" cl. ± 1/2" when fill on top slab is zero. and epoxy coat bars in top slab.



a_1 BARS

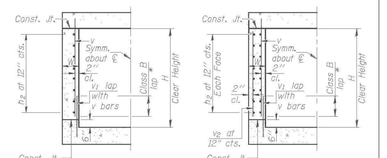
Top slab shown, bottom slab similar
For dimensions A and B, see Table 5.1-1

TOP AND BOTTOM SLAB DETAILS



TYPICAL SECTION - A

H <= 8 ft.



TYPICAL SECTION - B

H > 8 ft. and W <= 10'

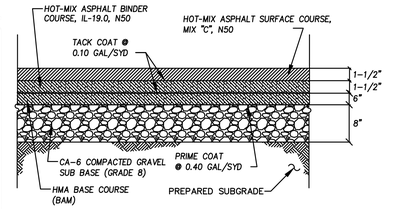
TYPICAL SECTION - C

H > 8 ft. and W > 10'

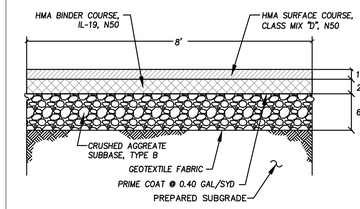
* See Table 5.1-2 for required lap length

SIDEWALL DETAILS

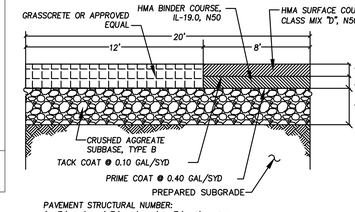
7' CLEAR SPAN BY 5' CLEAR HEIGHT																						
TOP SLAB			a_1 BAR		a_2, h BAR		h_1 BAR		WALL		v BAR			v_2, h_2 BAR			Conc.				
FILL	T	SEC.	SIZE	SPC.	SIZE	SPC.	SIZE	SPC.	W	SEC.	SIZE	SPC.		SIZE	SPC.		Vol.				
ft.	in.		#	in.	#	in.	#	in.	in.		#	in.		#	in.		yd.^{3} / ft.				
0	9.5	A	6	6.5	5	12	5	12	6	A	4	5.5		4	12		0.679				
1	9.5	A	6	6.5	5	12	5	12	6	A	4	5.5		4	12		0.679				
2	9.5	A	6	6.5	5	12	5	12	6	A	4	5.5		4	12		0.679				
3	9.5	A	6	6.5	5	12	5	12	6	A	4	5.5		4	12		0.679				
4	9	A	6	7	5	12	5	12	6	A	4	5.5		4	12		0.654				
5	9	A	6	7	5	12	5	12	6	A	4	5.5		4	12		0.654				
6	9	A	6	7	5	12	5	12	6	A	4	5.5		4	12		0.654				
7	9	A	6	7	5	12	5	12	6	A	4	5.5		4	12		0.654				
8	9.5	A	6	6.5	5	12	5	12	6	A	5	7.5		4	12		0.679				
9	9.5	A	6	6.5	5	12	5	12	6	A	5	7.5		4	12		0.679				
10	10	A	6	6	5	12	5	12	6	A	5	7		4	12		0.704				
11	10	A	6	6	5	12	5	12	6	A	5	7		4	12		0.704				
12	10	A	6	6	5	12	5	12	6	A	5	7		4	12		0.704				
13	10	A	6	6	5	12	5	12	7	A	5	7		4	12		0.725				
14	10	A	6	6	5	12	5	12	7	A	5	7		4	12		0.725				
15	10	A	6	6	5	12	5	12	7	A	5	7		4	12		0.745				
20	12	A	7	7	6	12	6	12	7	A	5	6		4	12		0.821				
25	13	A	7	6	6	12	6	12	8	A	5	6		4	12		0.916				



TYPICAL DRIVEWAY APRON WITHIN COUNTY ROW



TYPICAL BITUMINOUS PATH



PAVEMENT STRUCTURAL NUMBER:
(1.5")(0.40) + (2")(0.40) + (12.5")(0.13) = 3.02

TYPICAL FIRE LANE SECTION

SCB-TES 10-15-2016

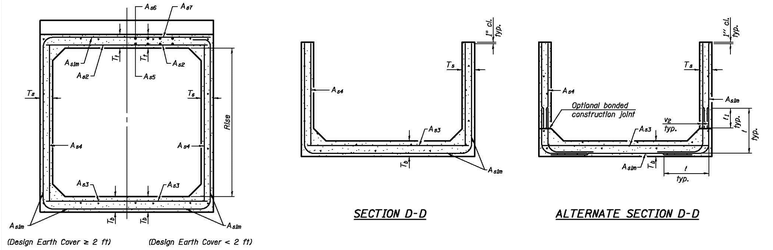
FILE NAME =	USER NAME =	DESIGNED -	REVISED -
		CHECKED -	REVISED -
	PLOT SCALE =	DRAWN -	REVISED -
	PLOT DATE =	CHECKED -	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

SINGLE CELL PRECAST BOX CULVERT TAPERED END SECTIONS
STRUCTURE NO.
SHEET NO. OF SHEETS

F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
		CONTRACT NO.		
		ILLINOIS FED. AID PROJECT		

(Sheet 1 of 2)



(Design Earth Cover ≥ 2 ft) (Design Earth Cover < 2 ft)

SECTION C-C

SECTION D-D

ALTERNATE SECTION D-D

A_{s1-s7} REINFORCEMENT
(in.^{2} / ft)

Rise (ft) / T_s (in.)	2	3	4	5	6	7	8	9	10	11	12
4	0.19	0.17									
5	0.26	0.21	0.18								
6	0.22	0.26	0.23	0.22							
7	0.25	0.33	0.29	0.27	0.28						
8	0.40	0.35	0.41	0.39	0.36	0.34	0.40				
9	0.44	0.39	0.35	0.43	0.40	0.37	0.36	0.48			
10	0.48	0.42	0.38	0.47	0.44	0.41	0.38	0.42	0.56		
11	0.52	0.45	0.54	0.50	0.46	0.44	0.41	0.46	0.50	0.65	
12	0.55	0.49	0.58	0.54	0.50	0.48	0.45	0.46	0.46	0.61	0.75

(A$_{s2m}$ reinforcement based upon welded wire reinforcement conforming to AASHTO M 55 or M 221).

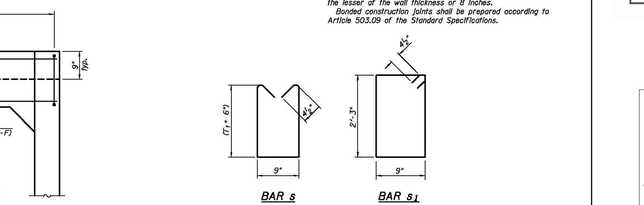
l_1 DIMENSION

#3 bar = 2'-0"
#4 bar = 2'-8"
#5 bar = 3'-4"
#6 bar = 3'-11"

Notes:
Alternate Section D-D is provided to allow the Contractor the option of casting the bottom slab of the end section first followed by construction of the sidewalls using conventional forming methods. Shop drawings that detail slab thickness and reinforcement layout shall be submitted to the Engineer for review and approval when using Alternate Section D-D.

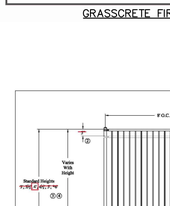
The size and spacing of the v_2 bars shall provide a minimum reinforcement area along each face of the walls ($in.^2$/ft.) equal to $1.10*(A_{s2m})$. v_2 bars may consist of #3 thru #6 size reinforcement bars and the longitudinal spacing shall not exceed the lesser of the wall thickness or 8 inches.

Bonded construction joints shall be prepared according to Article 503.09 of the Standard Specifications.

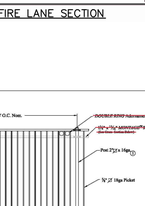


HEADWALL ELEVATION

(Allow sidewall reinforcement to extend into end of headwall.)



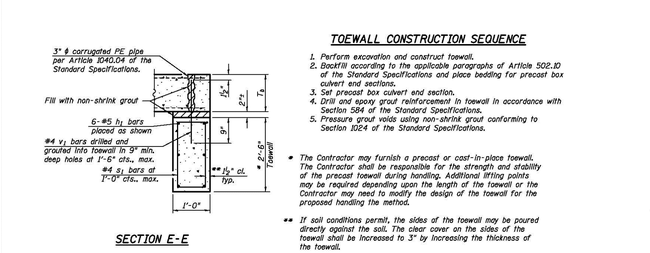
BAR s



BAR s$_1$

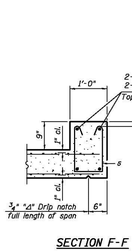
TOEWALL CONSTRUCTION SEQUENCE

1. Perform excavation and construct toewall.
2. Backfill according to the applicable paragraphs of Article 502.10 of the Standard Specifications and place bedding for precast box culvert end sections.
3. Set precast box culvert end section.
4. Drill and epoxy grout reinforcement in toewall in accordance with Section 584 of the Standard Specifications.
5. Pressure grout voids using non-shrink grout conforming to Section 1024 of the Standard Specifications.



* The Contractor may furnish a precast or cast-in-place toewall. The Contractor shall be responsible for the strength and stability of the precast toewall during handling. Additional lifting points may be required depending upon the length of the toewall or the Contractor may need to modify the design of the toewall for the proposed handling the method.

** If soil conditions permit, the sides of the toewall may be poured directly against the soil. The clear cover on the sides of the toewall shall be increased to 3" by increasing the thickness of the toewall.



SECTION E-E

SECTION F-F

SCB-TES 10-15-2016

FILE NAME =	USER NAME =	DESIGNED -	REVISED -
		CHECKED -	REVISED -
	PLOT SCALE =	DRAWN -	REVISED -
	PLOT DATE =	CHECKED -	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

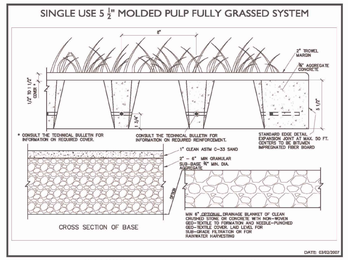
SINGLE CELL PRECAST BOX CULVERT TAPERED END SECTIONS
STRUCTURE NO.
SHEET NO. OF SHEETS

F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
		CONTRACT NO.		
		ILLINOIS FED. AID PROJECT		

(Sheet 2 of 2)

FILE: I:\2080-020 Canters Lot 2 Sub Area 2\Engineering\Drawings\Final Engineering

SINGLE USE 5 1/2" MOLDED PULP FULLY GRASSED SYSTEM



CROSS SECTION OF BASE

GRASSCRETE FIRE LANE SECTION

MONTAGE MAJESTIC 2/3-RAIL

DR. CJ SH. 1of 1 SCALE: DO NOT SCALE
CK: ME Date 7-18-11 REV: -

AMERISTAR
1555 N. Mingo
Tulsa, OK 74116
1-888-333-5422
www.ameristarfence.com

Values shown are nominal and not to be used for installation purposes. See product specifications for installation instructions.

RETAINING WALL FENCE DETAIL

George's Broad Spectrum Prairie																						
Native species per mix	52																					
Native seeds per square foot	108																					
Native FQI NE Illinois	19.83																					
Native FQI Illinois	20.62																					
Native Mean C Value NE Illinois	5.48																					
Native Mean C Value Illinois	4.87																					
Mean W Value NE Illinois	6.66																					
Mean W Value Illinois	6.44																					

An old-school, "ok to seed" mix for big, sunny areas.

Seed rate for ordinary soil is 20 lb. Will not do well in poor soil.

ACRONYM2																						
S&W	ILL	USDA	vPlants	scientific name	common name	seeds/oz	seeds/lb	lb/ac	seeds/ sq ft	seeds/lb												
ANDGER	ANDGER	ANGE	ANGE	*Andropogon gerardii*	Big Bluestem	9.975	150,000	3.500	525,000	12.05												
BOUCUR	BOUCUR	BOCU	BOCU	*Bouteloua curtipendula*	Side Oats Grama	6.565	105,000	2.000	210,000	4.82												
CHEVIR	CHEVIR	CHVI	CHVI	*Chelone virginica*	Shortist Turtlehead	26.875	400,000	0.230	105,500	2.47												
CHEGIG	CHEGIG	CHGI	CHGI	*Chelone glabra*	Clustered Coral Bulge	132.500	1,800,000	0.122	222,000	5.17												
CHOCOP	CHOCOP	CHCO	CHCO	*Chelone obliqua*	Pointed Bloom Tulip	87.500	1,400,000	0.125	172,000	4.02												
CHOVIL	CHOVIL	CHVI	CHVI	*Chelone virginica*	Pine Sedge	97.188	1,555,000	0.300	777,000	17.83												
ELIGRT	ELIGRT	ELIG	ELIG	*Eleocharis glauca*	Bluet Spikerush	131.250	2,100,000	0.122	262,500	6.03												
ELYCAN	ELYCAN	ELCA	ELCA	*Elymus canadensis*	Canada Wild Rye	5.700	120,000	1.000	120,000	2.75												
AGRTEC	AGRTEC	ELTEC	ELTEC	*Elymus trachycaulus (Agropyron t.)*	Slender Wheatgrass	9.975	150,000	1.000	150,000	3.44												
ELYVIR	ELYVIR	ELVI	ELVI	*Elymus virginicus*	Virginia Wild Rye	5.750	92,000	1.000	92,000	2.11												
TYPDUD	TYPDUD	TYDU	TYDU	*Juncus dudleyi*	Dudley Rush	3,750.000	60,000,000	0.060	3,780,000	86.78												
TYPTOR	TYPTOR	TYTO	TYTO	*Juncus torreyi*	Torrey Rush	1,375.000	30,000,000	0.060	2,364,000	54.56												
LEEORY	LEEORY	LEOR	LEOR	*Leersia oryzoides*	Rice Cut Grass	25.625	410,000	0.230	210,000	4.73												
PANVIR	PANVIR	PAVI	PAVI	*Panicum virgatum*	Prairie Switch Grass	19.813	317,000	1.000	317,000	7.28												
ANDGER	SCHSCO	SCSC	SCSC	*Schizachyrium scoparium (Andropogon s.)*	Little Bluestem	15.625	250,000	2.000	500,000	11.48												
SCHTA	SCHTA	SCAT	SCAT	*Scirpus atrovirens*	Dark Green Bulrush	581.250	9,300,000	0.122	1,362,500	26.69												
SCYCYP	SCYCYP	SCCY	SCCY	*Scirpus cyperinus*	Wool Grass	137.500	2,200,000	0.060	138,600	3.18												
SORNUT	SORNUT	SONU	SONU	*Sorghastrum nutans*	Indian Grass	12.188	195,000	3.000	585,000	13.43												
SPAPEC	SPAPEC	SPPE	SPPE	*Spartina pectinata*	Prairie Cord Grass	10.875	174,000	0.230	41,500	1.00												
						Totals or Average			11,470,100	270.												

Forbs																						
ACRONYM2																						
S&W	ILL	USDA	vPlants	scientific name	common name	seeds/oz	seeds/lb	lb/ac	seeds/ sq ft	seeds/lb												
ASCINC	ASCINC	ASIN	ASIN	*Asclepias incarnata*	Swamp Milkweed	5.625	90,000	0.230	21,500	0.52												
ASCSUL	ASCSUL	ASSU	ASSU	*Asclepias sullivantii*	Prairie Milkweed	5.000	80,000	0.125	10,000	0.23												
ASTNOR	ASTNOR	ASNO	ASNO	*Astragalus canadensis*	Canada Milkvetch	17.500	280,000	0.125	35,000	0.80												
BAPLEA	BAPLAC	BALE2	BALM	*Baptisia lacea *(Baptisia minor)*	White Indigo	1.875	30,000	0.125	3,750	0.09												
COREAR	COREAR	COAR	COAR	*Coreopsis lanceolata*	Sand Coreopsis	11.875	190,000	0.350	47,500	1.08												
COETRI	COETRP	COTR	COTR	*Coreopsis tripteris*	Tall Coreopsis	15.750	252,000	0.122	31,500	0.72												
EPIAGE	DALAGE	DAAG	DAAG	*Dalea aurea (Petalostemum a.)*	White Prairie Clover	27.500	440,000	0.122	53,000	1.24												
DALPUR	DALPUR	DAPU	DAPU	*Dalea purpurea (Petalostemum p.)*	Purple Prairie Clover	18.750	300,000	0.230	71,000	1.72												
ECHPAL	ECHPAL	ECPA	ECPA	*Echinacea pallida*	Pale Purple Coneflower	6.250	100,000	0.230	23,000	0.55												
ECHPUR	ECHPUR	ECPU	ECPU	*Echinacea purpurea*	Purple Coneflower	7.188	115,000	0.300	33,500	1.32												
ERYYUC	ERYYUC	ERYU	ERYU	*Eryngium yuccifolium*	Rattlesnake Master	8.875	142,000	0.230	33,000	0.80												
HELHEL	HELHEL	HEHE	HEHE	*Helianthus helianthoides*	Sawtooth Sunflower	10.938	175,000	0.125	21,500	0.52												
LEPCAM	LEPCAM	LECA	LECA	*Lespedeza capitata*	Roundhead Bushclover	15.500	248,000	0.015	3,720	0.09												
LIAASP	LIAASP	LIAS	LIAS	*Liatris aspera*	Button Blazing Star	15.500	248,000	0.015	3,720	0.09												
SOLRIG	SOLRIG	OLRI	SORI1	*Oligoneuron rigidum (Solidago r.)*	Stiff Goldenrod	40.625	650,000	0.125	81,250	1.87												
PARPAT	PARPAT	PAPA3	PAPA3	*Parthenium integrifolium*	Wild Quinine	12.500	200,000	0.125	25,000	0.57												
PENDIG	PENDIG	PEDI	PEDI	*Penstemon digitalis*	Eggplant Beardtongue	11.500	184,000	0.125	23,000	0.53												
PYCTEN	PYCTEN	PYTE	PYTE	*Pycnanthemum tenuifolium*	Slender Mt. Mint	481.250	7,700,000	0.031	238,700	5.48												
RUDHIR	RUDHIR	RUHI	RUHI	*Rudbeckia hirta*	Blackeyed Susan	93.750	1,500,000	0.230	345,000	7.92												
RUDSUB	RUDSUB	RUSU	RUSU	*Rudbeckia subtomentosa*	Sweet Coneflower	46.250	740,000	0.015	11,100	0.25												
CALMAR	CALMAR	EHMA1	EHMA1	*Senna marilandica (Cassia m)*	Maryland Senna	1.700	27,200	0.063	1,714	0.04												
SILINT	SILINT	SIIN1	SIIN1	*Silphium integrifolium*	Rosinweed	1.875	30,000	0.125	3,750	0.09												
SOLRIH	SOLRIH	SORI	SORI	*Solidago riddellii*	Riddell's Goldenrod	206.250	3,300,000	0.060	131,300	3.48												
ASTLAE	ASTLAE	SYLA15	ASLA5	*Symphyotrichum laeve (Aster l.)*	Smooth Aster	68.750	1,100,000	0.060	65,500	1.59												
ASTNOV	ASTNOV	SYNO2	ASNO	*Symphyotrichum novae-angliae (Aster n.)*	New England Aster	87.500	1,400,000	0.060	83,100	2.02												
ASTAZU	ASTAZU	SYOOO	ASOO4	*Symphyotrichum oolentangiense (Aster azureus) *(A.o.)*	Azure Aster	87.500	1,400,000	0.060	83,100	2.02												
VERBRA	VERBRA	VEBR	VEBR4	*Verbena brasiliensis*	Brazilian Vervain	112.500	1,800,000	0.500	900,000	20.66												
VERHAS	VERHAS	VEHA2	VEHA2	*Verbena hastata*	Blue Vervain	112.500	1,800,000	0.125	225,000	5.17												
VERSTR	VERSTR	VEST	VEST	*Verbena stricta*	Hoary Vervain	28.125	450,000	0.060	59,400	1.36												
ZIZAUR	ZIZAUR	ZIAU	ZIAU	*Zizia aurea*	Golden Alexander	13.500	200,000	0.060	11,600	0.29												
						Forbs total			4,094,114	94.												
						Ornamental & forb totals			23,379	15,607,368	370.											

Tough Native Shoreline	
Native species per mix	24
Native seeds per square foot	514
Native FQI NE Illinois	19.60
Native FQI Illinois	16.48
Native Mean C Value NE Illinois	4.91
Native Mean C Value Illinois	3.36
Mean W Value NE Illinois	6.83
Mean W Value Illinois	6.43

A mix of wetland grasses, as many species tolerant of per dystrophic (brown) seed. 31 the seeding rate

Recommended for dry, sandy, gravelly or rocky areas																						
ACRONYM3																						
S&W	ILL	USDA	vPlants	scientific name	common name	seeds/oz	seeds/lb	lb/ac	seeds/ sq ft	seeds/lb												
ALLUR	ALLURB	ALUR	ALUR	*Allium burdickii*	Wild Onion	8.000	128,000	0.125	16,000	0.37												
ALLCER	ALLCER	ALCE	ALCE	*Allium cernuum*	Nodding Onion	8.000	128,000	0.125	16,000	0.37												
AMOCAN	AMOCAN	AMCA	AMCA	*Amorpha canescens*	Lead plant	18.375	294,000	0.125	38,250	0.89												
ASCCYL	ASCCYL	ASCY	ASCY	*Asclepias cryptoceras*	Pallid Milkweed	31.250	500,000	0.063	31,500	0.72												
ASCTUB	ASCTUB	ASTU	ASTU	*Asclepias tuberosa*

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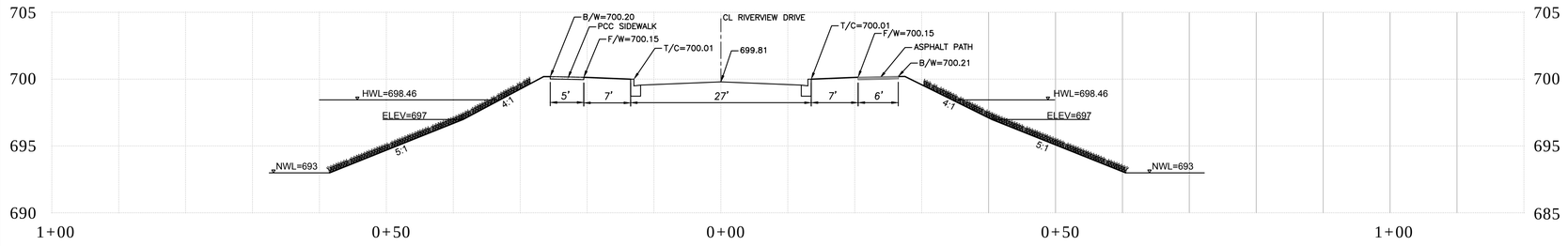
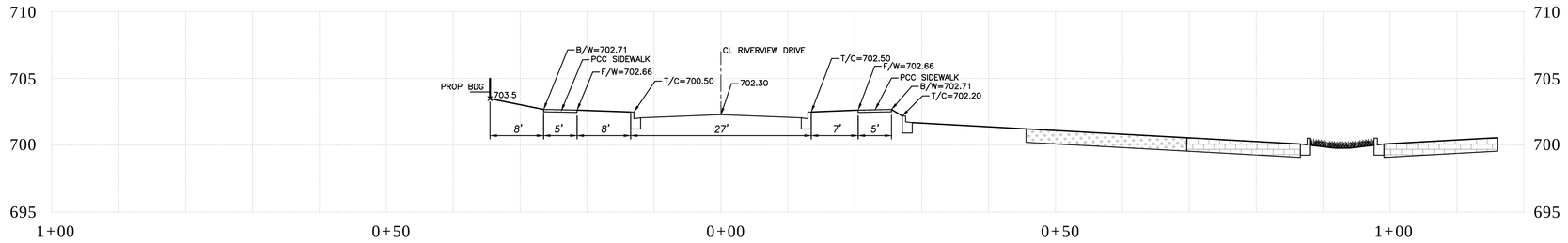
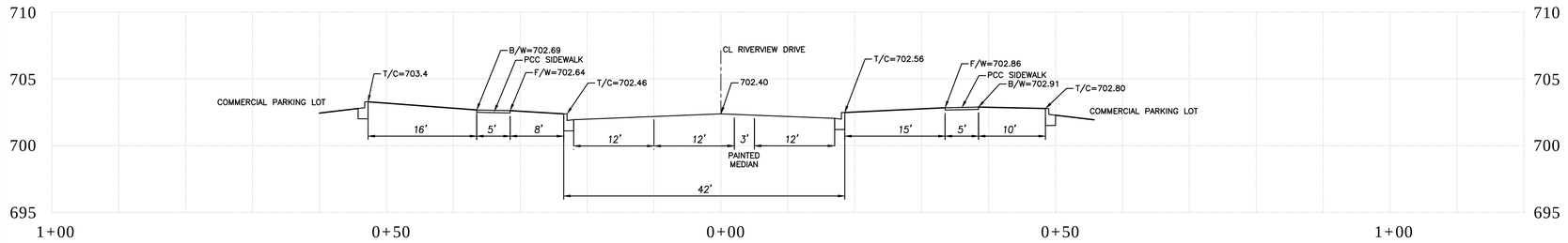


POLLARD ROAD STA 9+00



POLLARD ROAD STA 5+00



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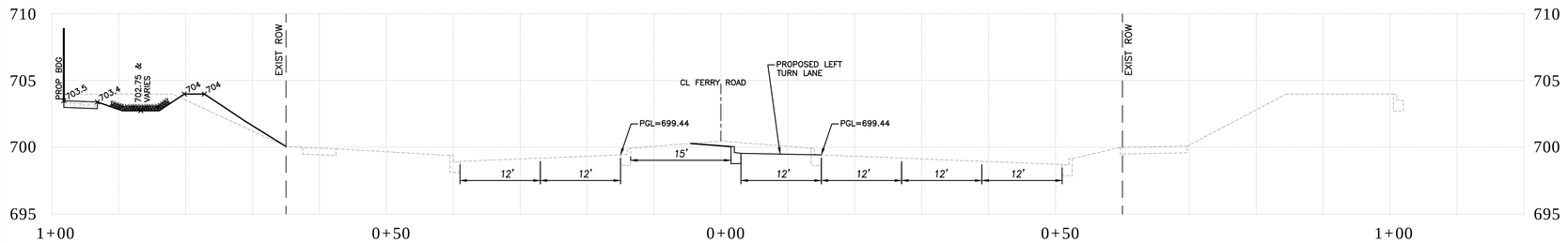
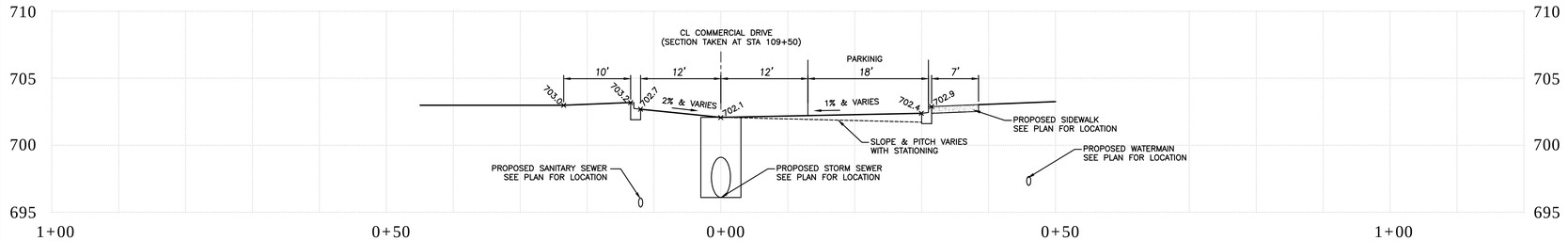
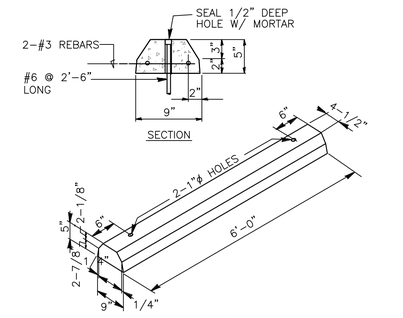


FERRY ROAD STA 129+50

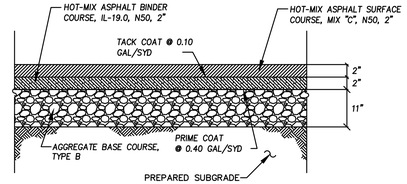


TYPICAL COMMERCIAL DRIVE SECTION



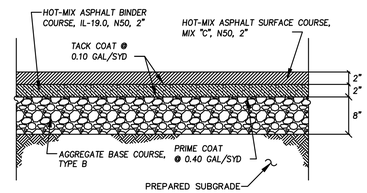
PRECAST CONCRETE WHEEL STOP

N.T.S.



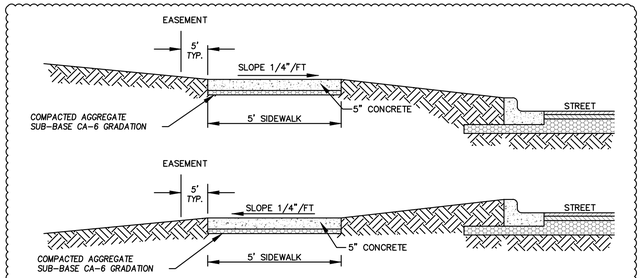
PAVEMENT STRUCTURAL NUMBER:
(2")(0.40) + (2")(0.33) + (11")(0.13) = 2.89

TYPICAL HEAVY DUTY PARKING LOT PAVEMENT SECTION



PAVEMENT STRUCTURAL NUMBER:
(2")(0.40) + (2")(0.33) + (8")(0.13) = 2.50

TYPICAL PARKING LOT PAVEMENT SECTION



GENERAL NOTES:

1. CONCRETE SHALL BE CLASS SI.
2. MINIMUM SIDEWALK THICKNESS SHALL BE FIVE INCHES (5").
3. SIDEWALK THICKNESS ACROSS DRIVEWAYS SHALL BE SEVEN INCHES (7") MINIMUM FOR RESIDENTIAL DRIVEWAYS, AND EIGHT INCHES (8") MINIMUM FOR NON-RESIDENTIAL DRIVEWAYS.
4. MAXIMUM LONGITUDINAL SLOPE SHALL NOT EXCEED 5% (20:1).
5. MAXIMUM TRANSVERSE CROSS SLOPE SHALL BE NO GREATER THAN 1/4"/FT. (2%) TYPICAL.
6. A TWO INCH (2") MINIMUM AGGREGATE SUB-BASE (CA-6 GRADATION) SHALL BE PROVIDED (FOUR INCHES (4" MINIMUM) THROUGH NON-RESIDENTIAL DRIVEWAYS).
7. AGGREGATE SUB-BASE COURSE SHALL BE MECHANICALLY COMPACTED.
8. ALL SIDEWALK SHALL BE PROMPTLY BACKFILLED AND PROTECTED FROM DAMAGE.
9. ALL SIDEWALK ALONG TORCH PARKWAY SHALL BE A MINIMUM OF 7" THICK.
10. ALL SIDEWALK THROUGH INTERSECTIONS ON RIVERVIEW DRIVE SHALL BE A MINIMUM OF 7" THICK.

SIDEWALK DETAIL

04-19-19: PER CITY COMMENTS

REVISIONS:
09-18-18: REVISD PER CITY COMMENTS
11-05-18: REVISD PER FPD COMMENTS
01-18-19: REVISD PER CITY COMMENTS
FILE: I:\080-020 Cantera Lot 2 Sub Area C\Engineering\Drawings\Final Engineering

JOB NO: 080-020
FIELD BOOK: N/A
FIELD BOOK: N/A
DRAWN BY: MK
CHECKED BY: KEK
COMPLETED:04/07/19

PREPARED FOR:
CANTERA DEVELOPMENT HOLDINGS, LLC.
TWO NORTHFIELD PLAZA, SUITE 320
NORTHFIELD, IL 60093
TEL: (847) 562-2001

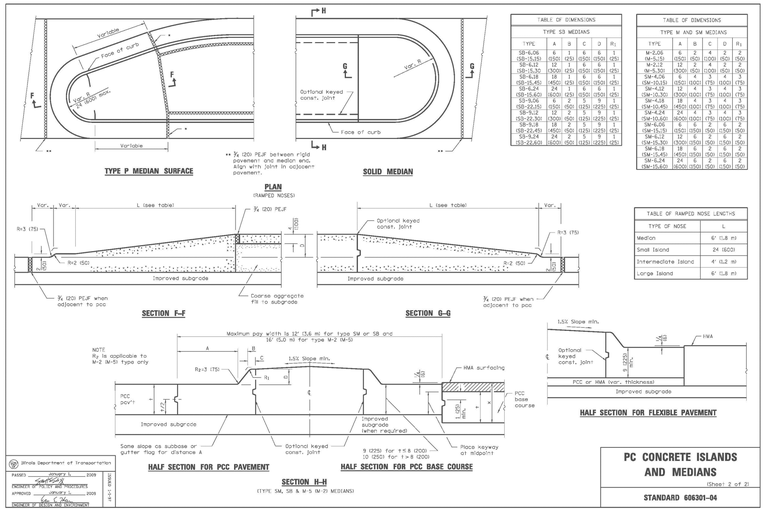
Bollinger, Lach & Associates, Inc.
CONSULTING ENGINEERS
333 PIERCE ROAD SUITE 200 ITASCA, IL 60143
P:(630) 436 6400 F:(630) 436 6444 www.bollingerlach.com
ITASCA * CHICAGO * ALGONQUIN * LAKE GENEVA * SOUTH BEND * INDIANAPOLIS

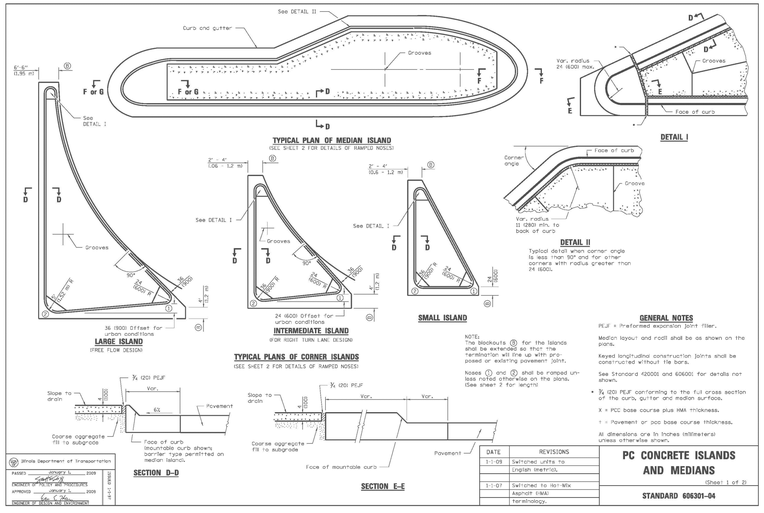
DETAILS

RIVER VIEW WEST
CITY OF WARRENVILLE, ILLINOIS

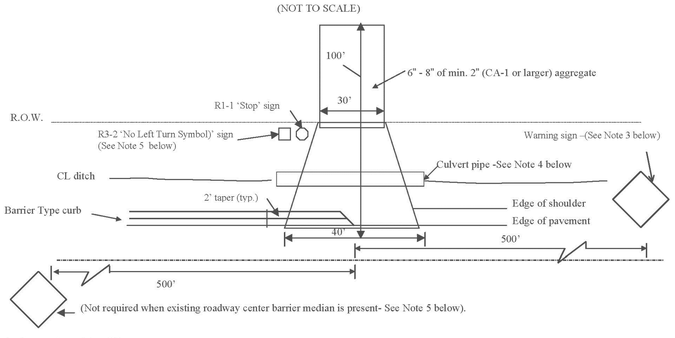
SHEET NUMBER
43
OF 71

Design Firm License No. 184-001129





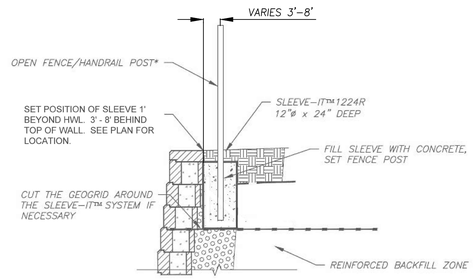
DuPage County Division of Transportation- Temporary Construction Entrance Standard

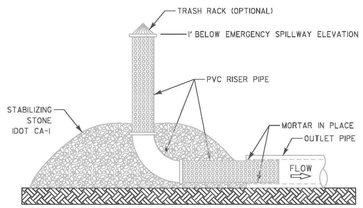


Construction requirements/conditions:

1. Pavement, curb/gutter and storm structures shall be maintained free of mud/debris at all times during construction. Rubber tired equipment and a street sweeper shall be kept on call on an "as needed" basis at all times.
2. The petitioner is solely responsible for any repairs and associated costs necessary for the replacement of any pavement, curb/gutter or sidewalks adjacent to the temporary construction entrance/haul road damaged due to the permitted work.
3. The petitioner is responsible to erect and maintain the black on orange warning signage until the time that the temporary entrance is removed. Signage shall state either: "Construction Entrance 500' " or "Trucks Entering and Leaving Highway" according to the M.U.T.C.D. Signs shall be sand bagged at all times.
4. Culvert pipe shall be a min. 15" dia. x min. 30' length. Side slopes within right of way shall not exceed 3:1.
5. Barrier median on roadway will require that the petitioner/contractor install an R3-2 'No Left Turn (symbol)' sign (per the M.U.T.C.D.) to prevent outbound cross median traffic movements.
6. Disturbed areas of the right of way shall be dressed with a minimum of 6" topsoil and seed with erosion control blanket, hydro-seeded or sod (salt tolerant and staked in place). Erosion control measures shall comply with the minimum requirements of the DuPage County Stormwater and Floodplain Ordinance specifications at all times.

(TempConstStd.doc), rjk (12/16/04 Rev. R.K.)





PVC RISER SHALL HAVE 1" HOLES EVENLY SPACED AROUND THE CIRCUMFERENCE OF THE PIPE AS FOLLOWS:

PIPE DIA (IN)	NUMBER OF 1" HOLES PER LIN FT OF PIPE
5	25
6	30
8	40
10	50
12	60
18	70

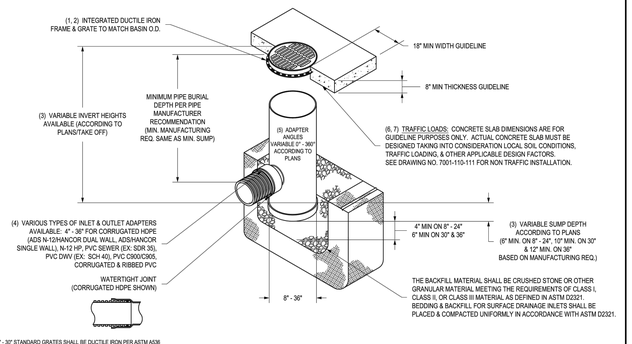
PVC RISER PIPE SHALL BE LOOSELY DOUBLE OR TRIPLE WRAPPED WITH CHICKEN WIRE OR ¼" HARDWARE CLOTH AROUND BOTH MEMBERS AND WRAPPED ON THE OUTSIDE WITH A WOVEN MONOFILAMENT GEOTEXTILE.

PLACE SUFFICIENT CA-1 STONE TO HOLD THE RISER PIPE IN PLACE.

IF TRASH RACK IS PROVIDED, IT SHALL BE SECURELY FASTENED TO THE INLET. TRASH GUARD MAY BE FABRICATED FROM METAL RODS (¼" DIA MIN) OR GALVANIZED WELDED WIRE FABRIC (16 GAGE MIN). THE SPACING BETWEEN VERTICAL MEMBERS SHOULD BE 1 INCH.

PERFORATED RISER DETAIL

NYLOPLAST DRAIN BASIN WITH STANDARD GRATE



1 - 8" - 30" STANDARD GRATES SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05.
2 - 12" - 30" FRAMES SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05. 8" & 10" STANDARD GRATES FIT DIRECTLY ONTO DRAIN BASINS WITH THE USE OF A PVC BODY TOP. SEE DRAWING NO. 7001-110-045.
3 - DRAIN BASIN TO BE CUSTOM MANUFACTURED ACCORDING TO PLAN DETAILS. RISERS ARE NEEDED FOR BASINS OVER 84" DUE TO SHIPPING RESTRICTIONS. SEE DRAWING NO. 7001-110-065.
4 - DRAINAGE CONNECTION STUB JOINT TIGHTNESS SHALL CONFORM TO ASTM D3212 FOR CORRUGATED HDPE (ADS N-12/HANCOR DUAL WALL), N-12 HP, & PVC SEWER (4" - 36").
5 - ADAPTERS CAN BE MOUNTED ON ANY ANGLE 0° TO 360°. TO DETERMINE MINIMUM ANGLE BETWEEN ADAPTERS SEE DRAWING NO. 7001-110-012.
6 - 12" - 30" STANDARD GRATES SHALL MEET H-20 LOAD RATING.
7 - 8" & 10" STANDARD GRATES ARE RATED FOR LIGHT DUTY APPLICATIONS ONLY; NO CONCRETE COLLAR NEEDED FOR LIGHT DUTY RATING.

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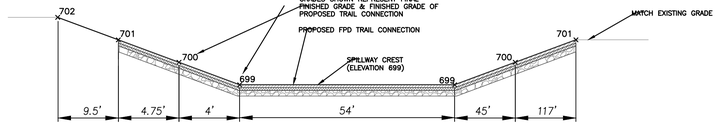
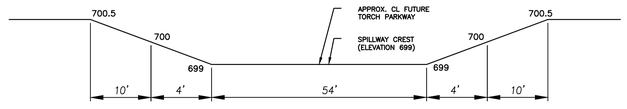
DRAWN BY	ESC	MATERIAL	
DATE	1-23-06		
REVISED BY	NMH	PROJECT NO./NAME	
DATE	06-12-18		
DWG SIZE	A	SCALE 1:40	SHEET 1 OF 1

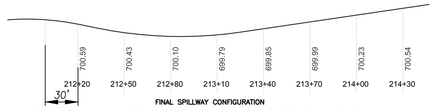
Nyloplast
3130 VERONA AVE
BUFORD, GA 30518
PHN (770) 932-2443
FAX (770) 932-2490
www.nyloplast-us.com
TITLE
DRAIN BASIN WITH STANDARD GRATE
QUICK SPEC INSTALLATION DETAIL
DWG NO. 7001-110-144 REV J



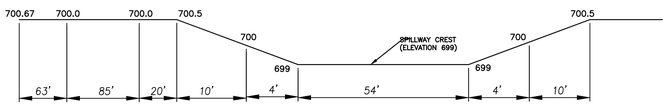
TYPICAL OUTLOT "A" OVERFLOW SPILLWAY TO WEST BRANCH OF DUPAGE RIVER



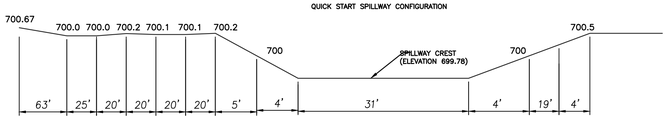
TYPICAL EXISTING OUTLET OVERFLOW SPILLWAY



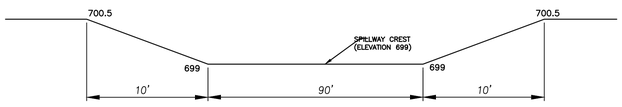
TYPICAL EXISTING OUTLET OVERFLOW SPILLWAY



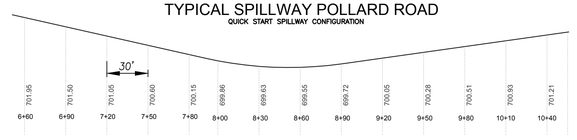
TYPICAL EAST PROPERTY SPILLWAY OVER BIKE PATH
QUICK START SPILLWAY CONFIGURATION



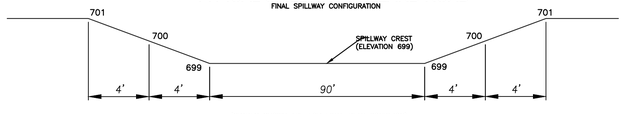
TYPICAL EAST PROPERTY SPILLWAY OVER BIKE PATH
FINAL CONDITIONS SPILLWAY CONFIGURATION



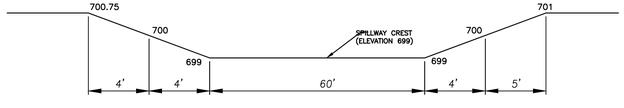
TYPICAL SPILLWAY POLLARD ROAD
QUICK START SPILLWAY CONFIGURATION



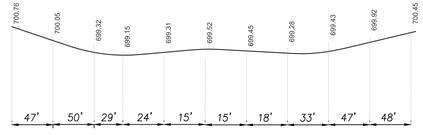
TYPICAL SPILLWAY POLLARD ROAD
FINAL SPILLWAY CONFIGURATION



(GRADES SHOWN ARE FOR FINAL PLAN CONDITION)
TYPICAL SPILLWAY WEST OF TORCH PARKWAY



TYPICAL SPILLWAY EAST OF SOUTHERN TOWNHOMES



REVISIONS:
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△ 11-05-18: REVISD PER FPD COMMENTS
△ 01-18-19: REVISD PER CITY COMMENTS

ASB NO.: 080-020
FIELD BOOK: N/A
FIELD BOOK: N/A
DRAWN BY: MK
CHECKED BY: KEK
COMPLETED: 04/07/18

FILE: V:\080-020 Cantera Lot 2 Sub Area C\Engineering\Drawings\Final Engineering

PREPARED FOR:
CANTERA DEVELOPMENT HOLDINGS, LLC.
TWO NORTHFIELD PLAZA, SUITE 320
NORTHFIELD, IL 60093
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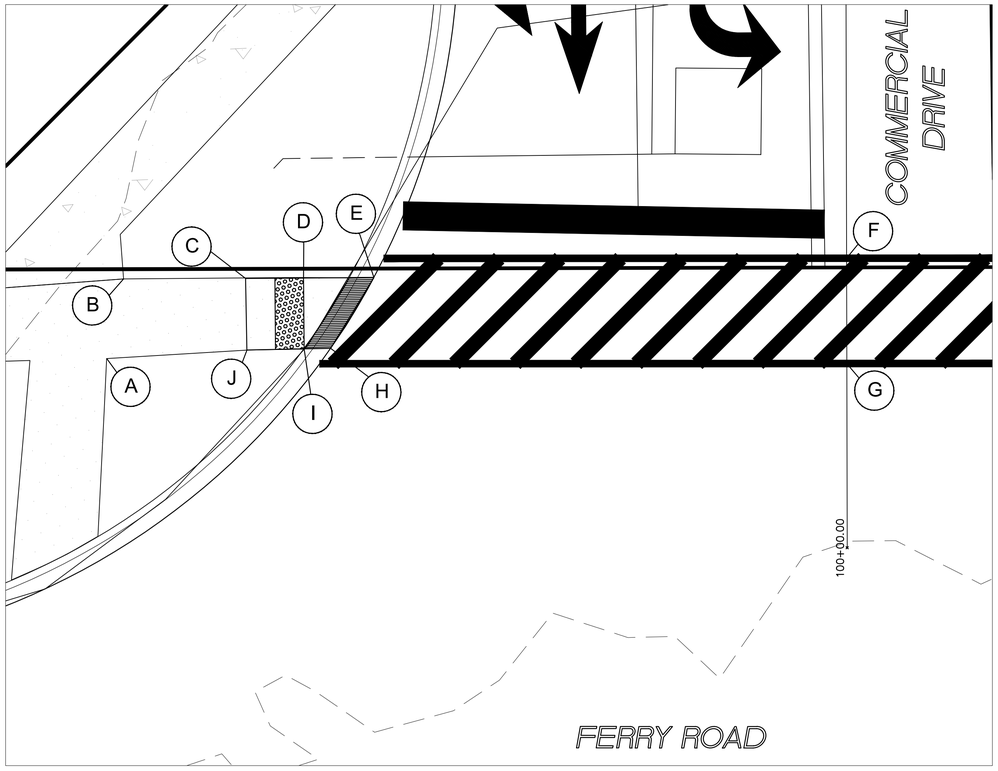
DETAILS

RIVER VIEW WEST
CITY OF WARRENVILLE, ILLINOIS

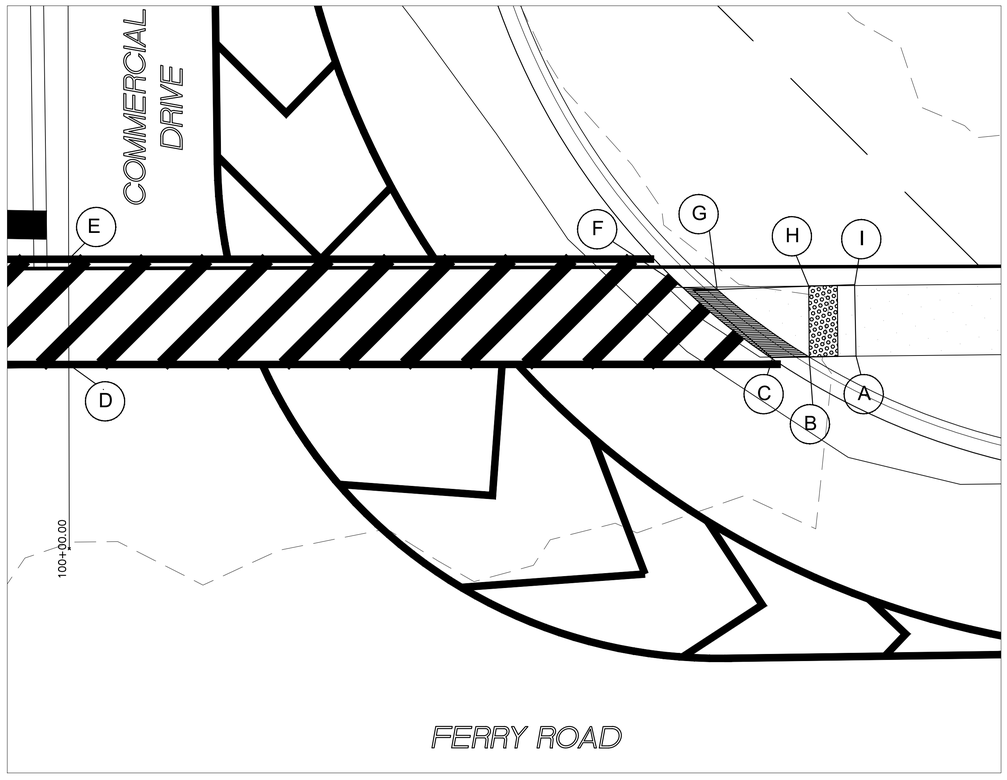
SHEET NUMBER
44
OF 71



STA 100+16.4, 34.5' LT

GRAPHIC SCALE
5' 0 2.5' 5'
(IN FEET)
1 inch = 5' ft.

	STATION	OFFSET	ELEVATION
A	100+13.33	51.71 L	700.00
B	100+18.90	50.52 L	700.00
C	100+18.91	42 L	700.18
D	100+18.93	37.9 L	700.14
E	100+19	33 L	700.10
F	100+20.27	0 L	700.43
G	100+12.90	36 L	700.26
H	100+14	36 L	700.00
I	100+13.98	37.9 L	700.07
J	100+13.91	42 L	700.09



STA 101+16.3, 45' RT

GRAPHIC SCALE
5' 0 2.5' 5'
(IN FEET)
1 inch = 5' ft.

	STATION	OFFSET	ELEVATION
A	100+13.3	55' R	700.09
B	100+13.3	52' R	700.07
C	100+13.3	49' R	700.00
D	100+12.9	0'R	700.26
E	100+20.9	0'R	700.43
F	100+18.16	42.92'R	700.10
G	100+18.04	45.29'R	700.17
H	100+18.26	57.7'R	700.18
I	100+18.34	54.91'R	700.18

LEGEND

- PROPOSED CONCRETE WALK
- PROPOSED DETECTABLE WARNING PANEL
- PROPOSED DEPRESSED CURB & GUTTER
- PROPOSED BITUMINOUS PATH
- EXISTING FERRY ROAD WALK
- PROPOSED CURB & GUTTER

NOTE:
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04-19-19: PER CITY COMMENTS 03-15-19: PER DUDOT COMMENTS
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02-18-19: REVISED PER CITY COMMENTS

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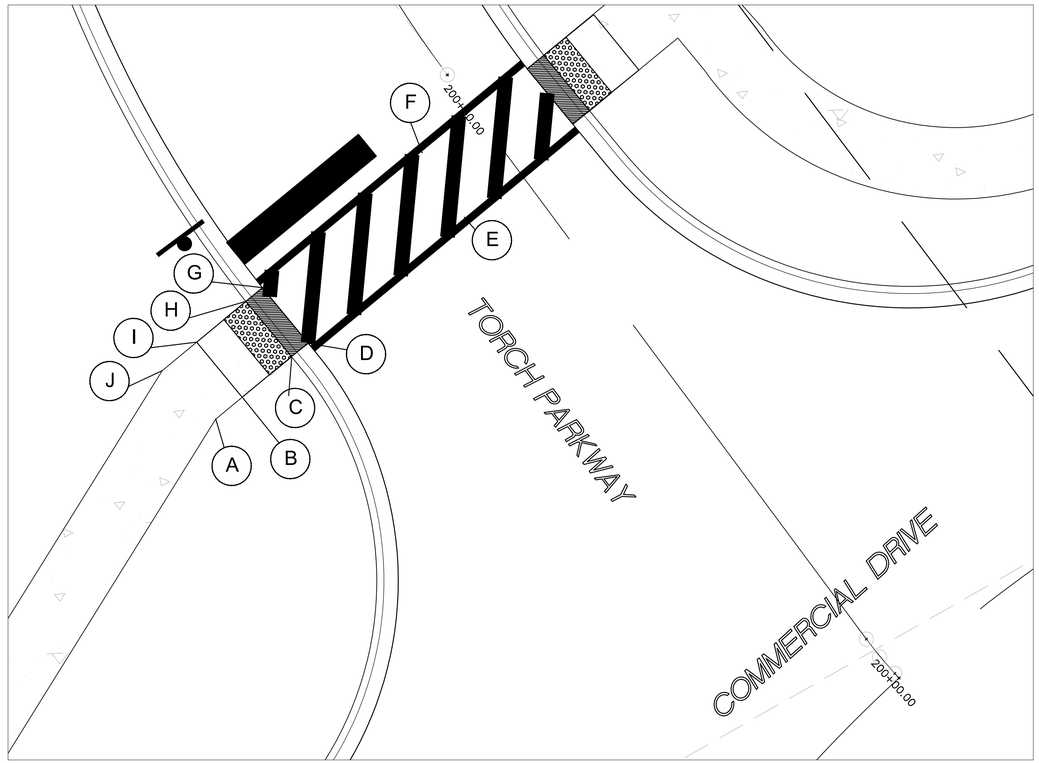
ADA RAMP GRADING PLANS

RIVER VIEW WEST
CITY OF WARRENVILLE, ILLINOIS

SHEET NUMBER
45
OF 71

Design Firm License No. 184-001129
FILE: I:/080-020 Cantera Lot 2 Sub Area C/Engineering/Drawings/Final Engineering

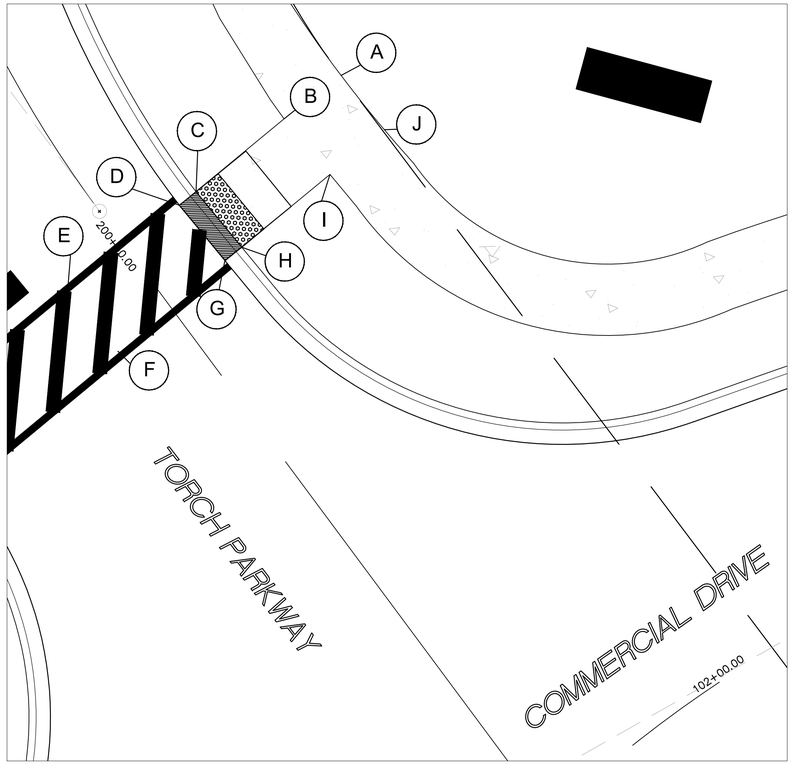
Design Firm License No. 184-001129



STA 200+45.6, 12' LT

GRAPHIC SCALE
5' 0 2.5' 5'
(IN FEET)
1 inch = 5' ft.

	STATION	OFFSET	ELEVATION
A	200+43.00	27.34'L	699.21
B	200+43.12	24.94'L	699.13
C	200+43.33	20.48'L	698.98
D	200+43.33	19'L	698.91
E	200+43.6	7'L	699.07
F	200+49.6	7.26'L	699.06
G	200+48.0	19..24'L	69887.00
H	200+48.35	20.74'L	699.04
I	200+48.11	25.2'L	699.20
J	200+47.90	28.32'L	699.29



STA 200+45.6, 12' RT

GRAPHIC SCALE
5' 0 2.5' 5'
(IN FEET)
1 inch = 5' ft.

	STATION	OFFSET	ELEVATION
A	200+50.43	19.2'R	699.33
B	200+50.17	14.20'R	699.28
C	200+49.75	6.23'R	699.04
D	200+49.56	4.7'R	699.87
E	200+49.6	7.28'R	699.06
F	200+43.6	7.0'R	699.07
G	200+44.7	5.0'R	698.91
H	200+44.7	6.5'R	699.98
I	200+45.1	14.5'R	699.37
J	200+45.3	19.4'R	699.43

LEGEND
- PROPOSED CONCRETE WALK
- PROPOSED DETECTABLE WARNING PANEL
- PROPOSED DEPRESSED CURB & GUTTER
- PROPOSED BITUMINOUS PATH
- EXISTING FERRY ROAD WALK
- PROPOSED CURB & GUTTER

NOTE:
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2) REFER TO DETAIL SHEETS FOR ADA RAMP DETAIL

03-25-19: PER FPD COMMENTS
03-15-19: PER DUDOT COMMENTS
02-25-19: PER INTERNAL COORDINATION

PREPARED FOR:
CANTERA DEVELOPMENT HOLDINGS, LLC.
TWO NORTHFIELD PLAZA, SUITE 320
NORTHFIELD, IL 60093
TEL: (847) 562-2001

REVISIONS:
- 09-18-18: REVISED PER CITY COMMENTS
- 11-05-18: REVISED PER FPD COMMENTS
- 01-18-19: REVISED PER CITY COMMENTS
- 02-18-19: REVISED PER CITY COMMENTS

JOB NO: 080-020
FIELD BOOK: N/A
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DRAWN BY: MK
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COMPLETED: 04/07/18
FILE: I:\080-020 Cantera Lot 2 Sub Area 5\Engineering\Drawings\Final Engineering

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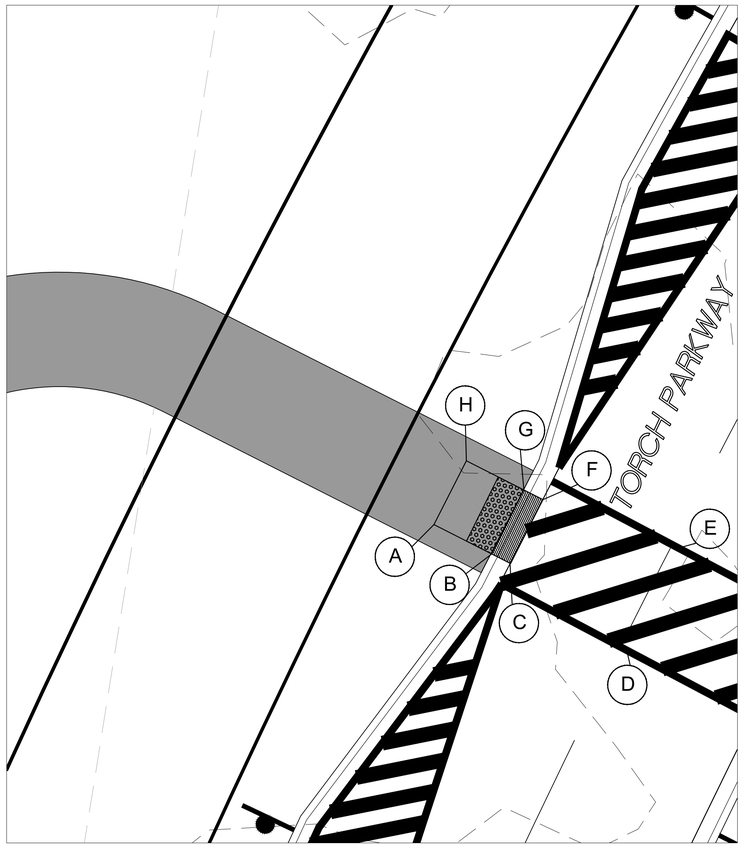
ADA RAMP GRADING PLANS

RIVER VIEW WEST
CITY OF WARRENVILLE, ILLINOIS

SHEET NUMBER
46
OF 71

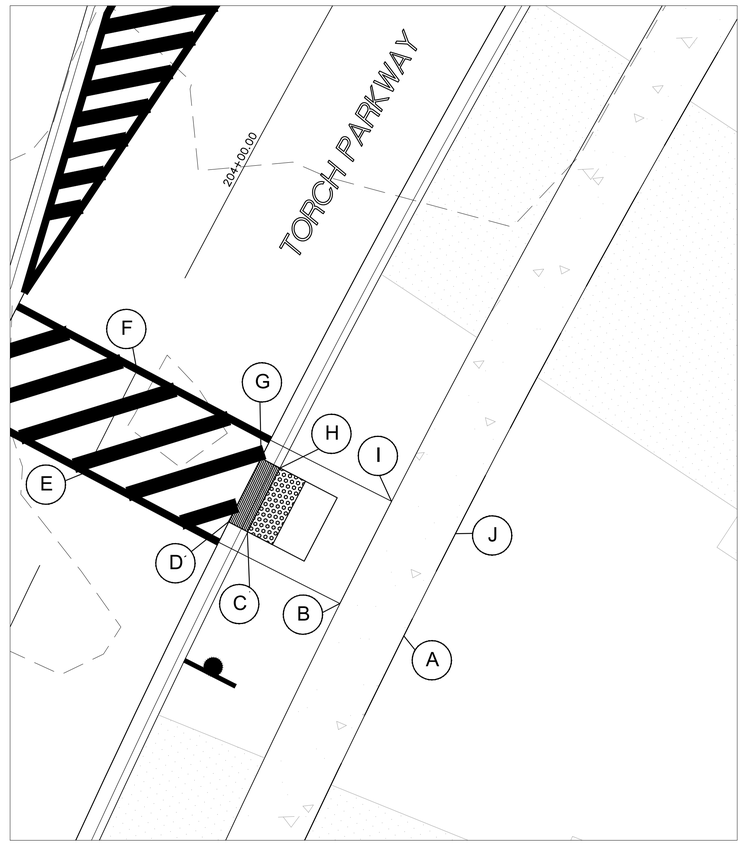
Design Firm License No. 184-001129



STA 203+80, 9.5' LT

GRAPHIC SCALE
5′ 0 2.5′ 5′
(IN FEET)
1 inch = 5′ ft.

	STATION	OFFSET	ELEVATION
A	203+77.5	15.5'L	701.11
B	203+77.4	12.9'L	701.09
C	203+77.4	9.5'L	701.00
D	203+75.7	0.5'L	701.14
E	203+83.7	0.5'L	701.17
F	203+82.4	9.5'L	701.00
G	203+82.4	12.97'L	701.08
H	203.22.4	15.5'L	701.09



STA 203+80, 10.5' RT

GRAPHIC SCALE
5′ 0 2.5′ 5′
(IN FEET)
1 inch = 5′ ft.

	STATION	OFFSET	ELEVATION
A	203+75.3	25'R	701.18
B	203+75.3	20'R	701.13
C	203+77	12'R	700.97
D	203+77	1050'R	700.90
E	203+75.7	0.5'R	701.14
F	203+83.7	0.5'R	701.17
G	203+82.1	10.5'R	700.93
H	203+82.0	12'R	701.00
I	203+83.5	20'R	701.16
J	203+83.6	25'R	701.21

LEGEND

- PROPOSED CONCRETE WALK
- PROPOSED DETECTABLE WARNING PANEL
- PROPOSED DEPRESSED CURB & GUTTER
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- EXISTING FERRY ROAD WALK
- PROPOSED CURB & GUTTER

NOTE:
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TWO NORTHFIELD PLAZA, SUITE 320
NORTHFIELD, IL 60093
TEL: (847) 562-2001

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△11-05-18: REVISED PER FPD COMMENTS	FIELD BOOK: N/A
△01-18-19: REVISED PER CITY COMMENTS	DRAWN BY: MK
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FILE: I:\080-020 Cantera Lot 2 Sub Area C\Engineering\Drawings	COMPLETED:04/07/19

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ADA RAMP GRADING PLANS

RIVER VIEW WEST
CITY OF WARRENVILLE, ILLINOIS

SHEET NUMBER
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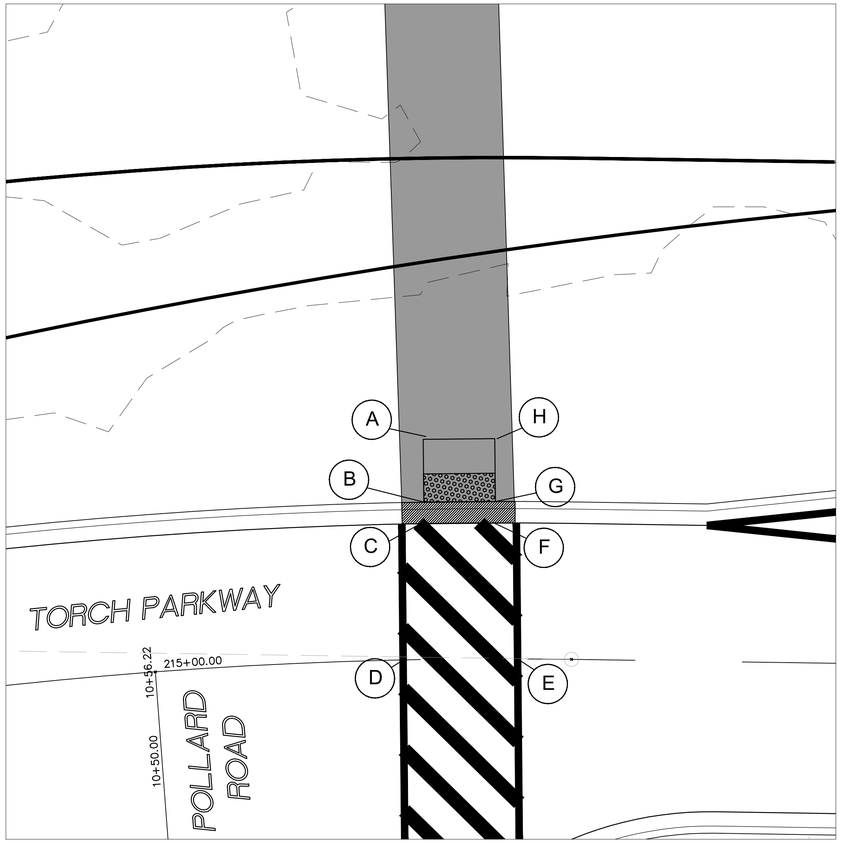
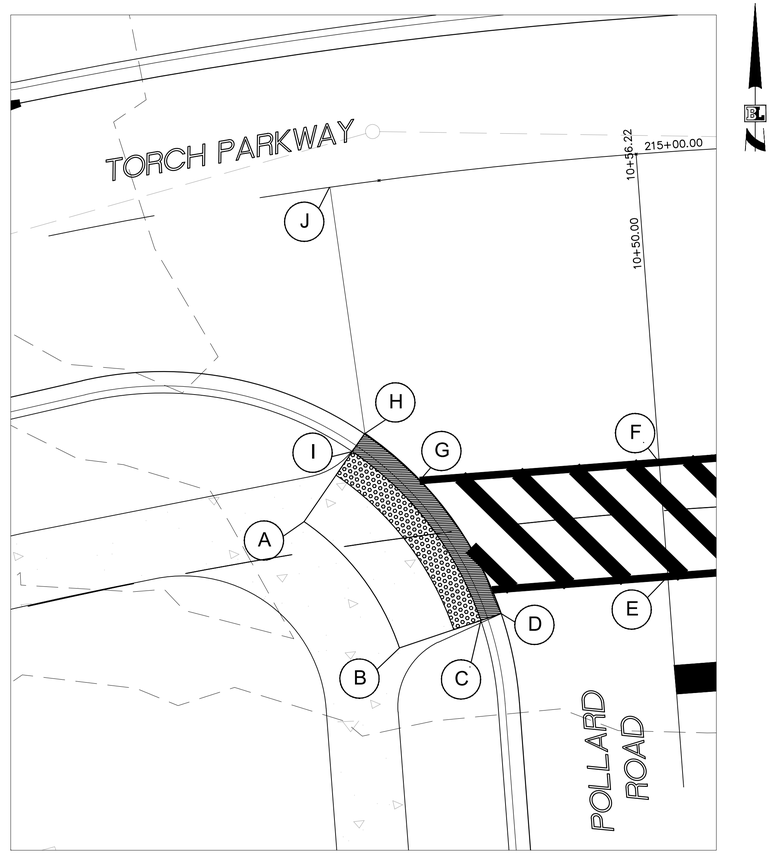


STA 215+18.7, 9.5' LT

GRAPHIC SCALE
5' 0 2.5' 5'
(IN FEET)
1 inch = 5' ft.

	STATION	OFFSET	ELEVATION
A	215+16.33	15.4'L	701.31
B	215+16.3	11.0'L	701.26
C	215+16.3	9.5'L	701.19
D	215+14.7	0'L	701.38
E	215+22.7	0'L	701.44
F	215+21.02	9.5'L	701.25
G	215+21.14	11'L	701.32
H	215+21.10	15.4'L	701.37



STA 10+31.45, 14.6' LT

GRAPHIC SCALE
5' 0 2.5' 5'
(IN FEET)
1 inch = 5' ft.

	STATION	OFFSET	ELEVATION
A	10+32.3	25.1'R	700.96
B	10+23.05	19.1'R	700.89
C	10+24.5	13.3'R	700.83
D	10+24.9	11.8'R	700.76
E	10+26.62	0'R	701.00
F	10+34.6	0'R	701.07
G	10+34.6	16'R	700.81
H	10+38.14	20.4'R	700.85
I	10+36.97	21.33'R	700.92
J	214+75.83	0'R	701.03

LEGEND

- PROPOSED CONCRETE WALK
- PROPOSED DETECTABLE WARNING PANEL
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ADA RAMP GRADING PLANS

RIVER VIEW WEST
CITY OF WARRENVILLE, ILLINOIS

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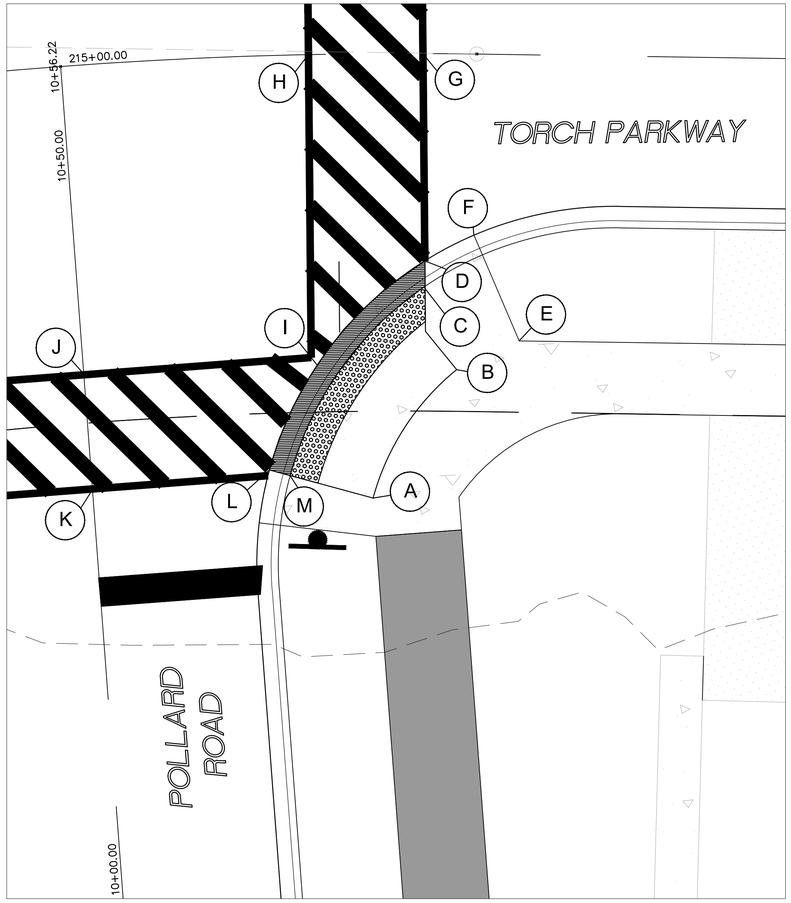
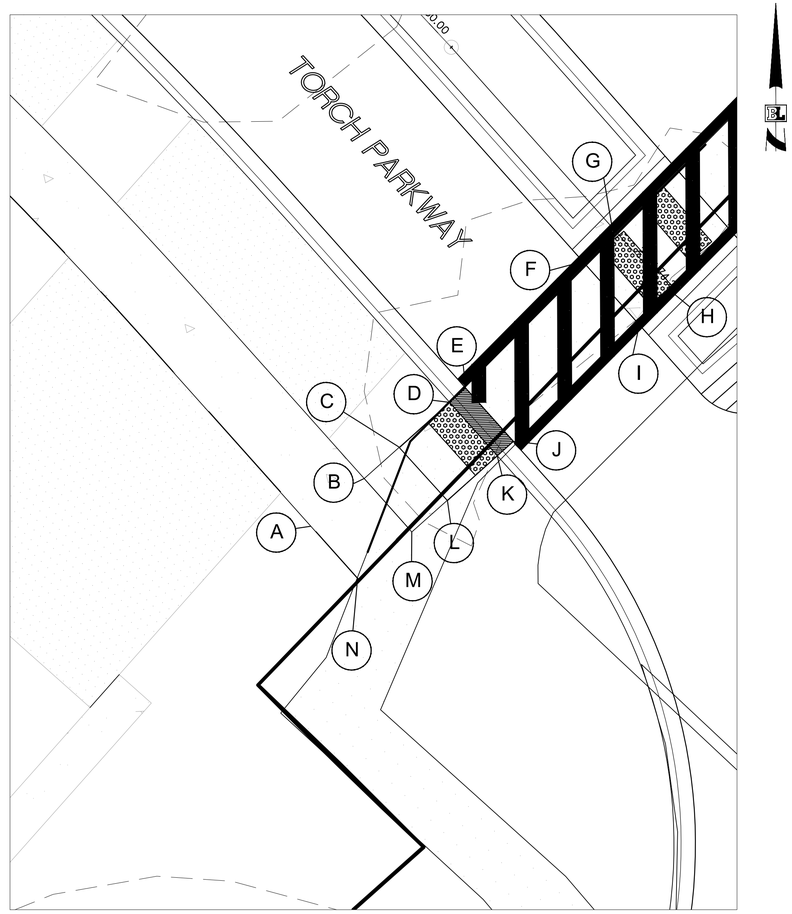


STA 10+33.8, 16.1' LT

GRAPHIC SCALE
5' 0 2.5' 5'
(IN FEET)
1 inch = 5' ft.

	STATION	OFFSET	ELEVATION
A	10+24.5	19.5'L	701.00
B	10+33.0	26'L	701.10
C	10+39.0	24.24'L	701.08
D	10+40.77	24.4'L	701.01
E	215+29.70	20.0'L	701.20
F	215+26.4	12.7'L	701.18
G	215+22.7	0'L	701.44
H	215+14.7	0'L	701.38
I	10+34.0	16.33'L	700.83
J	10+34.0	0.43'L	701.07
K	10+26.6	0'L	701
L	10+27.0	12.44'L	700.75
M	10+26.5	13.86'L	700.82



STA 219+74, 15.11' RT

GRAPHIC SCALE
5' 0 2.5' 5'
(IN FEET)
1 inch = 5' ft.

	STATION	OFFSET	ELEVATION
A	219+71.44	29.6'R	704.00
B	219+71.44	24.6'R	703.95
C	219+71.44	21.3'R	703.85
D	219+71.44	16.6'R	703.71
E	219+71.44	15.11'R	703.64
F	219+70.2	3.11'R	703.88
G	219+70.1	0'R	703.94
H	219+76.2	0'R	704.20
I	219+76.16	3.2'R	703.96
J	219+76.26	15.25'R	703.72
K	219+76.26	16.6'R	703.79
L	219+76.26	21.3'R	70391
M	219+76.26	24.6'R	704
N	219+76.26	29.61'R	704.05

LEGEND

- PROPOSED CONCRETE WALK
- PROPOSED DETECTABLE WARNING PANEL
- PROPOSED DEPRESSED CURB & GUTTER
- PROPOSED BITUMINOUS PATH
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- PROPOSED CURB & GUTTER

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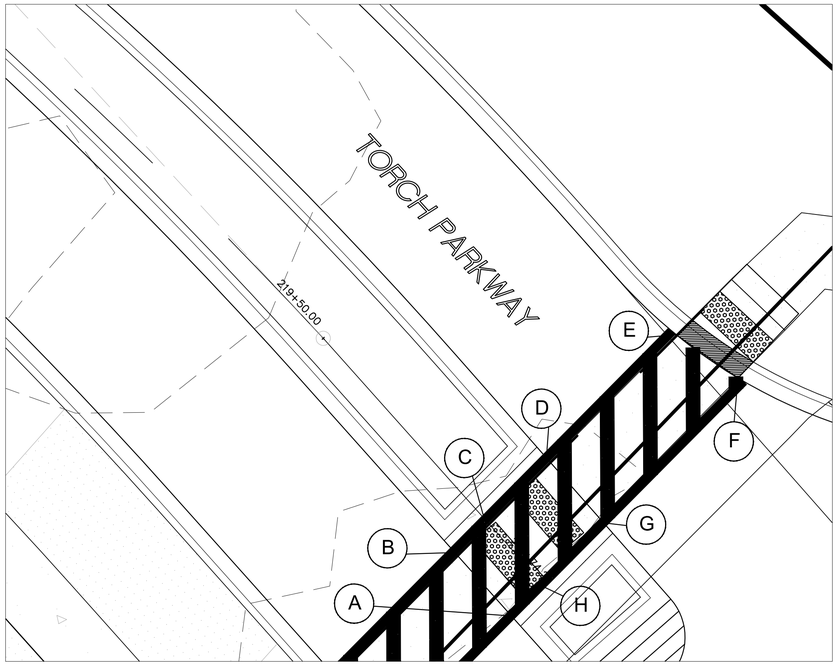
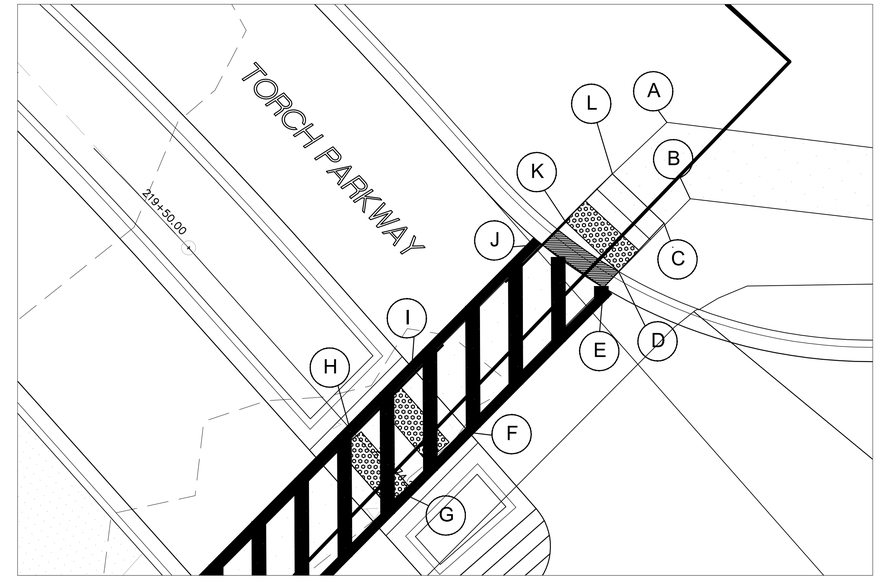
OF 71

Design Firm License No. 184-001129



STA 219+73, 3' LT

	STATION	OFFSET	ELEVATION
A	219+76.24	3.1'L	703.96
B	219+70.16	3.1'L	703.88
C	219+70.0	0'L	703.94
D	219+70.0	6.1'L	703.82
E	219+69.2	18.57'L	703.57
F	219+74.35	19.7'L	703.63
G	219+75.66	6.1'L	703.90
H	219+76.0	0'L	704.02



GRAPHIC SCALE
5' 0 2.5' 5'
(IN FEET)
1 inch = 5' ft.

STA 219+72, 19.2' LT

	STATION	OFFSET	ELEVATION
A	219+687	30.79'L	703.73
B	219+73.8	28.39'L	703.78
C	219+73.87	25.86'L	703.75
D	219+74.3	21.22'L	703.70
E	219+74.4	19.7'L	703.63
F	219+74.7	6.1'L	703.90
G	219+76.0	0'L	704.02
H	219+70.0	0'L	703.94
I	219+70.0	6.1'L	703.82
J	219+69.22	8.57'L	703.57
K	219+69.0	20.9'L	703.58
L	219+68.8	25.53'L	703.63

LEGEND

- PROPOSED CONCRETE WALK
- PROPOSED DETECTABLE WARNING PANEL
- PROPOSED DEPRESSED CURB & GUTTER
- PROPOSED BITUMINOUS PATH
- EXISTING FERRY ROAD WALK
- PROPOSED CURB & GUTTER

NOTE:
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FILE: I:/080-020 Cantera Lot 2 Sub Area C/Engineering/Drawings

JOB NO: 080-020
FIELD BOOK: N/A
FIELD BOOK: N/A
DRAWN BY: MK
CHECKED BY: KEK
COMPLETED: 04/07/18

PREPARED FOR:
CANTERA DEVELOPMENT HOLDINGS, LLC.
TWO NORTHFIELD PLAZA, SUITE 320
NORTHFIELD, IL 60093
TEL: (847) 562-2001

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ITASCA * CHICAGO * ALGONQUIN * LAKE GENEVA * SOUTH BEND * INDIANAPOLIS

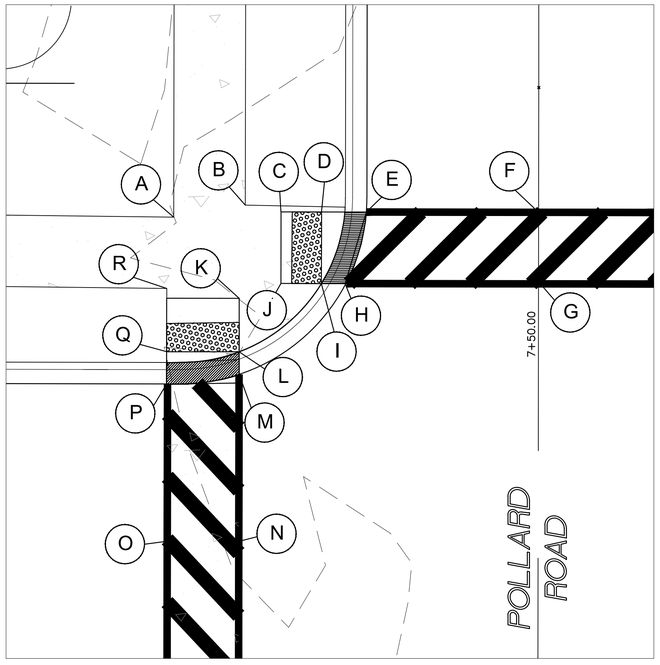
ADA RAMP GRADING PLANS

RIVER VIEW WEST
CITY OF WARRENVILLE, ILLINOIS

SHEET NUMBER
50
OF 71

Design Firm License No. 184-001129

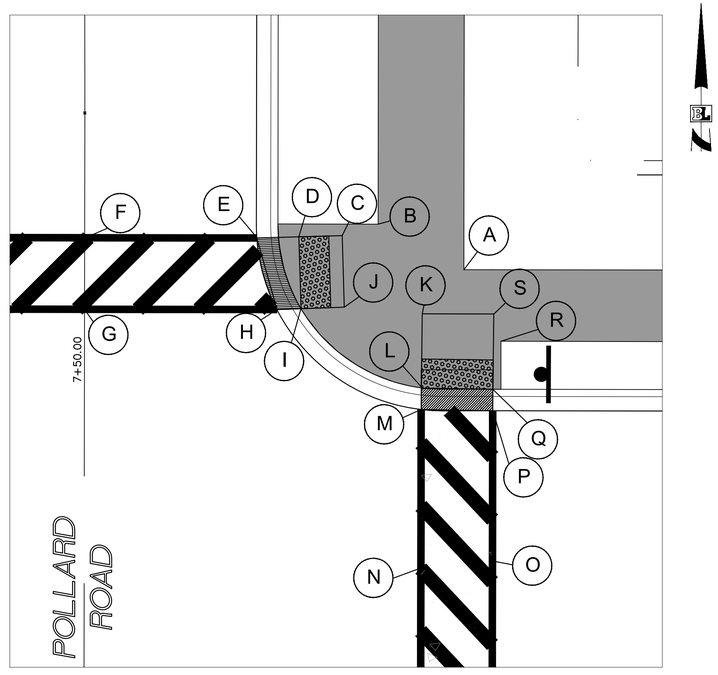
FILE: I:/080-020 Cantera Lot 2 Sub Area C/Engineering/Drawings/Final Engineering



STA 7+56.2, 12.77' LT
STA 7+46.5, 23.45' LT

GRAPHIC SCALE
5' 0 2.5' 5'
(IN FEET)
1 inch = 5' ft.

	STATION	OFFSET	ELEVATION
A	7+58.14	25.5'L	700.55
B	7+59.0	20.50'L	700.50
C	7+5852	18.0'L	700.42
D	7+5852	15.17'L	700.33
E	7+5852	12.0'L	700.23
F	7+5852	0'L	700.47
G	7+53.52	0'L	700.55
H	7+53.52	13.45'L	700.28
I	7+53.52	15.15'L	700.35
J	7+53.52	18.0'L	700.44
K	7+52.48	20.92'L	700.5
L	7+48.74	20.91'L	700.67
M	7+47.15	20.91'L	700.6
N	7+35.5	20.91'L	700.82
O	7+35.5	25.91'L	700.92
P	7+46.49	25.98'L	700.7
Q	7+48.74	25.98'L	700.77
R	7+53.16	25.98'L	700.55



STA 7+56.02, 12.74' RT
STA 7+46.5, 26' RT

GRAPHIC SCALE
5' 0 2.5' 5'
(IN FEET)
1 inch = 5' ft.

	STATION	OFFSET	ELEVATION
A	7+56.33	26.50'R	700.55
B	7+59.51	18.0'R	700.50
C	7+58.52	18.0'R	700.42
D	7+58.52	15.0'R	700.33
E	7+58.52	12.0'R	700.20
F	7+58.52	0'R	700.47
G	7+53.52	0'R	700.55
H	7+53.52	13.44'R	700.28
I	7+53.52	15.13'R	700.35
J	7+53.52	18.14'R	700.44
K	7+53.24	23.60'R	700.5
L	7+48.07	23.53'R	700.57
M	7+46.56	23.53'R	700.5
N	7+35.48	23.53'R	700.82
O	7+35.48	28.53'R	700.82
P	7+46.56	28.54'R	700.6
Q	7+47.98	28.54'R	700.67
R	7+51.33	291.'R	700.57
S	7+53.2	28.6'R	700.5

LEGEND

- PROPOSED CONCRETE WALK
- PROPOSED DETECTABLE WARNING PANEL
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- PROPOSED BITUMINOUS PATH
- EXISTING FERRY ROAD WALK
- PROPOSED CURB & GUTTER

NOTE:
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COMPLETED: 04/07/18

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ADA RAMP GRADING PLANS

RIVER VIEW WEST
CITY OF WARRENVILLE, ILLINOIS

SHEET NUMBER
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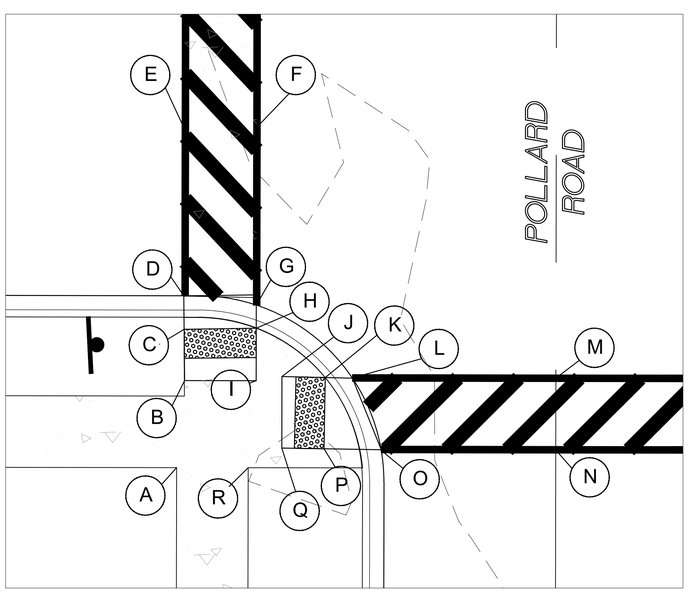
OF 71

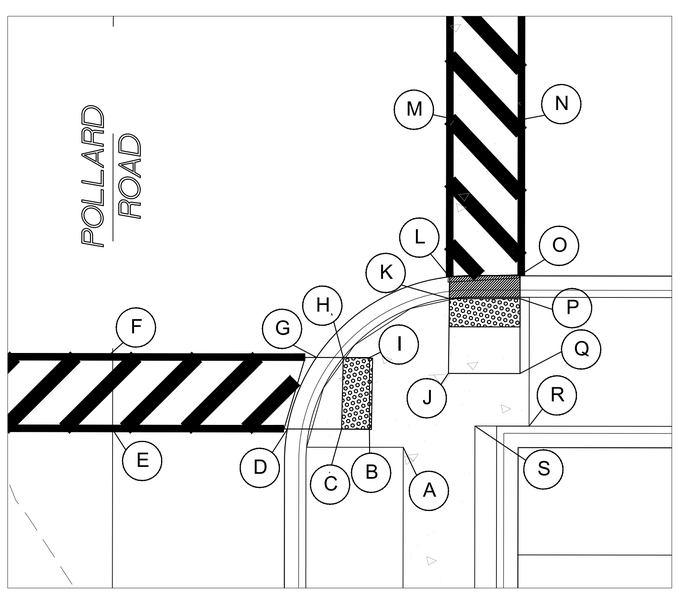
Design Firm License No. 184-001129



STA 7+24.5, 23.5' LT
STA 7+16.25, 13.2' LT

GRAPHIC SCALE
5' 0 2.5' 5'
(IN FEET)
1 inch = 5' ft.

	STATION	OFFSET	ELEVATION
A	7+12.2	26.76'L	701.20
B	7+18.57	25.94'L	701.19
C	7+22.15	25.98'L	701.19
D	7+24.48	25.91'L	701.12
E	7+35.5	25.91'L	700.92
F	7+35.5	20.91'L	700.82
G	7+23.84	20.94'L	701.02
H	7+22.23	20.94'L	701.09
I	7+18.57	20.94'L	701.09
J	7+18.86	19.14'L	701.05
K	7+18.79	16.11'L	700.9
L	7+18.75	14.21'L	700.83
M	7+18.77	0'L	701.07
N	7+13.77	0'L	701.14
O	7+13.77	12.19'L	700.9
P	7+13.77	16.19'L	700.97
Q	7+13.86	19.14'L	701.06
R	7+12.48	21.49'L	701.12



STA 7+24.2, 25.94' RT
STA 7+16.25, 12.7' RT

GRAPHIC SCALE
5' 0 2.5' 5'
(IN FEET)
1 inch = 5' ft.

	STATION	OFFSET	ELEVATION
A	7+12.48	20.31'R	701.15
B	7+13.73	18.08'R	701.10
C	7+13.73	16.0'R	701.05
D	7+13.75	12.21'R	700.98
E	7+13.77	0'R	701.14
F	7+18.77	0'R	701.07
G	7+18.75	14.24'R	700.93
H	7+18.75	16.11'R	701.00
I	7+18.71	18.15'R	701.06
J	7+17.65	23.45'R	701.15
K	7+22.88	23.51'R	701.11
L	7+24.39	23.53'R	701.04
M	7+35.48	23.53'R	700.82
N	7+35.48	28.53'R	700.82
O	7+24.54	28.45'R	701.04
P	7+22.88	28.45'R	701.11
Q	7+17.65	28.45'R	701.21
R	7+13.99	29.10'R	701.26
S	7+13.98	25.31'R	701.2

LEGEND

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- PROPOSED DETECTABLE WARNING PANEL
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NOTE:
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NORTHFIELD, IL 60093
TEL.:(847) 562-2001

REVISIONS:	JOB NO: 080-020
△ 09-18-18: REVISED PER CITY COMMENTS	FIELD BOOK: N/A
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ADA RAMP GRADING PLANS

RIVER VIEW WEST
CITY OF WARRENVILLE, ILLINOIS

SHEET NUMBER
52
OF 71

FILE: I:\080-020 Cantera Lot 2 Sub Area C\Engineering\Drawings\Final Engineering

Design Firm License No. 184-001129

STA 4+20, 12' LT
STA 3+99, 24' LT

GRAPHIC SCALE
5' 0 2.5' 5'
(IN FEET)
1 inch = 5' ft.

	STATION	OFFSET	ELEVATION
A	4+09.43	26.48'L	702.70
B	4+05.1	26.48'L	702.65
C	4+01.05	26.48'L	702.62
D	3+99.0	26.48'L	702.55
E	3+87.0	26.72'L	702.43
F	3+87.05	21.22'L	702.34
G	3+99.50	21.48'L	702.46
H	4+01.05	21.48'L	702.53
I	4+05.09	21.48'L	702.58
J	4+17.50	21.46'L	702.50
K	4+1750	17.95'L	702.34
L	4+1754	13.5'L	702.19
M	4+17.54	12.0'L	702.12
N	4+17.54	0'L	702.36
O	4+22.50	0'L	702.31
P	4+22.45	12.00'L	702.07
Q	4+22.49	13.50'L	702.14
R	4+22.49	17.93'L	702.34
S	4+22.49	21.46'L	702.5
T	4+22.57	26.46'L	702.5

STA 4+20, 12' RT
STA 3+99, 23' RT

GRAPHIC SCALE
5' 0 2.5' 5'
(IN FEET)
1 inch = 5' ft.

	STATION	OFFSET	ELEVATION
A	4+22.50	25.3'R	702.33
B	4+22.50	20.3'R	702.28
C	4+22.50	18.0'R	702.22
D	4+22.50	12.0'R	702.07
E	4+22.50	0'R	702.31
F	4+17.50	0'R	702.36
G	4+17.50	12.0'R	702.12
H	4+17.50	18.0'R	702.27
I	4+17.50	20.30'R	702.38
J	4+50.70	20.25'R	702.20
K	4+0170	20.25'R	702.12
L	3+99.98	20.25'R	702.05
M	3+87.0	20.0'R	702.29
N	3+99.98	25.50'R	702.26
O	4+01.70	25.25'R	702.02
P	4+01.70	25.25'R	702.09
Q	4+05.70	25.25'R	702.2

LEGEND
- PROPOSED CONCRETE WALK
- PROPOSED DETECTABLE WARNING PANEL
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- PROPOSED CURB & GUTTER

NOTE:
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ADA RAMP GRADING PLANS

RIVER VIEW WEST
CITY OF WARRENVILLE, ILLINOIS

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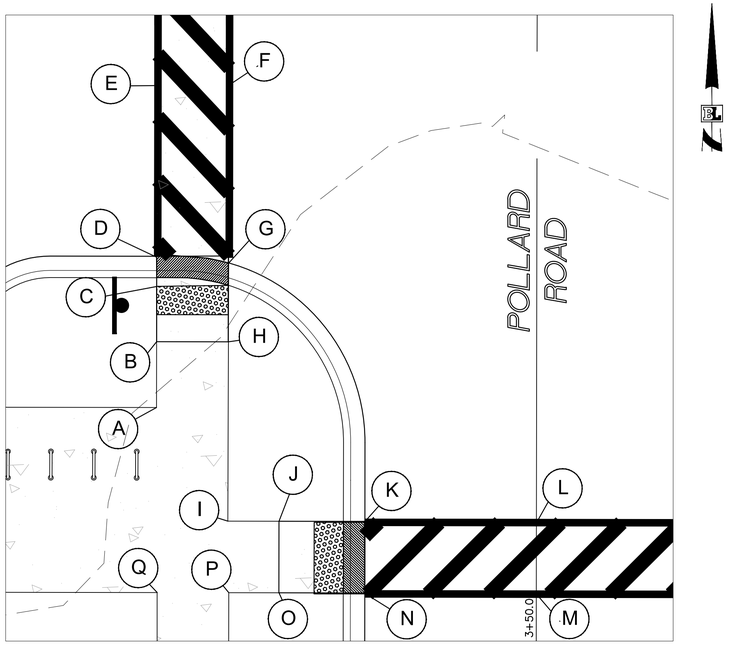
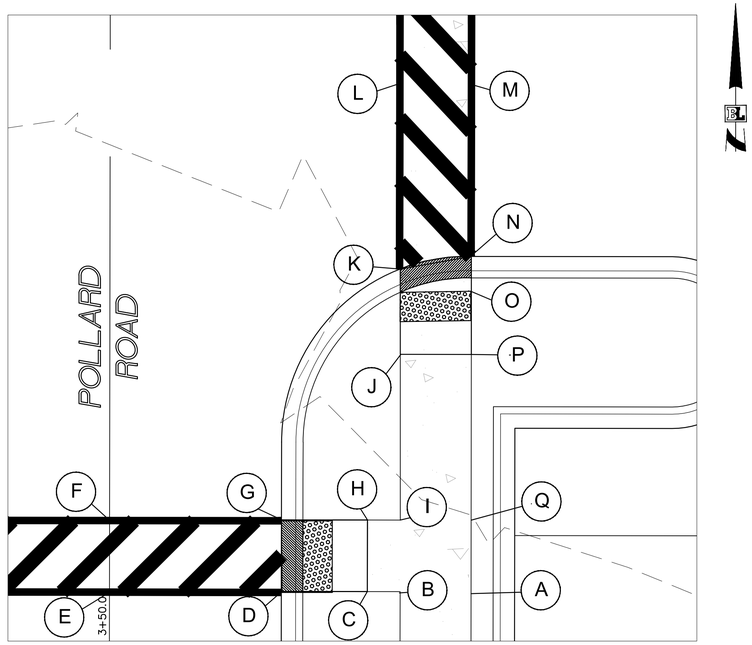


STA 3+75, 24' LT
STA 3+54, 12' LT

GRAPHIC SCALE
5' 0 2.5' 5'
(IN FEET)
1 inch = 5' ft.

	STATION	OFFSET	ELEVATION
A	3+64.4	26.6	702.70
B	3+69.0	26.6	702.65
C	3+72.9	26.6	702.62
D	3+75.0	26.6	702.55
E	3+87.05	26.72	702.43
F	3+87.7	21.22	702.34
G	3+74.54	21.55	702.46
H	3+69.04	21.55	702.58
I	3+56.61	21.55	702.50
J	3+56.61	18	702.36
K	3+56.61	12	702.16
L	3+56.61	0	702.4
M	3+51.51	0	702.34
N	3+51.51	12	702.1
O	3+51.51	18	702.36
P	3+51.51	21.49	702.5
Q	3+51.51	26.49	702.55



STA 3+74.5, 23' RT
STA 3+54, 12' RT

GRAPHIC SCALE
5' 0 2.5' 5'
(IN FEET)
1 inch = 5' ft.

	STATION	OFFSET	ELEVATION
A	3+51.51	25.3	702.42
B	3+51.51	20.3	702.37
C	3+51.51	18	702.32
D	3+51.51	12	702.10
E	3+51.51	0	702.34
F	3+56.51	0	702.40
G	3+56.51	12	702.16
H	3+56.51	18	702.32
I	3+56.51	20.3	70237.00
J	3+68.08	20.2	702.16
K	3+74.04	20.2	70205
L	3+87.05	20	702.29
M	3+87.05	25.25	702.26
N	3+74.93	25.25	702.02
O	3+72.49	25.25	702.1
P	3+68.08	25.25	702.16
Q	3+56.50	25.3	702.42

LEGEND

- PROPOSED CONCRETE WALK
- PROPOSED DETECTABLE WARNING PANEL
- PROPOSED DEPRESSED CURB & GUTTER
- PROPOSED BITUMINOUS PATH
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- PROPOSED CURB & GUTTER

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RIVER VIEW WEST
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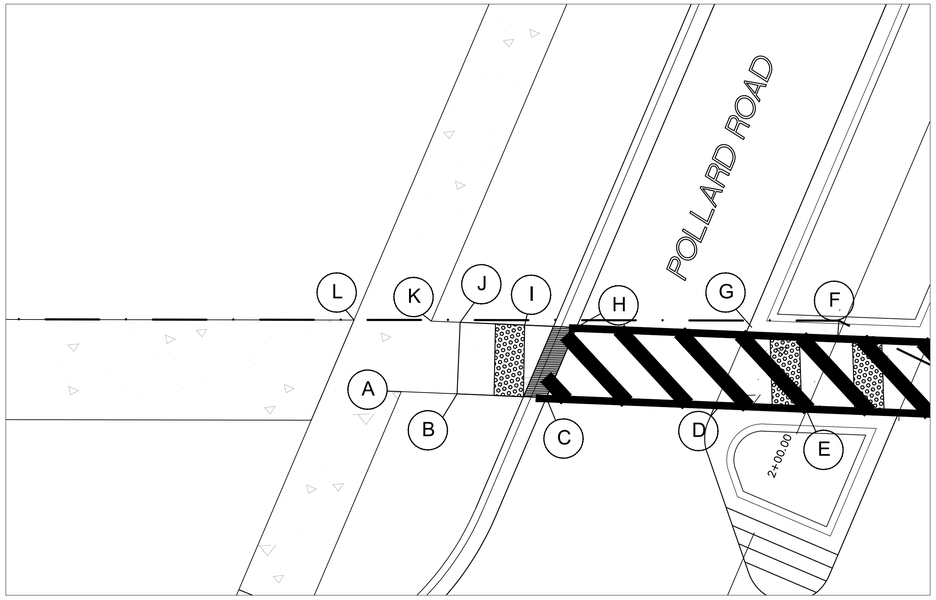
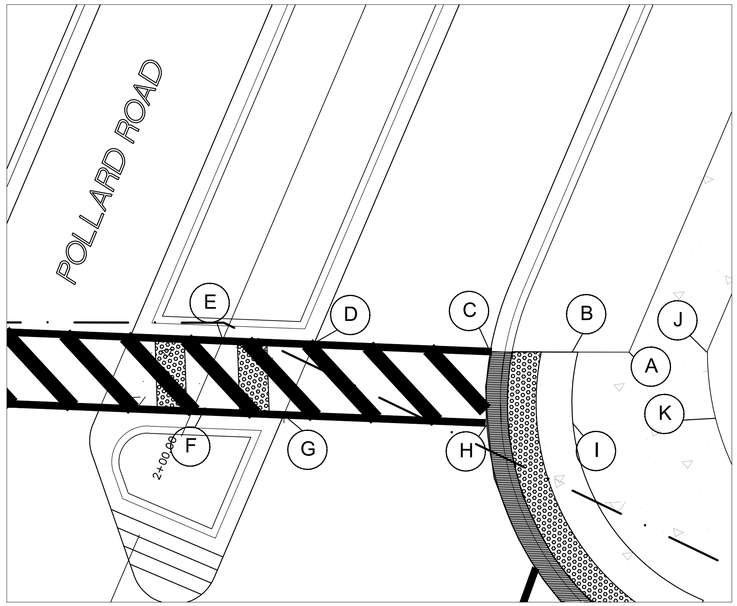


STA 2+00, 17.1' LT

GRAPHIC SCALE
5′ 0 2.5′ 5′
(IN FEET)
1 inch = 5′ ft.

	STATION	OFFSET	ELEVATION
A	1+93.74	26.56	702.27
B	1+95.13	22.91	702.16
C	1+97.26	12.09	701.96
D	2+01.42	6.02	702.18
E	2+03.65	0	702.30
F	2+09.11	0	702.24
G	2+06.19	6.02	702.12
H	2+02.67	17.07	701.90
I	2+01.46	20.45	701.99
J	1+99.18	24.67	702.16
K	1+99.18	26.56	702.22
L	1+97.05	31.56	702.27



STA 2+06, 0' RT

GRAPHIC SCALE
5′ 0 2.5′ 5′
(IN FEET)
1 inch = 5′ ft.

	STATION	OFFSET	ELEVATION
A	2+19.55	26.45	702.21
B	2+15.00	22.79	72.09
C	2+15.64	19.27	701.85
D	2+11.45	5.98	702.12
E	2+09.11	0	702.24
F	2+03.65	0	702.30
G	2+05.86	5.98	702.18
H	2+11.01	19.28	701.91
I	2+11.79	20.99	702.15
J	2+13.39	24.75	72.25
K	2+16.61	32.67	702.25

LEGEND

- PROPOSED CONCRETE WALK
- PROPOSED DETECTABLE WARNING PANEL
- PROPOSED DEPRESSED CURB & GUTTER
- PROPOSED BITUMINOUS PATH
- EXISTING FERRY ROAD WALK
- PROPOSED CURB & GUTTER

NOTE:
1) SCALE FOR ADA GRADING VEW IS 1"=5'
2) REFER TO DETAIL SHEETS FOR ADA RAMP DETAIL

△ 04-19-19: PER CITY COMMENTS △ 03-15-19: PER DUDOT COMMENTS
△ 03-25-19: PER FPD COMMENTS △ 02-25-19: PER INTERNAL COORDINATION

REVISIONS:

△ 09-18-18: REVISED PER CITY COMMENTS	JOB NO: 080-020
△ 11-05-18: REVISED PER FPD COMMENTS	FIELD BOOK: N/A
△ 01-18-19: REVISED PER CITY COMMENTS	FIELD BOOK: N/A
△ 02-18-19: REVISED PER CITY COMMENTS	DRAWN BY: MK
FILE: I:\080-020 Cantera Lot 3 Sub Area C\Engineering\Drawings	CHECKED BY: KEK
	COMPLETED: 04/07/19

PREPARED FOR:
CANTERA DEVELOPMENT HOLDINGS, LLC.
TWO NORTHFIELD PLAZA, SUITE 320
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CONSULTING ENGINEERS

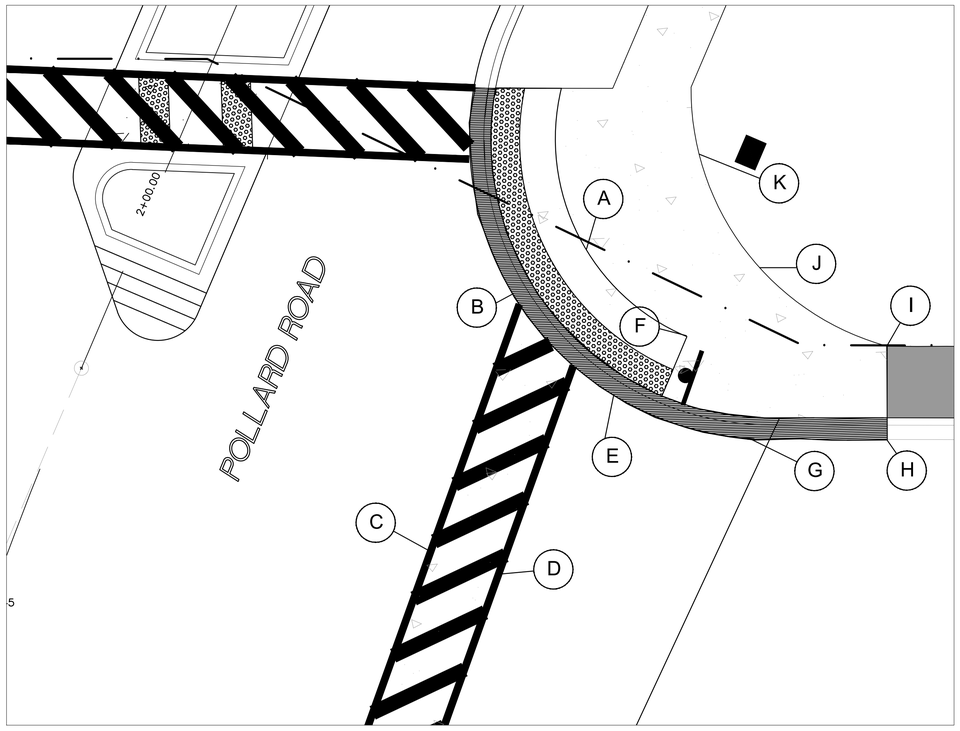
ADA RAMP GRADING PLANS

RIVER VIEW WEST
CITY OF WARRENVILLE, ILLINOIS

SHEET NUMBER
55
OF 71

FILE: I:\080-020 Cantera Lot 3 Sub Area C\Engineering\Drawings\Final Engineering

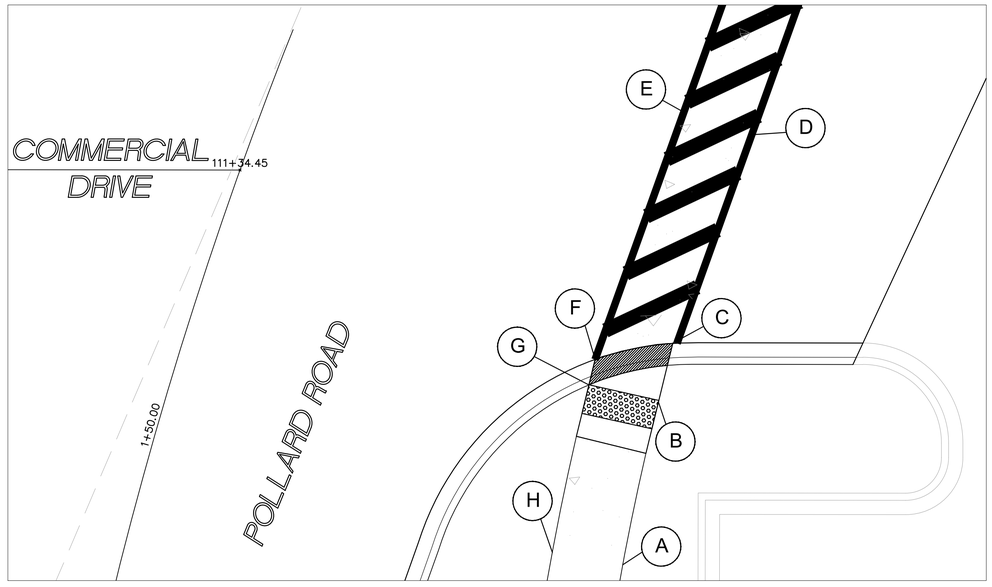
Design Firm License No. 184-001129



STA 2+13.4, 18.27' RT
STA 2+02, 28.16' RT

GRAPHIC SCALE
5' 0 2.5' 5'
(IN FEET)
1 inch = 5' ft.

	STATION	OFFSET	ELEVATION
A	2+08.47	29.2	702.21
B	2+03.57	25.7	702.11
C	1+79.76	27.65	702.22
D	1+81.96	32.58	702.38
E	1+99.84	34.9	702.31
F	2+05.63	38.63	702.37
G	2+00.74	45.07	702.51
H	2+04.50	53.74	702.70
I	2+10.54	51.14	702.80
J	2+12.06	40.88	702.45
K	2+17.64	33.86	702.25



STA 1+66.6, 30.9' RT

GRAPHIC SCALE
5' 0 2.5' 5'
(IN FEET)
1 inch = 5' ft.

	STATION	OFFSET	ELEVATION
A	1+48.73	34.18	702.62
B	1+62.92	32.92	702.40
C	1+67.48	32.51	702.35
D	1+81.96	32.58	702.38
E	1+79.76	27.65	702.22
F	1+64.37	27.79	702.30
G	1+62.34	27.95	702.33
H	1+47.61	29.07	702.54

LEGEND

- PROPOSED CONCRETE WALK
- PROPOSED DETECTABLE WARNING PANEL
- PROPOSED DEPRESSED CURB & GUTTER
- PROPOSED BITUMINOUS PATH
- EXISTING FERRY ROAD WALK
- PROPOSED CURB & GUTTER

NOTE:
1) SCALE FOR ADA GRADING VEW IS 1"=5'
2) REFER TO DETAIL SHEETS FOR ADA RAMP DETAIL

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03-15-19: PER DUDOT COMMENTS
02-25-19: PER INTERNAL COORDINATION

REVISIONS:
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11-05-18: REVISED PER FPD COMMENTS
01-18-19: REVISED PER CITY COMMENTS
02-18-19: REVISED PER CITY COMMENTS

JOB NO: 085-020
FIELD BOOK: N/A
FIELD BOOK: N/A
DRAWN BY: MK
CHECKED BY: KEK
COMPLETED: 04/07/18

FILE: I:\085-020 Cantera Lot 2 Sub Area C\Engineering\Drawings

PREPARED FOR:
CANTERA DEVELOPMENT HOLDINGS, LLC.
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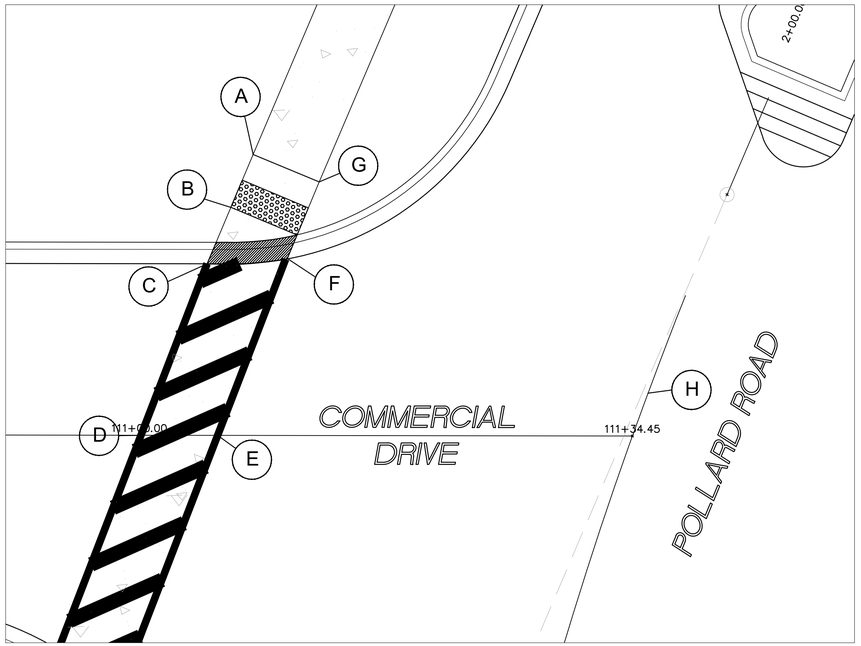
ADA RAMP GRADING PLANS

RIVER VIEW WEST
CITY OF WARRENVILLE, ILLINOIS

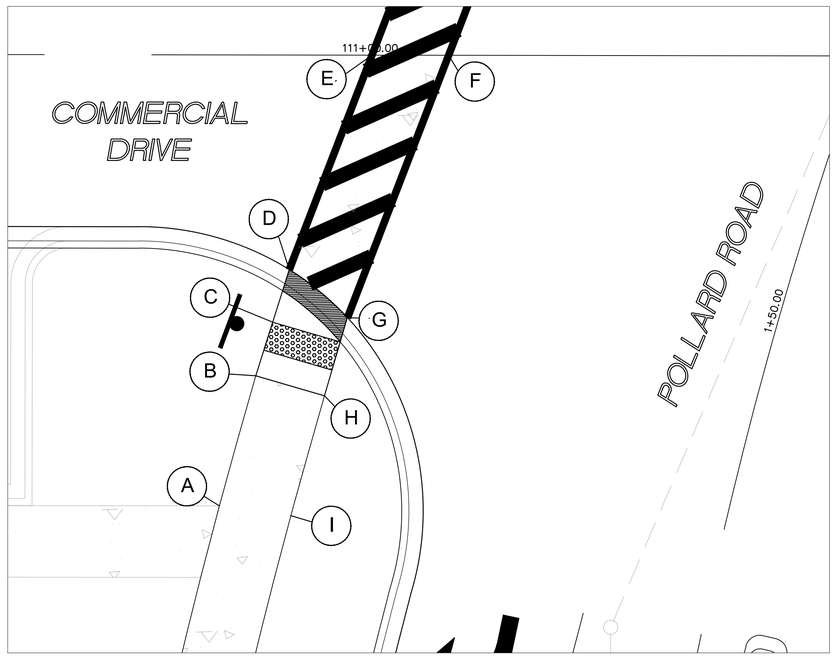
SHEET NUMBER
56
OF 71



STA 111+07.5, 12' LT

GRAPHIC SCALE
5' 0 2.5' 5'
(IN FEET)
1 inch = 5' ft.

	STATION	OFFSET	ELEVATION
A	111+07.92	19.63	702.77
B	111+06.37	15.93	702.76
C	111+04.72	12	702.68
D	111+00.12	0	702.57
E	111+05.47	0	702.51
F	111+10.0	12.33	702.60
G	111+12.54	17.33	702.69
H	111+34.45	0	702.70



STA 110+96.5, 16.56' RT

GRAPHIC SCALE
5' 0 2.5' 5'
(IN FEET)
1 inch = 5' ft.

	STATION	OFFSET	ELEVATION
A	110+89.50	31.52	702.81
B	110+92.03	22.42	702.75
C	110+93.21	18.67	702.67
D	110+94.36	15	702.60
E	110+00.12	0	702.57
F	110+05.12	0	702.51
G	110+96.84	18.36	702.52
H	110+96.84	22.42	702.59
I	110+94.68	31.52	702.71

LEGEND

- PROPOSED CONCRETE WALK
- PROPOSED DETECTABLE WARNING PANEL
- PROPOSED DEPRESSED CURB & GUTTER
- PROPOSED BITUMINOUS PATH
- EXISTING FERRY ROAD WALK
- PROPOSED CURB & GUTTER

NOTE:
1) SCALE FOR ADA GRADING VEW IS 1"=5'
2) REFER TO DETAIL SHEETS FOR ADA RAMP DETAIL

Design Firm License No. 184-001129

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JOB NO: 080-020
FIELD BOOK: N/A
FIELD BOOK: N/A
DRAWN BY: MK
CHECKED BY: KEK
COMPLETED: 04/07/18

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ADA RAMP GRADING PLANS

RIVER VIEW WEST
CITY OF WARRENVILLE, ILLINOIS

SHEET NUMBER
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OF 71

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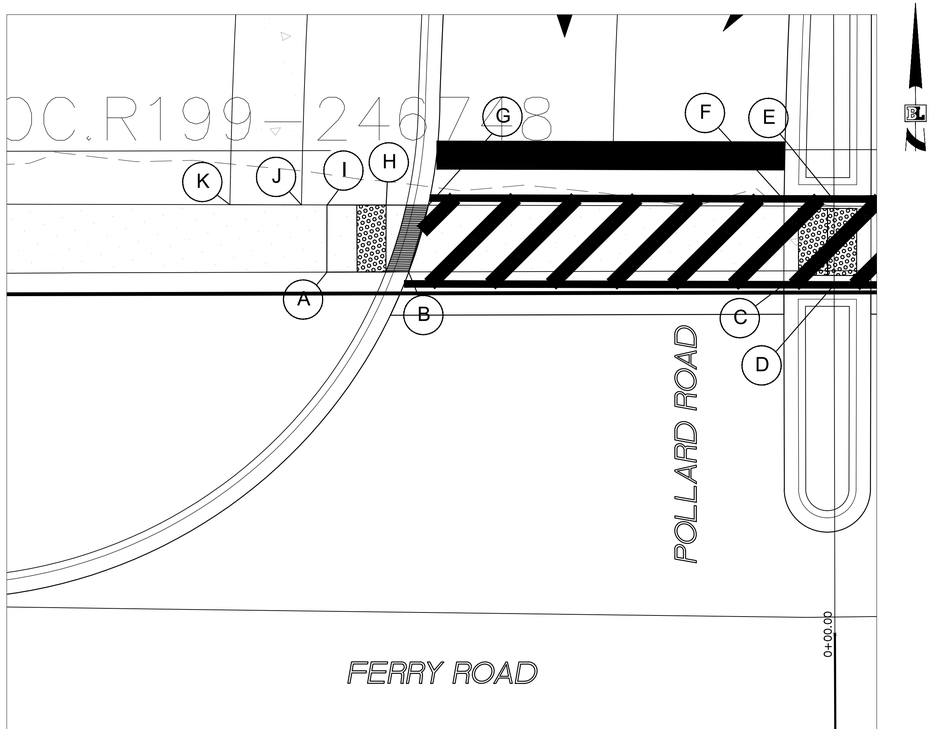
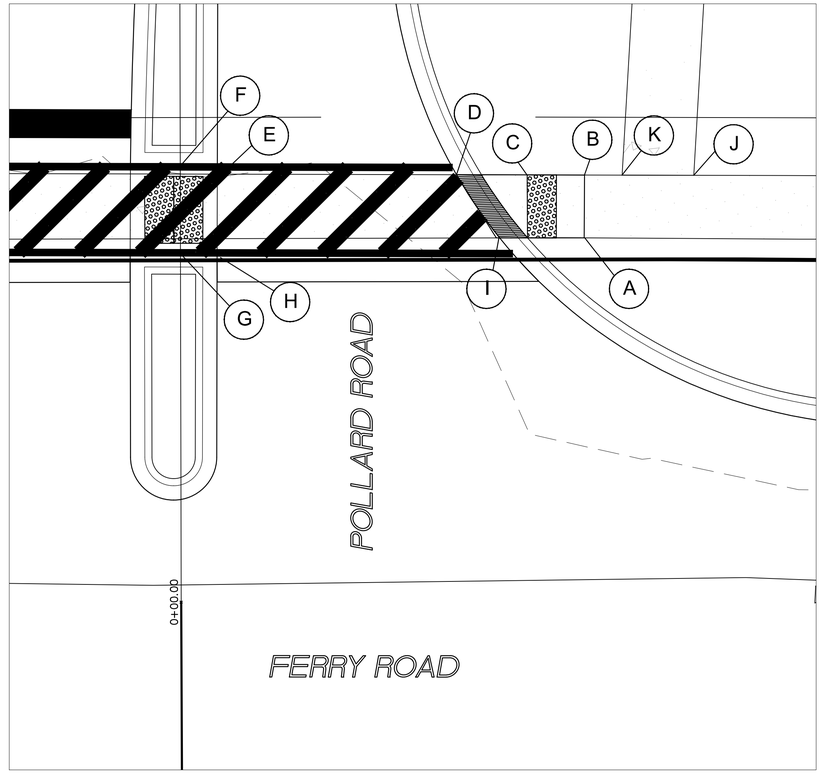


STA 0+27.7, 29.03' LT

GRAPHIC SCALE
5' 0 2.5' 5'
(IN FEET)
1 inch = 5' ft.

	STATION	OFFSET	ELEVATION
A	0+25.38	35.41	701.93
B	0+25.38	29.71	701.75
C	0+24.41	3.5	702.24
D	0+24.41	0	702.31
E	0+30.41	0	702.40
F	0+30.41	3.5	702.33
G	0+30.41	28.34	701.83
H	0+30.04	31.29	701.90
I	0+30.04	35.42	701.98
J	0+30.04	37.22	702.02
K	0+30.04	42.2	702.07



STA 0+27.7, 0' RT

GRAPHIC SCALE
5' 0 2.5' 5'
(IN FEET)
1 inch = 5' ft.

	STATION	OFFSET	ELEVATION
A	0+25.40	28.21	702.11
B	0+29.80	28.24	702.16
C	0+29.80	24.24	702.08
D	0+29.30	19.3	702.01
E	0+30.41	3.5	702.33
F	0+30.41	0	702.41
G	0+24.41	0	702.31
H	0+24.41	3.5	702.24
I	0+25.40	22.3	701.96
J	0+29.80	35.87	702.25
K	0+29.80	30.87	702.7

LEGEND

- PROPOSED CONCRETE WALK
- PROPOSED DETECTABLE WARNING PANEL
- PROPOSED DEPRESSED CURB & GUTTER
- PROPOSED BITUMINOUS PATH
- EXISTING FERRY ROAD WALK
- PROPOSED CURB & GUTTER

NOTE:
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2) REFER TO DETAIL SHEETS FOR ADA RAMP DETAIL

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△ 02-18-19: REVISED PER CITY COMMENTS

JOB NO: 086-020
FIELD BOOK: N/A
FIELD BOOK: N/A
DRAWN BY: MK
CHECKED BY: KEK
COMPLETED:04/07/18

PREPARED FOR:
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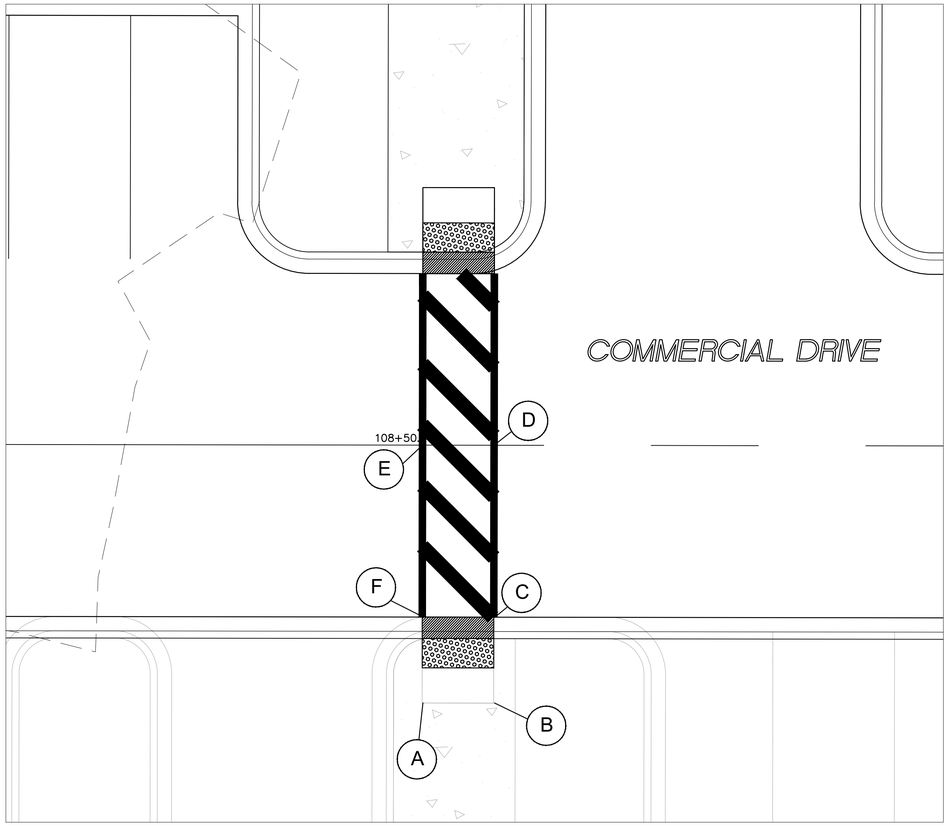
ADA RAMP GRADING PLANS

RIVER VIEW WEST
CITY OF WARRENVILLE, ILLINOIS

SHEET NUMBER
58
OF 71

FILE: I:\086-020 Cantera Lot 2 Sub Area C\Engineering\Drawings\Final Engineering

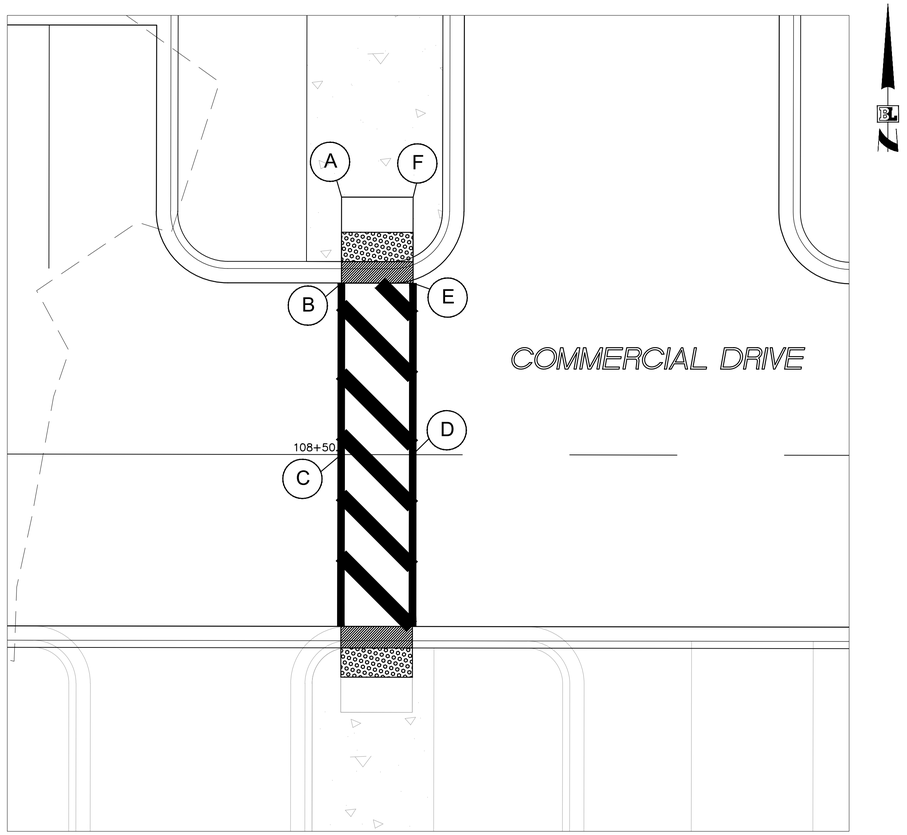
Design Firm License No. 184-001129



STA 108+54, 12' RT

GRAPHIC SCALE
5' 0 2.5' 5'
(IN FEET)
1 inch = 5' ft.

	STATION	OFFSET	ELEVATION
A	108+51.25	18	702.60
B	108+56.25	18	702.60
C	108+56.25	12	702.36
D	108+56.25	0	702.20
E	108+51.25	0	702.25
F	108+51.25	12	702.36



STA 108+53, 12' LT

GRAPHIC SCALE
5' 0 2.5' 5'
(IN FEET)
1 inch = 5' ft.

	STATION	OFFSET	ELEVATION
A	108+51.25	18	702.55
B	108+51.25	12	702.34
C	108+51.25	0	702.20
D	108+56.25	0	702.20
E	108+56.25	12.2	702.30
F	108+56.25	18.3	702.57

LEGEND

- PROPOSED CONCRETE WALK
- PROPOSED DETECTABLE WARNING PANEL
- PROPOSED DEPRESSED CURB & GUTTER
- PROPOSED BITUMINOUS PATH
- EXISTING FERRY ROAD WALK
- PROPOSED CURB & GUTTER

NOTE:
1) SCALE FOR ADA GRADING VEW IS 1"=5'
2) REFER TO DETAIL SHEETS FOR ADA RAMP DETAIL

△ 04-19-19: PER CITY COMMENTS △ 03-15-19: PER DUDOT COMMENTS
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REVISIONS:
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△ 11-05-18: REVISED PER FPD COMMENTS
△ 01-18-19: REVISED PER CITY COMMENTS
△ 02-18-19: REVISED PER CITY COMMENTS
FILE: I:\2018-080 Cantera Lot 2 Site Area 12\Engineering\Drawings\Final Engineering

JOB NO: 080-020
FIELD BOOK: N/A
FIELD BOOK: N/A
DRAWN BY: MK
CHECKED BY: KEK
COMPLETED: 04/07/18

PREPARED FOR:
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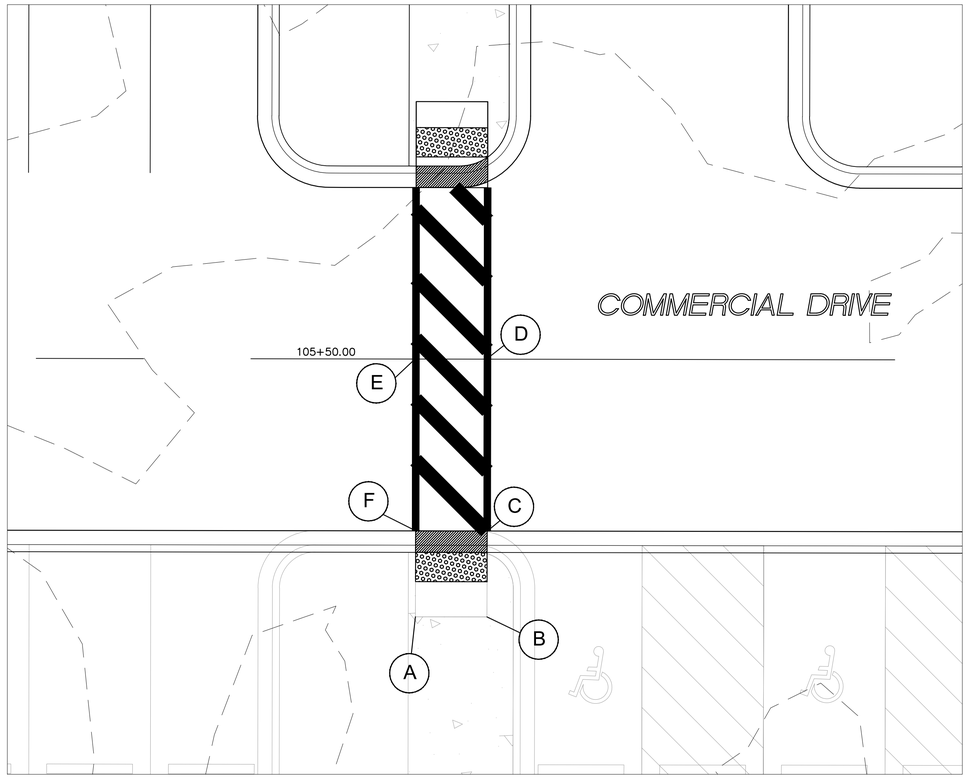
ADA RAMP GRADING PLANS

RIVER VIEW WEST
CITY OF WARRENVILLE, ILLINOIS

SHEET NUMBER
59
OF 71

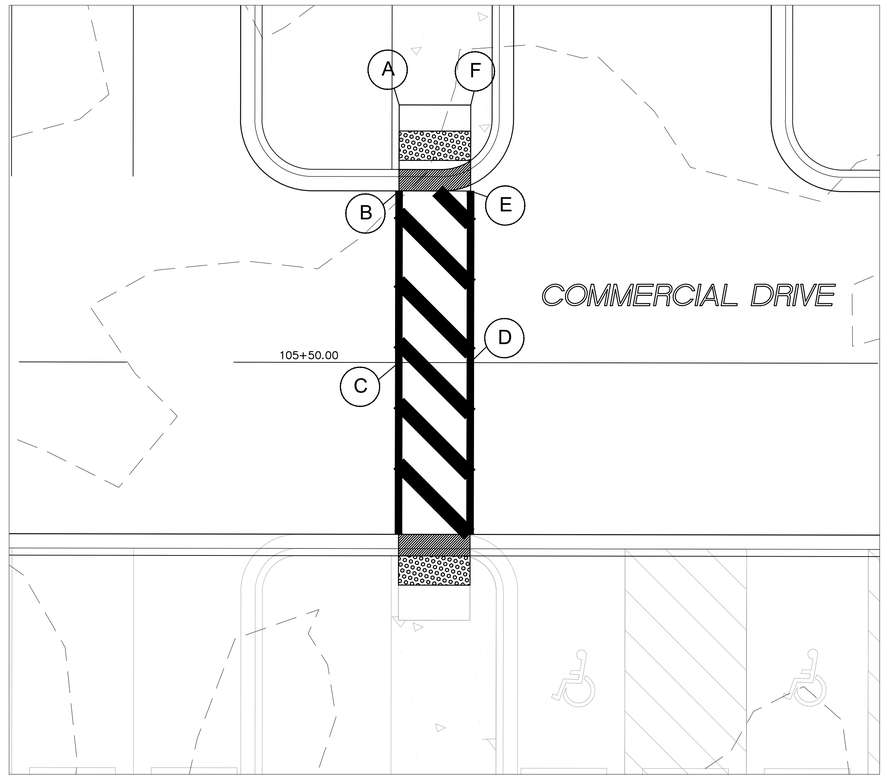
Design Firm License No. 184-001129



STA 105+58.2, 12' RT

GRAPHIC SCALE
5' 0 2.5' 5'
(IN FEET)
1 inch = 5' ft.

	STATION	OFFSET	ELEVATION
A	105+56.26	18	702.80
B	105+61.26	18	702.80
C	105+61.26	12	702.50
D	105+61.26	0	702.10
E	105+56.25	0	702.10
F	105+56.25	12	702.50



STA 105+58.2, 12' LT

GRAPHIC SCALE
5' 0 2.5' 5'
(IN FEET)
1 inch = 5' ft.

	STATION	OFFSET	ELEVATION
A	105+56.26	18	701.80
B	105+56.26	12	701.74
C	105+56.26	0	702.10
D	105+61.26	0	702.10
E	105+61.26	12	701.74
F	105+61.26	18	701.80

LEGEND

- PROPOSED CONCRETE WALK
- PROPOSED DETECTABLE WARNING PANEL
- PROPOSED DEPRESSED CURB & GUTTER
- PROPOSED BITUMINOUS PATH
- EXISTING FERRY ROAD WALK
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NOTE:
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04-19-19: PER CITY COMMENTS 03-15-19: PER DUDOT COMMENTS
03-25-19: PER PDD COMMENTS 02-25-19: PER INTERNAL COORDINATION

REVISIONS:
09-18-18: REVISED PER CITY COMMENTS
11-05-18: REVISED PER PDD COMMENTS
01-18-19: REVISED PER CITY COMMENTS
02-18-19: REVISED PER CITY COMMENTS

FILE: I:\086-020 Canters Lot 2 Sub Area C\Engineering\Drawings\Final Engineering

JOB NO: 086-020
FIELD BOOK: N/A
FIELD BOOK: N/A
DRAWN BY: MK
CHECKED BY: KEK
COMPLETED:04/07/18

PREPARED FOR:
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ADA RAMP GRADING PLANS

RIVER VIEW WEST
CITY OF WARRENVILLE, ILLINOIS

SHEET NUMBER
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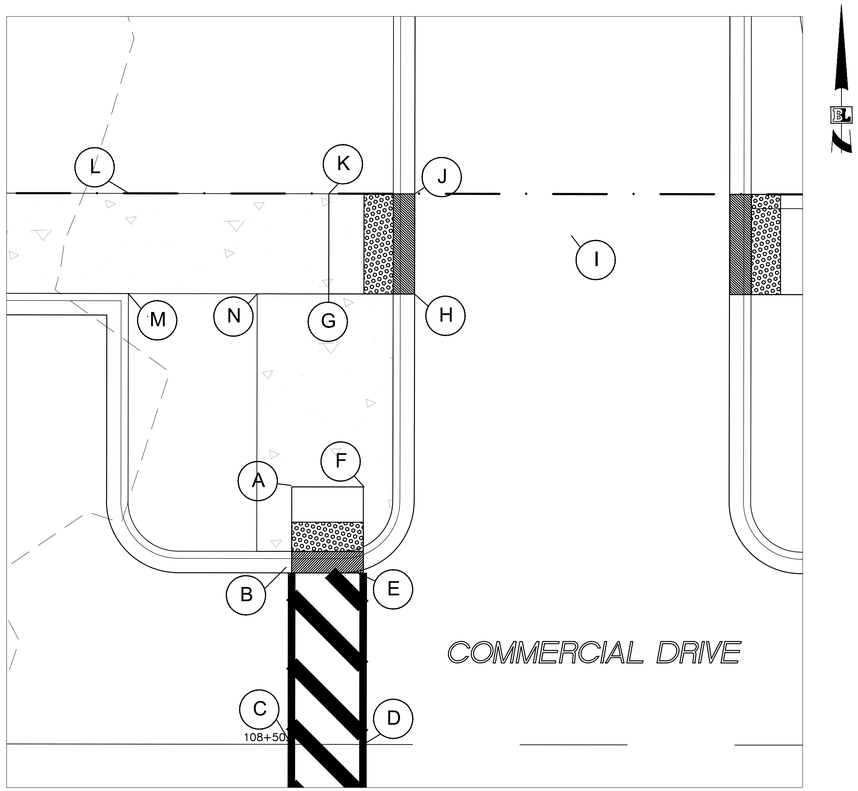
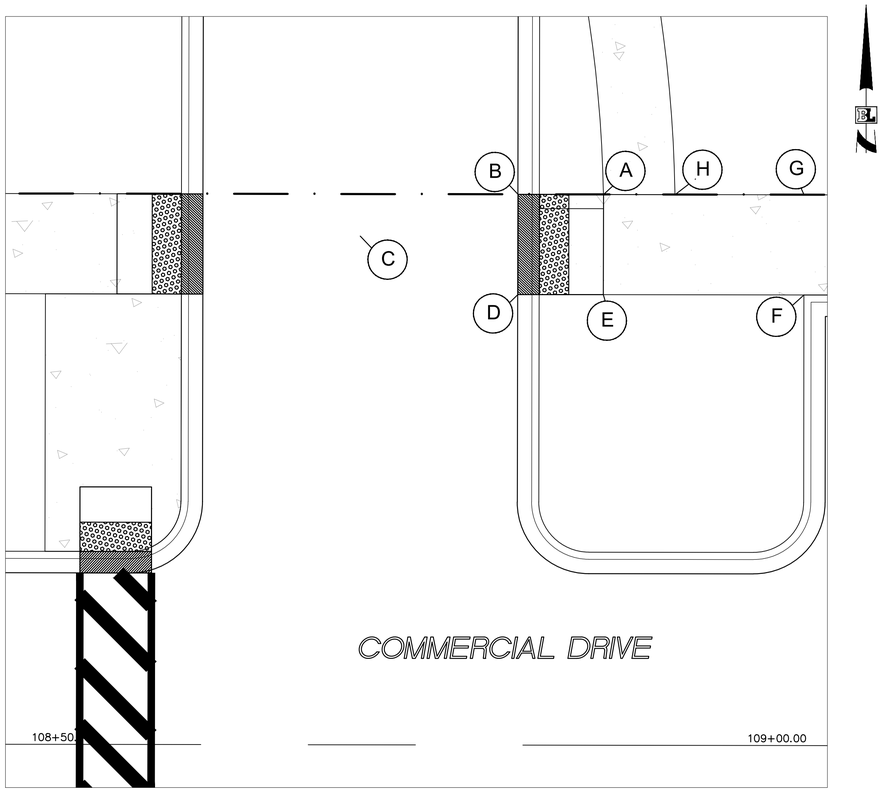


STA 108+58, 35' LT

GRAPHIC SCALE
5' 0 2.5' 5'
(IN FEET)
1 inch = 5' ft.

	STATION	OFFSET	ELEVATION
A	108+51.25	18	702.55
B	108+51.25	12	702.34
C	108+51.25	0	702.25
D	108+56.25	0	702.20
E	108+56.25	12	702.30
F	108+56.25	18	702.57
G	108+53.81	31.49	702.68
H	108+59.81	31.49	702.38
I	108+70.81	34.99	702.60
J	108+59.81	38.49	702.43
K	108+53.81	38.99	702.73
L	108+39.81	38.5	703.2
M	108+39.81	31.5	703.1
N	108+48.81	31.5	703.78



STA 108+83.4, 35' LT

GRAPHIC SCALE
5' 0 2.5' 5'
(IN FEET)
1 inch = 5' ft.

	STATION	OFFSET	ELEVATION
A	108+87.79	38.49	702.65
B	108+81.81	38.49	702.43
C	108+70.81	34.99	702.60
D	108+8181	31.47	702.38
E	108+87.79	31.47	702.60
F	109+01.03	31.47	702.90
G	109+01.83	38.49	703.00
H	108+92.79	38.49	702.70

LEGEND

- PROPOSED CONCRETE WALK
- PROPOSED DETECTABLE WARNING PANEL
- PROPOSED DEPRESSED CURB & GUTTER
- PROPOSED BITUMINOUS PATH
- EXISTING FERRY ROAD WALK
- PROPOSED CURB & GUTTER

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TEL: (847) 562-2001

REVISIONS:
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JOB NO: 080-020
FIELD BOOK: N/A
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ADA RAMP GRADING PLANS

RIVER VIEW WEST
CITY OF WARRENVILLE, ILLINOIS

SHEET NUMBER
61
OF 71

Design Firm License No. 184-001129

60 0 30 60
1 inch = 60 Ft.

WEST BRANCH DUPAGE RIVER

TORCH PARKWAY

FERRY ROAD

364 UNITS MULTIFAMILY BUILDING W/ GARAGE

COMED HANDHOLE

METER BANK

4"ø ELEC CONDUIT

EXISTING 15"ø SANITARY SEWER

EXISTING 12"ø WATER MAIN

EXISTING ROW

10' SIDEWALK EASEMENT PER DOC R199-046748

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TWO NORTHFIELD PLAZA, SUITE 320
NORTHFIELD, IL 60093
TEL.:(847) 562-2001

REVISIONS:	
09-18-18:	REVISED PER CITY COMMENTS
11-05-18:	REVISED PER FPD COMMENTS
01-18-19:	REVISED PER CITY COMMENTS
02-18-19:	REVISED PER CITY COMMENTS
03-25-19:	PER FPD COMMENTS
04-19-19:	PER DUDOT COMMENTS
03-15-19:	PER DUDOT COMMENTS
02-25-19:	PER INTERNAL COORDINATION

JOB NO: 080-020
FIELD BOOK: N/A
FIELD BOOK: N/A
DRAWN BY: MK
CHECKED BY: KEK
COMPLETED: 04/07/18

FILE: I:\080-020 Cantera Lot 3 Sub Area 4\Engineering\Drawings\

Bollinger, Lach & Associates, Inc.
CONSULTING ENGINEERS
333 PIERCE ROAD SUITE 200 ITASCA, IL 60143
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ITASCA • CHICAGO • ALGONQUIN • LAKE GENEVA • SOUTH BEND • INDIANAPOLIS

DRY UTILITY PLAN

RIVER VIEW WEST
CITY OF WARRENVILLE, ILLINOIS

SHEET NUMBER
62
OF 71

Design Firm License No. 184-001129

100 0 50 100
1 inch = 100 Ft.

WEST BRANCH DUPAGE RIVER

TORCH PARKWAY

POLLARD ROAD:
280 LF INTERSECTION SIGHT
DISTANCE FOR 25 MPH DESIGN
SPEED FROM CITY ORDINANCE
TABLE 10-1 & ILLUSTRATION 10-A

TORCH PARKWAY:
335 LF INTERSECTION SIGHT
DISTANCE FOR 30 MPH DESIGN
SPEED FROM CITY ORDINANCE
TABLE 10-1 & ILLUSTRATION 10-A

POLLARD ROAD:
280 LF INTERSECTION SIGHT
DISTANCE FOR 25 MPH DESIGN
SPEED FROM CITY ORDINANCE
TABLE 10-1 & ILLUSTRATION 10-A

POLLARD ROAD:
280 LF INTERSECTION SIGHT
DISTANCE FOR 25 MPH DESIGN
SPEED FROM CITY ORDINANCE
TABLE 10-1 & ILLUSTRATION 10-A

TORCH PARKWAY:
335 LF INTERSECTION SIGHT
DISTANCE FOR 30 MPH DESIGN
SPEED FROM CITY ORDINANCE
TABLE 10-1 & ILLUSTRATION 10-A

FERRY ROAD:
500LF INTERTSECTION SIGHT
DISTANCE FOR 45 MPH DESIGN
SPEED FROM CITY ORDINANCE
TABLE 10-1 & ILLUSTRATION 10-A

DECISION SIGHT
DISTANCE

INTERSECTION STOPPING
SIGHT DISTANCE

INTERSECTION STOPPING
SIGHT DISTANCE

-0+40.46 CL POLLARD ROAD =
131+24.62 CL FERRY ROAD

FERRY ROAD

WINFIELD ROAD

NOTE:
1) INTERSECTION SIGHT DISTANCE AND DECISION SIGHT DISTANCE VALUES SHOWN FOR THE PROPOSED POLLARD ROAD AND FERRY ROAD INTERSECTION USED THE IDOT BDE MANUAL GUIDELINES (CHAPTER 36 - INTERSECTIONS) AND A DESIGN SPEED OF 45 MPH.
2) SIGHT DISTANCE VALUES SHOWN FOR THE COMMERCIAL DRIVE AND FERRY ROAD INTERSECTION REFLECT THE CITY OF WARRENVILLE VALUES DUE TO THE EXISTING TRAFFIC SIGNAL.

REVISIONS:
- 04-19-19: PER CITY COMMENTS
- 03-25-19: PER FPD COMMENTS
- 03-15-19: PER IDOT COMMENTS
- 02-25-19: PER INTERNAL COORDINATION

09-18-18: REVISED PER CITY COMMENTS
11-05-18: REVISED PER FPD COMMENTS
01-18-19: REVISED PER CITY COMMENTS
02-18-19: REVISED PER CITY COMMENTS
FILE: I:\080-020 Cantera Lot 2 Sub Area C\Engineering\Drawings

JOB NO: 080-020
FIELD BOOK: N/A
FIELD BOOK: N/A
DRAWN BY: MK
CHECKED BY: KEK
COMPLETED: 04/07/19

PREPARED FOR:
CANTERA DEVELOPMENT HOLDINGS, LLC.
TWO NORTHFIELD PLAZA, SUITE 320
NORTHFIELD, IL 60093
TEL.:(847) 562-2001

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SIGHT DISTANCE PLAN

RIVER VIEW WEST
CITY OF WARRENVILLE, ILLINOIS

SHEET NUMBER
63
OF 71

P:\080-020 Cantera Lot 2 Sub Area C\Engineering\Drawings\Final Engineering

Design Firm License No. 184-001129

60 0 30 60
1 inch = 60 Ft.

NOTE:
1) ACCUMULATED AND STORED SNOW SHALL BE PLACED IN A MANNER TO ALLOW POSITIVE DRAINAGE AT ALL TIMES. DRAINAGE STRUCTURES AND SWALES SHALL BE FREE MELTWATER AND RAIN AT ALL TIMES.

WEST BRANCH DUPAGE RIVER

TORCH PARKWAY PROPOSED SNOW STORAGE LOCATION.

TORCH PARKWAY

FERRY ROAD

EXISTING ROW

PROPOSED SNOW STORAGE LOCATION FOR FIRE LANE ACCESS. FIRE ACCESS TO BE PASSABLE AT ALL TIMES.

364 UNITS MULTIFAMILY BUILDING W/ GARAGE
FF=704.00

PROPOSED SNOW STORAGE LOCATIONS.

ADDITIONAL STORAGE TO BE PROVIDED IN NORTHERN PARKING LOT AS NECESSARY. DRAINAGE SWALES TO REMAIN FREE AND FUNCTIONAL AT ALL TIMES.

ACCUMULATED SNOW ON PARKING GARAGE UPPER DECK TO BE LOADED INTO THE PROPOSED SNOW CHUTE AND MOVED TO THE DESIGNATED SNOW STORAGE LOCATIONS IN THE EASTERN PARKING LOT (TYP.).

PROPOSED SNOW STORAGE LOCATIONS. DRAINGE STUCTURES TO REMAIN FREE AND FUNCTIONAL AT ALL TIMES (TYP.)

PROPOSED SNOW STORAGE LOCATIONS. DRAINGE STRUCTURES TO REMAIN FREE AND FUNCTIONAL AT ALL TIMES (TYP.)

PROPOSED SNOW STORAGE LOCATION.

PROPOSED SNOW STORAGE LOCATION.

PROPOSED SNOW STORAGE LOCATION FOR FIRE LANE ACCESS. FIRE ACCESS TO BE PASSABLE AT ALL TIMES.

PROPOSED SNOW STORAGE LOCATION.

PROPOSED SNOW STORAGE LOCATION.

PROPOSED SNOW STORAGE LOCATION.

PROPOSED SNOW STORAGE LOCATION.

TORCH PARKWAY PROPOSED SNOW STORAGE LOCATION.

TORCH PARKWAY PROPOSED SNOW STORAGE LOCATION.

TORCH PARKWAY PROPOSED SNOW STORAGE LOCATION.

TORCH PARKWAY PROPOSED SNOW STORAGE LOCATION.

WALK EASEMENT PER DOC.R1994-0...

EXISTING 15"ø SANITARY SEWER

EXISTING 12"ø WATER MAIN

EXISTING 36"ø RCP

EXISTING 12"ø RCP

EXISTING 15"ø RCP

EXISTING 24"ø RCP

EXISTING 30"ø RCP

EXISTING 18"ø RCP

EXISTING 10"ø RCP

EXISTING 8"ø RCP

EXISTING 6"ø RCP

EXISTING 4"ø RCP

EXISTING 2"ø RCP

EXISTING 1"ø RCP

EXISTING 3"ø RCP

EXISTING 5"ø RCP

EXISTING 7"ø RCP

EXISTING 9"ø RCP

EXISTING 11"ø RCP

EXISTING 13"ø RCP

EXISTING 14"ø RCP

EXISTING 16"ø RCP

EXISTING 17"ø RCP

EXISTING 18"ø RCP

EXISTING 19"ø RCP

EXISTING 20"ø RCP

EXISTING 21"ø RCP

EXISTING 22"ø RCP

EXISTING 23"ø RCP

EXISTING 24"ø RCP

EXISTING 25"ø RCP

EXISTING 26"ø RCP

EXISTING 27"ø RCP

EXISTING 28"ø RCP

EXISTING

Design Firm License No. 184-001129

MAINTENANCE NOTES:

1. SEE THE GENERAL NOTES AND DETAILS SHEETS IN THESE PLANS FOR ADDITIONAL EROSION AND SEDIMENT CONTROL NOTES AND DETAILS.

2. RESPONSIBLE PARTIES: THE CONTRACTOR SHALL BE RESPONSIBLE TO PROVIDE QUALIFIED PERSONELL FOR ALL INSPECTION, MAINTENANCE AND REPAIR OF TEMPORARY AND PERMANENT EROSION AND SEDIMENT CONTROL MEASURES DURING CONSTRUCTION. THE OWNER SHALL BE RESPONSIBLE FOR ALL INSPECTION, MAINTENANCE AND REPAIR OF PERMANENT EROSION CONTROL MEASURES AFTER CONSTRUCTION. QUALIFIED PERSONNEL MEANS A PERSON KNOWLEDGEABLE IN THE PRINCIPLES AND PRACTICES OF EROSION AND SEDIMENT CONTROLS MEASURES, SUCH AS A LICENSED PROFESSIONAL ENGINEER (P.E.), A CERTIFIED PROFESSIONAL IN EROSION AND SEDIMENT CONTROL (CPESC), A CERTIFIED EROSION SEDIMENT AND STORM WATER INSPECTOR (CESSWI) OR OTHER KNOWLEDGEABLE PERSON WHO POSSESSES THE SKILLS TO ASSESS CONDITIONS AT THE CONSTRUCTION SITE THAT COULD IMPACT STORM WATER QUALITY AND TO ASSESS THE EFFECTIVENESS OF ANY SEDIMENT AND EROSION CONTROL MEASURES SELECTED TO CONTROL THE QUALITY OF STORM WATER DISCHARGES FROM THE CONSTRUCTION ACTIVITIES.

3. THE FOLLOWING IS A DESCRIPTION OF PROCEDURES THAT SHOULD BE USED TO MAINTAIN, IN GOOD AND EFFECTIVE OPERATION CONDITIONS, VEGETATION, EROSION AND SEDIMENT CONTROL MEASURES AND OTHER PROTECTIVE MEASURES IDENTIFIED IN THIS PLAN AND THE STANDARD SPECIFICATIONS. ALL EROSION AND SEDIMENT CONTROL MEASURES MUST BE MAINTAINED AND IMMEDIATELY REPLACED AS NEEDED AND AS DIRECTED BY THE ENGINEER. THE CONTRACTOR SHALL INSPECT AND COMPLETE MAINTENANCE OF ALL ITEMS A MINIMUM OF EVERY 7 DAYS AND WITHIN 24 HOURS OF A 0.5-INCH RAINFALL. ALL TEMPORARY EROSION AND SEDIMENT CONTROL ITEMS MUST BE REMOVED WITHIN 30 DAYS AFTER FINAL STABILIZATION IS COMPLETE.

4. STABILIZED CONSTRUCTION ENTRANCE: THE ENTRANCES SHOULD BE MAINTAINED TO PREVENT TRACKING OF SEDIMENT ONTO PUBLIC STREETS. MAINTENANCE INCLUDES TOP DRESSING WITH ADDITIONAL STONE AND REMOVING TOP LAYERS OF STONE AND SEDIMENT. THE SEDIMENT RUN-OFF INTO THE PUBLIC RIGHT-OF-WAY SHOULD BE REMOVED IMMEDIATELY.

5. CONCRETE WASHOUT AREA: EXISTING AREAS SHOULD BE CLEANED OUT, OR NEW FACILITIES SHOULD BE CONSTRUCTED AND OPERATIONAL ONCE THE EXISTING WASHOUT IS 75% FULL. WASHOUT SHOULD BE INSPECTED FREQUENTLY TO ENSURE THAT PLASTIC LININGS ARE INTACT AND SIDEWALLS HAVE NOT BEEN DAMAGED BY CONSTRUCTION ACTIVITIES. WHEN THE WASHOUT AREA IS ADJACENT TO A PAVED ROAD, THE PAVED ROAD SHOULD BE INSPECTED FOR ACCUMULATED CONCRETE WASTE. ANY ACCUMULATED CONCRETE WASTE ON THE ROAD, CURB OR GUTTER SHOULD BE REMOVED AND PROPERLY DISPOSED.

6. SILT FENCE: SILT FENCES SHOULD BE INSPECTED REGULARLY FOR UNDERCUTTING, WHERE THE FENCE MEETS THE GROUND, OVERTOPPING, AND TEARS ALONG THE LENGTH OF THE FENCE. DEFICIENCIES SHOULD BE REPAIRED IMMEDIATELY. REMOVE ACCUMULATED SEDIMENTS FROM THE FENCE BASE WHEN THE SEDIMENT REACHES 50% OF THE FENCE HEIGHT. DURING FINAL STABILIZATION, PROPERLY DISPOSE OF ANY SEDIMENT THAT HAS ACCUMULATED ON THE SILT FENCE. INSTANCES WHEN AREAS OF SILT FENCE CONTINUALLY FAIL, REPLACE SILT FENCE WITH ANOTHER BMP AS SEEN FIT.

7. INLET FILTERS: INLET FILTERS SHOULD BE INSPECTED FOR PROPER FILTERING, IF FILTER BAGS ARE USED, REMOVE SEDIMENT FROM THE FILTER BAGS WHEN 50% OF THE STORAGE VOLUME HAS BEEN FILLED, UNLESS OTHERWISE INSTRUCTED BY THE MANUFACTURER. REMOVE TRASH AND DEBRIS DURING INSPECTIONS. ACCUMULATED MATERIAL IN THE FILTERS SHOULD BE DISPOSED PROPERLY. DO NOT PUNCTURE HOLES IN FILTERS IF PONDING OCCURS.

8. SEDIMENT BASIN/TRAP: THE BOTTOM OF THE PROPOSED DETENTION PONDS SHALL BE USED AS A SEDIMENT BASIN DURING CONSTRUCTION. SEDIMENT SHALL BE REMOVED WHEN BASIN IS 75% FULL. ALL PERFORATED RISERS SHALL BE PERIODICALLY INSPECTED AND CLEANED IF CLOGGED. IMMEDIATELY PRIOR TO END OF CONSTRUCTION, THE BOTTOMS OF PROPOSED DETENTION PONDS SHALL BE EXCAVATED TO THE GRADES AS SHOWN ON THE PLANS.

9. OUTLET PIPE AND RESTRICTOR STRUCTURE: ALL OUTLET PIPES AND RESTRICTOR STRUCTURES SHALL BE CLEANED IF CLOGGED OR PARTIALLY BLOCKED.

10. DEBRIS MANAGEMENT: ALL TRASH, BRUSH, GRASS, CLIPPING DEBRIS ETC. SHOULD BE REMOVED AT LEAST EVERY TWO WEEKS FROM THE EXISTING PROJECT STARTING DATE THROUGHOUT AND DURING THE WHOLE OF THE MAINTENANCE PERIOD. THIS INCLUDES ALL AREAS WITHIN THE PROJECT LIMIT. ALL CONSTRUCTION DEBRIS AND MACHINERY SHALL BE REMOVED FROM THE SITE PRIOR TO FINAL ACCEPTANCE AND PROJECT CLOSE OUT

INSPECTIONS NOTES:

1. THE OWNER SHALL DESIGNATE A QUALIFIED PERSON TO BE RESPONSIBLE FOR SEDIMENT AND EROSION CONTROL OBSERVATION REPORTING. THIS QUALIFIED PERSON SHALL MEET THE REQUIREMENTS NOTED IN THE ILR10 PERMIT CONDITIONS AND/OR THE WMO REGULATIONS. SITE OBSERVATIONS SHOULD OCCUR AT LEAST ONCE EVERY 7 DAYS AND WITHIN 24 HOURS AFTER A RAINFALL OF 0.5-INCHES OR GREATER, OR EQUIVALENT SNOWFALL. SITE OBSERVATION REPORTS SHOULD BE MAINTAINED ONSITE AS PART OF THE SWPPP.

EACH SITE OBSERVATION SHALL INCLUDE:

A. DISTURBED AREAS AND AREAS USED FOR THE STORAGE OF MATERIALS THAT ARE EXPOSED TO PRECIPITATION SHALL BE CHECKED FOR EVIDENCE OF, OR POTENTIAL FOR, POLLUTANTS ENTERING THE DRAINAGE SYSTEM. THE EROSION AND SEDIMENT CONTROL MEASURES IDENTIFIED IN THE PLAN SHALL BE OBSERVED TO ENSURE THAT THEY HAVE BEEN INSTALLED AND ARE OPERATING CORRECTLY. WHERE DISCHARGE POINTS ARE ACCESSIBLE, THEY SHOULD BE CHECKED TO ASCERTAIN WHETHER EROSION CONTROL MEASURES ARE EFFECTIVE IN PREVENTING SIGNIFICANT IMPACTS TO THE RECEIVING WATERS. LOCATIONS WHERE VEHICLES ENTER AND EXIST THE SITE SHOULD BE CHECKED FOR OFF-SITE SEDIMENT TRACKING. ALL PUMPING OPERATIONS AND OTHER POTENTIAL NON-STORM WATER DISCHARGES SHOULD BE OBSERVED.

B. BASED ON THE RESULTS OF THE SITE OBSERVATION, THE DESCRIPTION OF POTENTIAL POLLUTANT SOURCES IDENTIFIED, AND THE POLLUTION PREVENTION MEASURES DESCRIBED IN THIS PLAN SHALL BE REVISED AS APPROPRIATE, AS SOON AS PRACTICABLE AFTER THE OBSERVATION. THE MODIFICATIONS, IF ANY, SHALL PROVIDE FOR TIMELY IMPLEMENTATION OF ANY CHANGES TO THE PLAN WITHIN 7 CALENDAR DAYS FOLLOWING THE SITE OBSERVATION.

C. A REPORT SUMMARIZING THE SCOPE OF THE OBSERVATION, NAME(S) AND QUALIFICATIONS OF PERSONNEL MAKING THE OBSERVATION, THE DATE(S) OF THE OBSERVATION, MAJOR OBSERVATIONS RELATING TO THE IMPLEMENTATION OF THE STORM WATER POLLUTION PREVENTION, AND ACTIONS TAKEN IN ACCORDANCE WITH PARAGRAPH B ABOVE SHALL BE MADE AND RETAINED AS PART OF THE STORM WATER POLLUTION PREVENTION PLAN FOR AT LEAST 3 YEARS FROM THE DATE OF FINAL STABILIZATION OR PERMIT COVERAGE IS TERMINATED. THE REPORT SHALL BE SIGNED IN ACCORDANCE WITH PART VI.G (SIGNATORY REQUIREMENTS) OF THE ILR10 NPDES PERMIT.

INSPECTIONS NOTES (CONTINUED):

D. THE OWNER SHALL NOTIFY THE APPROPRIATE AGENCY FIELD OPERATIONS SECTION OFFICE BY EMAIL AT EPA.SWNONCOMP@ILLINOIS.GOV, TELEPHONE OR FAX WITHIN 24 HOURS OF ANY INCIDENCE OF NONCOMPLIANCE FOR ANY VIOLATION OF THE STORM WATER POLLUTION PREVENTION PLAN OBSERVED DURING A SITE OBSERVATION, OR FOR VIOLATIONS OF ANY CONDITION OF THE PERMIT. THE OWNER SHALL COMPLETE AND SUBMIT WITHIN 5 DAYS OF INCIDENCE OF NONCOMPLIANCE (ION) REPORT FOR ANY VIOLATION OF THE STORM WATER POLLUTION PREVENTION PLAN OBSERVED DURING AN INSPECTION CONDUCTED. SUBMISSION SHALL BE ON FORMS PROVIDED BY THE AGENCY AND INCLUDE SPECIFIC INFORMATION ON THE CAUSE OF NONCOMPLIANCE, ACTIONS WHICH WERE TAKEN TO PREVENT ANY FURTHER CAUSES OF NONCOMPLIANCE, AND A STATEMENT DETAILING ANY ENVIRONMENTAL IMPACT WHICH MAY HAVE RESULTED FROM THE NONCOMPLIANCE.

E. ALL REPORTS OF NONCOMPLIANCE SHALL BE SIGNED BY A RESPONSIBLE AUTHORITY AS DEFINED IN PART VI.G OF THE ILR10 NPDES PERMIT (SIGNATORY REQUIREMENTS)

F. ALL REPORTS OF NONCOMPLIANCE SHALL BE MAILED TO THE AGENCY AT THE FOLLOWING ADDRESS:
ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
DIVISION OF WATER POLLUTION CONTROL
COMPLAINCE ASSURANCE #19
POST OFFICE BOX 19276
SPRINGFIELD, IL 62794-9276

NPDES PERMIT NO. ILR10 CONTENTS OF PLAN.

1. SITE DESCRIPTION. EACH PLAN SHALL PROVIDE A DESCRIPTION OF THE FOLLOWING:

   a. A DESCRIPTION OF THE NATURE OF THE CONSTRUCTION ACTIVITY OR DEMOLITION WORK;

PROPOSED CONSTRUCTION INCLUDES SITE CLEARING AND GRUBBING, INSTALLATION OF EROSION AND SEDIMENT CONTROL MEASEURES AS INDICATED ON THE PLAN, MASS GRADING, CONSTRUCTION OF APPROXIMATELY ±1,186 LF OF RETAINING WALL SYSTEM, INSTALLATION OF STORM SEWER, RECONFIGURATION OF AN EXISTING STORMWATER MANAGEMENT FACILITY, INSTALLATION OF STORMWATER CULVERTS, FINAL SEEDING AND STABILIZATION OF POND EDGES AND SWALES, AND TEMPORARY SEEDING OF AREAS DISTURBED BY CONSTRUCTION. THE PROPOSED IMPROVEMENTS ARE DEPICTED ON THE PLAN.

   b. A DESCRIPTION OF THE INTENDED SEQUENCE OF MAJOR ACTIVITIES WHICH DISTURB SOILS FOR MAJOR PORTIONS OF THE SITE (E.G. CLEARING, GRUBBING, EXCAVATION, GRADING, ON-SITE OR OFF-SITE STOCKPILING OF SOILS, ON-SITE OR OFF-SITE STORAGE OF MATERIALS);

1.	INSTALL E&S CONTROL ITEMS	10/20/18
2.	CLEARING AND TOPSOIL STRIPPING	10/21/18
3.	COFFERDAMS & DEWATERING	04/15/19
4.	MASS EARTHWORK	04/25/19
5.	RETAINAING WALL CONSTRUCTION	06/15/19
6.	UNDERGROUND IMPROVEMENTS	07/15/19
7.	BMP/BIOSWALE CONSTRUCTION	08/15/19
8.	SUB-BASE PREPARATION	08/01/19
9.	SITE PAVING	09/01/19
10.	TEMPORARY SEEDING / MULCH	11/15/19
11.	SIDEWALKS / SIGNS /LIGHTING	04/15/20
12.	FINAL LANDSCAPING	05/15/20
13.	REMOVE TEMP. E&S CONTROL ITEMS	07/15/20

   c. AN ESTIMATE OF THE TOTAL AREA OF THE SITE AND THE TOTAL AREA OF THE SITE THAT IS EXPECTED TO BE DISTURBED BY CLEARING, GRUBBING, EXCAVATION, GRADING, ON-SITE OR OFF-SITE STOCKPILING OF SOILS AND STORAGE OF MATERIALS, OR OTHER ACTIVITIES;

LOT 1 SITE AREA = 4.40 ACRES
LOT 1 DISTURBED AREA=4.40 ACRES
LOT 2 SITE AREA = 17.71 ACRES
LOT 2 DISTURBED AREA=11.76 ACRES
LOT 3 SITE AREA = 3.37 ACRES
LOT 3 DISTURBED AREA=3.37 ACRES
TORCH PKWY ROW AREA = 3.05 ACRES
TORCH PKWY ROW AREA=3.05 ACRES
OUTLOT A SITE AREA= 3.83 ACRES
OUTLOT A DISTURBED AREA = 1.47 ACRES

   d. AN ESTIMATE OF THE RUNOFF COEFFICIENT OF THE SITE AFTER CONSTRUCTION ACTIVITIES ARE COMPLETED AND EXISTING DATA DESCRIBING THE SOIL OR THE QUALITY OF ANY DISCHARGE FROM THE SITE;

LOT 1 EXISTING CN=0.55
LOT 1 PROPOSED CN=0.82
LOT 2 EXISTING CN=0.64
LOT 2 PROPOSED CN=0.86
LOT 3 EXISTING CN=0.55
LOT 3 PROPOSED CN=0.77
TORCH PKWY ROW EXISTING CN=0.45
TORCH PKWY ROW PROPOSED CN=0.78
OUTLOT A EXISTING CN=0.66
OUTLOT A PROPOSED CN=0.80

NPDES PERMIT NO. ILR10 CONTENTS OF PLAN (CONTINUED)

   e. A SITE MAP INDICATING DRAINAGE PATTERNS AND APPROXIMATE SLOPES ANTICIPATED BEFORE AND AFTER MAJOR GRADING ACTIVITIES, LOCATIONS WHERE VEHICLES ENTER OR EXIT THE SITE AND CONTROLS TO PREVENT OFFSITE SEDIMENT TRACKING, AREAS OF SOIL DISTURBANCE, THE LOCATION OF MAJOR STRUCTURAL AND NONSTRUCTURAL CONTROLS IDENTIFIED IN THE PLAN, THE LOCATION OF AREAS WHERE STABILIZATION PRACTICES ARE EXPECTED TO OCCUR, LOCATIONS OF ON-SITE OR OFF- SITE SOIL STOCKPILING OR MATERIAL STORAGE, SURFACE WATERS (INCLUDING WETLANDS), AND LOCATIONS WHERE STORM WATER IS DISCHARGED TO A SURFACE WATER; AND

SEE SWPPP AND EROSIOIN CONTROL DRAWINGS

   f. THE NAME OF THE RECEIVING WATER(S) AND THE ULTIMATE RECEIVING WATER(S), AND AREAL EXTENT OF WETLAND ACREAGE AT THE SITE.

IMMEDIATE RECEIVEING WATERS ARE AN EXISTING ON-SITE STORMWATER RETENTION FACILITY. DOWNSTREAM RECEIVING WATERS ARE THE WEST BRANCH OF THE DUPAGE RIVER. THERE ARE NO WETLANDS PRESENT ON THE SUBJECT SITE.

CONTROLS:
EROSION AND SEDIMENT CONTROLS ARE PROPOSED AS DESCRIBED ON THIS SWPPP AND DEPICTED ON THE EROSION CONTROL PLANS AND SWPPP.

STABILIZATION PRACTICES:
STABILIZATION PRACTICES ARE PROPOSED AS DESCRIBED ON THIS SWPPP AND DEPICTED ON THE EROSION CONTROL PLANS AND SWPPP.

STRUCTURAL PRACTICES:
STRUCTURAL PRACTICES ARE PROPOSED AS DESCRIBED ON THIS SWPPP AND DEPICTED ON THE EROSION CONTROL PLANS AND SWPPP.

USE OF TREATMENT CHEMICALS:
THERE ARE CURRENTLY NO POLYMER FLOCCULANT OR TREATMENET CHEMICALS PROPOSED. THE USE OF FERTILIZERS FOR SEEDING AREAS IS NOT PROPOSED. ALL VEHICLE FUELING WILL BE DELIVERED TO THE SITE AND FUELING WILL BE PERFORMED INT THE EQUIPMENT STORAGE AREAS. NO VEHICLE FUELS WILL BE STORED ON SITE.

BEST MANAGEMENT PRACTICES:
BMPS ARE PROPOSED THROUGH NATIVE SEEDING, VEGETATED SWALES, AND RUNOFF VOLUME RETENTION. THE EXISTNING RETENTION PONDS WILL BE USED AS SEDIMENT BASINS FOR THE MASS GRADING OPERATIONS.

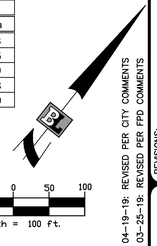
POLLUTION PREVENTION:
CONCRETE WASHOUTS ARE PROPOSED FOR ALL CONCETE WORK, VEHICLE AND MATERIAL STORAGE AREAS HAVE BEEN DESIGNATED ON THE PLANS, ALL BUILDING MATERAS AND EQUIPMENT WILL BE STORED IN LOCKED STORAGE UNITS OR IN APPROPRIATE STORAGE CONTAINMENT UNITS. PORTABLE SANITARY FACILITIES ARE DEISGNATED ON THE PLAN.

POST CONSTRUCTION BEST MANAGEMENT PRACTICES:
PCBMPS ARE PROVIDED THROUGH RUNOFF VOLUME RETENTION, NATIVE VEGATATION ON THE POND SIDE SLOPES AND VEGETATED SWALES. ADDITIONAL PCBNPS ARE DEPICTED ON THE PHASE 1 IMPROVEMENT PLANS.

NATURAL BUFFERS:
NATURAL BUFFERS ARE MAINTAINED BETWEEN THE CONSTRUCTION ACTIVITIES AND THE WEST BRANCH OF THE DUPAGE RIVER. ON-SITE BUFFERS DISTURBED BY CONSTRUCTION ACTIVITIES SHALL BE REPLACED THROUGH NATIVE SEEDING OF POND SHORELINES.

MAINTENANCE:
MAINTENANCE SHALL BE AS DESCRIBED ON THIS SHEET AND IN THE SWPPP.

Existing Conditions									
Lot 1	Area	Lot 2	Area	Lot 3	Area	Torch Parkway ROW	Area	Outlot A	Area
Total Area	4.40	Total Area	17.71	Total Area	3.37	Total Area	3.05	Total Area	4.62
Pond Area	0.65	Pond Area	6.14	Pond Area	0.60	Pond Area	0.00	Pond Area	1.76
Impervious Area	0.13	Impervious Area	0.03	Impervious Area	0.00	Impervious Area	0.02	Impervious Area	0.00
Pervious Area	3.62	Pervious Area	11.54	Pervious Area	2.77	Pervious Area	3.04	Pervious Area	2.86
Weighted C	0.55	Weighted C	0.64	Weighted C	0.55	Weighted C	0.45	Weighted C	0.66
Proposed Conditions									
Lot 1	Area	Lot 2	Area	Lot 3	Area	Torch Parkway ROW	Area	Outlot A	Area
Total Area	4.40	Total Area	17.71	Total Area	3.37	Total Area	3.05	Total Area	3.83
Pond Area	0.00	Pond Area	5.95	Pond Area	0.00	Pond Area	0.00	Pond Area	2.36
Impervious Area	3.29	Impervious Area	7.87	Impervious Area	2.13	Impervious Area	1.99	Impervious Area	0.09
Pervious Area	1.11	Pervious Area	3.89	Pervious Area	1.24	Pervious Area	1.06	Pervious Area	1.38
Weighted C	0.82	Weighted C	0.86	Weighted C	0.77	Weighted C	0.78	Weighted C	0.80



NOTE:

1. SEE THE GENERAL NOTES AND DETAILS SHEETS IN THESE PLANS FOR EROSION AND SEDIMENT CONTROL NOTES, MAINTENANCE, INSPECTIONS AND DETAILS.
2. NATIVE SEEDING SHALL BE PER THE SEEDING MIX TABLES CONTAINED IN THE DETAIL SHEETS.
3. TEMPORARY SEEDING SHALL BE PER IDOT SECTION 250 & SEEDING CLASS 2A.
4. AREAS INDICATED AS FUTURE DEVELOPMENT SHALL RECEIVE TEMPORARY SEEDING AND MULCH OR HYDROSEED UPON COMPLETION OF MASS GRADING OPERATIONS

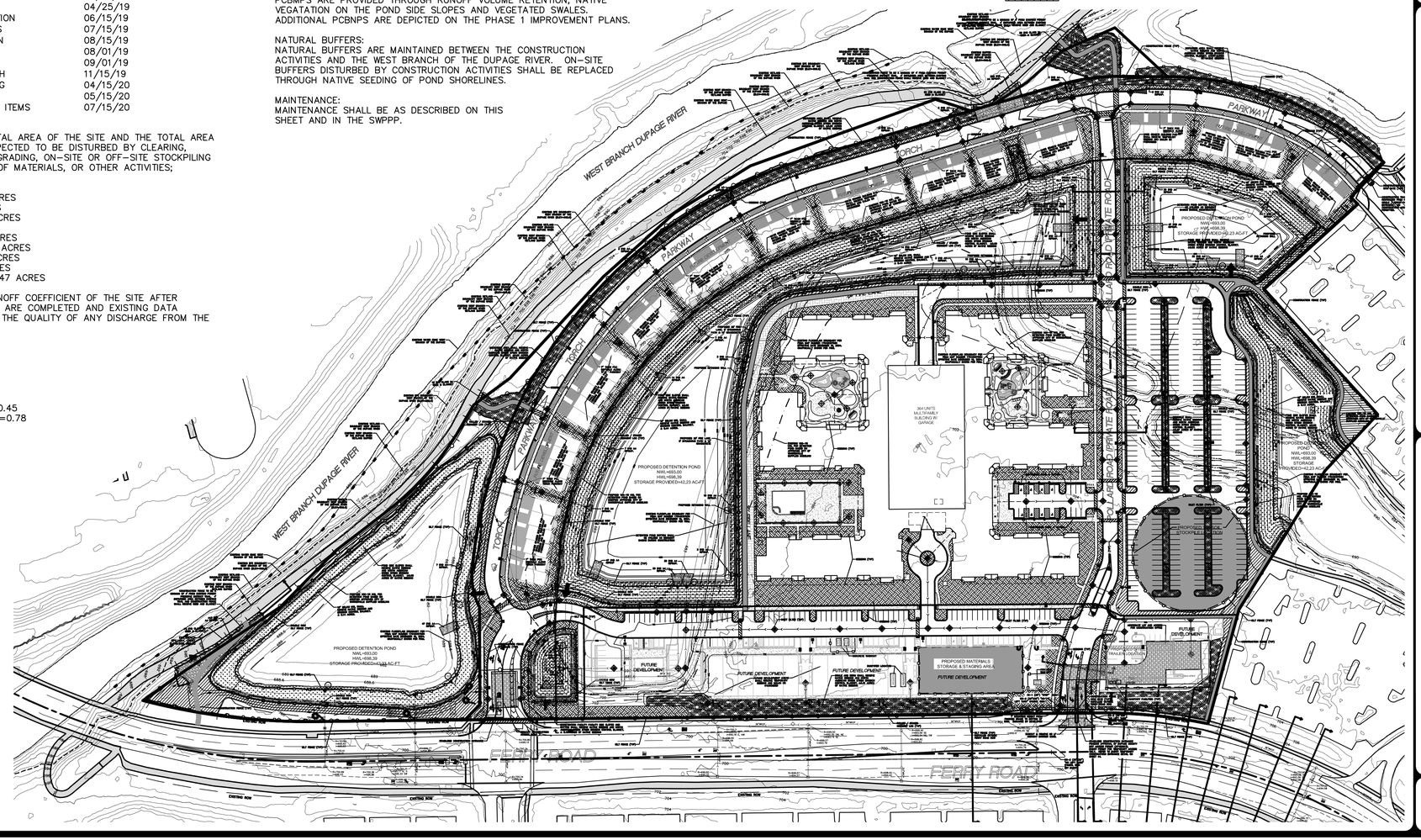
NATIVE SEEDING AND EROSION CONTROL BLANKET BROAD SPECTRUM PRAIRIE W/ FLOWER MIX

NATIVE SEEDING AND EROSION CONTROL BLANKET LOW PROFILE DRY MESIC PRAIRIE W/ FLOWER MIX

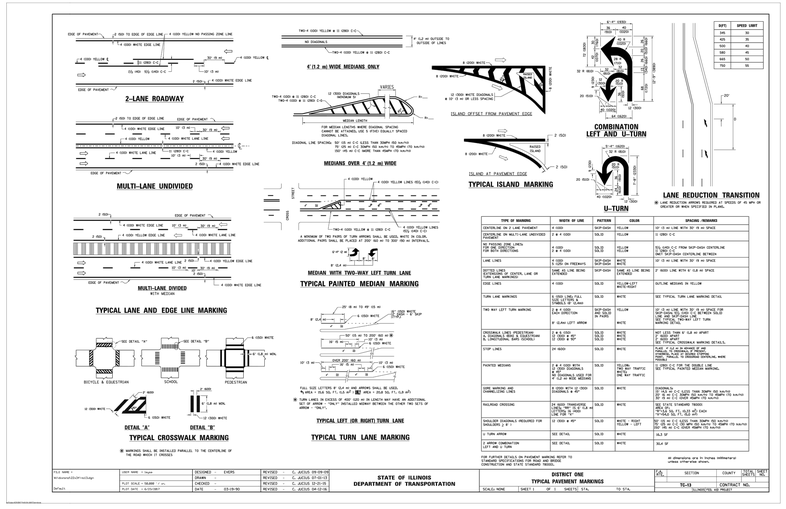
NATIVE SEEDING AND EROSION CONTROL BLANKET TOUGH SHORELINE MIX

SODDING

TEMPORARY SEEDING AND MULCH OR HYDROSEED


WEST BRANCH DUPAGE RIVER
PARKWAY
TORCH
PROPOSED DETENTION POND
NWL=693.00
HWL=698.39
STORAGE PROVIDED=42.23 AC-FT
364 UNITS MULTI-FAMILY BUILDING W/ GARAGE
PROPOSED MATERIALS STORAGE & STAGING AREA
FUTURE DEVELOPMENT
PROPOSED DETENTION POND
NWL=693.00
HWL=698.39
STORAGE PROVIDED=42.23 AC-F

Design Firm License No. 184-001129



TYPE OF MARKING	WIDTH OF LINE	PATTERN	COLOR	SPACING / REMARKS
CENTERLINE ON 2 LANE PAVEMENT	4 (100)	SKIP-DASH	YELLOW	10' (3 m) ON 30' (9 m) SPACE
CENTERLINE ON MULTI-LANE UNDIVIDED PAVEMENT	6 (150)	SOLID	YELLOW	5 (900) C-C
NO PASSING ZONE LINES FOR BOTH DIRECTIONS	4 (100) 4 (100)	SOLID SOLID	YELLOW YELLOW	SOLID LINE 4 (100) FROM SKIP-DASH CENTERLINE 4 (100) BETWEEN SOLID CENTERLINE BETWEEN
LANE LINES	4 (100) 6 (150) ON FREEWAYS	SKIP-DASH SKIP-DASH	WHITE WHITE	10' (3 m) ON 30' (9 m) SPACE
DIVIDED LINES (CENTERLINE OR CENTER LANE OR DIRECTIONAL ROADWAYS)	6 (150)	SKIP-DASH	YELLOW	3' (900) LINE WITH 9' (2.8 m) SPACE
EDGE LINES	4 (100)	SOLID	YELLOW LEFT WHITE RIGHT	OUTLINE MEDIANS IN YELLOW
TURN LANE MARKINGS	6 (150) (150) (12) (300) (24) (600) 24" (600) 8' (2.4 m)	SOLID	WHITE	SEE TYPICAL TURN LANE MARKING DETAIL
TWO WAY LEFT TURN MARKING	4 & 4 (100) (100) 4" (100)	SKIP-DASH SOLID	YELLOW WHITE	10' (3 m) ON 30' (9 m) SPACE FOR 12' (3.6 m) LANE WITH 4' (1.2 m) SPACE BETWEEN 4" (100) LINES. 2'-0" (600) ARROW WITH 4' (1.2 m) TURN BAR WITH 2'-0" (600) SPACE BETWEEN ARROW AND BAR
CROSSWALK LINES (PEDESTRIAN & PEDALCYCLE) AND X (INDIRECTIONAL BIKE CROSSING)	12" (300) 6 (150) 4" (100)	SOLID SOLID	WHITE WHITE	SEE TYPICAL CROSSWALK MARKING DETAILS.
STOP LINES	24 (600)	SOLID	WHITE	PLACE 4' (1.2 m) MINIMUM IN ADVANCE OF CROSSWALK LINE
PAINTED MEDIANS	6 & 6 (150) (150) 4" (100)	SOLID	YELLOW WHITE	2' (600) TAPER & 40' (12 m) 2' (600) POINTED MEDIAN MARKING
LANE ASSIGN AND CHANNELIZING LINES	4" (100)	SOLID	WHITE	SEE TYPICAL TURN LANE MARKING DETAIL
RAILROAD CROSSING	24 (600) CROSSBUCK 6 (150) WIDE BAR ON EACH SIDE OF TRACKS		WHITE	SEE STATE STANDARD 780001 FOR DETAILS
SHOULDER DIAGONALS MEASURED FOR SHOULDERS 8' (2.4 m) OR WIDER	4" (100) & 40'	SOLID	WHITE - RIGHT YELLOW - LEFT	10' (3 m) C-C (100) THICK DIAPER (12) WIDE AT 45° ANGLE TO ROADWAY (24) (600) ON (12) (300) SHOULDER WIDTH TO MAINTAIN
U-TURN ARROW	SEE DETAIL	SOLID	WHITE	ALS 3'
1 ARROW COMBINATION LEFT AND U-TURN	SEE DETAIL	SOLID	WHITE	ALS 3'

FOR FURTHER DETAILS ON PAVEMENT MARKING REFER TO STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION AND STATE STANDARD 780001

All dimensions are in inches (millimeters) unless otherwise shown.

DATE	REVISIONS
4-1-16	Omitted orange safety fence from standard as this is covered in the std. spec.
1-1-12	Added SIDEWALK DIVERSION
	Modified appearance of plan views. Renamed Std

SIDEWALK, CORNER OR CROSSWALK CLOSURE

(Sheet 1 of 2)

STANDARD 701801-06

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

DISTRICT ONE
TYPICAL PAVEMENT MARKINGS

SCALE: NONE | SHEET 1 OF 1 SHEETS | STA. | TO STA.

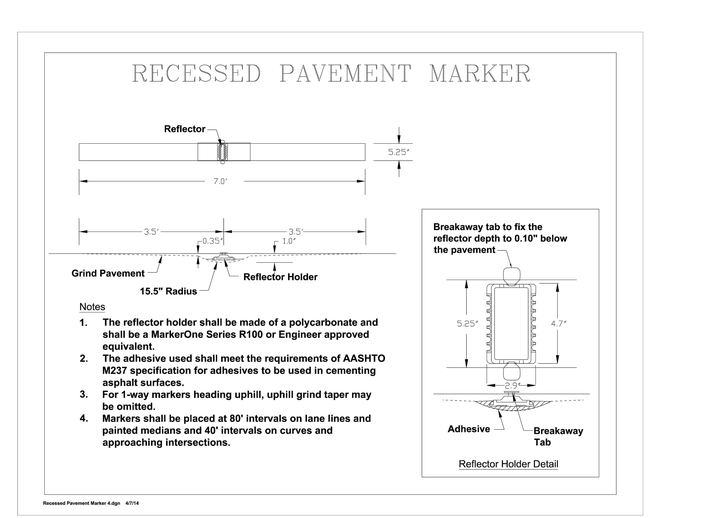
F.A.S. | SECTION | COUNTY | TOTAL SHEET SHEETS | SHEET NO.

CONTRACT NO.

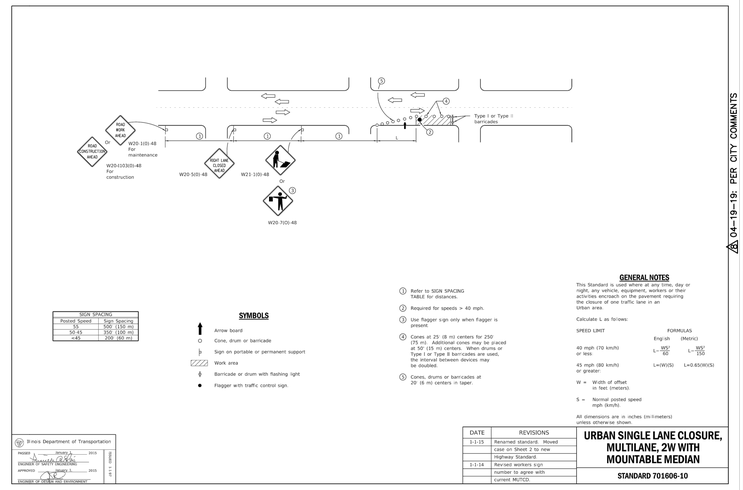
ILLINOIS FED. PROJECT

FILE NAME = N:\Standard\SIGNS\Signs

	DESIGNED	EDCPS	REVISED	C. AUGUS. 09-09-08
	DRAWN		REVISED	C. AUGUS. 07-10-13
	PLOT SCALE = 50.000 ' / in.	CHECKED	REVISED	C. AUGUS. 12-31-15
Default	PLOT DATE = 4/15/2021	DATE	REVISED	C. AUGUS. 04-13-16



Recessed Pavement Marker 4.dgn 4/7/14



SIGN SPACING	
Posted Speed mph	Sign Spacing
30-35	500' (150 m)
40-45	350' (100 m)
50-55	200' (60 m)

SYMBOLS

- Arrow board
- Cone, drum or barricade
- Sign on portable or permanent support
- Work area
- Barricade or drum with flashing light
- Flagger with traffic control sign.

1. Refer to SIGN SPACING TABLE for distances.
2. Required for speeds > 40 mph.
3. Use flagger sign only when flagger is present
4. Cones at 25 (8 m) centers for 250 (75 m) - Additional cones may be placed at 50' (15 m) centers. Where only a Type I or Type II barricades are used, the interval between devices may be doubled.
5. Cones, drums or barricades at 20' (6 m) centers in taper.

GENERAL NOTES

This Standard is used where at any time, day or night, any vehicle, equipment, workers or their activities encroach on the pavement requiring the closure of one traffic lane in an Urban area.

Calculate L as follows:

SPEED LIMIT — FORMULAS

	English	(Metric)
40 mph (70 km/h) or less	$L=\frac{WS^2}{60}$	$L=\frac{WS^2}{150}$
45 mph (80 km/h) or greater.	$L=W(S)$	$L=0.65(W)(S)$

W = Width of offset in feet (meters).

S = Nominal posted speed mph (km/h).

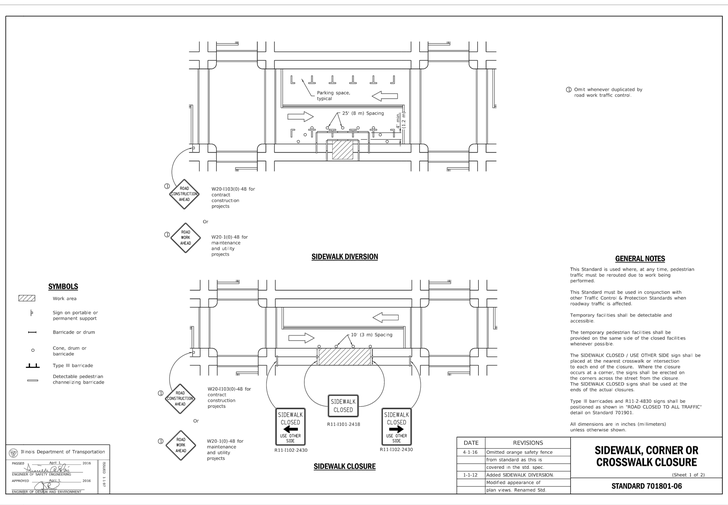
All dimensions are in inches (m-t-meters) unless otherwise shown.

DATE	REVISIONS
1-1-15	Renamed standard. Moved case on Sheet 2 to new Highway Standard
1-1-14	Revised workers sign number to agree with current MUTCD.

URBAN SINGLE LANE CLOSURE, MULTILANE, 2W WITH MOUNTABLE MEDIAN

STANDARD 701606-10

Illinois Department of Transportation
PASSED January 1, 2015
ENGINEER OF POLICY AND PROCEDURES
APPROVED January 1, 2015
ENGINEER OF DESIGN AND ENVIRONMENT



GENERAL NOTES

This Standard is used where, at any time, pedestrian traffic must be rerouted due to work being performed.

This Standard must be used in conjunction with other Traffic Control & Protection Standards when roadway traffic is affected.

Temporary facilities shall be detectable and accessible.

The temporary pedestrian facilities shall be provided on the same side of the closed facilities wherever possible.

The SIDEWALK CLOSED / USE OTHER SIDE sign shall be placed at the nearest crosswalk or intersection to each end of the closure. Where the closure occurs at a corner, the signs shall be erected on the crosswalk perpendicular to the closed walk. The SIDEWALK CLOSED signs shall be used at the ends of the actual closures.

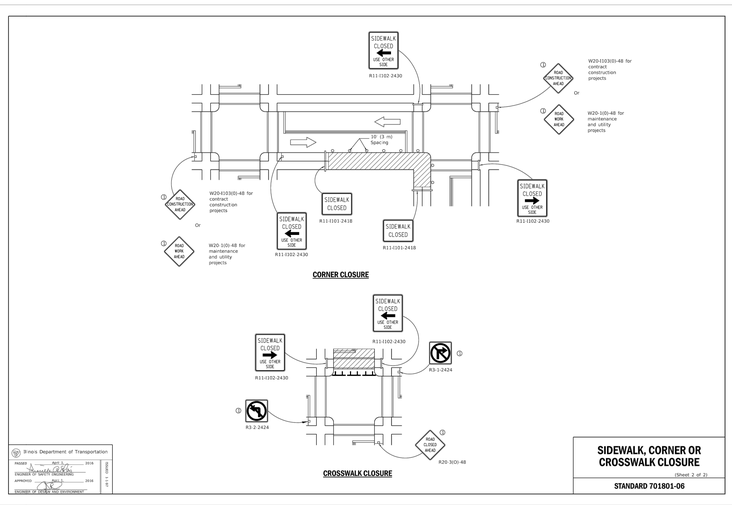
Type II barricades and R11-2-4830 signs shall be installed at the "SIDEWALK CLOSED TO ALL TRAFFIC" detail on Standard 701801.

All dimensions are in inches (m-limeters) unless otherwise shown.

DATE	REVISIONS
1-1-09	Switched units to English (metric)
1-1-02	Renum. Standard 846001.

DETECTOR LOOP INSTALLATIONS

STANDARD 886001-01



SIDEWALK, CORNER OR CROSSWALK CLOSURE

(Sheet 2 of 2)

STANDARD 701801-06

Illinois Department of Transportation
PASSED January 1, 2015
ENGINEER OF POLICY AND PROCEDURES
APPROVED January 1, 2015
ENGINEER OF DESIGN AND ENVIRONMENT

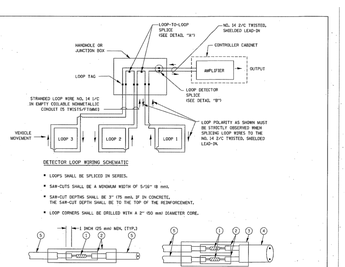
LOOP DETECTOR NOTES

1. EACH PAIR OF LOOP WIRES SHALL BE PLACED IN A SEPARATE EMPTY COILABLE NONMETALLIC CONDUIT FROM THE EDGE OF PAVEMENT TO THE HANDHOLE. SPACING BETWEEN THE HOLES DRILLED IN THE PAVEMENT SHALL NOT BE LESS THAN 6" (150 mm). EMPTY COILABLE NONMETALLIC CONDUIT SHALL BE INCLUDED IN THE COST OF THE LOOP WIRE.
2. THE NUMBER OF LOOP TURNS SHALL BE AS RECOMMENDED BY THE AMPLIFIER MANUFACTURER. ALL ADJACENT SIDES OF THE LOOPS SHALL BE INSTALLED IN SUCH A WAY THAT THE CURRENT FLOW IS IN THE SAME DIRECTION TO REINFORCE ITS MAGNETIC FIELDS FOR SMALL VEHICLE DETECTION.
3. EACH LOOP LEAD-IN SHALL BE IDENTIFIED AND PERMANENTLY TAGGED IN THE HANDHOLE. EACH LEAD-IN CABLE TAG SHALL INDICATE THE LOCATION OF THE LOOP, LOOP ROTATION (CLOCKWISE/COUNTERCLOCKWISE), LOOP LEAD-IN DIRECTION (IN OR OUT), LOOP CABLE NUMBER AND LOCATION IN CABINET, AND NUMBER OF TURNS IN THE DETECTOR LOOPS IN WATER PROOF INK AS INDICATED ON THE DISTRICT 1 STANDARD TRAFFIC SIGNAL DESIGN DETAIL. THE CONTRACTOR SHALL MARK LOOP LOCATIONS ON RECORD DRAWINGS AND PRESENT TO THE ENGINEER AFTER FINAL INSPECTION. LOOPS SHALL BE MARKED BY LANE AND LOOP NUMBER. SEE DETAIL BELOW.
4. ALL LOOP CABLE SHALL BE FASTENED WITH PLASTIC TIE WRAP TO THE HANDHOLE HOOKS.
5. IN ASPHALT PAVEMENT, LOOPS SHOULD BE PLACED IN THE BINDER AND SEVEALS MARKED AT THE CURB WITH A SAW-CUT. THE SAW-CUT SHALL BE CUT IN ACCORDANCE WITH LOCAL AND E.P.A. DUST CONTROL REQUIREMENTS. DETECTOR LOOPS SHALL NOT BE INSTALLED IN WET CONDITIONS AND THE SAW-CUTS MUST BE FREE OF DEBRIS AND RESIDUE SUCH AS DUST AND WATER WHICH IS TO BE ACHIEVED BY THE USE OF COMPRESSED AIR, WIRE BRUSHING AND HEAT DRYING ACCORDING TO SEALANT MANUFACTURER REQUIREMENTS. THE DETECTOR WIRE SHALL BE SECURED IN PLACE BY THE USE OF FORM WEDGES. WEDGES SHALL BE SPACED NO MORE THAN 18" (450 mm) APART.
6. LOOP SPLICES SHALL BE SOLDERED USING A SOLDERING IRON. BLOW TORCHES OR OTHER DEVICES WHICH OXIDIZE COPPER CABLE SHALL NOT BE ALLOWED FOR SOLDERING OPERATIONS. SEE DETAIL BELOW RIGHT.
7. PREFORMED DETECTOR LOOPS SHALL BE USED, AS SHOWN ON THE PLANS, WHERE NEW CONCRETE PAVEMENT IS PROPOSED. THE INSTALLATION OF PREFORMED LOOPS SHALL BE IN ACCORDANCE WITH THE DISTRICT 1 SPECIFICATIONS OR AS DIRECTED BY THE ENGINEER.

LOOP LEAD-IN CABLE TAG

LANE (1) LOOP (2)
LOOP DIRECTION (3)
LOOP ROTATION (4)

A. LANE 1 IS THE LANE CLOSEST TO THE CENTERLINE OF THE ROADWAY
B. LOOP #1 IS THE LOOP IN THE LANE CLOSEST TO THE INTERSECTION.
C. LABEL LOOP CABLE "IN" OR LOOP CABLE "OUT".
D. LABEL LOOP CABLE CLOCKWISE OR LOOP CABLE COUNTERCLOCKWISE.



DATE	REVISIONS
1-1-09	Switched units to English (metric)
1-1-02	Renum. Standard 886006.

TYPICAL LAYOUTS FOR DETECTION LOOPS

STANDARD 886006-01

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

DISTRICT ONE
STANDARD TRAFFIC SIGNAL DESIGN DETAILS

SCALE: NONE | SHEET NO. 1 OF 1 SHEETS | STA. | TO STA.

F.A.S. | SECTION | COUNTY | TOTAL SHEET SHEETS | SHEET NO.

CONTRACT NO.

ILLINOIS FED. PROJECT

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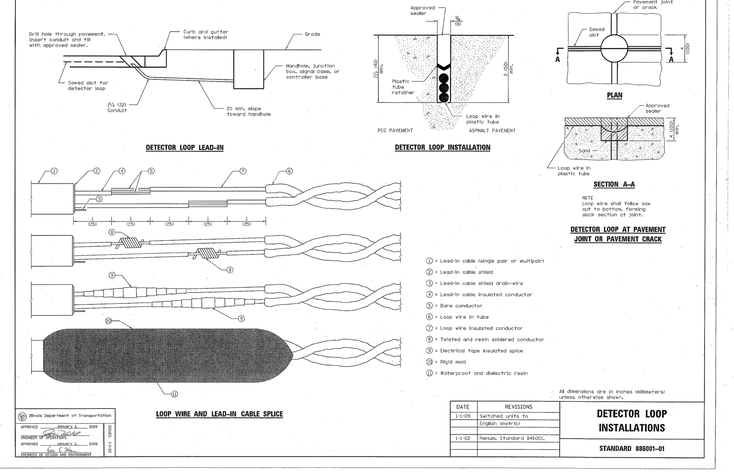
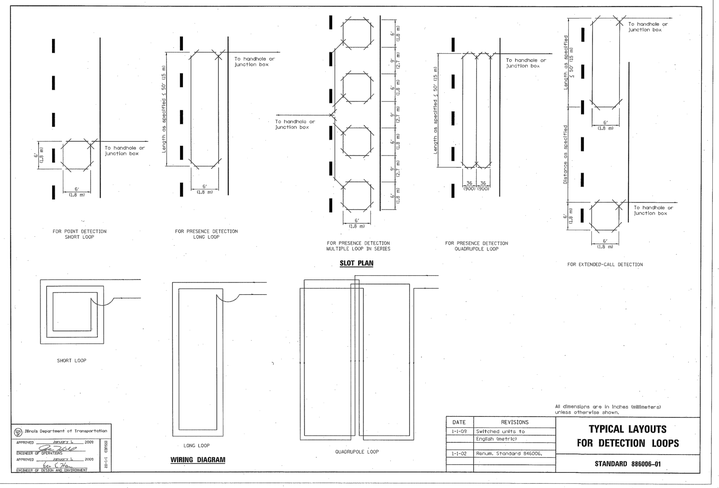


DATE	REVISIONS
1-1-09	Switched units to English (metric)
1-1-02	Renum. Standard 886005.

DETECTOR LOOP INSTALLATIONS

STANDARD 886001-01

Illinois Department of Transportation
APPROVED January 1, 2009
ENGINEER OF DESIGN AND ENVIRONMENT
APPROVED January 1, 2009
ENGINEER OF POLICY AND PROCEDURES



All dimensions are in inches (millimeters) unless otherwise shown.

LOOPS NEXT TO SHOULDERS	LEFT TURN LANES WITH MEDIANS VOLUME DENSITY ("FAR OUT" DETECTION) ON SAME APPROACH (PROTECTED / PERMITTED LEFT TURN PHASING)	LEFT TURN LANES WITHOUT MEDIANS VOLUME DENSITY ("FAR OUT" DETECTION) ON SAME APPROACH (PROTECTED / PERMITTED LEFT TURN PHASING)

NOTES:

VEHICLES LOOP DETECTORS

- ALL LEAD IN CABLE SHALL BE TWO CONDUCTOR NO. 14 TWISTED, SHIELDED.
- EACH DETECTOR LOOP SHALL HAVE ITS OWN SAW CUT FROM THE LOOP TO THE EDGE OF PAVEMENT OR TO A HANDHOLE IN THE PAVEMENT.
- EACH DETECTOR LOOP SHALL HAVE ITS OWN ONE INCH (25 mm) UNIT DUCT BETWEEN THE EDGE OF PAVEMENT AND THE FIRST HANDHOLE OR JUNCTION BOX. EACH UNIT DUCT RUN SHALL BE SHOWN ON THE PLANS BY THE DESIGNER, BUT SHALL NOT BE PAID FOR SEPARATELY, THIS ITEM IS INCIDENTAL TO THE PAY ITEM FOR DETECTOR LOOPS.
- ONE DIMENSION OF ALL DETECTOR LOOPS SHALL BE SIX FEET (1.8 m)
- EACH LANE OF NON-LOCKING, PRESENCE DETECTION AND EACH LANE OF A DOUBLE LEFT TURN LANE REQUIRES A SEPARATE INDUCTIVE LOOP DETECTOR AND LEAD IN CABLE.
- WHEN NON-LOCKING, PRESENCE DETECTION IS USED, MORE THAN ONE LOOP PER LANE IS REQUIRED BEHIND THE STOP BAR (i.e., 1-1-2, 1-1-1).
- WHEN SYSTEM LOOPS ARE REQUIRED ON AN APPROACH OF AN INTERSECTION, THE LOOPS USED FOR VOLUME DENSITY AND INTERSECTION TIMING SHALL ALSO BE USED AS SYSTEM DETECTORS. EACH ONE OF THESE TYPE OF LOOPS REQUIRES A SEPARATE LEAD IN CABLE. WHEN A TYPE 170 CONTROLLER IS USED AND A SEPARATE INDUCTIVE LOOP DETECTOR WHICH NEW CONTROLLERS ARE UTILIZED, THE DESIGNER SHALL LABEL THESE TYPES OF LOOPS AS "INTERSECTION AND SAMPLING SYSTEM DETECTORS" ON THE SIGNAL LAYOUT. THE INTERCONNECT PLAN SHALL SHOW THAT ONE OF THESE LOOPS IN EACH LANE GROUP IS UTILIZED FOR THIS TYPE OF DETECTION, THE PAY ITEM "INDUCTIVE LOOP DETECTOR WITH SYSTEM OUTPUT" SHOULD BE USED.

PLACEMENT OF DETECTORS

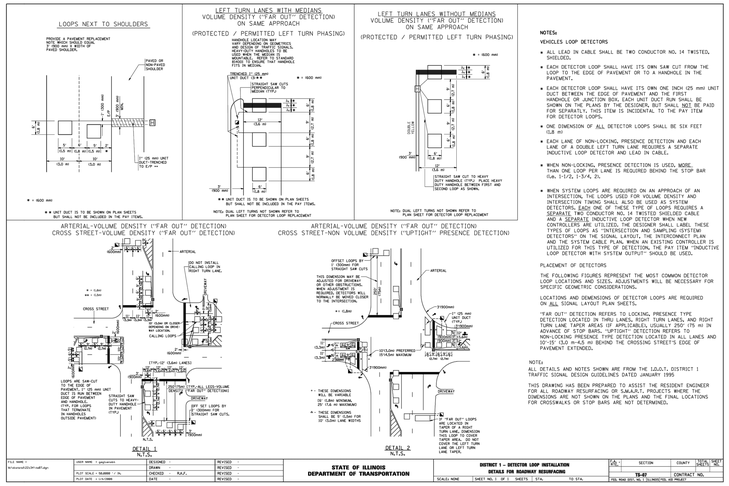
THE FOLLOWING FIGURES REPRESENT THE MOST COMMON DETECTOR LOOP LOCATIONS AND SIZES, ADJUSTMENTS WILL BE NECESSARY FOR SPECIFIC GEOMETRIC CONSIDERATIONS.

LOCATIONS AND DEMENSIONS OF DETECTOR LOOPS ARE REQUIRED ON ALL SIGNAL LAYOUT PLAN SHEETS.

"FAR OUT" DETECTION REFERS TO LOCKING, PRESENCE TYPE DETECTION LOCATED IN THRU LANES, RIGHT TURN LANES AND RIGHT TURN OVERLAPS AT 250' (75 m) OR GREATER FROM THE STOP BAR IN ADVANCE OF STOP BARS. "UPSTREAM" DETECTION REFERS TO NON-LOCKING PRESENCE TYPE DETECTION LOCATED IN ALL LANES AND 50'-75' (15 m-4.5 m) BEHIND THE CROSSING STREET'S EDGE OF PAVEMENT EXTENDED.

NOTE:
ALL DETAILS AND NOTES SHOWN ARE FROM THE I.D.O.T. DISTRICT 1 TRAFFIC SIGNAL DESIGN GUIDELINES DATED JANUARY 1995

THIS DRAWING HAS BEEN PREPARED TO ASSIST THE RESIDENT ENGINEER FOR ALL ROADWAY RESURFACING OR SMALRJ'L PROJECTS WHERE THE DIMENSIONING ARE NOT SHOWN ON THE PLANS AND THE FINAL LOCATIONS FOR CROSSWALKS OR STOP BARS ARE NOT DETERMINED.



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	PLOT DATE = 4/15/2021	DATE - 01/09/20	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

DISTRICT 1 - DETECTOR LOOP INSTALLATION DETAILS FOR ROADWAY RESURFACING

SCALE: NONE | SHEET NO. 1 OF 1 SHEETS | STA. | TO STA.

F.A.S. | SECTION | COUNTY | TOTAL SHEET SHEETS | SHEET NO.

TS-07 | CONTRACT NO.

FED. ROAD DIST. NO. | ILLINOIS FED. PROJECT

04-09-19: PER CITY COMMENTS

REVISIONS:	JOB NO. 080-020
09-18-18: REVISD PER CITY COMMENTS	FIELD BOOK: N/A
11-05-18: REVISD PER FPD COMMENTS	FIELD BOOK: N/A
01-18-19: REVISD PER CITY COMMENTS	DRAWN BY: MK
03-15-19: PER DUDOT COMMENTS	CHECKED BY: KEK
FILE: I:\080-020 Cantera Lot 2 Sub Area C\Engineering\Drawings	COMPLETED:04/07/19

PREPARED FOR:
CANTERA DEVELOPMENT HOLDINGS, LLC.
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TEL: (847) 562-2001

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333 PIERCE ROAD SUITE 200 ITASCA, IL 60143
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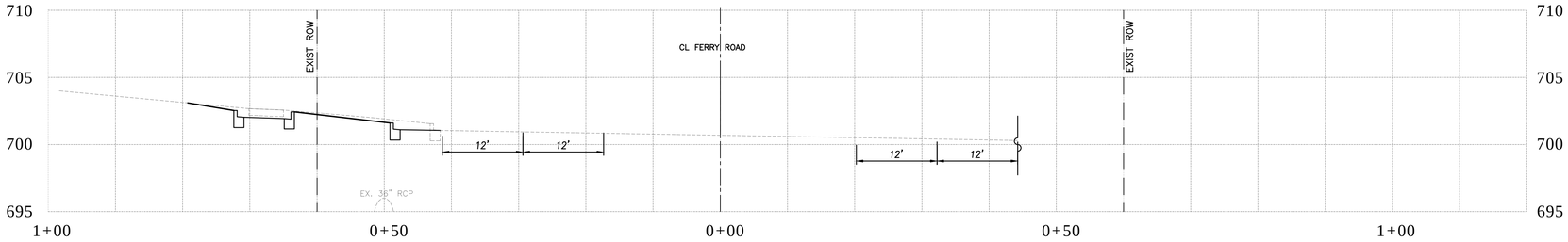
ITASCA * CHICAGO * ALGONQUIN * LAKE GENEVA * SOUTH BEND * INDIANAPOLIS

DETAILS
RIVER VIEW WEST
CITY OF WARRENVILLE, ILLINOIS

SHEET NUMBER
66
OF 71

FILE: I:\080-020 Cantera Lot 2 Sub Area C\Engineering\Final Engineering

Design Firm License No. 184-001129



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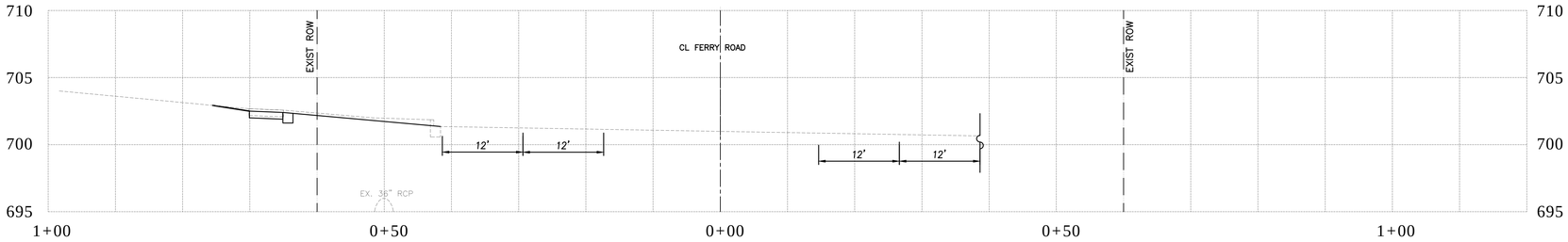

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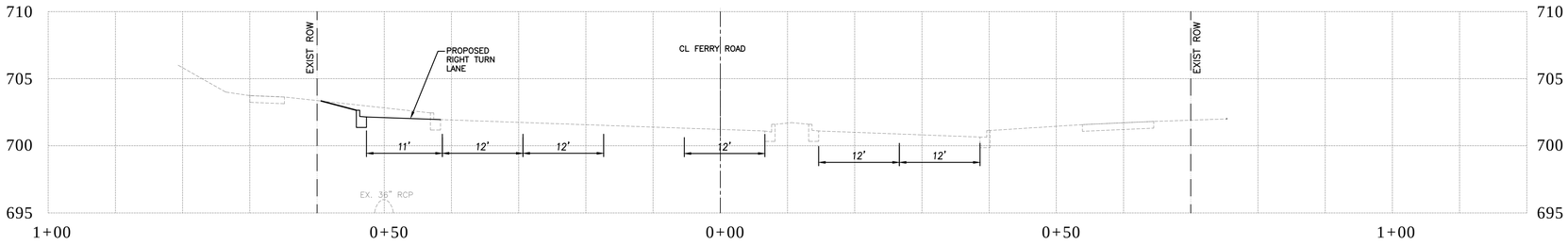
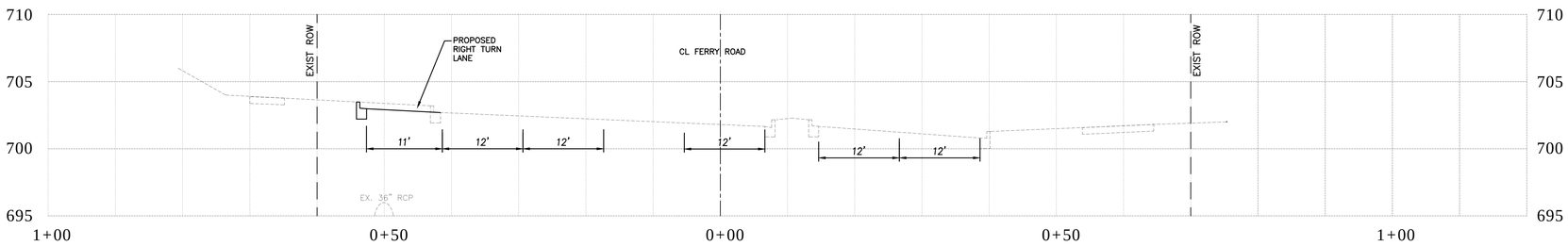


FERRY ROAD STA 132+00



FERRY ROAD STA 132+50

04-19-19: PER CITY COMMENTS

REVISIONS:	JOB NO.: 080-020
09-18-18: REVISD PER CITY COMMENTS	FIELD BOOK: N/A
11-05-18: REVISD PER FPD COMMENTS	FIELD BOOK: N/A
01-18-19: REVISD PER CITY COMMENTS	DRAWN BY: MK
03-15-19: PER DUDOT COMMENTS	CHECKED BY: KEK
FILE: I:\080-020 Cantera Lot 2 Sub Area 4\Engineering\Drawings\Civil	COMPLETED:04/07/19

PREPARED FOR:
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TWO NORTHFIELD PLAZA, SUITE 320
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ITASCA * CHICAGO * ALGONQUIN * LAKE GENEVA * SOUTH BEND * INDIANAPOLIS

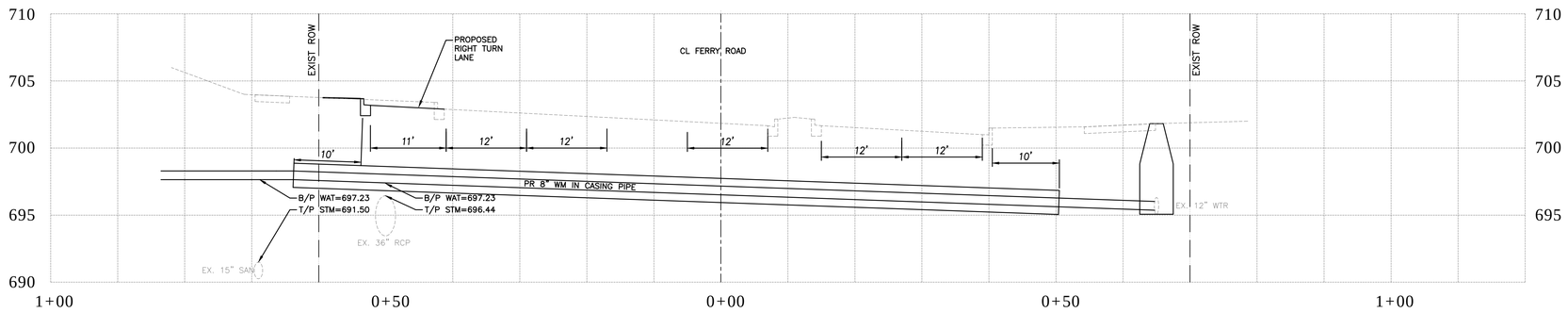
DETAILS

RIVER VIEW WEST
CITY OF WARRENVILLE, ILLINOIS

SHEET NUMBER
67
OF 71

FILE: I:\080-020 Cantera Lot 2 Sub Area 4\Engineering\Drawings\Final Engineering

Design Firm License No. 184-001129



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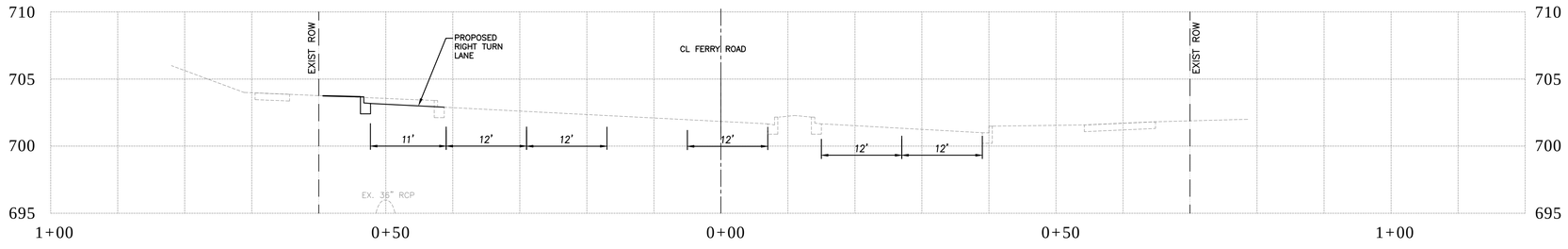

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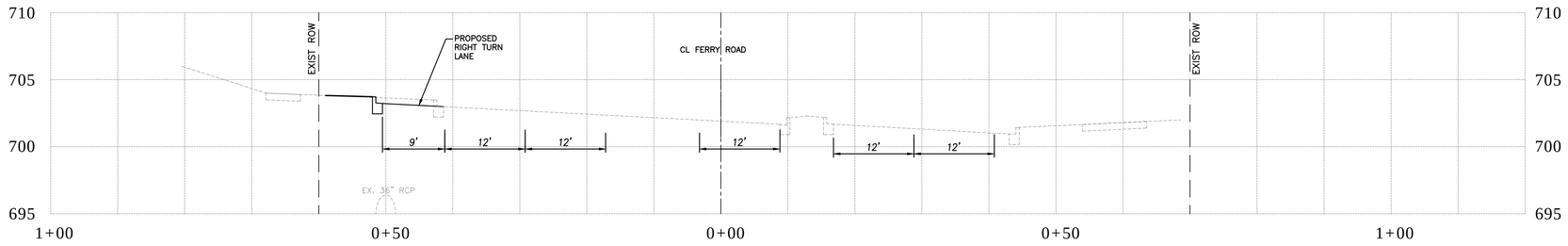
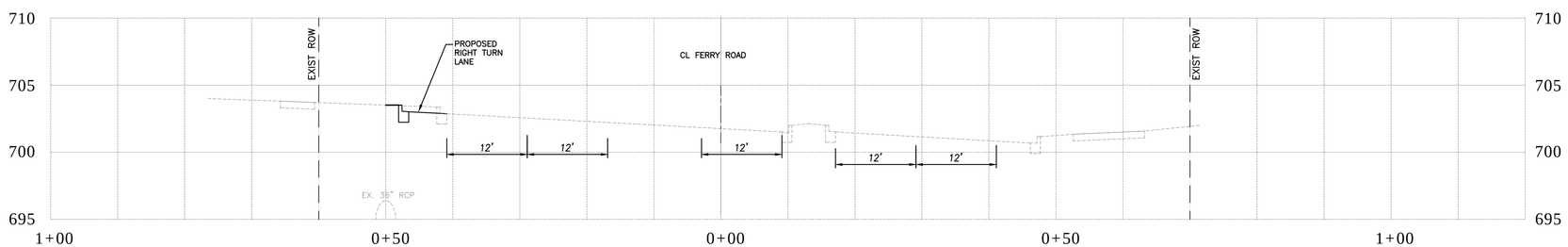


FERRY ROAD STA 133+50



FERRY ROAD STA 134+00

04-19-19: PER CITY COMMENTS

REVISIONS:
- 09-18-18: REVISD PER CITY COMMENTS
- 11-05-18: REVISD PER FPD COMMENTS
- 01-16-19: REVISD PER CITY COMMENTS
- 03-15-19: PER DUDOT COMMENTS

File: I:\080-020 Cantera Lot 2 Sub Area C\Engineering\Drawings

JOB NO: 080-020
FIELD BOOK: N/A
FIELD BOOK: N/A
DRAWN BY: MK
CHECKED BY: KEK
COMPLETED: 04/07/19

PREPARED FOR:
CANTERA DEVELOPMENT HOLDINGS, LLC.
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CONSULTING ENGINEERS

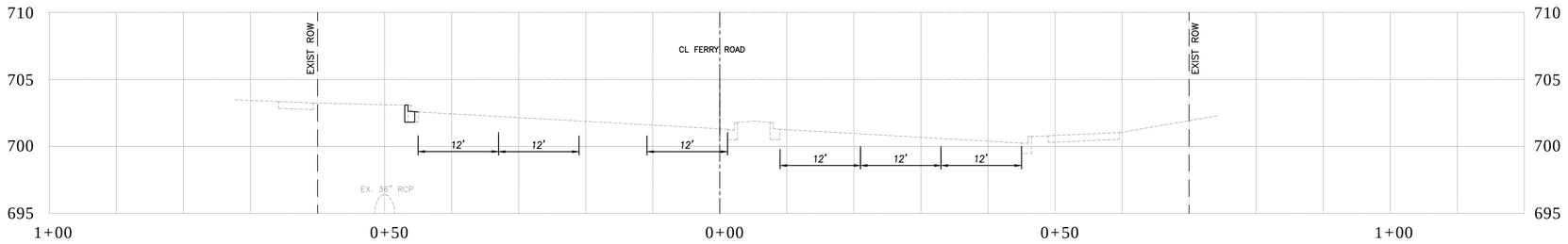
DETAILS

RIVER VIEW WEST
CITY OF WARRENVILLE, ILLINOIS

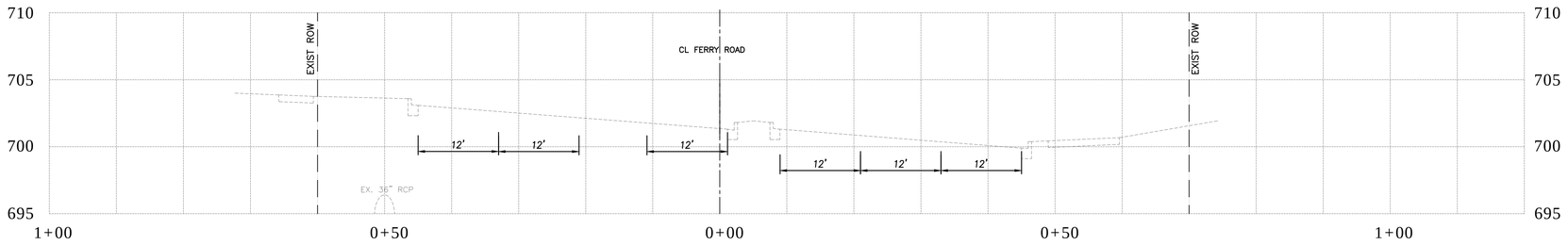
SHEET NUMBER
68
OF 71

FILE: I:\080-020 Cantera Lot 2 Sub Area C\Engineering\Drawings\Final Engineering

Design Firm License No. 184-001129



FERRY ROAD STA 134+50

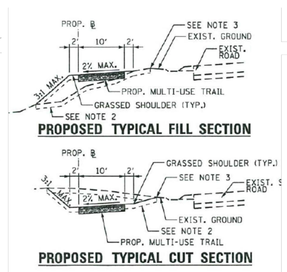


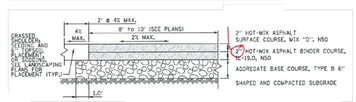
FERRY ROAD STA 135+00

DuPage County Division of Transportation General Notes and Specifications

1. All construction within the County's right-of-way shall be performed according to IDOT'S "Standard Specifications for Road and Bridge Construction" (Latest Edition) and the "Supplemental Specifications and Recurring Special Provisions" (Latest Edition).
2. Daily lane closures are permitted between 9:00 a.m. and 4:00 p.m. ONLY. Traffic control shall conform to IDOT's Highway Standards and the FHWA's 'Manual for Uniform Traffic Control Devices' and IDOT's Supplement at all times during construction. Traffic control shall include use of advance warning lane closure signage, an arrow board and Type II barricades with sandbags.
3. Lane closures are not permitted on County roadways during snowfall or within 2 hours prior to prediction of snowfall or precipitation conditions between November 15 and April 15 for maintenance of the roadway pavement by County Highway Maintenance Department staff and equipment.
4. Disturbed areas of the right-of-way shall be dressed with a minimum of 6" topsoil and Class 2A salt tolerant seed (with erosion control blanket) or sod (salt tolerant and staked in place).
5. Erosion control measures shall comply with the minimum requirements of the DuPage County Stormwater and Floodplain Ordinance specifications at all times.
6. Equipment and materials shall not be stored within the County's right-of-way at any time without the express written permission of the County Engineer, or his duly authorized assign.
7. Pavement, curb/gutter and storm structures within the County's right-of-way shall be maintained free of mud/debris at all times and shall be cleaned as is required and/or as directed by DuPage County.
8. Contact DuPage County (630/407-6900) a minimum of 48 hours prior to the start of construction to arrange for inspections of and at the completion of the described work within the County's right-of-way.
9. Trench backfill for non-paved areas shall be installed within the County's right-of-way per DuPage County's standard.
10. Trench backfill below existing or proposed pavement, curb/gutter and/or sidewalk shall be installed within the County's right of way per DuPage County's standard.
11. There shall be no decorative stone, landscaping or trees planted within the County right of way.

DuPage County DOT Typical Bituminous Multi-use Trail Sections





04-19-19: PER CITY COMMENTS

REVISIONS:
09-18-18: REVISD PER CITY COMMENTS
11-05-18: REVISD PER FPD COMMENTS
01-18-19: REVISD PER CITY COMMENTS
03-15-19: PER DUDOT COMMENTS
Ref: Warrenville Ltr. 4 Fee Ordinance.docx

JOB NO: 080-020
FIELD BOOK: N/A
FIELD BOOK: N/A
DRAWN BY: MK
CHECKED BY: KEK
COMPLETED:04/07/19

PREPARED FOR:
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CONSULTING ENGINEERS

DETAILS

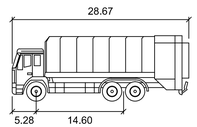
RIVER VIEW WEST
CITY OF WARRENVILLE, ILLINOIS

SHEET NUMBER
69
OF 71

FILE: I:\080-020 Cantera Lot 2 Sub Area C\Engineering\Drawings\Final Engineering

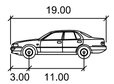
Design Firm License No. 184-001129

60 0 30 60
1 inch = 60 Ft.



REFUSE 3AXLE feet

Width	: 8.20
Track	: 8.20
Lock to Lock Time	: 6.0
Steering Angle	: 35.3



P feet

Width	: 7.00
Track	: 6.00
Lock to Lock Time	: 6.0
Steering Angle	: 31.6

LEGEND

- VEHICLE TRAVEL PATH & DIRECTION
- REAR WHEEL TRAVEL PATH
- FRONT WHEEL TRAVEL PATH
- VEHICLE BODY CLEARANCE PATH

WEST BRANCH DUPAGE RIVER

TORCH PARKWAY

POLLARD ROAD PRIVATE ROAD

364 UNITS MULTIFAMILY BUILDING W/ GARAGE

FERRY ROAD

EXISTING ROW

10' SIDEWALK EASEMENT PER DOC R199-246748

REVISIONS:
- 09-18-18: REVISED PER CITY COMMENTS
- 11-05-18: REVISED PER PPD COMMENTS
- 01-18-19: REVISED PER CITY COMMENTS
- 02-18-19: REVISED PER CITY COMMENTS
- 02-25-19: PER INTERNAL COORDINATION
- 03-15-19: PER DUDOT COMMENTS
- 04-19-19: PER PPD COMMENTS
- 03-25-19: PER PPD COMMENTS

FILE: I:\088-020 Cantera Lot 2 Sub Area C\Engineering\Drawings

JOB NO: 088-020
FIELD BOOK: N/A
FIELD BOOK: N/A
DRAWN BY: MK
CHECKED BY: KEK
COMPLETED: 04/07/19

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VEHICLE TURNING MOVEMENT PLAN

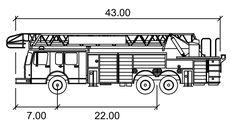
RIVER VIEW WEST
CITY OF WARRENVILLE, ILLINOIS

SHEET NUMBER
70
OF 71

Design Firm License No. 184-001129

60 0 30 60

1 inch = 60 Ft.



Aerial Fire Truck

	feet
Width	: 8.50
Track	: 8.50
Lock to Lock Time	: 6.0
Steering Angle	: 33.3

LEGEND

- VEHICLE TRAVEL PATH & DIRECTION
- REAR WHEEL TRAVEL PATH
- FRONT WHEEL TRAVEL PATH
- VEHICLE BODY CLEARANCE PATH

WEST BRANCH DUPAGE RIVER

TORCH PARKWAY

POLLARD ROAD PRIVATE ROAD

364 UNITS MULTIFAMILY BUILDING W/ GARAGE

FERRY ROAD

EXISTING ROW

10' SIDEWALK EASEMENT PER DOC R99-246748

REVISIONS:
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- 03-15-19: PER DUDOT COMMENTS
- 02-25-19: PER INTERNAL COORDINATION
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- 02-18-19: REVISED PER CITY COMMENTS

FILE: I:\08b-020 Cantera Lot 2 Sub Area C\Engineering\Drawings

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FIELD BOOK: N/A
FIELD BOOK: N/A
DRAWN BY: MK
CHECKED BY: KEK
COMPLETED: 04/07/19

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EMERGENCY VEHICLE TURNING PLAN

RIVER VIEW WEST
CITY OF WARRENVILLE, ILLINOIS

SHEET NUMBER
71
OF 71

April 19, 2019

Ms. Kristine Hocking
Senior Civil Engineer
City of Warrenville
3S258 Manning Avenue
Warrenville, Illinois 60555

RE: Riverview West Development
Final PUD / Plat Staff Review Comments

Dear Ms. Hocking:

BLA, Inc. (BLA) received review comments for the above referenced project via email dated April 11, 2019. The application submittal has been reviewed and revised accordingly. Please find enclosed the following information for review and ultimate approval:

1) Revised Proposed Site Improvement Plans for Riverview West, dated April 19, 2019.

2) Revised Stormwater Management Report, dated April 19, 2019.

3) Revised Engineer's Opinion of Probable Construction Cost, dated April 19, 2019.

The provided comments have been addressed as follows (comment in italics, response in plain font):

The following comments were provided by City of Warrenville Staff:

1. ***Civil Engineering Review****: Address review comments and recommendations contained in the April 11, 2019, review memo from City/Consulting Civil Engineers (attached).*

Please refer to response to engineering comments.

2. ***Warrenville Fire Protection District Review****: Address all City of Warrenville code-required comments contained in the Warrenville Fire Protection District's review memo dated April 10, 2018 (attached).*

Please refer to response to Fire Protection District comments.

3. ***Apartment Building:***

   a. ***Roof top equipment:*** *The location of roof top equipment is illustrated on Sheet A-3. The requested details on the proposed roof top equipment height and its screening are not provided. Any positive staff recommendation on this project will include the following condition: "All roof top equipment must be fully screened. The top of parapet walls or roof screens shall be at least as high as all roof top equipment. Screens must be consistent with the architecture and color scheme of the building. Details illustrating the locations of roof top equipment, the equipment height, and screening design shall be provided for staff review and approval prior to the issuance of a building permit".*

Response by Others

   b. ***Fence Detail:*** *Three separate fence detail cut sheets are provided for fence around pool, section of ponds and court yards, however the fence material type and color are not specified. Any positive staff recommendation on this project will include condition requiring the fence be constructed of high quality, black aluminum.*

Response by Others

   c. ***Screen walls/fences:*** *Cut sheets for screen walls/fences proposed around first floor unit patios refer to "cedar board". The architectural plans refer to "wood fence at patio". Provide information on height and color of the proposed screen walls.*

Response by Others

   d. ***Ground Sign Lighting:*** *Provide cut sheet with (specified selected options) for lights proposed to illuminate ground signs.*

Response by Others

   e. ***Balcony Details:*** *Provide construction detail for proposed balconies that illustrates what flooring/base materials are being proposed. Explain what measures will be taken to minimize corrosion on these exterior painted steel architectural improvements.*

Response by Others

   f. ***Building Elevation Colors:*** *Provide information on color scheme for the proposed apartment building.*

Response by Others

g. ***EV Charging Stations:*** *Any positive recommendation on this project will include a condition requiring installation of EV charging stations for apartment residents.*

Response by Others

4. ***Site Plan and Landscape Plan:***
   a. ***Site Plan:*** *Illustrate all proposed property lines on the Site Plan, sheet A-3.*
   b. ***Ferry Road Street Trees:*** *Landscaping along Ferry Road should be consistent with the Cantera parkway landscaping design, which includes a double row of consistent species of shade trees along the entire frontage of the Subject Property, including Outlot A. The proposed Landscape Plan illustrates the required double row of parkway trees. Any positive staff recommendation on this project will include a condition requiring the City Arborist review and approval of the parkway tree species selection.*

Response by Others

   c. ***Access Drive Median Planting:*** *Landscaping of the medians within north-south access drive shall be illustrated on the Landscape Plan. The Cantera Development Control Regulations require median strips be planted with highly ornamental perennials and/or low shrub masses. The landscape median at the entrance of Diehl Road (north of the sidewalk) should be planted with low shrubs not exceeding 24 inches in height at maturity. The wider median area located further to the north should be planted with combination of trees and shrub masses.*

Response by Others

   d. ***Groundcover:*** *Groundcover should be noted and specified on the Landscape Plan.*

Response by Others

   e. ***Turf Details:*** *Except where occupied by planting beds, all landscaping areas shall be sodded, planted with native or adapted plant materials, or planted with seed/erosion control blanket combination. The Landscape Plan should clearly illustrate areas to be seeded/sodded.*

Response by Others

f. ***Generator****: An emergency backup generator is proposed on top level of the garage. Provide generator specifications and dimensions, including height, width and length and provide enclosure/screening details, including type of wall, its height.*

Response by Others

g. ***Trash and Recycling Station:*** *Explain the proposed refuse collection improvements and the planned refuse pickup/removal system. Will recycling facilities be incorporated in the refuse collection system/improvements? If so, provide details and illustrate on the plans.*

Response by Others

h. ***Mailroom:*** *Explain where mail will be delivered to/picked up.*

Response by Others

i. ***Loading Area:*** *Illustrate loading area on the Site Plan.*

Response by Others

j. ***Planting Calculations:*** *The Landscape Plan should include calculations confirming compliance with various quantitative landscape requirements of the Cantera Development Control Regulations and the Zoning Ordinance. This includes parking lot landscaping, perimeter parking lot landscaping, site perimeter landscaping, parkway tree planting (1 shade tree every 40 feet of the roadway), and SWM detention facility landscaping. See Section 11.K of the Zoning Ordinance for detention pond requirements and Section VI.C of the Cantera Development Control Regulations for detailed landscape requirements for all other areas. An example of the required landscape calculations for a similar mixed-use project is available on the City website at https://www.warrenville.il.us/DocumentCenter/View/10572*

Response by Others

k. ***Building Foundation landscaping:*** *The submitted 3D color rendering for the building illustrates shrub rows in front of the proposed patio wooden screens on the ground level. The Landscape Plan does not illustrate any landscaping along wooden fence/screen walls. Staff recommends the landscape design incorporates shrub rows and/or ornamental grasses or similar landscape materials along the proposed wooden screen walls/fences to soften their appearance.*

Response by Others

l. ***Light Poles:*** *All light poles should be illustrated on the Landscape Plan to eliminate conflicts with proposed location of trees.*

Response by Others

5. ***Covenants:*** *Revise Master Declaration dated December 15, 2017 to address review comments outlined in the outlined on the attached Exhibit A.*

Response by Others

6. ***Signage:***
   a. ***Monument Sign Setbacks****: Monument signs shall be setback from the street right-of-way line at least 12.5 feet and shall be outside of vision clearance triangle as defined in the Zoning Ordinance. In addition, signs are not permitted within 75 feet from the centerline of Ferry Road per Section V.D.5 of the Cantera DCRs.*
   Based on the provided location of signs it is not clear whether they comply with setback requirements. Revise sign locations and provide dimensions on the Site Plan confirming compliance with the setback requirements. Illustrate setbacks from all right-of-way lines, including the new Torch Parkway right-of- way (not only Diehl Road).

Response by Others

   b. ***Site Wayfinding Signage****: Parking lot regulation/directional signage is limited to 9 square feet per face. The proposed directional signs #1 and 2 are approximately 30-square foot per face and thus exceed the maximum allowed area. The signs shall be revised to comply with the maximum area or a variation from the Sign Ordinance shall be applied for and approved.*

Response by Others

   c. ***Apartment Building Wall Signs****: Wall signs are not permitted in the Cantera Special Development Multi-Family Use area, which the Subject Property is zoned for. Wall signage may not be installed unless a special approval for wall signage is applied for and received.*

Response by Others

7. ***Irrigation:*** *A detailed Irrigation Plan shall be required at the time of Building Permit issuance for this project.*

Response by Others

8. ***Commercial Lot Design Requirements:*** *Any positive staff recommendation on this project will include a condition requiring commercial component of this project be developed in accordance with the Commercial Lot Development Design Guidelines. Such guidelines are being finalized by City staff and will be provided separately.*

Response by Others

9. ***Sanitary Sewer:*** *The Applicant shall pay the required sanitary sewer capacity fee (the amount to be finalized by the City of Naperville) prior to the final Plat and final PUD ordinance recording with the DuPage County.*

Noted.

10. ***School, Park and Library Contributions****: Unless otherwise approved by the City Council, the City Code requires the Applicant to pay the required school, park and library contributions for the subdivision at the time of building permit issuance for each building.*

Response by Others

11. ***Fees and Security Guaranteeing Completion of Public Improvements****: The Applicant shall pay/submit all applicable review and inspection fees and the required security guaranteeing completion of public improvements prior to recording of Final Plat of Subdivision and Ordinance approving Final PUD for this project.*

Response by Others

12. ***Traffic Enforcement Agreement****: A Private Property Traffic Enforcement Agreement (in a form acceptable to the City) shall be executed by the Property Owner and recorded by the City prior to any building permit issuance for this project.*

Response by Others

13. ***DuPage County Traffic Impact Fee****: The DuPage County Traffic Impact Fee must be paid prior to the City's issuance of a building permit for this project. The information and application can be obtained at the DuPage County Division of Transportation at (630) 407-6674.*

Noted.

14. ***DuDOT Permit****: A Permit to perform work within County ROW Ferry Road is required from DuPage County DOT. A copy of the issued Permit shall be provided to City staff prior to commencement of such work.*

Noted. Submittal has been made to DuDOT. Comments have been received and are being addressed with DuDOT. Copies of all issued permits will be provided to the City of Warrenville

ENGINEERING

SUMMARY

PROPOSED LAND USES: *The proposed development has not changed and consists of consists of the following land uses.*

- *364 Apartment units (1BR – 201, 2BR – 153, 3BR – 10)*
- *Townhome units (previously 60 3BR)*
- *undesignated commercial space*

ACCESS AND VEHICULAR CIRCULATION: *Access has not changed from earlier submittals. Since Ferry Road is under the jurisdiction of DuPage County Department of Transportation (DuDOT), they will review construction affecting their road. We have seen the April 2, 2019 DuDOT review of the site improvement plans and note several sheets need revision.*

Torch Parkway is proposed to be extended as a 27-foot wide (back to back of curb) public street within a 60 foot wide right-of-way southwesterly from its current terminus at Kline Circle to the internal intersection with the private drive that serves the commercial area, and then south to where it intersects with Ferry Road. The proposed extension is generally consistent with the Cantera General Site Plan Exhibits approved by the City on February 17, 1994. The typical section for Torch extended includes B6.12 curb and gutter along the future townhome side of the pavement. Since the final locations of the townhomes will be established in the Phase 2 submittals, confirm depressed sections of curb and gutter will be created during Phase 2.

A new private internal central road is proposed extending from Ferry Road opposite Cornerstone to Torch Parkway extended. It is called "Riverview Drive", from which extends private residential drive to a parking garage and a private commercial drive. There is a typical section for this private road. The pavement is 24' back to back and no on-street parking is proposed. A central island just north of the commercial drive has been extended from previous submittals. The extension is acceptable.

A proposed private commercial drive extends between Torch and Riverview. There is no typical

section for this pavement. The lanes and north side parking are proposed to be constructed under Phase 1. South side parking is proposed to be built in Phase 3. The current concept includes many perpendicular commercial parking spaces along the south side of the drive.

TRAFFIC STUDY IMPACT: *No new information about traffic impact has been submitted since the November 2017 report by GHA. DuDOT has requested a technical supplement.*

*As previously noted**, the projected site traffic generated by the proposed residential and commercial land uses will be half of that which would be generated by the previous PUD approval for this site consisting of up to 950,000 square feet of office space.** Consequently the proposed development is expected to have less impact on the surrounding streets.*

In our last review, we recommended measures designed to reduce risk at the Torch Parkway pedestrian crossing and to calm traffic. Curb bump-outs at pedestrian crossings of Torch Parkway have been added.

See response and documents as submitted by Gewalt Hamilton and Associates

WARRENVILLE CITY ORDINANCE No. 1439: *Ordinance No. 1439 requires the removal of the right-in portion of the right-in/right-out driveway to lot C1 (Cantera Meadows) about 300' west of the Winfield Road/Ferry Road intersection when "Access #4" is constructed. Access #4 is a driveway aligned with the unsignalized Cornerstone Development access to Ferry Road. The proposed development will construct such an access, but the proposed development plan does not specify closure of the right-in portion of the existing C1 entrance.*

The Ordinance requirements were based upon the prior plan which consisted entirely of office space throughout all of Subarea C. The prior plan also included internal connectivity between lot C1 and the remainder of the of the Subarea C office development. The proposed lot C2 development plan replaces the previously proposed office use residential and commercial uses, and eliminates vehicular cross access to Cantera Meadows.

See response and documents as submitted by Gewalt Hamilton and Associates

The April 8 memorandum from GHA says that the existing Lot C1 access and the proposed Lot C2 access operate reasonably. We agree with GHA's recommendation of continued monitoring.

Ordinance 1439 also requires:

1. *Widening of Torch Parkway to accept dual left turns from northbound Winfield Road to westbound Torch Parkway.*
2. *Striping the Torch Parkway approaches to Kline Circle, and the southbound Kline Circle approach to Torch Parkway to provide left turn lanes and tapers.*

The proposed residential and commercial development is projected to generate half of the new trips than the previously approved office space for the site. The need for dual lefts from northbound Winfield to westbound Torch will not exist due to the reduction in projected site traffic. The projected Level of Service (LOS) for this traffic movement is LOS A with left turn vehicle queues contained within the existing single turn lane storage. It is our professional opinion that the widening of westbound Torch Parkway is not necessary in conjunction with the current development proposal.

See response and documents as submitted by Gewalt Hamilton and Associates

PEDESTRIAN CIRCULATION: *Ordinance 1439 lists six requirements for sidewalks, most of which were previously constructed or would not apply under the proposed development plan. The requirement to provide a sidewalk connection to the River just north of the existing pond at the northwest corner of Ferry Road and Torch Parkway is now proposed.*

Noted

PARKING: *Off-street residential parking has not changed. In a previous review, we agreed with the required parking space tabulation on page 8 of the GHA traffic report.*

Sheet A-12 of the Architectural Plans locate on-street Townhome Guest Parking along Torch Boulevard. We have no objection to the location of the spaces except for the two spaces within the designated overflow route of the detention pond system.

Noted

LOADING: *Two loading spaces are required and have been provided for Commercial Buildings 2, 3 and 4. They have not changed and are acceptable. The approach to the trash pickup area has been reconfigured to include a central island. An autoturn is necessary to confirm a garbage truck can enter and exit the access.*

An AutoTurn plan has been provided for refuse, passenger and emergency vehicle turning movements.

VISION CLEARANCE: *The vision clearance triangles shown on Sheet 49 of the Site Improvement Plan appear correct. They assume the posted speed of the future commercial drive will be 20 mph. The landscape plans do not show the vision clearance triangles. We are concerned about the sight lines for eastbound traffic on the commercial road looking north at Riverview Drive. The corner of the building is close to the triangle limits and the choice of five 10-15' arborvitae and three Black Hills Spruce which are not trimmed up are inappropriate.*

Sight vision triangle have been coordinated with the landscape architect. Please refer to the landscape drawings for additional information.

PERMITS: *The proposed disturbed area will be approximately 32+/- acres, so a City of Warrenville Stormwater and Flood Plain Certification is required. City of Warrenville Building Permits will be required as each unit is constructed. Illinois Environmental Protection Agency (IEPA) permits are required for the proposed sanitary sewer and water main improvements for this project. DuPage County Department of Transportation permits will be required for work within their right-of-way. DuPage County Forest Preserve District permits will be required to implement the proposed trail connections to the West Branch of the DuPage Regional Trail.*

Noted

STORMWATER DETENTION*: Since the proposed improvement will result in greater than 25,000 square feet, in accordance with Section 15-72.A of the DuPage Countywide Stormwater and Floodplain Ordinance (DCSFPO), site runoff Storage (stormwater detention) is required. The existing parcel contains three detention ponds which were sized for future development of Subarea C. The design of the proposed ponds account for all tributary area, including upstream detention ponds and also any proposed impervious area which was not accounted for in the existing detention pond design.*

Noted

EROSION CONTROL*: The project site is greater than one acre in size, so a National Pollutant Discharge Elimination System (NPDES) permit is required for the discharge of storm water during construction. The Owner will have to implement the Storm Water Pollution Prevention Plan (SWPPP) to effectively manage the discharge of pollutants from the site. The Owner received a permit approval in October 2018.*

Noted

BEST MANAGEMENT PRACTICES*: The proposed development will create more than 2,500 square feet of impervious area. In accordance with the City of Warrenville Stormwater and Floodplain Ordinance, PCBMPs for water quality are required. One 0.55 Acre-Foot PCBMP facility is proposed at the northeast corner of Ferry Road and the proposed Torch Parkway entrance. Bioswales are proposed within the east parking lot and also along the south side of the commercial properties (along the north side of Ferry Road). Per Section 15-64 of the DCSFPO, PCBMPs shall provide volume control calculated as the New Impervious Area multiplied by 1.25" rainfall event.*

Noted

SPECIAL MANAGEMENT AREAS*: The area of the proposed improvement is located in a shaded Zone A (100-year floodplain with no base elevations determined). The West Branch DuPage River is located approximately 50 feet west of the site at an elevation of 692.6 at Federal Emergency Management Agency (FEMA) section WBWB0024 which is just south of Torch Parkway. We understand a Conditional Letter of Map Revision (CLOMR) application was approved by FEMA on October 11, 2018 to revise the existing detention ponds Zone A flood mapping delineation. We understand the CLOMR is based upon the proposed engineering plan.*

Once a CLOMR based upon proposed conditions has been issued by FEMA, detention basin re-grading may begin after City approval. A building permit shall not be issued until a LOMR is issued by FEMA and the public comment period has ended.

Wetlands within the Cantera Development are governed by an Army Corps of Engineers (ACOE) permit. All isolated wetlands within Cantera were mitigated by the construction of the Flowage Easement in the southwest corner of Subarea I, adjacent to the West Branch DuPage River. Therefore, any wetlands found in Subarea C have already been mitigated and may be filled. The ACOE permit does not cover wetlands contiguous to the West Branch DuPage River.

Noted

***WATER DISTRIBUTION**: The applicant is proposing to make one mainline connection to the City's existing 12 inch water main at Klein Circle and Torch Drive, one mainline connection to an existing 12 inch water main at the east side of Ferry Road approximately 850 feet west of Winfield Road and one connection to an existing water stub on the west side of Ferry Road approximately 1,800 feet northeast of River Road.*

Noted

***SANITARY SEWER:** The applicant is proposing to connect the individual sanitary services of the proposed 60 townhouses to the existing 8 inch sanitary mainline which is northwest of the extended Torch Drive. Three additional sanitary mainline connections are proposed to the City's existing 15 inch sanitary sewer on the northwest side of Ferry Road approximately 1,800 feet, 2,000 feet and 2,800 feet northeast of River Road.*

On August 20, 2018, the City Council approved an alternative tap-on surcharge for this project that would cover the costs associated with the City's purchase of the additional sanitary sewer capacity required for it from Naperville in lieu of the standard sanitary sewer service connection fees contained in the City Code Section 7-4B-6.D.

According to the August 24, 2018 letter from the City of Warrenville to Interforum Holdings, Inc., the developer pay for the City's purchase of the necessary sanitary sewer capacity from Naperville before the City of Warrenville and the City of Naperville will sign off on the IEPA sanitary sewer permit for the project. Population equivalent (PE) calculations have been submitted to the City for review and forwarded to Naperville. After the IEPA draft is reviewed by Naperville, the City of Warrenville will send a letter requesting the additional capacity and in return the City of Naperville will provide an invoice. The City of Warrenville will then invoice the developer. Once the developer submits the payment, then both cities can sign the IEPA permit.

Noted

REPORT OF SOILS EXPLORATION: *The Report of Soils Exploration prepared by TSC and dated January 13, 2017 was reviewed previously and approved on October 4, 2017.*

LIGHTING: *Light poles are located on the photometric analyses but not on the site plan or landscaping plans, so potential conflicts cannot be evaluated.*

Proposed light poles have been added to the revised site plan and are shown on the utility plans for coordination purposes. The light pole location have been coordinated with the architectural and landscape drawings. Please refer to the revised plan for additional information.

Parking Lot 1 (PL-1), the residential lot east of Riverside Drive which has more than 100 spaces, was considered a High Level Activity. The remaining parking lots were considered Medium Level Activity Lots. The illumination average to minimum uniformity ratio and minimum lighting for all parking lots are in accordance with the zoning ordinance.

The Sternberg photometric analysis predicts only 0.2 ft-c illumination at the Torch-Riverview intersection and 0.7 ft-c at the Torch-commercial drive intersection across both of which are pedestrian crossings. Table 8 of the IES Roadway Lighting report RP-8-14 suggests at least 0.8 ft-c. This level of illumination is exceeded at the pedestrian crossing of Torch Parkway north of Pond 4. The Chicago Lightworks projected illumination of the Torch Parkway pedestrian crossing at Ferry Road is about 0.5 ft-c, but this lighting must be reviewed by DuDOT. The pedestrian crossings of Riverview Drive are well lit.

A check of illumination levels for the on-street parking along Torch Parkway revealed minimums of 0.2 ft-c which exceed the 0.1 ft-c ITE recommended values for Low Pedestrian Conflict Areas.

The Applicant agrees to work with Staff and accepts Staff recommendations regarding illumination of parking and drives.

The following comments were provided in the review prepared by James J. Benes & Associates:

REVIEW COMMENTS

Proposed Site Improvement Plans *The Proposed Site Improvement Plans for Riverview West Development has been stamped* ***"RETURNED FOR CORRECTIONS"****. We have the following comments:*

1. *Plans should be signed and sealed by a Registered Professional Engineer.* ***Not Addressed.***

The Revised Engineering Plans have been signed and sealed. Please refer to the plans for detail.

2. *According to the construction phasing plan, the parking spots on the south side of the commercial drive won't be built until Phase 4. How will drainage work?* ***Partially Addressed. Confirm that the souths side will be curb and gutter. Provide a cross-section of the commercial drive.***

The commercial areas are indicated as a "Future Phase of Development" and will not be constructed at this time. The parking associated with the commercial areas will not be constructed at this time. A curb and Gutter has been proposed at the limits of the roadway, on the south side of the commercial drive. A cross section of the commercial drive is provided on Sheet43 of the plans.

3. *On sheet 6, the overflow route is proposed at the first townhome. This should be shifted to the south per the Quick Start plans. Also, one or two townhomes should be removed to ensure a proper overflow route.* ***Partially Addressed. As stated in the previous submittal, one or two townhouses should be removed to ensure a proper overflow route. Was this considered?***

Removal of townhomes was reviewed and deemed not feasible by the owners of the development.

4. *Provide cross section view of the overflow route through the future townhomes near the N/S road and near the commercial drive. Properly denote the overland flow route hatching along the contours and in correlation with the overflow calculations. The route near 213+25 currently crosses over proposed driveway and is not delineated based upon the proposed contours.* ***Partially Addressed. Delineate on the grading plan the overflow route area from the ponds using the calculated elevation needed to convey the flow.***

Overflow routes have been delineated on the grading plans as requested. Please refer to the grading plans for additional information.

5. *On sheet 7, rename the PCBMP facility as "bioretention facility" to match the detail. Remove the sidewalk around the west side of the bioretention facility. Remove the crosswalk and ramps connecting the north side of the commercial drive to the eastern sidewalk of the bioretention facility. Add sidewalk within the south side of the commercial driveway to connect to multi-unit buildings to the east.* ***Not Addressed. After further internal discussion, remove the cross walk along the commercial drive to the bioretention facility and the sidewalks on both sides of the bioretention facility. Any sidewalks in this area will be addressed when the commercial area is completed.***

The sidewalks at the northeast corner of the intersection of the commercial drive and Ferry Road, south and west of the commercial drive, have been removed. The pedestrian crossing of the commercial drive and the proposed crosswalk have also been removed. Please refer to the revised plans for detail.

6. *On sheet 10, Grading Plan, clearly delineate the HWL 698.46 at the existing outlet location (between the two proposed town houses). The east side is drawn as 699.0.* ***Not Addressed.***

The Base Flood Elevation and HWL have been revised to show the correct delineation of the proposed HWL. Please refer to the grading plans for additional information.

7. *On the grading plan or cover sheet, provide a key for the different hatched symbols within the driveways, pavement, paths and sidewalks. When is heavy duty parking lot pavement vs parking lot pavement used? Labels for key should match the detail title.* ***Partially Addressed. In legend, include hatched symbol for bioswale. Callout bioswale in east parking lot. Label heavy pavement (typ.) and permeable pavement (typ.) on grading plan.***

A key has been provided on the cover sheet indicating the meaning of the hatched areas. The hatched areas have also been called out on the grading plan. Heavy duty paving is proposed in the drive lanes of the parking areas where the highest vehicular traffic is anticipated. Parking stalls are proposed as regular pavement. Please refer to the grading plans for additional information.

8. *On Sheets 33-35, provide ADA detail for each intersection or crosswalk with ADA ramps. Provide cross slopes and spot grades similar to IDOT requirements.* ***Partially Addressed. Detectable warnings should be the correct width and locate away from curb and gutter. See DuDOT comments as well. Provide grades similar to IDOT Template for ADA ramps (attached).***

The ADA Grading Plans have been revised pursuant to the IDOT ADA Grading Template. Please refer to sheets 45-61 of the revised plan set for additional information.

9. *Include armoring at the pond overflow locations.* ***Partially Addressed****.* ***The proposed armoring of the pond overflow weirs with rip rap should be shown on the Grading Plans as permanent. By only showing the overflow armoring on the Erosion Control Plan indicates the rip rap may be temporary.***

The proposed overland flow locations have been provided with hard armoring (riprap). The riprap has been shown on the grading plans. Please refer to the revised grading plans for additional information.

10. *Utility Sheets:*

    a. *Provide clean outs for sanitary sewer services at townhomes.* ***Not Addressed.***

Cleanouts are provided on the sanitary sewer services for the townhomes. The callouts for the sewer and water services have been updated to specifically indicate that cleanouts are required. Please refer to the revised plans for additional information.

    b. ***NEW COMMENT:*** *Call out watermain on utility sheets as PVC C-900 (DR-18).*

Watermain has been called out as PVC 900 (DR-18) on the utility plans. A note has been included on the Utility Callout Sheets indicating that the watermain shall be PVC 900 (DR-18). Please refer to the revised plans for additional information.

    c. ***NEW COMMENT:*** *Maintain the 12" pipe*

The 12" diameter outlet pipe from the pond on Outlot A has been indicated as remaining. The utility plans indicate that this outlet shall remain. Invert information has been field verified and is provided on the plan. The 12" diameter storm sewer that drains the parking lot on the adjacent property to the northeast has been indicated as remaining. The end section shall be removed and reset to conform to the proposed pond edged contours. Please refer to the revised plan set for additional information.

11. *Analyze vision clearance triangles at all new intersections, including impact of proposed monument signage on vision triangles.* ***Partially Addressed****.* ***Sheet 49 is not legible. Also, DuDOT insists upon IDOT not City methodologies for vehicles entering Ferry at Torch Parkway.***

Sheet 49 has been revised to include only the vision sight triangles. The turning movements have been removed and are provided on separate plan sheets. The sight triangle for the proposed entrance to Ferry Road has been revised to reflect IDOT methodologies pursuant to Chapter 36 of the BDE. The intersection sight distance and the decision sight distance have been provided on the revised drawings. A copy of the intersection sight distance for the proposed Pollard Road intersection at Ferry Road has been previously submitted to DuDOT

as a separate exhibit. A copy of the sight distance exhibit that was submitted to DuDOT is available for review upon request. The sight distance for the Ferry Road and Commercial Drive reflects the City of Warrenville sight distance requirements. DuDOT has stated that the sight distances at the signalized intersection are not of a major concern due to the presence of the existing traffic signal. Please refer to the revised plans for additional information.

12. *Submit Autoturn movements for the complete site for all driveway entrances and fire lane (fire trucks, delivery trucks, etc).* ***Partially Addressed. Sheet 49 is not legible. Show Autoturn for separate vehicles on separate sheets and do not combine with vision clearance.***

Separate AutoTurn movement drawings have been provided for passenger and refuse vehicles and for emergency/fire vehicles on Sheets 70 and 71 of the plans set. Vision sight triangle have been removed for the turning movement drawings. Please refer to the revised plans for additional information.

13. *Although space for swing movements have been added to the commercial parking west of the north-south road, a parking space must be striped out to make a turn-around maneuver.* ***This can be addressed in Phase 2.***

Spaces in the commercial parking lots have been striped out for the purposed of turn-around maneuvers. Please refer to the revised plans for additional information.

14. *Proposed landscape plantings should not be in the path of overland flow routes.* ***Not Addressed. The Landscape Plan shows trees and shrubs in the Outlot A overflow path. The Outlot A overflow path should be delineated on the landscape plans and no plantings should be proposed within this area. The current submittal proposes River Birch shrubs which have a mature height and width of 10 feet and 10 feet and also trees within the overflow weir.***

    The overflow route area should be shown and delineated over Riverview Drive between the east and west ponds. Again, there should not be proposed plantings within the overflow route. The current submittal proposes River Birch shrubs which have a mature height and width of 10 feet and 10 feet. These shrubs should be removed and the proposed trees should be spaced so they are not within this overflow route.

    On the Landscape Plans delineate all pond overflow areas between the interconnected ponds and ensure no plantings are proposed within these areas.

Please refer to the revised landscaping plans for additional information.

15. *The bioswales have inlets however the detail doesn't show the inlets. Update the detail to show the inlets and depth above the bottom of the swale. It appears the rims are at the bottom of the swale which would assume there isn't any storage provided which is in conflict to the 4-18-18 Final PUD SWM report.* ***Not Addressed. How will the bioswales store water if there are inlets provided at the bottom? Consider raising the rim to allow for adequate BMP volume storage per the stormwater management report.***

The intent for storm sewer structures within the bioswale areas is to provide a means for drainage at higher storm events. The structure are intended to be placed with rim elevation higher than the adjacent grade, allowing for the storage of surface runoff, but also providing a means for controlling the amount of storage. Generally the storage depth is limited to one foot (1'). The structure has been added to the detail. Contours have also been provided in the bioswale areas to clarify the intended function of the storm sewers. Please refer to the revised plans for additional information.

16. ***New Comment:*** *Rename Riverview Drive (Private Road) to "Pollard Road". The City already has a Riverview Drive.*

Riverview Drive has been renamed to Pollard Road.

17. ***New Comment:*** *Add light hatching for trench backfill to utility plan.*

Hatching has been added to the utility plans to indicate trench backfilled. A symbol has been added to the legend on the cover sheet. Please refer to the revised plans for additional information.

18. ***New Comment:*** *The permeable paver detail should include a flat curb between the pavers and asphalt. Revise the detail to include this and to show the proposed barrier curb on the other side.*

Curbing has been added to the permeable paver detail. Please refer to the revised plans for additional information.

19. ***New Comment:*** *Ensure the retaining wall fence is black aluminum. See Community Development staff comments.*

The proposed fence along the retaining wall is specified as black. Please refer to the proposed fence detail on sheet 42.

20. ***New Comment:*** *There are crosswalks to allow pedestrians to cross Torch Parkway at the intersection with the commercial drive and the intersection with Riverview Drive. These are expected crossing points. The midblock crossing at station 204+00 is unexpected, so two advance non-vehicular warning signs (W11-2) one for each approach of Torch Parkway and two "stop for pedestrians within crosswalk" signs (R1-6a) are appropriate on sheet 31.*

The requested pedestrian signage has been added to the trail connection crosswalk of Torch Parkway at STA 204+00. Please refer to the revised pavement marking and signage plans for additional information.

21. ***New Comment:*** *Label the size and invert of the Outlot A existing pond outlet pipe and note that this pipe will be maintained. Label the existing 6" restrictor. Include a detail of the existing 6" restrictor. Note that a perforated riser is proposed on the existing outlet.*

The existing outlet pipe from the pond on Outlot A has been surveyed and the information has been provided on the plans. The presence of the restrictor was verified. The restrictor is a six inch (6") diameter PVC pipe grouted into the end of a 12" RCP. Please refer to the revised plan set for additional information.

22. ***New Comment:*** *Since the Outlot A pond will now maintain the existing outlet pipe (per DuDOT 04/02/19 review comment) the High Water Elevation of the pond system will be recalculated. Label this revised High Water Elevation on the plans.*

The hydrologic routing of the proposed detention ponds has been updated to include the release from the outlet on Outlot A. A critical duration analysis is included as part of the revised Stormwater Management Report. The resulting HWL was reduced to 693.39 and the plans have been updated to reflect the revised HWL. Please refer to the revised plans and stormwater report for additional information.

23. ***New Comment:*** *A culvert should be proposed under the proposed path connection at Sta. 204+00.*

A culvert has been provided under the trail connector at STA 204+00. The proposed culvert is a 12" diameter RCP and is shown on the revised utility plans. Please refer to the revised plans for additional information.

24. ***New Comment:*** *Plan sheet 44 shows the proposed spillway cross-section on N- S Commercial Drive. The other plan sheets label this street as Riverview Drive. The overflow cross-section should be referenced accordingly. See previous comment about the new name of this N-S road.*

The proposed spillway and roadway typical sections have been renamed Pollard Road. Please refer to the revised plan for additional information.

25. ***New Comment:*** *On Plan sheet 44, on the overflow spillway cross-sections, please note and clarify on each cross-section if the noted grades are for the Quick Start work or the final finished grades for the improvement. It appears as if there were roadway design revisions since the last review. The overland flow calculations and corresponding cross-sections for the final plan set should be updated and submitted for review.*

Proposed and mass grading spillway conditions have been provided on the detail sheets. Please refer to h the revised plans for additional information.

26. ***New Comment:*** *Include steel grating on pond outlet flared end section.*

The utility sheets have been revised to include a note specifying grates on all flared end section.

27. ***New Comment:*** *Submit an updated, complete Tabular Stormwater Management Report incorporating all calculation and design revisions to date. The narrative for all Tabs should be updated per all revisions to date.*

The Stormwater report has been updated and is included as part of the revised PUD submittal.

28. ***New Comment:*** *Label Riverview Drive and Torch Parkway on the Landscape Plans.*

Please refer to the landscape plans.

29. ***New Comment:*** *The approach to the trash pickup area has been reconfigured to include a central island. An autoturn is necessary to confirm that a garbage truck and fire truck can enter and exit the access. See Fire District comments.*

The center island has been revised to provide a 22' pavement width. Please refer to he revised plans for additional information.

30. ***New Comment:*** *We did not receive an updated Tabular submittal based on our environmental comments from June 18, 2018. Review comments appear to have been addressed however this must be confirmed through a review of the Tabular submittal.*

The Stormwater report has been updated and is included as part of the revised PUD submittal.

31. ***New Comment:*** *The review comment response refers to the seed mixes being changed to Wet to Messic Savannah and Dry to Mesic Savanna seed mixes. The plans refer to low-profile and broad-spectrum seed mixes. Savanna type seed mix is not included on the plans. Please clarify that tough shoreline, low-profile and broad- spectrum seed mixes will be planted and that savanna seed mixes will not be used if that is the case.*

The proposed seed mixes have been updated based on previously received comments. The proposed seed mixes are called out on the erosion control plan sheets and are provided on the detail sheets. The seed mixes are also included in the revised stormwater report.

32. ***New Comment:*** *Provide an exhibit showing the delineated wetlands along the River and the associated buffer (50' for regulatory or 100' for critical') with supporting documentation so the City Wetland Consultant can confirm this in the field. If wetlands are located, a wetland or wetland buffer would be required and impacts to the buffer would require functional value mitigation per the Ordinance.*

The delineated wetlands and the delineated wetland buffer for the West Branch of the DuPage River have been added to the plan sheets. An exhibit is also included in the revised stormwater report.

33. ***New Comment:*** *The BFE is used as the riparian buffer for the River. The two proposed path connections of the development map impact the wetland and riparian buffer. Tab 4/5 should be submitted discussing the impacts to the functional values of the riparian buffer and mitigation for the impacts should be proposed per the Ordinance.*

The proposed trail connections have been revised per previously received comments and per the review by the Forest Preserve District. The northernmost connection shows a minor impact to the waters buffer based on the BFE used and the buffer. The impact is 341 square feet. The FPD owns and maintains the existing trail system corridor and has requested that the area immediately adjacent to the trail be planted with turf grass to facilitate their maintenance and mowing of the trail system. The areas outside of the maintenance region are being planted with native seeding consistent with the function of the existing buffer being disturbed by the train connection. The proposed areas of native planting are large than the impacted areas disturbed by the proposed connection. All other trail connection have no impact on the proposed waters buffer. Please refer to the revised plan and stormwater report for additional information.

Architectural Drawings *The Architectural Drawings, Apartments at Riverview West have been coordinated with the Site Improvement Plans. Any updates to the Site Improvement Plans should be updated on the Architectural Drawings to maintain consistency.*

See architectural plans by Baranyk and Associates

Lighting Layout Plan and Photometric Plan *The Lighting Layout Plan and Photometric Plan has been stamped "**RETURNED FOR CORRECTIONS.**" We have the following comments:*

1. *Stagger the light posts along Torch Parkway on either side of the road.* ***Partially Addressed. Add the light pole locations on site plans for the roadways and parking lots.***

   Light posts have been added to the Site Plan

2. *Show phased lighting plan or show how the lights will be built in the commercial areas and townhomes during Phase I. For the lights along Torch, how will the lights on the townhome side be placed so that they don't conflict with future driveways?* ***Not Addressed. Add locations on phasing plans.***

Light poles are shown on Civil Drawings BLA Sheet 5, Construction Phasing Plan.

3. *The Torch Parkway street lights should be the City's decorative standard per the attached detail.* ***Partially Addressed. Add the detail to the Site Improvements plan set.***

See light fixture cut sheets as submitted as part of this response.

4. *Include Standard Street Lighting Details, controller, service connection, and underground conduits. Provide a detailed controller diagram specifying cabinet equipment and wiring schematic. Provide voltage drop calculations for wire sizing. Add the location of the light poles and this information to the engineering plans. Contact staff for a sample of these plans.* ***Not Addressed. This can be completed during the permitting process.***

Noted and accepted

5. *Add the location of the controller and power source. Coordinate with Public Works regarding the lights along Torch Parkway and if they can be connected to the existing lights along Torch Parkway.* ***Not Addressed.***

Similar to Item 4, we request that the location of the controller and power source be identified during the permitting process.

6. *Note which lights are public vs private.* ***Not Addressed.***

All lights per drawing PH-2 and PH-3 are to be public and all lights per drawing PH-1 are to be private lights.

7. ***New Comment:*** *Adjust lighting levels at intersections. Per summary on page 6/7.*

Lighting levels at the intersections have been adjusted per the summary comments on page 6 and 7.

8. ***New Comment:*** *Adjust the light temperature of the fixtures on the building and parking lot from 5700k to a lesser temperature of 3000k or 3500k depending on application (building, parking lot, road).*

Response: The Applicant agrees to work with Staff and accepts Staff recommendations regarding illumination and a light temperature of 400k of parking and drives. The Applicant's consultant will submit a revised photometric plan acceptable to the City

Overflow Spillway Calculations *The overflow spillway calculations have been stamped* ***"APPROVED AS NOTED".*** *The following comment should be addressed on the plans and included in the final stormwater management report:*

1. ***Initial and date 4/9/19 on all calculations.*** *Please note on the calculations that these calculations correlate with the Final PUD plans for Riverview West dated April 2019.*
2. *All weir calculations should have current date.*
3. *The Riverview Drive calculations show that the "weir" is beyond the limits of the pond. To effectively pass approximately 400 cfs, the water elevation is at 700.68 which is the effective overflow route.*
4. *The East overflow calculations show a "weir" elevation at 700.84. The overland flow to pass approximately 400cfs of upstream flow would be at elevation 700.84.*
5. *The Commercial-Torch Parkway weir calculations used the north top of curb (at a length of 296 feet) on Commercial Drive for the overflow location east of Torch Parkway from Sta. 202+00 on Torch Parkway to Sta. 103+50 on the Commercial Drive. This technically is not a weir due to the curved geometrics of the curb and the townhouse grading at elevation 701.00. The proposed overflow at this location shows flow going south from the west pond, flowing east through the street and then overflowing over the Torch Parkway near the first townhouse.*
   Since the pond system has two outlet overflow weir locations, and the controlling elevation is 701.00 at the existing pond outlet (to pass approximately 400 cfs) the elevation (conservative) at this location would also be 701.00 at which point the flow would be flowing through the street to Outlot A. The proposed commercial development on Commercial Drive should be at least I foot above this elevation.

Final Plat of Subdivision Cantera Sub-Area "C", Lot 2 Subdivision *The previous submittal The Plat of Subdivision and Plat of Easement Vacation / Dedication were included on one sheet. They are now on two sheets. But, there remains some easement dedication on the Plat of Subdivision which should now be removed. The list of comments below is from the previous December 7, 2018 review. The Final Plat of Subdivision has been stamped* ***"RETURNED FOR CORRECTIONS".*** *We have the following comments:*

1. *The Quick Start easements were recorded.* ***Not addressed. On Sheet 1 of the Plat of Subdivision show existing and proposed Lot Lines, Access Easements, and Sidewalk Easements. Move Sheet 4 to Sheet 2 and show all existing sanitary, public utility and all easements granted under the Quick Start Plat of Easement (R2019-000492). Move certificates to Page 3 and 4.***

See Updated Plat of Subdivision by United Survey

2. *Update the lot lines and show all existing property lines on Sheets 1 and 2.* ***Not addressed.***

See architectural plans by Baranyk and Associates

3. *The commercial drive in Lot 1 must cross Lots 2 and 3 to reach the dedicated Torch Parkway right-of-way. Provide a cross-access easement or agreement covering this drive.* ***Not addressed.***

Noted. Will be addressed in the CC+Rs

4. *Proposed sanitary sewer and services for more than one service outside of ROW should be within an exclusive City Utility Easement (see attached for easement language).* ***Dedications through Lot 1 will be resolved when Phase 3 plans are submitted.***

See revised Plat of Subdivision and United Survey letter dated 4.22.19

5. *Proposed water main outside of City ROW should be within an exclusive City Utility Easement.* ***Not addressed.***

See revised Plat of Subdivision and United Survey letter dated 4.22.19

6. *Any storm sewer draining the Torch Parkway City ROW should be in an exclusive City Utility Easement unless it was already included in the Quick Start Plat of Easement.* ***Not addressed.***

See revised Plat of Subdivision and United Survey letter dated 4.22.19

7. ***New Comment:*** *Overland flow routes should be within the Stormwater Management Easement.*

This note shall be added on an updated Plat submitted no later than 4.27.19

8. ***New Comment:*** *Add a note referencing agreement between development and owner of Outlot A (R2018-108094).*

This note shall be added on an updated Plat submitted no later than 4.27.19

9. ***New Comment:*** *Add a note referencing the Covenants.*

This note shall be added on an updated Plat submitted no later than 4.27.19

10. ***New Comment:*** *Label the disconnected Outlot A to the north.*

See revised Plat of Subdivision and United Survey letter dated 4.22.19

11. ***New Comment:*** *Remove the County Health Department Certification.*

See revised Plat of Subdivision and United Survey letter dated 4.22.19

12. ***New Comment:*** *Change the font size of the certificates so they are all the same.*

See revised Plat of Subdivision and United Survey letter dated 4.22.19

Memorandum prepared by GHA *The memorandum prepared by GHA regarding City Ordinance 1439 has been stamped* ***"APPROVED AS SUBMITTED"****.*

Traffic Impact Study *In our last review, the Traffic Impact Study for Cantera Sub-Area "C", Lot 2 Subdivision was stamped "****RETURNED FOR CORRECTIONS****". The following comments still need to be addressed:*

1. *Eastbound peak hour queuing on the Torch Parkway approach to Winfield Road is projected to exceed the existing marked turn lane storage. In previous reviews, we suggested a re-stripe of the existing eastbound left turn lane on Torch to provide a total storage length of 153 feet, and reduce the back-to-back taper length to 96 feet. This will provide sufficient storage for the projected AM peak hour, and accommodate the majority of the left turn queue during the PM peak hour. An earlier response letter says this was corrected, but the documents confirming this change were not in our review package.* ***Not addressed.***

See GHA documents submitted as part of this Response

Engineer's Opinion of Probable Cost *The Engineer's Opinion of Probable Cost has been stamped* ***"RETURNED FOR CORRECTIONS".*** *We have the following comments:*

1. *Reminder that the EOPCC is for Public Improvements as defined in Subdivision Control Ordinance definitions on page 6 and 7. Revise the following items in the cost estimate:*

    a. *Remove sanitary services and watermain services.*

Sanitary and watermain services have been removed from the EOPCC.

    b. *Pedestrian crossing signage requested in this memo.*

Pedestrian crossing signage has been included in the revised EOPCC.

    c. *Rip rap at pond overflow spillways.*

Riprap at the pond overflow spillway has been included in the revised EOPCC.

    d. *Existing sidewalk removal.*

Sidewalk removal has been included in the revised EOPCC.

    e. *Add 7" PCC sidewalks.*

The Proposed 7" sidewalk has been included in the revised EOPCC.

    f. *Update the unit costs for watermain to be PVC C-900, Class 150 (DR-18).*

Unit Cost of watermain has been revised to reflect the PVC C900, Class 150 (DR-18) material specification

    g. *Check the quantities for updates since last submittal.*

Quantities have been updated to reflect the changes from the previous submittal. Please note that the EOPCC covers all items not included in the Quick Start EOPCC and is not inclusive of items previously included in the Quick Start EOPCC.

    h. *Remove any quantities related to road improvement to Ferry Road as DuDOT will require a bond for those improvements.*

Ferry Road improvements will be bonded separately and have been removed from the EOPCC.

i. *Remove pavement surface, binder, base and permeable pavers and associated pavement markings for apartment parking lots and access to parking and garbage entrance from EOPCC as those are not public improvements.*

The EOPCC has been updated to remove all items that are not public improvements.

j. *Remove the split rail fence since this will not be provided.*

Split Rail fence has been removed from the EOPCC.

Fees and Security

1. *Final Engineering Review and Inspection: 4.25% x EOPCC of Public Improvements*

Noted.

2. *Stormwater Management Fee for Review and Issuance = $10,000 (PAID)*

Noted.

3. *Stormwater Management Inspection Fee is $500 + 2.5% of the EOPCC (Stormwater , BMP, Erosion Control)*

Noted.

4. *Development Security (A Letter of Credit, Bond, or Cash Deposit) is 110% of the total EOPCC of Public Improvements.*

Noted.

5. *Sanitary Sewer Capacity Fee.*

Noted.

6. *Plat Recording Fees will be billed.*

Noted.

The following comments were provided by the fire inspector

- *This is the first drawing where I am seeing a South side Delivery entrance that is actually a Cul De Sac turn around. The access for a Fire Service apparatus is defined in IFC 2015 as, "A road that provides fire apparatus access from a fire station to a facility, building, or portion thereof. This is a general term INCLUSIVE of all other terms such as fire lane, Public Street, Private Street, PARKING LOT LANE, and access roadway. This proposal shows the access narrows to 17' 5" and turns. The WFPD requires a 20' width minimum fire lane, IFC 2015 503.2.1.*

The service Drive has been revised to provide a pavement width of 22'.

- *All phases of this project including Townhomes shall have an automatic Fire Sprinkler System installed.*

Noted and accepted

- *Is it a possibility to create a boat launch for the WFPD in the event of Water Rescue situations?*

The development does not include a boat launch

- *Underground Fire Service Mains shall follow NFPA 24, section 10.10, and IFC 2015, sections 507.2.1, and 507.4 for acceptance requirements. A copy of the "contractor's material and test certificate" for underground mains shall be witnessed and signed by the Warrenville Fire Code Official or AHJ, and a copy delivered to the WFPB prior to Sprinkler System Review.*
- Noted and accepted

- *HOA/Lease agreements shall stipulate open flame cooking devices shall adhere to IFC 2015, section 308, 308.1.4.*
- Noted and accepted

- *It shall be written in the Association By-Laws/HOA agreement that the association shall enter into an agreement with the City of Warrenville Police Department, for "No Parking" enforcement, WFPD code Amendment 18-04.*
- Noted and accepted

Please contact me at (630) 438-6400 or at kkenniff@bollingerlach.com if there are any questions or if additional information is required.

Sincerely,
BLA, INC.

Kevin Kenniff, P.E.
Project Manager

DUPAGE COUNTY STORMWATER MANAGEMENT PERMIT APPLICATION

RIVERVIEW WEST

CITY OF WARRENVILLE

Prepared for:

Cantera Development Holdings, Inc.
Two Northfield Plaza Suite 320
Northfield, Illinois 60093
PH: (281)-675-6120

Prepared by:

Bollinger, Lach & Associates, Inc.
333 Pierce Road, Suite 200
Itasca, IL 60143
Contact: Kevin Kenniff
p: 630.438.6400
f: 630.438.6444

BLA PROJECT NO.: 080-020

April 19, 2019

PROJECT NARRATIVE

The Riverview West Development referenced in this report is a Planned Unit Development (PUD) in the City of Warrenville. The Riverview West PUD is an amendment of the Cantera PUD. The property is referred to on the Plat of Subdivision as Cantera Sub-Area C, Lot 2. The property is approximately 28.01 acres in size and is located just north of Ferry Road, approximately 700 feet west of the intersection of Winfield Road and Ferry Road, Section 2, T38N, R9E, in the City of Warrenville, DuPage County, Illinois.

The proposed project is a mixed use commercial/residential development with improvements consisting of the construction of a four story residential apartment building with 364 units surrounding a central parking garage structure. There are 60 residential townhome units proposed along Torch Parkway, and commercial buildings proposed along the frontage of Ferry Road. The proposed improvements include the extension of Torch Parkway from the current termination in the northeast of the site to Ferry Road in the southwest of the site. There is an existing signal at the intersection of the commercial entrance of Ferry Road in the southwest. An additional controlled access intersection is proposed on Ferry Road for access to the residential and commercial elements. An existing stormwater detention facility is located in the central and western portions of the site. The existing stormwater facility will be modified to provide detention for the proposed improvements. The scope of work includes mass grading, roadway and utility infrastructure (water, sanitary, storm) improvements intended to serve the fully developed property, stormwater detention, PCBMP's, and final landscaping. The improvements will be phased. The initial phase of construction includes the residential portion of the project and all required site infrastructure, detention, utility and parking improvements. The second phase of construction will be the extension of Torch Parkway and the townhomes. The final phase of construction will be the commercial properties along the frontage of Ferry Road.

This submittal is intended to address the required stormwater management issues associated with the site development. The stormwater detention required for the proposed improvements shall be provided in the existing on-site stormwater facility, modified to meet the proposed site improvement plan. This Stormwater Management Permit Application contains the appropriate tabs as determined by the Stormwater Permit Submittal Flow Chart. The latest county flow chart has been included in this application. The Tabs corresponding to the latest flow chart have been included. Tabs 1-11 were prepared and completed in accordance with the DuPage County Countywide Stormwater and Flood Plain Ordinance.

EXISTING CONDITIONS

The existing site is vacant, undeveloped and overgrown with low quality scrub trees and brush. The project is located in the West Branch of the DuPage River Watershed. The property is bound by Ferry Road on the south, The west Branch of the DuPage River and DuPage County Forest Preserve District property on the west, existing residential property (Cantera Village) on the north, and office development to the east. Please refer to the project location map for additional detail.

The project location is shown on the USGS Location Map, FEMA FIRM, DFIRM, RFM, DuPage County Wetland Map, NRCS Soil Survey and DuPage County FEQ maps. These Exhibits are provided in Tab 1. The Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) for DuPage County, Illinois and Incorporated Areas – Panel 0703H; Map Number 17043C0703H; effective December 16, 2004, and the Regulatory Flood Map (RFM) for DuPage County, Illinois and Incorporated Areas, Panel 0141A of Quadrangle Naperville; Map Number 17043C0141A; effective July 7, 2010, indicate Zone A and Zone AE floodplain respectively. The DuPage County Wetland Map is included for reference; however, the wetlands have been mitigated as part of the Cantera Development prior to the mass grading of the site. Please refer to Tab 4 for further information regarding wetlands. The NRCS Custom Soil Resource Report for the project area has been included for reference.

PROPOSED CONDITIONS

The proposed development consists of the construction of a 4-story, 364 unit apartment building with a central parking garage, 60 townhome buildings, five (5) commercial buildings, site grading, utility and roadway infrastructure, and site stormwater management. The proposed improvements have been designed to meet the DCSFPO and the City of Warrenville regulations.

Stormwater Detention Requirements

Stormwater detention shall be provided in the existing on-site stormwater facility modified per the proposed site plan. There are no underground detention facilities proposed as part of this development. Please refer to Tab 2 for detention calculations and supporting assumptions and documentation. Please refer to Tab 8 for pond planting plans.

Post Construction Best Management Practices

Post Construction Best Management Practices are required by ordinance and will be provided in the proposed landscaped medial swales, drainage swales, and bioretention facilities. Pretreatment is provided in the proposed catch basin units swales and underdrain. The proposed pond side slopes and shoreline will be planted with native vegetation.

Regulatory Flood Plain and Floodway Impacts

Floodplain environments are identified on the property. There are no floodway areas identified on the project site. Please refer to Tab 3 for a detailed discussion of the site floodplain.

Wetland Environment Impacts

There are no wetland impacts associated with the proposed improvements. Wetlands are present adjacent to the site along the West Branch of the DuPage River. There is are no wetland impacts proposed along the West Branch of the DuPage River. Please refer to Tab 4 for additional information.

Riparian Environment Impacts

Riparian Impacts are associated with the reconfiguration of the existing detention pond which is currently classified as a Zone A floodplain. Riparian impacts associated with the reconfiguration of the existing detention pond will be restored in the proposed detention ponds.

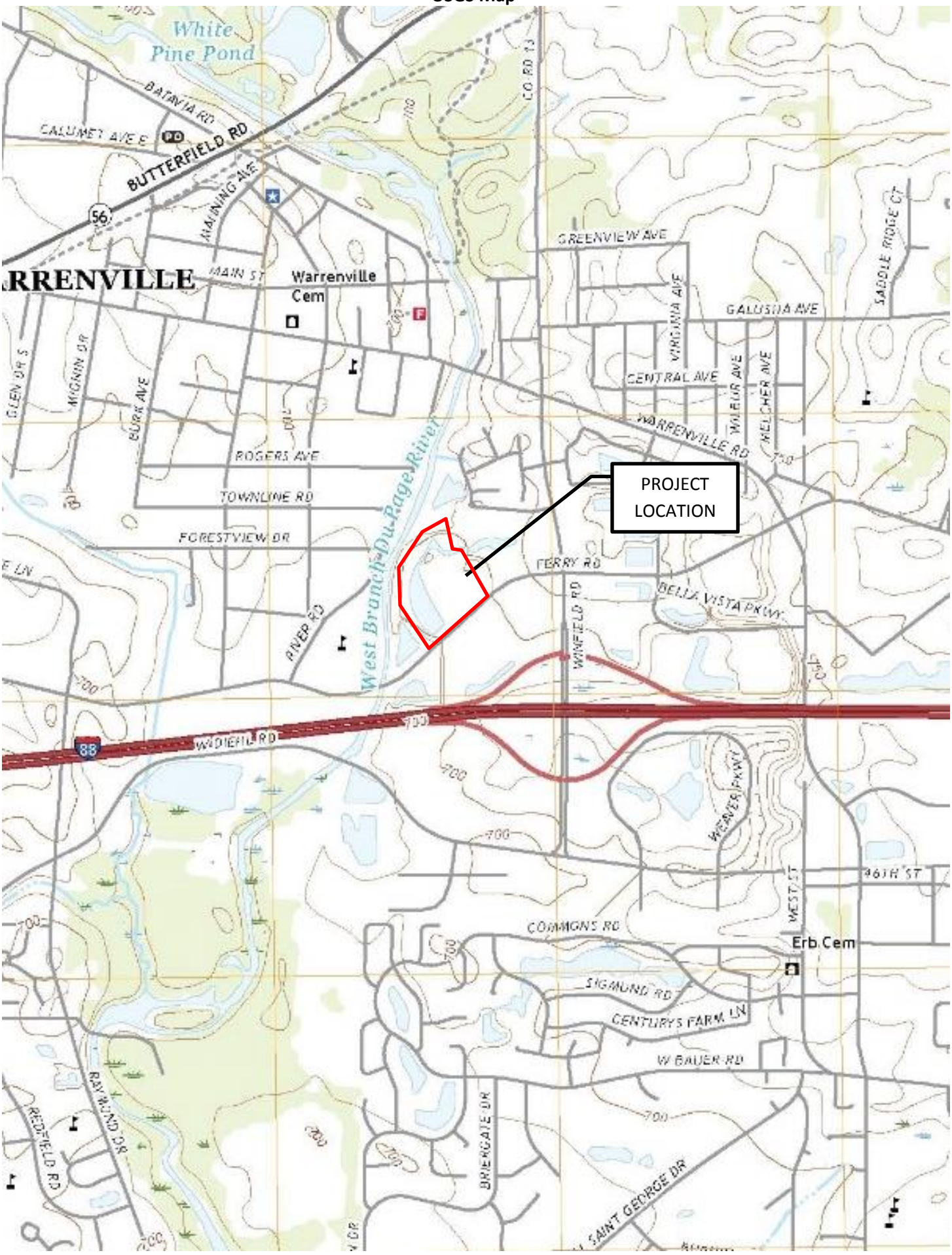
EROSION CONTROL MEASURES

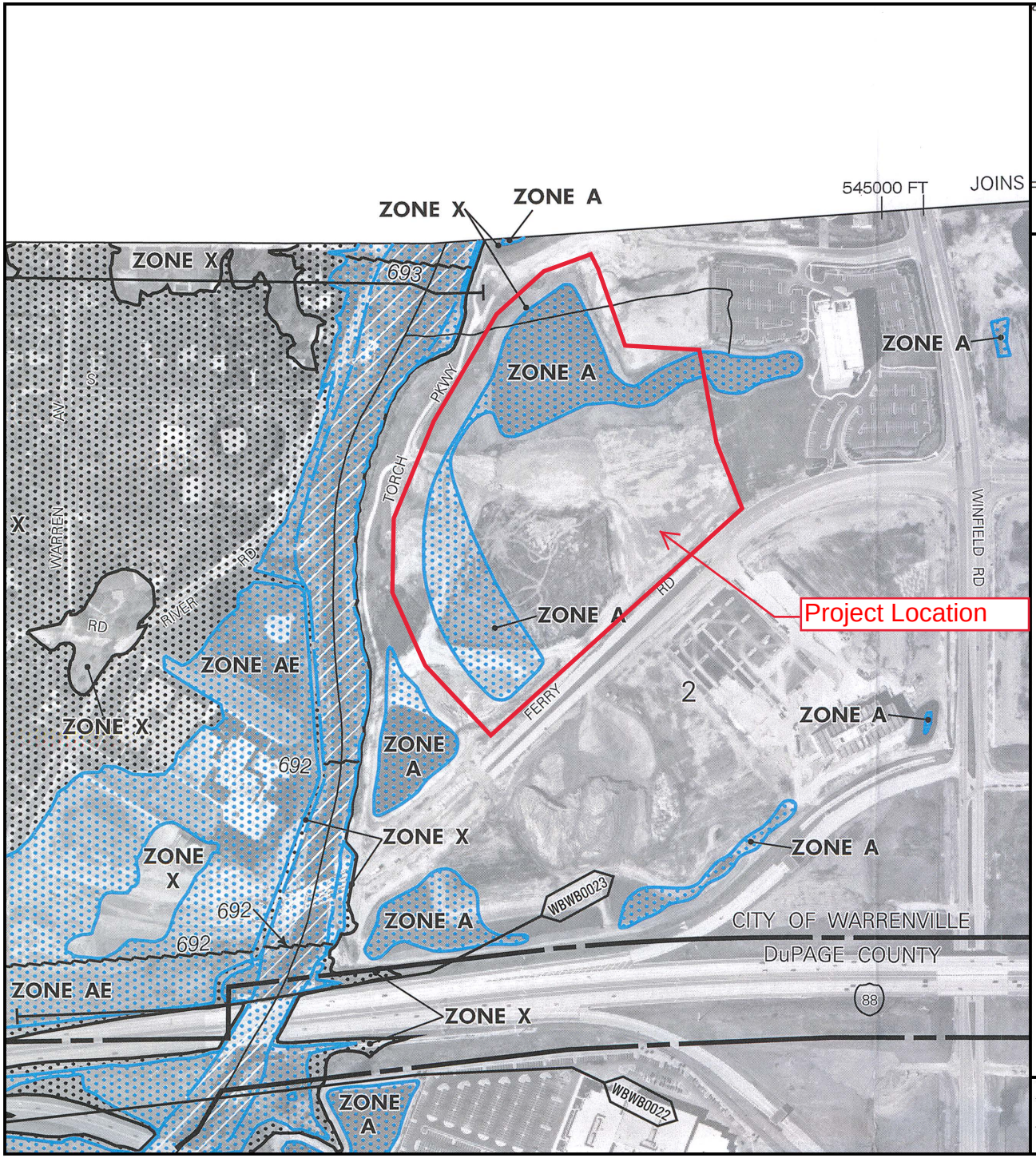
The sediment and erosion control plans shall be implemented prior to the beginning of construction. The proposed sediment and erosion control plans and specifications are shown on the plan set in Tab 7 and in the plan set provided in Tab 8.

BEST MANAGEMENT PRACTICES

The Best Management Practices for the proposed project include directing stormwater runoff to the proposed storm sewer system which includes catch basins with sumps to settle solids and debris, native planted drainage swales, select areas of permeable pavement, and a stormwater management facility planted with select native plantings with deep root structures for final stabilization of embankment slopes. Please refer to Tab 6 for the best management practices used to treat the runoff prior to discharge from the site. A planting plan is included in Tab 8 in the proposed site improvement plan set.

USGS Map


White Pine Pond
BATAVIA RD
CALUMET AVE E
BUTTERFIELD RD
56
MANNING AVE
CO RD 13
GREENVIEW AVE
SADDLE RIDGE CT
RRENVILLE
MAIN ST
Warrenville Cem
VIRGINIA AVE
GALUSHA AVE
GLEN DR S
WIGNIN DR
BURK AVE
CENTRAL AVE
WILEUR AVE
WELCHER AVE
WARRENVILLE RD
ROGERS AVE
TOWNLINE RD
FORESTVIEW DR
PROJECT LOCATION
West Branch DuPage River
FERRY RD
DELLA VISTA PKWY
WINFIELD RD
PINER RD
88
WEAVER PKWY
WEST ST
COMMONS RD
Erb Cem
SIGMUND RD
CENTURYS FARM LN
W BAUER RD
RAYMOND DR
BRIERGATE DR
SAINT GEORGE DR



MAP SCALE 1" = 500'

250 0 500 1000 FEET

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0703H

FIRM

FLOOD INSURANCE RATE MAP

DuPAGE COUNTY,
ILLINOIS
AND INCORPORATED AREAS

PANEL 0703 OF 1006

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
DuPAGE COUNTY	170197	0703	H
WARRENVILLE, CITY OF	170218	0703	H

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
17043C0703H

EFFECTIVE DATE
DECEMBER 16, 2004

Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov

NOTES TO USERS

This map is for use in administering the DuPage Regulatory Flood Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The community map repository should be consulted for possible updated or additional flood hazard information.

Users should be aware that Base Flood Elevations (BFEs) shown on the RFM represent rounded whole foot elevations. The BFEs are intended for regulatory enforcment purposes only and should not be used as the sole source of flood elevation information.

Boundaries of the floodways were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the DuPage Regulatory Flood Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study reports for this jurisdiction. This data may be supplemented by FEMA and DuPage flood study updates. Approximate centerlines of obstructions to or passageways for floodways are shown.

The projection used in the preparation of this map is State Plane zone 3376, Fipszone 1201. The horizontal datum is NAD27, on the GRS1980 spheroid. Differences in datum, spheroid, projection or State Plane zones used in the production of RFMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdictional boundaries. The differences do not affect the accuracy of this RFM.

The State Plane coordinates near the corners of the map neatline correspond to the respective nearby corners of the fully contained Map Panel. The grid lines are even thousand foot northings and eastings.

Flood elevations on this map are referenced to the National Geodetic Vertical Datum of 1929. These flood elevations must be compared to structures and ground elevations referenced to the same vertical datum. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey at its website at www.ngs.noaa.gov or contact it at the following address:

Spatial Reference System Division
National Geodetic Survey, NOAA, Silver Spring Metro Center
1315 East-West Highway, Silver Spring, Maryland 20910
(301)713-3191

BASE MAP SOURCE: Base map information was obtained in 2008 from AeroMetric, Inc. These maps were photogrammetrically compiled at a scale of 1:1200 (1" = 100') based on LIDAR data acquired using AeroMetric's Digital Mapping Camera in Spring 2006. Aerial photography was also acquired soon after the LIDAR flight for areas within the County.

Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

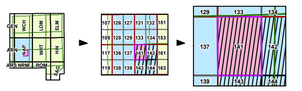
Accompanying Flood Insurance Study reports, Letters of Map Revision or Letters of Map Amendment revising portions of this panel and digital versions of this RFM may be available. These reports may be supplemented by DuPage flood study reports.

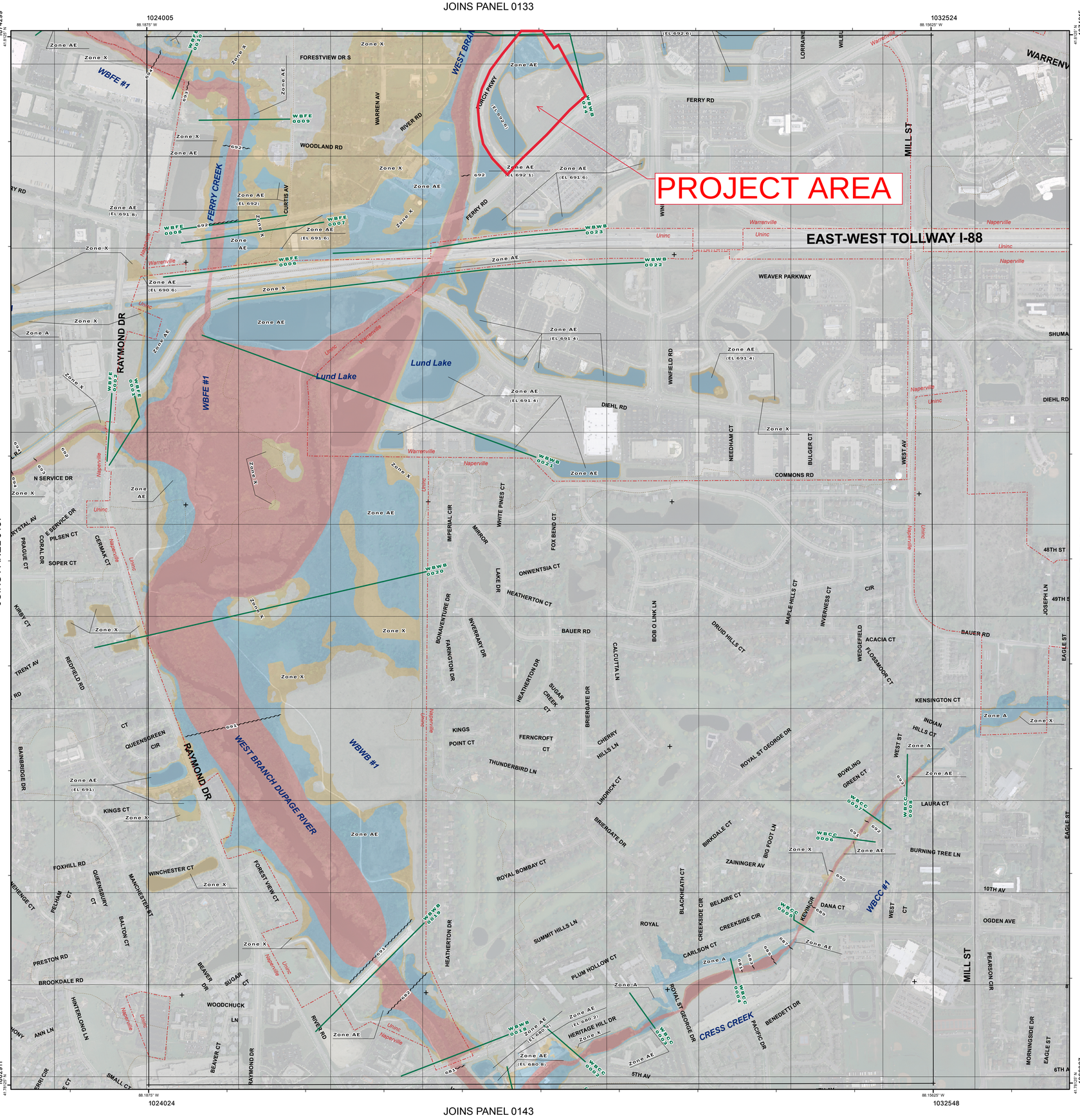
If you have questions about this map or questions concerning the DuPage Regulatory Flood Program in general, please call 1-630-407-6800 or visit the DuPage County Stormwater Management.

For adjoining map panels, see the separately printed Map Index.

This digital Regulatory Flood Map (RFM) was produced through a unique cooperative partnership between DuPage County and the Federal Emergency Management Agency (FEMA). DuPage County has implemented a long term approach of floodplain management to decrease the costs associated with flooding. This is demonstrated by the County's commitment to map floodplain areas at the local level. As a part of this effort, DuPage County has joined in a Cooperative Technical Partnership agreement with FEMA to produce this digital RFM.

PANEL LOCATION





DuPage County Illinois
CTP Cooperating Technical Partners
Data for Disaster Resistance
U.S. Department of Homeland Security

LEGEND

SPECIAL FLOOD HAZARD AREAS INUNDATED BY THE 1% ANNUAL CHANCE FLOOD EVENTS

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water surface elevation of the 1% annual chance flood.

Zone AE Base flood elevations determined. BFE lines shown.

Zone A Base flood elevations undetermined.

FLOODWAY AREAS — Approximate Structure Centerline

OTHER FLOOD AREAS

Zone X Areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; areas protected by levees from the 1% annual chance flood; areas of 0.2% annual chance flood.

OTHER AREAS — Approximate Structure Centerline

Underground Passage Areas over underground passages carrying some or all of the 1% annual chance flood.

- 1% Annual Chance Floodplain Boundary
- Floodway Boundary
- 0.2% Annual Chance Floodplain Boundary
- Other Areas
- Boundary dividing SFHAs of different Base Flood Elevations, depths, velocities, or zones.
- *Incorporated*
- 513 — Base Flood Elevation line and value; elevation in feet*
- (EL 678.9) — Base Flood Elevation value where uniform within zone; elevation in feet*
- *Referenced to the National Geodetic Vertical Datum of 1929 (NGVD29).
- WBWF 0012 — Cross Section Line and Name

MAP REPOSITORY
DuPage County Stormwater Management
421 N. County Farm Rd., Wheaton, IL 60187

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP
December 16, 2004

DATE(S) OF REVISION(S) TO THIS PANEL:

Code	Riverbasin	Tributary	Revision Date	Rev.
FRWA	Fox River Tributaries	Waubansee Crk.	Jul. 7, 2010	A
WBCC	West Branch DuPage R.	Cress Crk.	Jul. 7, 2010	A
WBFE	West Branch DuPage R.	Ferry Crk.	Jul. 7, 2010	A
WBWB	West Branch DuPage R.	Main Stem	Jul. 7, 2010	A

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study reports for the jurisdictions appearing in this map panel.

To determine if flood regulations apply in this Map Panel, contact the DuPage County Stormwater Management at 1-630-407-6800.

MAP SCALE 1" = 500' (1:6000)
0 250 500 1000 1500 Feet
0 75 150 300 450 Meters

DFIRM DUPAGE COUNTY, ILLINOIS AND INCORPORATED AREAS

PANEL 0141 A

RFM

REGULATORY FLOOD MAP
DuPAGE COUNTY, ILLINOIS
and INCORPORATED AREAS

PANEL 0141 of QUADRANGLE
NAPERVILLE

(SEE MAP INDEX FOR PANEL LAYOUT)

CONTAINS:

COMMUNITY	CODE	FIPS #	TYPE
NAPERVILLE	24	170213	City
Unincorporated DuPAGE	0	170197	County
WARRENVILLE	31	170218	City

Notice to User: The Map Number shown below should be used when placing map orders; the Community Number show above should be used on insurance applications for the subject community.

MAP NUMBER:
17043C0141 A
EFFECTIVE DATE:
July 7, 2010

Federal Emergency Management Agency

Du Page Wetland Map

DuPage Web Mapping Application - DuPage County, Illinois



DuPage County
Information Technology Department / GIS Division
421 N County Farm Rd.
Wheaton, IL 60187

Ph# 1(630)407-5000
Email gis@dupageco.org
DuPage Maps Portal :
http://dupage.maps.arcgis.com/home

This map is for assessment purposes only.

DuPage County Web Site :
www.dupageco.org

N

Copyright DuPage 2017

Watershed Model Reference Map



Watershed Model Status

- FEMA Approved Floodplain Map Model
- FLOODPLAIN MAP MODEL
- MODEL IN DEVELOPMENT
- WATERSHED PLAN MODEL
- WATERSHED PLAN MODEL/FLOODPLAIN MAP MODEL

Municipalities

- Incorporated Areas

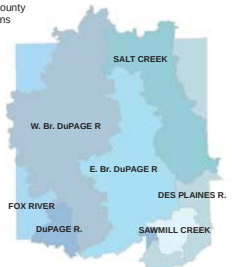
FEQ Model Status Table

Watershed	Model Status	Watershed	Model Status
DP Flagg	Watershed Plan Model	WB Kress*	Watershed Plan Model
DP Flagg (63rd)	Watershed Plan Model	WB Winfield	Model In Development
DP Flagg (59th)	Watershed Plan Model	WB Spring Brook #18	Floodplain Map Model
DP Flagg (Plainfield)	Watershed Plan Model	EB Rott8	Floodplain Map Model
DP Addison Creek	Watershed Plan Model	WB Ferry	Watershed Plan Model
DP Willow Creek	Watershed Plan Model	DU Spring Brook #2	Model In Development
Sawmill Creek Main Stem*	Watershed Plan Model/Floodplain Map Model	DP Black Partridge	Watershed Plan Model
DP Flagg (79th)	Watershed Plan Model	SC Spring Brook*	Watershed Plan Model/Floodplain Map Model
SW Wards*	Floodplain Map Model	SC Devon Avenue*	Floodplain Map Model
Salt Creek Main Stem*	Watershed Plan Model/Floodplain Map Model	East Branch DuPage Mainstem*	Floodplain Map Model
SC Westwood*	Watershed Plan Model/Floodplain Map Model	EB Swift Meadows*	Floodplain Map Model
SC Sugar Creek*	Floodplain Map Model	EB Army Trail*	Floodplain Map Model
SC Oak Brook*	Floodplain Map Model	EB Armitage Creek*	Floodplain Map Model
SC Ginger Creek*	FEMA Approved Floodplain Map Model	EB Trib #2*	FEMA Approved Floodplain Map Model
SC Bronswood*	Floodplain Map Model	EB Glen Crest*	Floodplain Map Model
WB Steeple Run*	Watershed Plan Model/Floodplain Map Model	EB Willoway*	Floodplain Map Model
West Branch DuPage River Mainstem	Watershed Plan Model	EB Lacey*	Floodplain Map Model
WB Trib #1/Keeneyville	Watershed Plan Model	EB Prentiss*	Floodplain Map Model
WB Klein	Watershed Plan Model	EB Crabtree*	Floodplain Map Model
WB Trib #4	Watershed Plan Model		
			*Under FEMA Contract

Watershed Model Status as of 04-25-2013

Data contained in this map is presented for planning purposes only. The data is based on the best information presently available to the County. The data contained may be subject to alteration and modification based on new or different information and changing conditions. The County makes no guarantee, warranty, or assurances as to the accuracy herein. The widths of the area represented by the FEQ Models are not representative of the areas that may be subject to flooding and does not constitute a flood map. This map may be copied without permission, but any enlargement of this map could cause distortions or omissions of the detail and result in erroneous interpretations.

DuPage County
River Basins



DuPage County
Economic Development & Planning Department
421 North County Farm Road
Wheaton, IL 60187
(630) 407-6800

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for DuPage County, Illinois

Soil Survey



March 21, 2018

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or a part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require

alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD). To file a complaint of discrimination, write to USDA, Director, Office of Civil Rights, 1400 Independence Avenue, S.W., Washington, D.C. 20250-9410 or call (800) 795-3272 (voice) or (202) 720-6382 (TDD). USDA is an equal opportunity provider and employer.

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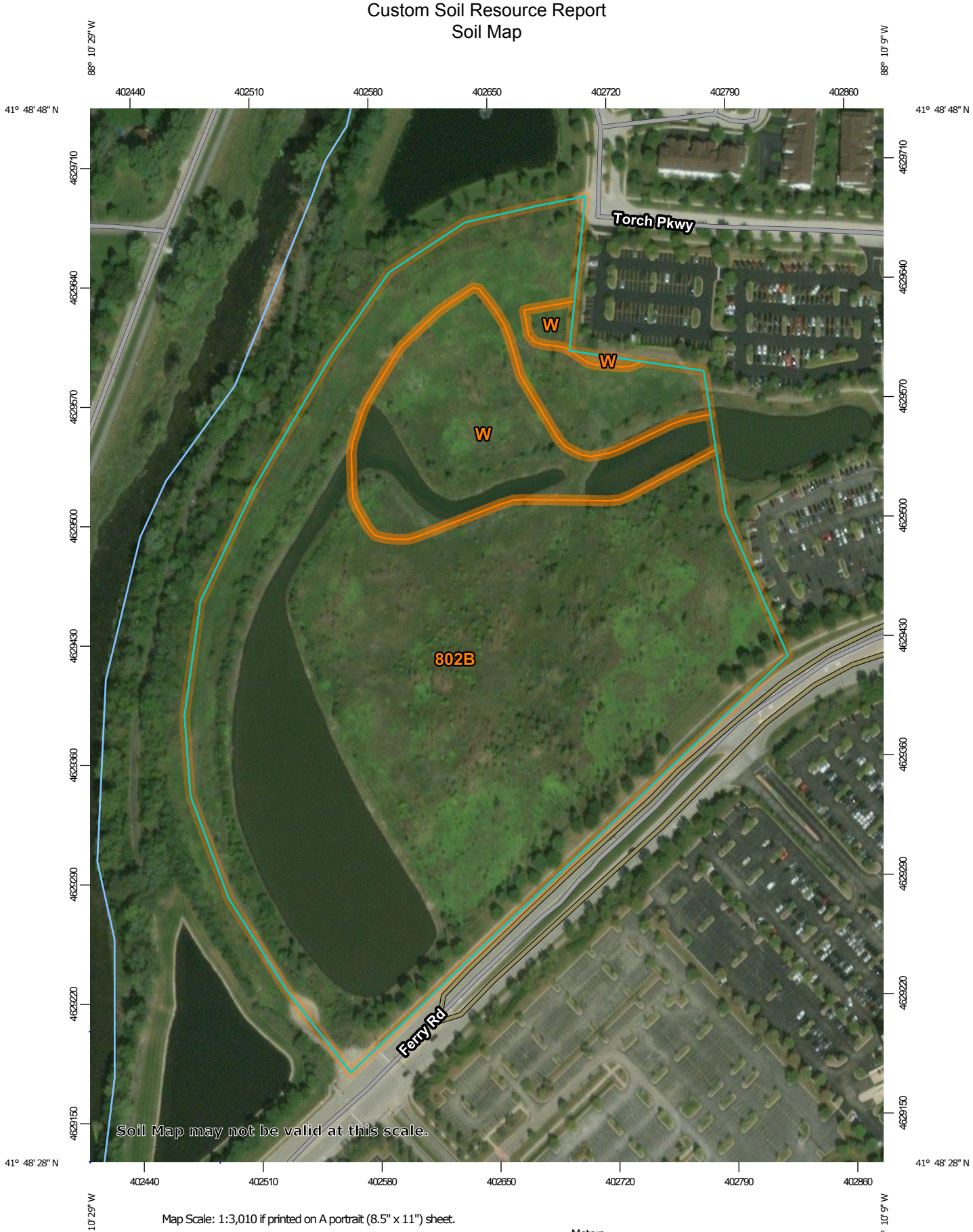
Map Unit Legend..... 8
Map Unit Descriptions..... 8
DuPage County, Illinois.....10
802B—Orthents, loamy, undulating.....10
W—Water..... 11

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map



Map Scale: 1:3,010 if printed on A portrait (8.5" x 11") sheet.

N

Meters
0 40 80 160 240

Feet
0 100 200 400 600

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 16N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:12,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: DuPage County, Illinois
Survey Area Data: Version 13, Sep 20, 2017

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Feb 10, 2016—Oct 8, 2016

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
802B	Orthents, loamy, undulating	22.8	85.7%
W	Water	3.8	14.3%
Totals for Area of Interest		**26.6**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however,

onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

DuPage County, Illinois

802B—Orthents, loamy, undulating

Map Unit Setting

National map unit symbol: 64ws
Elevation: 510 to 1,020 feet
Mean annual precipitation: 28 to 40 inches
Mean annual air temperature: 45 to 54 degrees F
Frost-free period: 140 to 180 days
Farmland classification: Not prime farmland

Map Unit Composition

Orthents, loamy, undulating, and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Orthents, Loamy, Undulating

Setting

Landform: Ground moraines, outwash plains, lake plains
Landform position (two-dimensional): Backslope, summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Earthy fill

Typical profile

H1 - 0 to 7 inches: loam
H2 - 7 to 60 inches: clay loam

Properties and qualities

Slope: 1 to 6 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: About 42 to 60 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 20 percent
Available water storage in profile: Moderate (about 8.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: C
Hydric soil rating: No

Minor Components

Urban land

Percent of map unit: 3 percent
Down-slope shape: Linear
Across-slope shape: Linear

Hydric soil rating: No

Orthents, clayey

Percent of map unit: 3 percent
Landform: Ground moraines, lake plains
Landform position (two-dimensional): Summit, backslope
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Orthents, loamy-skeletal, undulating

Percent of map unit: 2 percent
Landform: Lake plains, ground moraines
Landform position (two-dimensional): Summit, backslope
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Pella

Percent of map unit: 1 percent
Landform: Ground moraines, outwash plains, lake plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Drummer

Percent of map unit: 1 percent
Landform: Ground moraines, outwash plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

W—Water

Map Unit Composition

Water: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Water

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8w
Hydric soil rating: Unranked

Narrative
(Tab 1)

RIVERVIEW WEST

City of Warrenville
DuPage County, Illinois

Prepared by:

Bollinger, Lach & Associates, Inc.
333 Pierce Road, Suite 200
Itasca, IL 60143
Contact: Kevin Kenniff
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April 19, 2019

NARRATIVE

The proposed Riverview West Development includes the full development of the 28.90 acre parcel commonly referred to as Subarea C, Lot 2. The development includes the improvement of Outlot A with additional landscaping, the grading of a swale as requested by the Forest Preserve District of DuPage County and modifications to an existing pond (C3). Stormwater detention is provided in compliance with the City of Warrenville and DuPage County requirements. Stormwater calculations are based on the Cantera Development stromwater modeling approved as part of the Cantera development and provided by the City of Warrenville. The provided models, assumptions and modifications used in the design of the stormwater management facilities are described below. Detailed calculations are provided in Tab 2. The existing outlet from the existing site detention facility was surveyed and the existing and proposed calculations were revised to reflect surveyed data.

METHODOLOGY

Bollinger, Lach and Assoc. (BLA) requested copies of the approved existing stormwater management reports from the City of Warrenville for the Cantera Development in early November 2016. Shortly thereafter BLA picked up the requested information from the City. BLA received the following:

1. Approved Overall Stormwater Management report titled "Cantera Stormwater Management Calculations for Subarea Aeast and Subarea C" dated August 11, 1995 and prepared by SDI Consultants. Referred to as "Report No. 1"
2. Approved Supplemental Stormwater Management report titled "Cantera Stormwater Management Calculations for Subarea Aeast and Subarea C-Lot 1" dated November 2, 1995 and prepared by SDI consultants. Referred to as "Report No. 2".

The reports included the TR-20 models and the assumptions made for future / current development. Onsite models were completed to determine detention required. Additional modeling was prepared to represent the overall tributary are with the offsite flows included.

Report No. 1 represents the originally conceived development plan and assumed full buildout of all parcels with storage provided in the following basins:

1. F1 (TR-20 STRUCT 01)
2. F2 (TR-20 STRUCT 02)
3. F3 (TR-20 STRUCT 03)
4. B6: AEAST (TR-20 STRUCT 06)
5. Dry basin: Offsite (TR-20 STRUCT 11)
6. D7: Reindeer Lake (TR-20 STRUCT 07)
7. C1: Site Pond (TR-20 STRUCT 08)
8. C2: Site Pond (TR-20 STRUCT 09)
9. C3: This pond was omitted from the modeling as it is not connected to the drainage system

With an assumption of fully developed parcels the total allowable release rate at the 100 year event was 123.06 cfs (including offsite flow) with a corresponding HWL of 699.96. This was the flow allowed from Basin C2 (TR-20 STRUCT 09) to the river and included flows from the upstream basins Basin C1 (TR-20 STRUCT 08), AEast (TR-20 STRUCT 06), Reindeer Lake (TR-20 STRUCT 07), Basins F1/F2/F3 (TR-20 STRUCT 01/02/03), and offsite flow north of Warrenville Road. Basin C3 was originally included in the modeling, but was omitted from the current modeling as it is not connected to the drainage system. This report is generally consistent with the "General Site Plan: Exhibit B" for the Cantera Development which can be found on the Village Website. This modeling was not re-created with a TR-20 run, but is taken from the original report located in Tab 13.

Report No. 2 appears to have been prepared as a supplement to include the actual development of Lot 1 of Parcel C (to include more detailed information for construction permit). What should be noted in this report is that flows from Basins F1, F2, F3 and C3 were removed. In addition to truncating the model to remove these areas it also removed the developed runoff curve number from the remaining area of Parcel C and assumed it was undeveloped. It appears that with this report / development they modified the existing ponds by filling Basin C1 and then relocating / enlarging Basin C2 further to the west. The existing restrictor structure in Basin C2 was also revised in this model to provide the additional detention they required. This is the condition we are assuming exists today and is represented by the Topographic Survey we received titled "Topographic Map of Cantera Subarea C" in TAB 12 dated Revision No. 1, 9-19-01 and prepared by V3. This topographic survey appears consistent with current aerial photography. Report No. 2 can be found in TAB 14.

Changes were made to the originally conceived Cantera development stormwater management system as part of the land reclamation efforts in the mid 1990's. These changes are reflected in the revised modeling and are supported by field inspection, records received from the City of Warrenville, and aerial imagery obtained through the DuPage County GIS interface. The main changes include the modification of the detention facilities east of Winfield Road to "float" and act as one and the modification of the storage provided in ponds west of Winfield Road. The original modeling represented ponds D7 (TR-20 STRUCT 07), F1 (TR-20 STRUCT 01), F2 (TR-20 STRUCT 02), and F3 (TR-20 STRUCT 03) separately. The land reclamation efforts combined the ponds east of Winfield Road through a large storm sewer system to function as one pond with a single restrictor at the downstream end of pond D7 (TR-20 STRUCT 07). Pond C1 was filled and eliminated. The pond in area C2 (TR-20 STRUCT 39) was modified and the storage provided was increased from the original configuration. Pond C3 was not included as it was disconnected from the drainage system. The TR-20 modeling presented in Report No. 2 was revised to reflect the existing and proposed conditions with county topographic data, city provided utility data, and aerial imagery as follows:

EXISTING CONDITIONS

The existing conditions scenario is a modification of the model from Report No. 2 where features have been updated to represent physical changes made to the ponds as part of the land reclamation efforts. Ponds previously indicated as F1 (TR-20 STRUCT 01), F2 (TR-20 STRUCT 02) and F3 (TR-20 STRUCT 03) have been eliminated from the modeling and combined in pond D7, Reindeer Lake (TR-20 STRUCT 07). This model coincides with the physical combination of these ponds to "float" and act as one. These ponds are controlled by restrictor structure located at the west end of pond D7, Reindeer Lake (TR-20 STRUCT 07). Pond B-6, A-East, (TR-20 STRUCT 06) and offsite areas north of Warrenville Road are included in this model. The existing storage provided in the pond in area C2 (TR-20 STRUCT 39) is represented in the existing model as undeveloped land and area C-1 is represented as office development immediately west of Winfield Road. Pond C-3 is not included in the existing model as the pond is not connected to the drainage system in the existing condition. The stage-storage-discharge relationships have been updated to show the existing storage provided in all of the ponds. The storage calculations were taken from current DuPage County topographic data. Drainage tributary areas were updated based on the topographic work map and contour data and also to reflect the consolidation of the detention ponds east of Winfield Road.

The existing outlet structure on Pond C-2 was field surveyed on August 10, 2018, to confirm the elevations and pipe sizes depicted in the original calculations. The 2001 topographic survey was used as the basis for the outlet survey. The 2001 topographic prepared by V3 indicates an 18" diameter outlet with an invert of 693.45 (NGVD 29). Vertcon was used to convert to NAVD 88 datum and the 18" diameter outlet pipe was determined to have an invert of 693.19 NAVD 88. The overflow structure size was confirmed, but the rim elevation was surveyed at 696.74 vs, 697.5 design. The volume of the existing pond was adjusted based on a starting storage elevation of 693.19 (vs. 693.00), and the outflow form the pond was calculated based on the surveyed elevations of the overflow structure. The revised stage-storage-elevation tables were used to revise the existing conditions modeling. Please refer to the topographic work maps, storage computations and revised existing conditions modeling for additional information.

PROPOSED CONDITIONS

The proposed mixed-use development includes constructing a 4 story residential apartment building, residential townhomes, commercial/retail buildings and associated improvements such as roadways, parking lots, drainage and utilities and stormwater management areas on the existing undeveloped Lot 2. As part of the development, portions of the existing detention pond will be relocated and/or reconfigured to maximize the use of the site. Existing ponds C2 & C3 will be interconnected and the resulting shared volume has been reflected in the in the revised Stage-Discharge-Storage for the detention pond.

The unit area detention method was used to determine the required storage for the proposed development based on the impervious area percentage and the proposed development area. It is

estimated that a total of 15.12 ac-ft of stormwater detention are required for the proposed improvements.

This model was created by modifying the existing model to show a developed RCN and Tc for the balance of the site west of Winfield Road (changed from 74/0.74 in existing to 90/0.25 in proposed). The storage provided in the pond on Lot C2 (TR-20 STRUCT 39) has been updated to show the proposed detention pond configuration and associated storage volume. Pond C3 has been included in the volume calculations for the proposed pond on lot C2 (TR-20 STRUCT 39).

The proposed improvements include resetting the 18" diameter outlet to elevation 693.00. The overflow structure will be protected and used for the proposed pond overflow. Local ordinance dictates that a larger emergency spillway be provided for the area tributary to proposed pond C-2. The proposed conditions model has been revised to reflect the proposed pond storage and the outlet calculations have been updated to reflect the revised 18" diameter outlet elevation, the surveyed elevation of the existing overflow structure, and the proposed emergency spillway.

The original development proposal included the removal / abandoning the existing outlet from the pond on Outlot A. DuPage County DOT has requested that this outlet remain in place and the release rate calculations have been revised to reflect the outlet remaining. Field inspection has verified the presence of a six inch (6") diameter restrictor which is reflected in the revised calculations. The stage-storage-discharge tables were updated in the proposed conditions modeling. Please refer to the topographic work maps, storage computations and revised proposed conditions modeling for additional information.

A topographic work map has been provided for the subject property and for the overall Cantera tributary area. The values used in the modeling are consistent with the topographic work maps.

SUMMARY OF RESULTS

A critical duration analysis was performed on the various development scenarios. The full calculations are included in Tab 2 and are summarized in the following table:

T able I: Summary of Modeling Results at STRUCT 39

Development Condition	Peak Elevation (ft)	Peak Discharge (cfs)
Original Model	699.96	123.06
Existing Condition	698.48	108
Proposed Condition	698.39	107

The originally approved modeling of this detention basin which was submitted and approved by the City of Warrenville as part of the overall Cantera Development established an allowable release rate of 123.06 cfs and a max high water level of 699.96. Based on the approved reports, the maximum allowable release rate across Winfield Road is 115 cfs. The maximum allowable release rate from the proposed conditions model is determined from the release rate from development east of Winfield

Road plus the ordinance specified release rate from the areas west of Winfield Road (0.10 cfs/acre) on the balance of Lot C. The maximum release from areas east of Winfield Road is 115 cfs taken from the existing conditions ADDHYD 050 section. The allowable release rate for the undeveloped areas west of Winfield Road is (49.10 acres) x (0.10 cfs/acre), or 4.91 cfs. The maximum allowable release rate for the proposed conditions is 115 cfs + 4.91 cfs = 119.91 cfs. The modeling results show a maximum release rate at the 24-hour critical duration storm of 107 cfs with a corresponding HWL of 698.39, both of which are less than the max allowable. The release rate and high water level resulting from the proposed development are less than the maximum release rate and HWL established by the original model approved by the city.

CONCLUSIONS

The existing conditions model has a critical duration HWL of 698.48 and a maximum release rate of 108 cfs. The proposed conditions model has a critical duration HWL of 698.39 and a maximum release rate of 107 cfs. The originally approved model for the Cantera Development has a critical duration HWL of 699.96 and a release rate of 123.06 cfs. The proposed development results in a HWL that is lower than the existing conditions by 0.09' and a release rate that is less than the existing conditions release rate by 1.00 cfs. The proposed conditions model has a HWL and release rate less than the originally approved model for the Cantera development. The results for the proposed conditions model are viewed as conservative in that there are several smaller ponds present for developments east of Winfield Road that were ignored in the proposed modeling in an effort to simplify the modeling. Incorporating these smaller ponds would reduce the total tributary area and flow to the overall drainage system and result in lower flows and elevations. The proposed development will result in a base flood elevation 0.09' lower than the existing conditions, and less than the originally approved conditions. The flood risks are not increased as the proposed base flood elevation boundaries are reduced and contained within the boundaries of the proposed detention pond on the subject property (Lot C2) and within the boundaries of the existing detention pond on the offsite property (Lot C1). Please refer to the enclosed routing calculations for detailed information.

DETENTION REQUIRED

CONSULTING ENGINEERS

Bollinger, Lach & Associates, Inc.

JOB NO.: 050-020		SHEET:	OF:
PROJECT: RIVERVIEW WEST			
SUBJECT: STORAGE REQUIRED			
BY:	DATE:	CK:	DATE:

TOTAL PROJECT AREA = 28.52 Ac.

BASED ON UNIT AREA DETENTION METHOD CHART FOR AN IMPERVIOUS SITE CONDITION OF 90%, THE DETENTION REQUIRED PER ACRE IS: 0.53 Ac-Ft/Ac.

DETENTION REQUIRED = 0.53 Ac.Ft/Ac.
TOTAL AREA = 28.52 Ac.

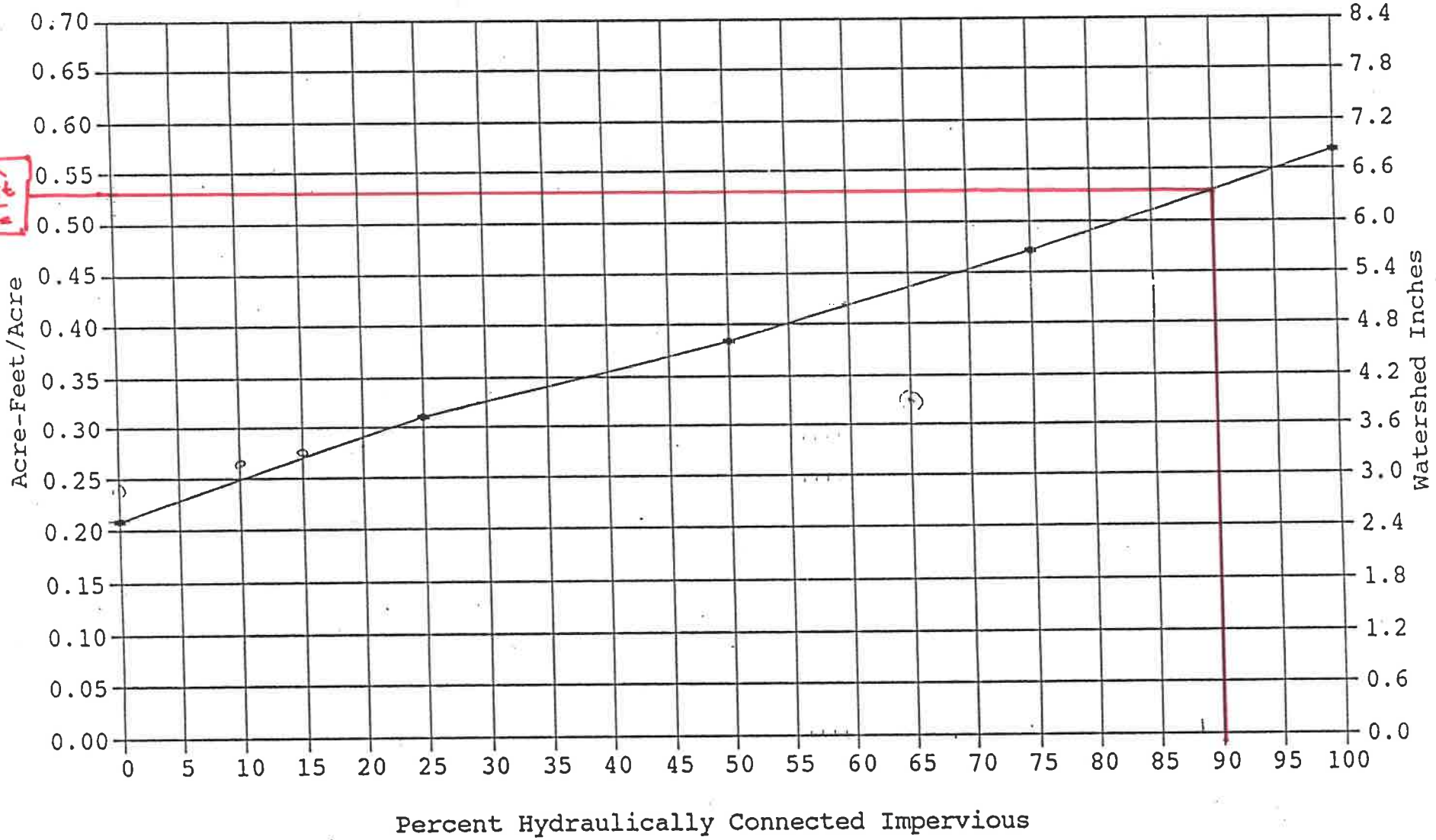
DETENTION REQUIRED = (28.52 Ac)(0.53 Ac Ft/Ac) = 15.12 Ac-Ft.

DETENTION REQUIRED FOR SUBAREA C = 15.12 Ac.Ft.

Figure 2

DETENTION VOLUME VS PERCENT IMPERVIOUS

100-YEAR UNIT AREA DETENTION VOLUME



Notes: 100-year release rate = 0.10 cfs/acre
Based on continuous storage routing of Wheaton Runoff

- Develop this table comparing different methods - TR20 & TR CRCBSM Screw 1006 B
- Develop table comparing

DETENTION PROVIDED

LEGEND

- PROP. CONDITIONS BASE FLOODPLAIN (PER TR-20 MODEL)
- EXIST. CONDITIONS BASE FLOODPLAIN (PER TR-20 MODEL)
- EFFECTIVE ZONE A BASE FLOODPLAIN PER FEMA MAP
- DRAINAGE AREA BOUNDARY
- PROPOSED CONTOUR — 690
- EXISTING CONTOUR — 690
- PROPOSED WALL

EXISTING FLOODPLAIN BOUNDARY SHOWN GRAPHICALLY WAS SCALED FROM THE FEMA FLOOD INSURANCE RATE MAP (FIRM) FOR DUPAGE COUNTY AND INCORPORATED AREAS; PANEL 0703H, PANEL 0703 OF 1006; MAP NUMBER 17043C0703H, EFFECTIVE DATE: DECEMBER 16, 2004.

BENCHMARK: DUPAGE COUNTY 2006 GEODETIC SURVEY MONUMENT WI35004. STATION IS LOCATED 0.2 MILES WEST ALONG WARRENVILLE ROAD FROM THE INTERSECTION OF WARRENVILLE ROAD WITH WINFIELD ROAD AT THE NORTHWEST END OF THE BRIDGE FOR WARRENVILLE ROAD OVER THE WEST BRANCH OF THE DUPAGE RIVER. STATION IS 32.4 FEET NORTH OF THE CENTERLINE OF WARRENVILLE ROAD, 70.7 FEET EAST OF POWER POLE 69299, AND 16.0 FEET EAST OF THE WEST END OF THE SIDEWALK ON THE NORTH EDGE OF THE BRIDGE. MONUMENT IS FLUSH WITH THE SIDEWALK ELEVATION = 695.79 (NAVD88 DATUM).

80 0 40 80
1 inch = 80 ft.

Design Firm License No. 184-001129

WEST BRANCH DUPAGE RIVER

OUTLET TO EAST BRANCH DUPAGE RIVER TR20 STRUCT 39

RIVER ROAD

TORCH PKWY

POND-C2
TR20 ID: 39

5'X7' BOX

5'X7' BOX

20' FIRE LANE

PROP. CONDITIONS BASE FLOODPLAIN (PER TR-20 MODEL)

54' EMERGENCY SPILLWAY

POND-C2
TR20 ID: 39

AREA 019

POND-C2
TR20 ID: 39

POND-C3
TR20 ID: 39
(INCLUDED IN
PR. MODEL ONLY)

60"

60"

EXIST. ZONE A FLOODPLAIN
PER FEMA MAP 17043C0703H,
EFFECTIVE 12/16/04

EXIST. CONDITIONS BASE FLOODPLAIN
(PER TR-20 MODEL)

AREA 019
ADDED TO
PR. MODEL ONLY)

FERRY ROAD

AREA 024

REVISIONS:	JOB NO: 080-026
03-09-17: REVISED PER OWNER & CITY COMMENTS	FIELD BOOK: N/A
06-19-18: REVISED PER SURVEYED OUTLET STRUCTURE	FIELD BOOK: N/A
	DRAWN BY: MK
	CHECKED BY: KEK
FILE: I:\080-026\ LOT 2 CANTERA SUBAREA C\Engineering\Drawings	COMPLETED:02/22/17

PREPARED FOR:
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550 W. FRONTAGE ROAD 3700
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TEL: (281) 675-6120

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ITASCA * CHICAGO * ALGONQUIN * LAKE GENEVA * SOUTH BEND * INDIANAPOLIS

TOPOGRAPHIC WORK MAP

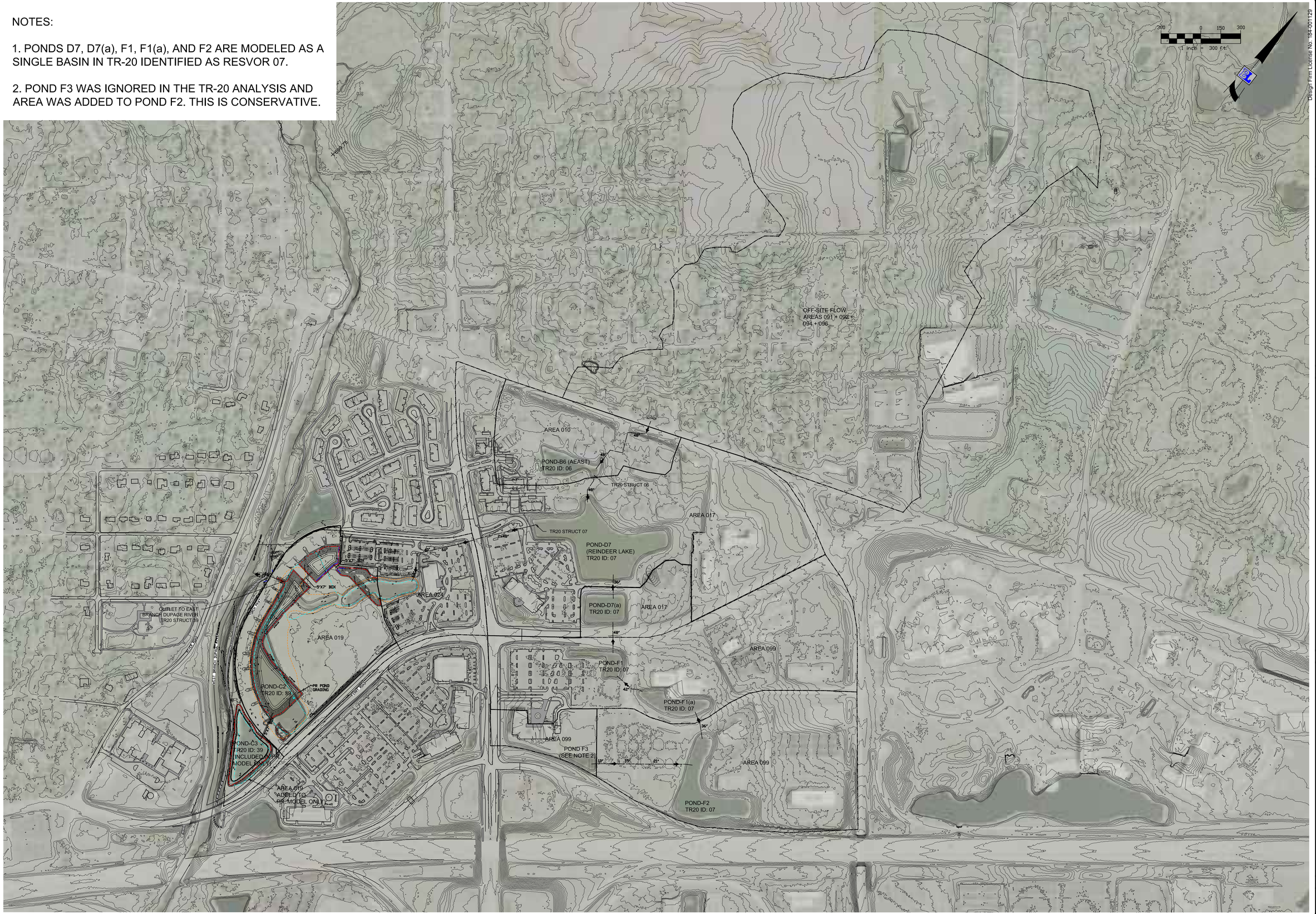
LOT 2 CANTERA SUB-AREA C
CITY OF WARRENVILLE, ILLINOIS

SHEET NUMBER
1
OF 1

NOTES:

1. PONDS D7, D7(a), F1, F1(a), AND F2 ARE MODELED AS A SINGLE BASIN IN TR-20 IDENTIFIED AS RESVOR 07.

2. POND F3 WAS IGNORED IN THE TR-20 ANALYSIS AND AREA WAS ADDED TO POND F2. THIS IS CONSERVATIVE.



Design Firm License No: 184-001129

JOB NO: 080-020

REVISIONS:	FIELD BOOK: N/A
03-09-17: REVISED PER OWNER & CITY COMMENTS	FIELD BOOK: N/A
04-14-16: REVISED PER SURVEYED OUTLET STRUCTURE	DRAWN BY: MK
	CHECKED BY: KEK
FILE: Y080-020 LOT 2 CANTERA SUBAREA C/Engineering/Drawings	COMPLETED: 02/22/17

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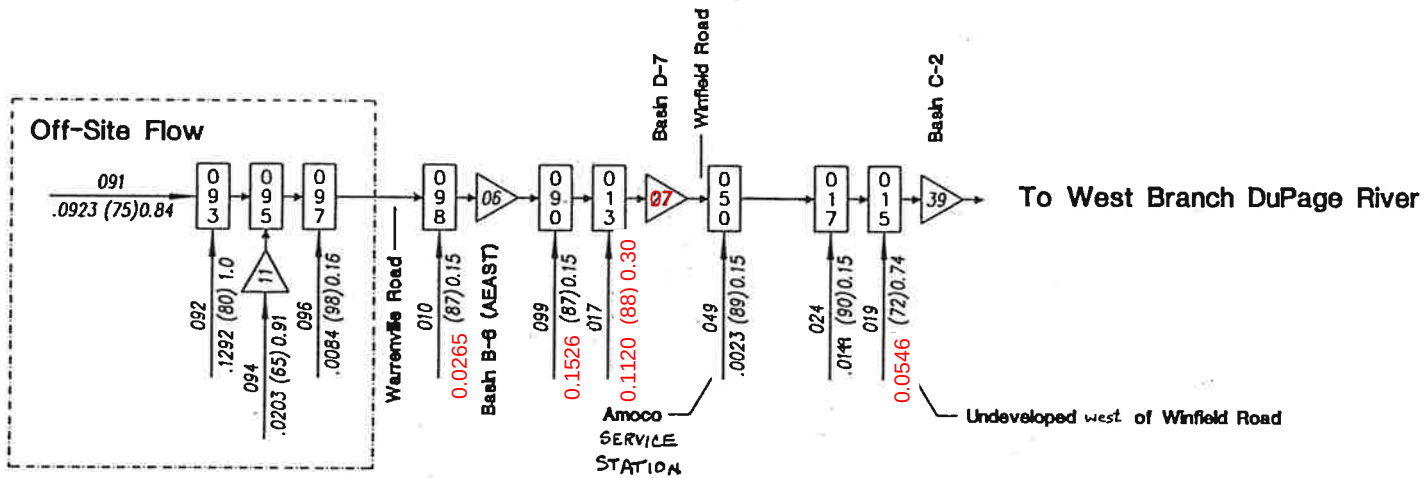
HYDROLOGIC WORK MAP

LOT 2 CANTERA SUB-AREA C
CITY OF WARRENVILLE, ILLINOIS

SHEET NUMBER
1
OF 1

EXISTING MODEL SCHEMATIC

I) ALL PONDS UPDATED TO REFLECT STORAGE VOLUMES PER COUNTY TOPO
II) TRIBUTARY AREAS UPDATED BASED ON TOPOGRAPHIC WORK MAP
III) C2 UNDEVELOPED & C3 NOT CONNECTED



LEGEND

SUBCATCHMENT ID.
AREA (SQ.MI.) (RCN) TC

STARTING ELEVATION
RESERVOIR ROUTING

DIVERSION

ADD HYDROGRAPHS

REACH ID.
REACH LENGTH

SAVE & MOVE



Photo #1: Existing Pond Overflow Structure



Photo #2: Existing Pond Overflow Structure - Interior



Photo #3: 18"ø FES at Pond



Photo #4: 66"ø Outlet



Photo #5: 66" ø Outlet



Photo #6: Channel Downstream of 66"ø Outlet to West Branch of DuPage River

TOPOGRAPHIC MAP
OF
CANTERA SUBAREA C
WARRENVILLE, ILLINOIS

PART OF SECTIONS 1 AND 2, TOWNSHIP 38 NORTH, RANGE 9 EAST, AND SECTION 36, TOWNSHIP 39 NORTH, RANGE 9 EAST OF THE THIRD PRINCIPAL MERIDIAN, IN WARRENVILLE, DUPAGE COUNTY, ILLINOIS.

BENCHMARK - BM 6 - BRASS DISK ON NORTHWEST CORNER OF WARRENVILLE ROAD BRIDGE OVER THE WEST BRANCH DUPAGE RIVER. ELEV. = 666.082 NGVD 1929 FURNISHED BY DUPAGE COUNTY MAPS AND PLATS.

BENCHMARK - TBM - CUT CROSS IN WALK SOUTHWEST CORNER OF WARRENVILLE ROAD AND WARFIELD ROAD. ELEV. = 721.80

County BM NGVD 29

GRAPHIC SCALE

SITE

VICINITY MAP
NOT TO SCALE

TORCH PARKWAY

18" RCP culvert

FERRY ROAD

LEGEND

ABBREVIATIONS

GENERAL NOTES

1. CONTRACTOR TO FIELD VERIFY ALL POINTS IN FIELD PRIOR TO ANY CONSTRUCTION AND NOTIFY ENGINEER OF ANY DISCREPANCIES TO SURVEYOR AT ONCE.
2. FOR BUILDING RESTRICTIONS AS ESTABLISHED BY LOCAL ORDINANCES NOT SHOWN HEREON CONSULT YOUR LOCAL MUNICIPAL AUTHORITIES.
3. DO NOT SCALE DIMENSIONS FROM THIS PLAT.
4. CALL JULIE +1-1-800-892-0123 FOR FIELD LOCATION OF ALL UNDERGROUND UTILITIES PRIOR TO ANY DIGGING OR CONSTRUCTION.
5. TOPOGRAPHY SHOWN HEREON PREPARED FOR PURPOSE OF ESTIMATING GRADING AND ELEVATIONS AS OF 9-21-2020
6. BOUNDARY LINES SHOWN HEREON FOR REFERENCE ONLY
7. SITE IS UNDER CONSTRUCTION AT TIME OF FIELD WORK

Engineers Scientists Surveyors
7325 Janes Avenue, Suite 100
Woodridge, IL 60517
630.724.9200 voice
630.724.9202 fax
v3consultants.com

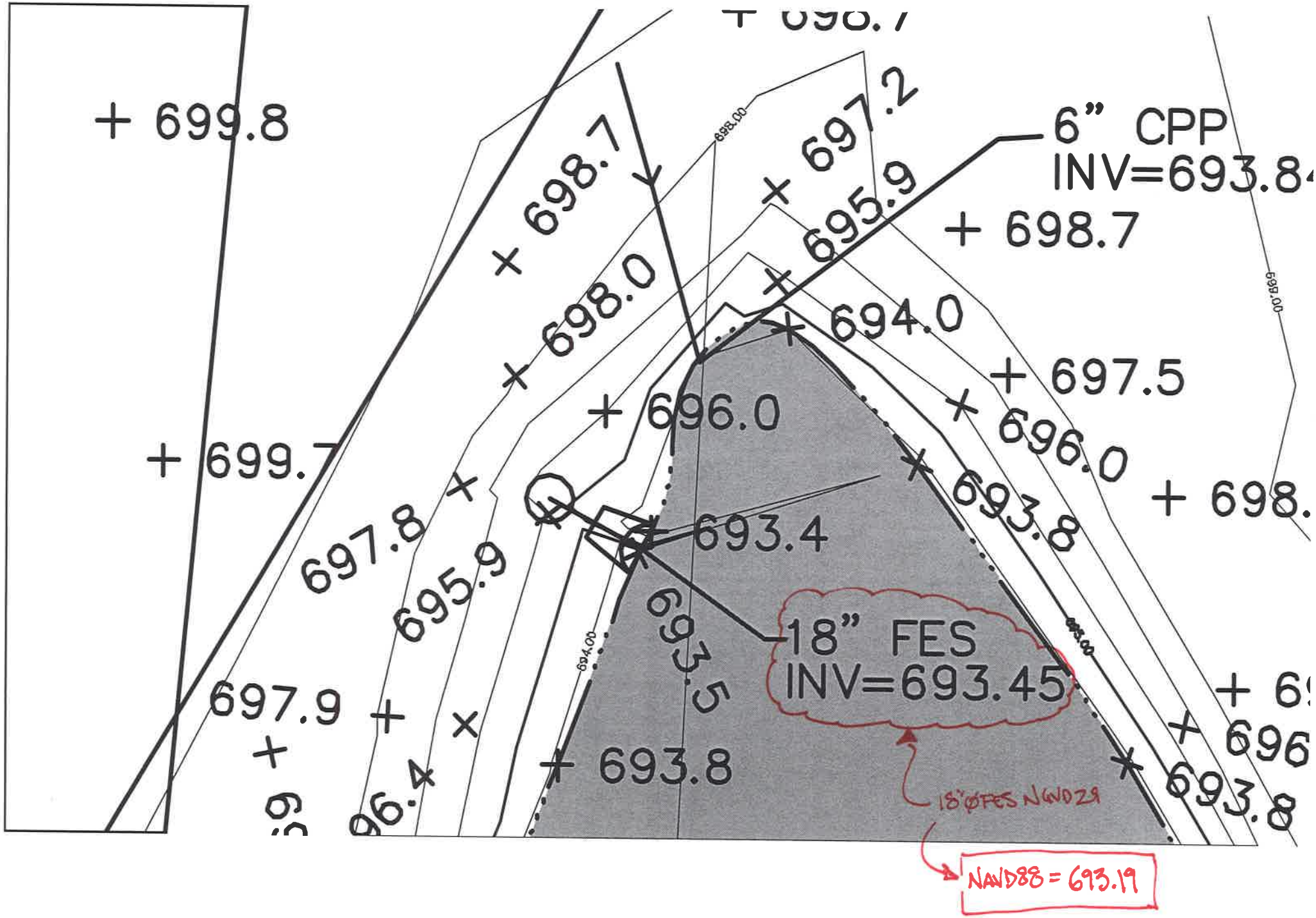
PREPARED FOR:
WDLP C/O JONES LANG LaSALLE
200 E. RANDOLPH DRIVE
CHICAGO, IL.
(312) 228-2297

NO	DATE	DESCRIPTION	NO	DATE	DESCRIPTION
1	9-13-21	REVISE GRADING - POST CONSTRUCTION			

TOPOPGRAPHIC MAP
CANTERA - SUBAREA C, WARRENVILLE, ILLINOIS

FILE NAME: PDSURVEY-X-2021	DRAWN BY: RJH	CHECKED BY: TJH	JOB NO: PROJECT:
XREF DIRECTORY: PATH:	PROJ. MGR.: TJH	DATE: 9-13-21	SCALE: 1" = 60'

SHEET NO. 1 OF 1


+ 699.8
+ 699.7
+ 698.7
+ 698.0
+ 697.8
+ 695.9
+ 697.9
+ 696.4
+ 697.2
+ 695.9
+ 698.7
+ 694.0
+ 697.5
+ 696.0
+ 696.0
+ 693.8
+ 693.4
+ 693.5
+ 693.8
+ 698.
+ 69
+ 696
+ 693.8
6" CPP
INV=693.84
18" FES
INV=693.45
18"ØFES NGVD29
NAVD88 = 693.19

Questions concerning the VERTCON process may be mailed to NGS

Latitude: 41.817679

Longitude: 088.171624

NGVD 29 height: 696.080 ft

Datum shift (NAVD 88 minus NGVD 29): -0.256 feet

Converted to NAVD 88 height: 695.824 feet

NGVD29 - 0.256' = NAVD88

CONSULTING ENGINEERS

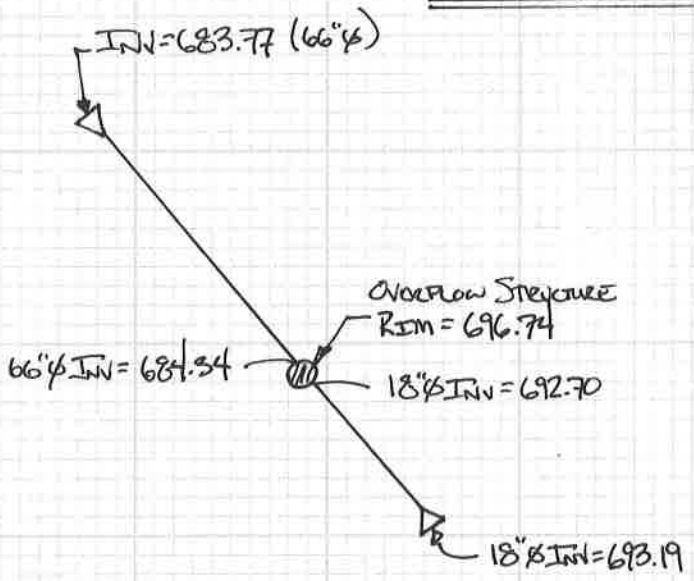
Bollinger, Lach & Associates, Inc.

JOB NO.:		SHEET:	OF:
PROJECT: Cantera Sub-Area C, Lot 2			
SUBJECT: CLOMR Existing Outlet Survey			
BY: KSK	DATE: 08/10/18	CK:	DATE:

Existing Outlet Survey

- Existing outlet survey used 2001 As-Built survey as source of 18"ϕ FES elevation.
- 18"ϕ FES from 2001 survey = INV = 693.45 (NGVD29)
- NGVD29 was converted to NAVD88 using Vertcon.
- Based on Vertcon, NGVD29 − 0.256' = NAVD88
- 18"ϕ INV = 693.45 NGVD29 = 693.19 NAVD88

August 10, 2018 Survey Results.



Primary Release = 18"ϕ INV = 693.19

Overflow Structure Rim = 696.74

Overland Flow = Crest = 700

CONSULTING ENGINEERS

Bollinger, Lach & Associates, Inc.

JOB NO.:		SHEET:	OF:
PROJECT: Cantera Subarea C, Lot 2			
SUBJECT: CLOMR - Existing Release Rate			
BY: KEK	DATE: 02/10/18	CK:	DATE:

EXISTING

PRIMARY RELEASE = 18"ϕ RCP INV = 693.19

54"ϕ OVERFLOW STRUCTURE : RIM = 696.74

EMERGENCY SPILLWAY : CREST = 700

TOTAL OUTFLOW = $Q_{18"\phi} + Q_{54"\phi} + Q_{SPILLWAY}$

ELEV	$Q_{18"\phi}$	+	$Q_{54"\phi}$	+	$Q_{SPILLWAY}$	=	Q_{TOTAL}
693.19	0		-		-		0
694	2.12		-		-		2.12
695	8.91		-		-		8.91
696	12.41		-		-		12.41
696.74	14.47		0		-		14.47
697	15.31		6.24		-		21.55
698	17.43		66.57		-		84.00
699	19.46		115.09		-		134.55
700	21.29		138.24		-		159.53
700.25	21.73		143.44		8.375		173.51

CONSULTING ENGINEERS

Bollinger, Lach & Associates, Inc.

JOB NO.:		SHEET:	OF:
PROJECT: Cantera Subarea, Lot 2			
SUBJECT: CLOMR - Existing Outlet Release			
BY: KEK	DATE: 08/10/18	CK:	DATE:

EXISTING

PRIMARY OUTLET: 18"ϕ RCP IN = 693.19

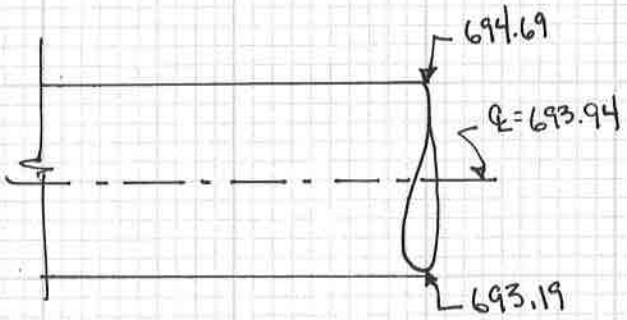
USE ORIFICE EQUATION TO DESCRIBE OUTFLOW

$Q = CA\sqrt{2gH}$

$C = 0.61$, $A_{18"\phi} = 1.767$, $2g = 64.4$

$Q = (0.61)(1.767)\sqrt{64.4(H)}$

$Q = 8.65\sqrt{H}$



E	$H = E - 693.94$	$Q_{ORIFICE\ 18"\phi}$ $Q = 8.65\sqrt{H}$
693.19	0	0
694	0.06	2.12
695	1.06	8.91
696	2.06	12.41
696.74	2.80	14.47
697	3.06	15.31
698	4.06	17.43
699	5.06	19.46
700	6.06	21.29
700.25	6.31	21.73

CONSULTING ENGINEERS

Bollinger, Lach & Associates, Inc.

JOB NO.:		SHEET:	OF:
PROJECT: CANTORA SUBDIV. C, LOT 2			
SUBJECT: CLOMR - EXISTING OUTFLOW/OVERFLOW			
BY:	DATE:	CK:	DATE:

EXISTING.

EXISTING OVERFLOW STRUCTURE WILL BE WEIR CONTROL OR ORIFICE CONTROL

54"ϕ RISER (FIELD VERIFIED 08/10/18) : RIM = 696.74

WEIR FLOW = $Q_W = CLH^{3/2}$

$C = 3.33$, $L = 14.14$

$Q = (3.33)(14.14)(H)^{3/2}$

$\underline{Q_W = (47.07)(H)^{3/2}}$

ORIFICE FLOW = $Q_O = CA\sqrt{2gH}$

$C = 0.60$, $A = 15.90$, $2g = 64.4$

$Q = (0.60)(15.90)\sqrt{64.4(H)}$

$\underline{Q_O = (76.56)\sqrt{H}}$

OVERFLOW STRUCTURE RIM = 696.74

E	H = E − 696.74	Q_W	Q_O
696.74	0	0	0
697	0.26	6.24 ← CONTROLS	~~39.04~~
698	1.26	66.57 ← CONTROLS	~~85.94~~
699	2.26	~~159.92~~	115.09 ← CONTROLS
700	3.26	~~277.06~~	138.24 ← CONTROLS
700.25	3.51	~~309.53~~	143.44 ← CONTROLS.

CONSULTING ENGINEERS

Bollinger, Lach & Associates, Inc.

JOB NO.:		SHEET:	OF:
PROJECT: CANTORA SUBDIV. C, LOT 2			
SUBJECT: CLOMR - EXISTING OUTFLOW / SPILLWAY			
BY: KCK	DATE: 08/10/18	CK:	DATE:

EXISTING

EMERGENCY SPILLWAY
CREST ELEVATION = 700.00
LENGTH = 25' (ASSUMED BASED ON ORIGINAL CALCS)

$$Q = CLH^{3/2}$$

$C = 2.68$, $L = 24$, $H = 700.25 - 700.00 = 0.25'$

$$Q_w = (2.68)(25)(0.25)^{3/2}$$

$$\underline{Q = 8.375 \text{ cfs.}}$$

5/4/2018

CANTERA EXISTING OFFSITE DETENTION PONDS
A-EAST (B-6)

ELEVATION	AREA (SQFT)	AREA (ACRE)	AVERAGE AREA (ACRE)	Δ ELEVATION	VOLUME (AC-FT)	Σ VOLUME (AC-FT)
707	45,764.26	1.05				0.00
			1.11	1.00	1.11	
708	50,938.51	1.17				1.11
			1.21	1.00	1.21	
709	54,789.32	1.26				2.32
			1.30	1.00	1.30	
710	58,640.13	1.35				3.63
			1.40	1.00	1.40	
711	63,162.00	1.45				5.02
			1.50	1.00	1.50	
712	67,518.00	1.55				6.52
			1.59	0.50	0.79	
712.5	70,567.20	1.62				7.32

Contour Information taken from DuPage County GIS two foot contour interval topography

5/4/2018
8/14/2018

CANTERA EXISTING OFFSITE DETENTION PONDS
C-2

ELEVATION	AREA (SQFT)	AREA (ACRE)	AVERAGE AREA (ACRE)	Δ ELEVATION	VOLUME (AC-FT)	Σ VOLUME (AC-FT)
693.19	229,145.00	5.26				0.00
			5.48	0.81	4.44	
694	248,678.00	5.71				4.44
			5.84	1.00	5.84	
695	259,855.00	5.97				10.28
			6.09	1.00	6.09	
696	271,032.00	6.22				16.37
			6.44	1.00	6.44	
697	290,032.00	6.66				22.81
			6.88	1.00	6.88	
698	309,771.00	7.11				29.70
			9.72	1.00	9.72	
699	536,967.00	12.33				39.42
			14.93	1.00	14.93	
700	764,163.00	17.54				54.35
			17.54	0.25	4.39	
700.25	764,163.00	17.54				58.74

Contour Information taken from DuPage County GIS two foot contour interval topography
Revised based on Surveyed Outlet Data

5/4/2018

CANTERA EXISTING OFFSITE DETENTION PONDS
C-3

ELEVATION	AREA (SQFT)	AREA (ACRE)	AVERAGE AREA (ACRE)	Δ ELEVATION	VOLUME (AC-FT)	Σ VOLUME (AC-FT)
692	72,894.00	1.67				0.00
			1.72	1.00	1.72	
693	76,855.00	1.76				0.00
			1.81	1.00	1.81	
694	80,815.00	1.86				1.81
			1.90	1.00	1.90	
695	85,098.00	1.95				3.71
			2.00	1.00	2.00	
696	89,380.00	2.05				5.72
			2.12	1.00	2.12	
697	95,238.00	2.19				7.84
			2.25	1.00	2.25	
698	101,095.00	2.32				10.09
			2.39	1.00	2.39	
699	107,205.00	2.46				12.48
			2.53	1.00	2.53	
700	113,315.00	2.60				15.01

Contour Information taken from DuPage County GIS two foot contour interval topography

5/4/2018

CANTERA EXISTING OFFSITE DETENTION PONDS
REINDEER LAKE (D-7)

ELEVATION	AREA (SQFT)	AREA (ACRE)	AVERAGE AREA (ACRE)	Δ ELEVATION	VOLUME (AC-FT)	Σ VOLUME (AC-FT)
700	268,787.32	6.17				0.00
			6.28	1.00	6.28	
701	278,348.40	6.39				6.28
			6.50	1.00	6.50	
702	287,903.00	6.61				12.78
			6.73	1.00	6.73	
703	298,821.60	6.86				19.51
			6.98	1.00	6.98	
704	309,683.18	7.11				26.50
			7.23	1.00	7.23	
705	320,601.60	7.36				33.73
			7.49	1.00	7.49	
706	332,076.00	7.62				41.23
			7.71	0.60	4.62	
706.6	339,304.80	7.79				45.85

Contour Information taken from DuPage County GIS two foot contour interval topography

5/4/2018

CANTERA EXISTING OFFSITE DETENTION PONDS
D-7A

ELEVATION	AREA (SQFT)	AREA (ACRE)	AVERAGE AREA (ACRE)	Δ ELEVATION	VOLUME (AC-FT)	Σ VOLUME (AC-FT)
700	60,996.00	1.40				0.00
			1.44	1.00	1.44	
701	64,468.80	1.48				1.44
			1.51	1.00	1.51	
702	66,812.00	1.53				2.95
			1.57	1.00	1.57	
703	69,696.00	1.60				4.51
			1.63	1.00	1.63	
704	72,482.00	1.66				6.15
			1.71	1.00	1.71	
705	76,230.00	1.75				7.85
			1.79	1.00	1.79	
706	79,521.00	1.83				9.64
			1.86	0.60	1.11	
706.6	82,328.40	1.89				10.76

Contour Information taken from DuPage County GIS two foot contour interval topography

5/4/2018

CANTERA EXISTING OFFSITE DETENTION PONDS
F-1

ELEVATION	AREA (SQFT)	AREA (ACRE)	AVERAGE AREA (ACRE)	Δ ELEVATION	VOLUME (AC-FT)	Σ VOLUME (AC-FT)
700.5	32,234.40	0.74				0.00
			0.76	0.50	0.38	
701	33,550.00	0.77				0.38
			0.80	1.00	0.80	
702	36,386.00	0.84				1.18
			0.88	1.00	0.88	
703	40,366.00	0.93				2.06
			0.97	1.00	0.97	
704	44,345.00	1.02				3.03
			1.07	1.00	1.07	
705	48,453.00	1.11				4.10
			1.16	1.00	1.16	
706	52,560.00	1.21				5.26
			1.23	0.60	0.74	
706.6	54,450.00	1.25				6.00

Contour Information taken from DuPage County GIS two foot contour interval topography

5/4/2018

CANTERA EXISTING OFFSITE DETENTION PONDS
F-1A

ELEVATION	AREA (SQFT)	AREA (ACRE)	AVERAGE AREA (ACRE)	Δ ELEVATION	VOLUME (AC-FT)	Σ VOLUME (AC-FT)
700.57	48,946.00	1.12				0.00
			1.15	0.43	0.49	
701	51,184.00	1.18				0.49
			1.23	1.00	1.23	
702	56,388.00	1.29				1.73
			1.34	1.00	1.34	
703	60,636.00	1.39				3.07
			1.44	1.00	1.44	
704	64,884.00	1.49				4.51
			1.55	1.00	1.55	
705	70,512.00	1.62				6.07
			1.68	1.00	1.68	
706	76,140.00	1.75				7.75
			1.88	0.50	0.94	
706.5	87,415.20	2.01				8.69

Contour Information taken from DuPage County GIS two foot contour interval topography

5/4/2018

CANTERA EXISTING OFFSITE DETENTION PONDS
F-2

ELEVATION	AREA (SQFT)	AREA (ACRE)	AVERAGE AREA (ACRE)	Δ ELEVATION	VOLUME (AC-FT)	Σ VOLUME (AC-FT)
701	146,483.00	3.36				0.00
			3.44	1.00	3.44	
702	153,583.00	3.53				3.44
			3.62	1.00	3.62	
703	162,170.00	3.72				7.07
			3.82	1.00	3.82	
704	170,756.00	3.92				10.89
			4.01	1.00	4.01	
705	178,663.00	4.10				14.90
			4.19	1.00	4.19	
706	186,569.00	4.28				19.09
			4.33	0.60	2.60	
706.6	190,920.80	4.38				21.69

Contour Information taken from DuPage County GIS two foot contour interval topography

5/4/2018

CANTERA EXISTING OFFSITE DETENTION PONDS
REINDEER LAKE COMBINED

ELEVATION	D-7 VOLUME (AC-FT)	D-7A VOLUME (AC-FT)	F-1 VOLUME (AC-FT)	F-1A VOLUME (AC-FT)	F-2 VOLUME (AC-FT)	Σ VOLUME (AC-FT)
700	0.00	0.00	0.00	0.00	0.00	0.00
701	6.28	1.44	0.38	0.49	0.00	8.59
702	12.78	2.95	1.18	1.73	3.44	22.08
703	19.51	4.51	2.06	3.07	7.07	36.22
704	26.50	6.15	3.03	4.51	10.89	51.08
705	33.73	7.85	4.10	6.07	14.90	66.65
706	41.23	9.64	5.26	7.75	19.09	82.97
706.6	45.85	10.76	6.00	8.69	21.69	92.99

Contour Information taken from DuPage County GIS two foot contour interval topography

Cantera Lot 2, Subarea C

Existing Model (Updated per Surveyed Outlet)

Critical Duration Analysis

	TR-20 Structure 39	100-year Storm Event	
		Elevation	Discharge
		39	39
1	5 Min	-	0
2	10 Min	693.65	1
3	15 Min	693.91	2
4	30 Min	694.39	5
5	1 Hour	694.82	8
6	2 Hour	696.96	20
7	3 Hour	697.06	25
8	6 Hour	697.72	67
9	12 Hour	698.23	95
10	18 Hour	698.16	92
11	24 Hour	698.48	108
12	48 Hour	698.43	106
13	72 Hour	698.03	86
14	120 Hour	697.71	66
15	240 Hour	697.14	30

Cantera Subarea C. Lot 2
Existing Conditions
100-yr Event
Revised Based on Surveved Outlet


```
******************80-80 LIST OF INPUT DATA FOR TR-20 HYDROLOGY******************

JOB TR-20 001                          PASS=     SUMMARY
TITLE     CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE
TITLE     PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DAT)
 5 RAINFL 1              0.05
 8          0.00         0.16         0.33         0.43         0.52
 8          0.60         0.66         0.71         0.75         0.79
 8          0.82         0.84         0.86         0.88         0.90
 8          0.92         0.94         0.96         0.97         0.98
 8          1.00         1.00         1.00         1.00         1.00
 9 ENDTBL
 5 RAINFL 2              0.05
 8          0.00         0.03         0.08         0.12         0.16
 8          0.22         0.29         0.39         0.51         0.62
 8          0.70         0.76         0.81         0.85         0.88
 8          0.91         0.93         0.95         0.97         0.98
 8          1.00         1.00         1.00         1.00         1.00
 9 ENDTBL
 5 RAINFL 3              0.05
 8          0.00         0.03         0.06         0.09         0.12
 8          0.15         0.19         0.23         0.27         0.32
 8          0.38         0.45         0.57         0.70         0.79
 8          0.85         0.89         0.92         0.95         0.97
 8          1.00         1.00         1.00         1.00         1.00
 9 ENDTBL
 5 RAINFL 4              0.05
 8          0.00         0.02         0.05         0.08         0.10
 8          0.13         0.16         0.19         0.22         0.25
 8          0.28         0.32         0.35         0.39         0.45
 8          0.51         0.59         0.72         0.84         0.92
 8          1.00         1.00         1.00         1.00         1.00
 9 ENDTBL
 3 STRUCT      06
 8                       707.0        0.00         0.00           POND-B6 - AEAST
 8                       708.0        8.40         1.11           36" DIA. RCP
 8                       709.0        20.0         2.32           INLET CONTROL
 8                       710.0        38.0         3.63
 8                       711.0        55.0         5.02
 8                       712.0        66.0         6.52           12' WEIR; C=3.0
 8                       712.5       114.0         7.32
 9 ENDTBL
 3 STRUCT      11
 8                       737.5         0.0          0.0
 8                       738.          0.5         .005           DRYBASIN
 8                       739.          1.0         .040
 8                       740.          3.0         .098
 8                       741.          5.0         .176
 8                       742.          7.0         .288
 8                       743.          9.0         .446
 8                       744.         33.9         .566
 9 ENDTBL
 3 STRUCT      07
 8                       700.          0.0          0.0           POND-D7
 8                       701.          4.0         8.59           REINDEER LAKE
 8                       702.          12.        22.08           INCLUDES PONDS F
 8                       703.          18.        36.22           21" DIA RCP
 8                       704.          22.        51.08           INLET CONTROL
```

**********80-80 LIST OF INPUT DATA (CONTINUED)**********

```
 8                     705.         26.        66.65
 8                     705.5        46.        74.81          20' WEIR; C=2.6
 8                     706.         82.        82.97
 8                     706.5       128.        92.99
 9 ENDTBL
 3 STRUCT      39
 8                     693.19        0.0         0.0           POND-C2
 8                     694.         2.12        4.44          REVISED STAGE-D
 8                     695.         8.91       10.28          FOR PHASE 1 IMP
 8                     696.        12.41       16.37
 8                     696.74      14.47       21.14
 8                     697.        21.55       22.81
 8                     698.        84.00       29.70
 8                     699.       134.55       39.42
 8                     700.       159.53       54.35
 8                     700.25     173.51       58.74
 9 ENDTBL
 6 RUNOFF 1 091       1 0.0923     75.00       0.84       1         1
 6 RUNOFF 1 092       2 0.1292     80.00       1.00       1         1
 6 ADDHYD 4 093   1 2 3                                   1
 6 RUNOFF 1 094       4 0.0203     65.00       0.91       1         1
 6 RESVOR 2    11 4   5                                     1 1 1 1 1
 6 ADDHYD 4 095   3 5 6
 6 RUNOFF 1 096       1 0.0084     98.00       0.16       1         1
 6 ADDHYD 4 097   6 1 7                                   1
 6 RUNOFF 1 010       4 0.0265     87.00       0.15
 6 ADDHYD 4 098   7 4 1
 6 RESVOR 2     6 1   5                                     1 1 1 1 1
 6 RUNOFF 1 099       7 0.1526     87.00       0.15       1         1
 6 ADDHYD 4 090   5 7 2                                   1
 6 RUNOFF 1 017       7 0.1120     88.00       0.30
 6 ADDHYD 4 013   2 7 1
 6 RESVOR 2     7 1   2                                     1 1 1 1 1
 6 RUNOFF 1 049       7 0.0023     89.00       0.15       1         1
 6 ADDHYD 4 050   2 7 1                                   1
 6 RUNOFF 1 024       7 0.0149     90.00       0.15
 6 ADDHYD 4 017   1 7 2
 6 RUNOFF 1 019       6 0.0546     74.00       0.74
 6 ADDHYD 4 015   2 6 7
 6 RESVOR 2    39 7   1                                     1 1 1 1 1
   ENDATA
 7 INCREM 6             0.008
 7 COMPUT 7 091      39 0.00         0.91        0.09       1 2      01   5-MIN
   ENDCMP 1
 7 COMPUT 7 091      39 0.00         1.67        0.17       1 2      02   10-MIN
   ENDCMP 1
 7 COMPUT 7 091      39 0.00         2.05        0.25       1 2      03   15-MIN
   ENDCMP 1
 7 COMPUT 7 091      39 0.00         2.80        0.50       1 2      04   30-MIN
   ENDCMP 1
 7 COMPUT 7 091      39 0.00         3.56        1.00       1 2      05   1-HR
   ENDCMP 1
 7 INCREM 6             0.10
 7 COMPUT 7 091      39 0.00         4.47        2.00       1 2      06   2-HR
   ENDCMP 1
 7 COMPUT 7 091      39 0.00         4.85        3.00       1 2      07   3-HR
```


**********80-80 LIST OF INPUT DATA (CONTINUED)**********

```
   ENDCMP 1
 7 COMPUT 7 091      39 0.00         5.68        6.00       1 2      08   6-HR
   ENDCMP 1
 7 INCREM 6             0.50
 7 COMPUT 7 091      39 0.00         6.59        12.0       2 2      09   12-HR
   ENDCMP 1
 7 COMPUT 7 091      39 0.00         6.97        18.0       2 2      10   18-HR
   ENDCMP 1
   ENDJOB 2
```

**********END OF 80-80 LIST**********

```
TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
08/14/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
16:04:24                    PASS   1   JOB NO.   1                       PAGE   1


EXECUTIVE CONTROL  INCREM    MAIN TIME INCREMENT =   .008 HOURS


EXECUTIVE CONTROL  COMPUT    FROM XSECTION  91  TO STRUCTURE 39           5-MIN
    STARTING TIME =   .00       RAIN DEPTH =   .91       RAIN DURATION =   .09
    ANT. RUNOFF COND. = 2       MAIN TIME INCREMENT =   .008 HOURS
    ALTERNATE NO. = 0           STORM NO. = 1            RAIN TABLE NO. = 1


OPERATION RUNOFF    XSECTION  91

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .57                          1.5 *                        (RUNOFF)
                                        * FIRST POINT OF FLAT PEAK

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                    .02 WATERSHED INCHES;       1 CFS-HRS;        .1 ACRE-FEET.


OPERATION RUNOFF    XSECTION  92

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .66                          6.0 *                        (RUNOFF)
                                        * FIRST POINT OF FLAT PEAK

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                    .06 WATERSHED INCHES;       5 CFS-HRS;        .4 ACRE-FEET.


OPERATION ADDHYD    XSECTION  93

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .63                          7.4                          (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                    .04 WATERSHED INCHES;       6 CFS-HRS;        .5 ACRE-FEET.


OPERATION RUNOFF    XSECTION  94

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                    .00 WATERSHED INCHES;       0 CFS-HRS;        .0 ACRE-FEET.


OPERATION RESVOR    STRUCTURE 11
```



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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
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16:04:24                    PASS   1   JOB NO.   1                       PAGE   2


    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                    .00 WATERSHED INCHES;      -1 CFS-HRS;        .0 ACRE-FEET.


OPERATION RUNOFF    XSECTION  96

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .13                          26.0                         (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                    .70 WATERSHED INCHES;       4 CFS-HRS;        .3 ACRE-FEET.


OPERATION ADDHYD    XSECTION  97

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .13                          26.4                         (NULL)
         .63                           7.4                         (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                    .06 WATERSHED INCHES;      10 CFS-HRS;        .8 ACRE-FEET.


OPERATION RESVOR    STRUCTURE  6

                    HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM = 1
     HRS      MAIN TIME INCREMENT =  .008 hr,      DRAINAGE AREA =    .28 SQ.MI.
      .02 CFS      .00     .01     .02     .03     .06     .11     .18     .27
      .02 ELEV   707.00  707.00  707.00  707.00  707.01  707.01  707.02  707.03
      .08 CFS      .39     .54     .71     .90    1.11    1.33    1.56    1.80
      .08 ELEV   707.05  707.06  707.08  707.11  707.13  707.16  707.19  707.21
      .14 CFS     2.03    2.25    2.46    2.65    2.83    2.99    3.13    3.25
      .14 ELEV   707.24  707.27  707.29  707.32  707.34  707.36  707.37  707.39
      .21 CFS     3.36    3.45    3.53    3.60    3.66    3.71    3.75    3.79
      .21 ELEV   707.40  707.41  707.42  707.43  707.44  707.44  707.45  707.45
      .27 CFS     3.82    3.85    3.87    3.89    3.90    3.92    3.93    3.94
      .27 ELEV   707.45  707.46  707.46  707.46  707.46  707.47  707.47  707.47
      .34 CFS     3.95    3.96    3.97    3.98    3.98    3.99    4.00    4.01
      .34 ELEV   707.47  707.47  707.47  707.47  707.47  707.48  707.48  707.48
      .40 CFS     4.02    4.02    4.03    4.04    4.05    4.06    4.07    4.08
      .40 ELEV   707.48  707.48  707.48  707.48  707.48  707.48  707.48  707.49
      .46 CFS     4.09    4.10    4.12    4.13    4.14    4.15    4.17    4.18
      .46 ELEV   707.49  707.49  707.49  707.49  707.49  707.49  707.50  707.50
      .53 CFS     4.19    4.21    4.22    4.23    4.25    4.26    4.28    4.29
      .53 ELEV   707.50  707.50  707.50  707.50  707.51  707.51  707.51  707.51
      .59 CFS     4.31    4.32    4.34    4.35    4.37    4.38    4.40    4.41
      .59 ELEV   707.51  707.51  707.52  707.52  707.52  707.52  707.52  707.53
      .66 CFS     4.43    4.44    4.46    4.47    4.49    4.50    4.51    4.53
      .66 ELEV   707.53  707.53  707.53  707.53  707.53  707.54  707.54  707.54
      .72 CFS     4.54    4.55    4.57    4.58    4.59    4.60    4.61    4.62
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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
08/14/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
16:04:24                    PASS   1   JOB NO.   1                      PAGE   3
```

.72	ELEV	707.54	707.54	707.54	707.54	707.55	707.55	707.55	707.55
.78	CFS	4.63	4.64	4.65	4.66	4.67	4.68	4.68	4.69
.78	ELEV	707.55	707.55	707.55	707.55	707.56	707.56	707.56	707.56
.85	CFS	4.70	4.70	4.71	4.71	4.72	4.72	4.73	4.73
.85	ELEV	707.56	707.56	707.56	707.56	707.56	707.56	707.56	707.56
.91	CFS	4.73	4.73	4.74	4.74	4.74	4.74	4.74	4.74
.91	ELEV	707.56	707.56	707.56	707.56	707.56	707.56	707.56	707.56
.98	CFS	4.74	4.73	4.73	4.73	4.72	4.72	4.72	4.71
.98	ELEV	707.56	707.56	707.56	707.56	707.56	707.56	707.56	707.56
1.04	CFS	4.71	4.70	4.69	4.69	4.68	4.67	4.66	4.66
1.04	ELEV	707.56	707.56	707.56	707.56	707.56	707.56	707.56	707.55
1.10	CFS	4.65	4.64	4.63	4.62	4.61	4.60	4.59	4.58
1.10	ELEV	707.55	707.55	707.55	707.55	707.55	707.55	707.55	707.55
1.17	CFS	4.57	4.56	4.55	4.54	4.53	4.52	4.50	4.49
1.17	ELEV	707.54	707.54	707.54	707.54	707.54	707.54	707.54	707.53
1.23	CFS	4.48	4.47	4.46	4.44	4.43	4.42	4.40	4.39
1.23	ELEV	707.53	707.53	707.53	707.53	707.53	707.53	707.52	707.52
1.30	CFS	4.38	4.37	4.35	4.34	4.32	4.31	4.30	4.28
1.30	ELEV	707.52	707.52	707.52	707.52	707.51	707.51	707.51	707.51
1.36	CFS	4.27	4.26	4.24	4.23	4.21	4.20	4.18	4.17
1.36	ELEV	707.51	707.51	707.50	707.50	707.50	707.50	707.50	707.50
1.42	CFS	4.15	4.14	4.13	4.11	4.10	4.08	4.07	4.05
1.42	ELEV	707.49	707.49	707.49	707.49	707.49	707.49	707.48	707.48
1.49	CFS	4.04	4.02	4.01	3.99	3.97	3.96	3.94	3.93
1.49	ELEV	707.48	707.48	707.48	707.47	707.47	707.47	707.47	707.47
1.55	CFS	3.91	3.90	3.88	3.87	3.85	3.84	3.82	3.81
1.55	ELEV	707.47	707.46	707.46	707.46	707.46	707.46	707.46	707.45
1.62	CFS	3.79	3.78	3.76	3.75	3.73	3.71	3.70	3.68
1.62	ELEV	707.45	707.45	707.45	707.45	707.44	707.44	707.44	707.44
1.68	CFS	3.67	3.65	3.64	3.62	3.61	3.59	3.58	3.56
1.68	ELEV	707.44	707.43	707.43	707.43	707.43	707.43	707.43	707.42
1.74	CFS	3.55	3.53	3.52	3.50	3.49	3.47	3.46	3.44
1.74	ELEV	707.42	707.42	707.42	707.42	707.41	707.41	707.41	707.41
1.81	CFS	3.43	3.41	3.40	3.38	3.37	3.35	3.34	3.32
1.81	ELEV	707.41	707.41	707.40	707.40	707.40	707.40	707.40	707.40
1.87	CFS	3.31	3.29	3.28	3.26	3.25	3.23	3.22	3.20
1.87	ELEV	707.39	707.39	707.39	707.39	707.39	707.38	707.38	707.38
1.94	CFS	3.19	3.17	3.16	3.15	3.13	3.12	3.10	3.09
1.94	ELEV	707.38	707.38	707.38	707.37	707.37	707.37	707.37	707.37
2.00	CFS	3.07	3.06	3.05	3.03	3.02	3.00	2.99	2.98
2.00	ELEV	707.37	707.36	707.36	707.36	707.36	707.36	707.36	707.35
2.06	CFS	2.96	2.95	2.94	2.92	2.91	2.89	2.88	2.87
2.06	ELEV	707.35	707.35	707.35	707.35	707.35	707.34	707.34	707.34
2.13	CFS	2.85	2.84	2.83	2.81	2.80	2.79	2.77	2.76
2.13	ELEV	707.34	707.34	707.34	707.34	707.33	707.33	707.33	707.33
2.19	CFS	2.75	2.74	2.72	2.71	2.70	2.68	2.67	2.66
2.19	ELEV	707.33	707.33	707.32	707.32	707.32	707.32	707.32	707.32
2.26	CFS	2.65	2.63	2.62	2.61	2.60	2.58	2.57	2.56
2.26	ELEV	707.32	707.31	707.31	707.31	707.31	707.31	707.31	707.30


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TR20 ------------------------------------------------------------------- SCS -
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08/14/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
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2.32	CFS	2.55	2.53	2.52	2.51	2.50	2.49	2.47	2.46
2.32	ELEV	707.30	707.30	707.30	707.30	707.30	707.30	707.29	707.29
2.38	CFS	2.45	2.44	2.43	2.42	2.40	2.39	2.38	2.37
2.38	ELEV	707.29	707.29	707.29	707.29	707.29	707.28	707.28	707.28
2.45	CFS	2.36	2.35	2.33	2.32	2.31	2.30	2.29	2.28
2.45	ELEV	707.28	707.28	707.28	707.28	707.28	707.27	707.27	707.27
2.51	CFS	2.27	2.26	2.25	2.23	2.22	2.21	2.20	2.19
2.51	ELEV	707.27	707.27	707.27	707.27	707.26	707.26	707.26	707.26
2.58	CFS	2.18	2.17	2.16	2.15	2.14	2.13	2.12	2.11
2.58	ELEV	707.26	707.26	707.26	707.26	707.25	707.25	707.25	707.25
2.64	CFS	2.10	2.09	2.08	2.07	2.06	2.05	2.04	2.03
2.64	ELEV	707.25	707.25	707.25	707.25	707.24	707.24	707.24	707.24
2.70	CFS	2.02	2.01	2.00	1.99	1.98	1.97	1.96	1.95
2.70	ELEV	707.24	707.24	707.24	707.24	707.24	707.23	707.23	707.23
2.77	CFS	1.94	1.93	1.92	1.91	1.90	1.89	1.88	1.87
2.77	ELEV	707.23	707.23	707.23	707.23	707.23	707.23	707.22	707.22
2.83	CFS	1.86	1.85	1.84	1.84	1.83	1.82	1.81	1.80
2.83	ELEV	707.22	707.22	707.22	707.22	707.22	707.22	707.22	707.21
2.90	CFS	1.79	1.78	1.77	1.76	1.76	1.75	1.74	1.73
2.90	ELEV	707.21	707.21	707.21	707.21	707.21	707.21	707.21	707.21
2.96	CFS	1.72	1.71	1.70	1.70	1.69	1.68	1.67	1.66
2.96	ELEV	707.20	707.20	707.20	707.20	707.20	707.20	707.20	707.20
3.02	CFS	1.65	1.65	1.64	1.63	1.62	1.61	1.60	1.60
3.02	ELEV	707.20	707.20	707.19	707.19	707.19	707.19	707.19	707.19
3.09	CFS	1.59	1.58	1.57	1.57	1.56	1.55	1.54	1.53
3.09	ELEV	707.19	707.19	707.19	707.19	707.19	707.18	707.18	707.18
3.15	CFS	1.53	1.52	1.51	1.50	1.50	1.49		
3.15	ELEV	707.18	707.18	707.18	707.18	707.18	707.18		

```
    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                    .06 WATERSHED INCHES;      10 CFS-HRS;        .8 ACRE-FEET.

    DURATION(HRS)   2      3
    FLOW(CFS)       3      1 TRUNCATED

 --- STRUCTURE  6, ALTERNATE  0, STORM  1, HYDROGRAPH ADDED TO READHD FILE ---


OPERATION RUNOFF    XSECTION  99

    PEAK TIME(HRS)              PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .14                          127.0                        (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                    .18 WATERSHED INCHES;      17 CFS-HRS;       1.4 ACRE-FEET.


OPERATION ADDHYD    XSECTION  90
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TR20 ------------------------------------------------------------------------ SCS -
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    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .14                         128.8                        (NULL)
         .95                           4.7 *                      (NULL)
                                         * FIRST POINT OF FLAT PEAK

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .10 WATERSHED INCHES;      28 CFS-HRS;       2.3 ACRE-FEET.


OPERATION RESVOR    STRUCTURE  7

                  HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM = 1
     HRS      MAIN TIME INCREMENT =   .008 hr,      DRAINAGE AREA =    .54 SQ.MI.
      .04 CFS      .00     .01     .01     .02     .03     .05     .08     .10
      .04 ELEV   700.00  700.00  700.00  700.01  700.01  700.01  700.02  700.03
      .10 CFS      .14     .18     .22     .26     .31     .36     .41     .46
      .10 ELEV   700.03  700.04  700.05  700.07  700.08  700.09  700.10  700.12
      .17 CFS      .51     .56     .61     .65     .69     .73     .76     .80
      .17 ELEV   700.13  700.14  700.15  700.16  700.17  700.18  700.19  700.20
      .23 CFS      .83     .86     .89     .92     .94     .96     .99    1.01
      .23 ELEV   700.21  700.22  700.22  700.23  700.24  700.24  700.25  700.25
      .30 CFS     1.03    1.05    1.06    1.08    1.09    1.11    1.12    1.13
      .30 ELEV   700.26  700.26  700.27  700.27  700.27  700.28  700.28  700.28
      .36 CFS     1.14    1.15    1.16    1.17    1.18    1.18    1.19    1.20
      .36 ELEV   700.29  700.29  700.29  700.29  700.29  700.30  700.30  700.30
      .42 CFS     1.20    1.21    1.21    1.22    1.22    1.23    1.23    1.24
      .42 ELEV   700.30  700.30  700.30  700.30  700.31  700.31  700.31  700.31
      .49 CFS     1.24    1.24    1.25    1.25    1.25    1.26    1.26    1.26
      .49 ELEV   700.31  700.31  700.31  700.31  700.31  700.31  700.31  700.32
      .55 CFS     1.26    1.27    1.27    1.27    1.27    1.27    1.28    1.28
      .55 ELEV   700.32  700.32  700.32  700.32  700.32  700.32  700.32  700.32
      .62 CFS     1.28    1.28    1.28    1.28    1.29    1.29    1.29    1.29
      .62 ELEV   700.32  700.32  700.32  700.32  700.32  700.32  700.32  700.32
      .68 CFS     1.29    1.29    1.29    1.30    1.30    1.30    1.30    1.30
      .68 ELEV   700.32  700.32  700.32  700.32  700.32  700.32  700.33  700.33
      .74 CFS     1.30    1.30    1.31    1.31    1.31    1.31    1.31    1.31
      .74 ELEV   700.33  700.33  700.33  700.33  700.33  700.33  700.33  700.33
      .81 CFS     1.31    1.31    1.31    1.32    1.32    1.32    1.32    1.32
      .81 ELEV   700.33  700.33  700.33  700.33  700.33  700.33  700.33  700.33
      .87 CFS     1.32    1.32    1.32    1.33    1.33    1.33    1.33    1.33
      .87 ELEV   700.33  700.33  700.33  700.33  700.33  700.33  700.33  700.33
      .94 CFS     1.33    1.33    1.33    1.33    1.33    1.34    1.34    1.34
      .94 ELEV   700.33  700.33  700.33  700.33  700.33  700.33  700.33  700.33
     1.00 CFS     1.34    1.34    1.34    1.34    1.34    1.34    1.35    1.35
     1.00 ELEV   700.33  700.34  700.34  700.34  700.34  700.34  700.34  700.34
     1.06 CFS     1.35    1.35    1.35    1.35    1.35    1.35    1.35    1.35
     1.06 ELEV   700.34  700.34  700.34  700.34  700.34  700.34  700.34  700.34
     1.13 CFS     1.36    1.36    1.36    1.36    1.36    1.36    1.36    1.36
     1.13 ELEV   700.34  700.34  700.34  700.34  700.34  700.34  700.34  700.34
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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
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     1.19 CFS     1.36    1.36    1.37    1.37    1.37    1.37    1.37    1.37
     1.19 ELEV   700.34  700.34  700.34  700.34  700.34  700.34  700.34  700.34
     1.26 CFS     1.37    1.37    1.37    1.37    1.37    1.38    1.38    1.38
     1.26 ELEV   700.34  700.34  700.34  700.34  700.34  700.34  700.34  700.34
     1.32 CFS     1.38    1.38    1.38    1.38    1.38    1.38    1.38    1.38
     1.32 ELEV   700.34  700.34  700.35  700.35  700.35  700.35  700.35  700.35
     1.38 CFS     1.39    1.39    1.39    1.39    1.39    1.39    1.39    1.39
     1.38 ELEV   700.35  700.35  700.35  700.35  700.35  700.35  700.35  700.35
     1.45 CFS     1.39    1.39    1.39    1.40    1.40    1.40    1.40    1.40
     1.45 ELEV   700.35  700.35  700.35  700.35  700.35  700.35  700.35  700.35
     1.51 CFS     1.40    1.40    1.40    1.40    1.40    1.40    1.40    1.40
     1.51 ELEV   700.35  700.35  700.35  700.35  700.35  700.35  700.35  700.35
     1.58 CFS     1.41    1.41    1.41    1.41    1.41    1.41    1.41    1.41
     1.58 ELEV   700.35  700.35  700.35  700.35  700.35  700.35  700.35  700.35
     1.64 CFS     1.41    1.41    1.41    1.41    1.41    1.41    1.42    1.42
     1.64 ELEV   700.35  700.35  700.35  700.35  700.35  700.35  700.35  700.35
     1.70 CFS     1.42    1.42    1.42    1.42    1.42    1.42    1.42    1.42
     1.70 ELEV   700.35  700.35  700.35  700.35  700.35  700.36  700.36  700.36
     1.77 CFS     1.42    1.42    1.42    1.42    1.42    1.43    1.43    1.43
     1.77 ELEV   700.36  700.36  700.36  700.36  700.36  700.36  700.36  700.36
     1.83 CFS     1.43    1.43    1.43    1.43    1.43    1.43    1.43    1.43
     1.83 ELEV   700.36  700.36  700.36  700.36  700.36  700.36  700.36  700.36
     1.90 CFS     1.43    1.43    1.43    1.43    1.43    1.43    1.43    1.44
     1.90 ELEV   700.36  700.36  700.36  700.36  700.36  700.36  700.36  700.36
     1.96 CFS     1.44    1.44    1.44    1.44    1.44    1.44    1.44    1.44
     1.96 ELEV   700.36  700.36  700.36  700.36  700.36  700.36  700.36  700.36
     2.02 CFS     1.44    1.44    1.44    1.44    1.44    1.44    1.44    1.44
     2.02 ELEV   700.36  700.36  700.36  700.36  700.36  700.36  700.36  700.36
     2.09 CFS     1.44    1.44    1.44    1.45    1.45    1.45    1.45    1.45
     2.09 ELEV   700.36  700.36  700.36  700.36  700.36  700.36  700.36  700.36
     2.15 CFS     1.45    1.45    1.45    1.45    1.45    1.45    1.45    1.45
     2.15 ELEV   700.36  700.36  700.36  700.36  700.36  700.36  700.36  700.36
     2.22 CFS     1.45    1.45    1.45    1.45    1.45    1.45    1.45    1.45
     2.22 ELEV   700.36  700.36  700.36  700.36  700.36  700.36  700.36  700.36
     2.28 CFS     1.45    1.45    1.45    1.45    1.45    1.46    1.46    1.46
     2.28 ELEV   700.36  700.36  700.36  700.36  700.36  700.36  700.36  700.36
     2.34 CFS     1.46    1.46    1.46    1.46    1.46    1.46    1.46    1.46
     2.34 ELEV   700.36  700.36  700.36  700.36  700.36  700.36  700.36  700.36
     2.41 CFS     1.46    1.46    1.46    1.46    1.46    1.46    1.46    1.46
     2.41 ELEV   700.36  700.36  700.36  700.36  700.36  700.37  700.37  700.37
     2.47 CFS     1.46    1.46    1.46    1.46    1.46    1.46    1.46    1.46
     2.47 ELEV   700.37  700.37  700.37  700.37  700.37  700.37  700.37  700.37
     2.54 CFS     1.46    1.46    1.46    1.46    1.46    1.46    1.46    1.46
     2.54 ELEV   700.37  700.37  700.37  700.37  700.37  700.37  700.37  700.37
     2.60 CFS     1.46    1.47    1.47    1.47    1.47    1.47    1.47    1.47
     2.60 ELEV   700.37  700.37  700.37  700.37  700.37  700.37  700.37  700.37
     2.66 CFS     1.47    1.47    1.47    1.47    1.47    1.47    1.47    1.47
     2.66 ELEV   700.37  700.37  700.37  700.37  700.37  700.37  700.37  700.37
     2.73 CFS     1.47    1.47    1.47    1.47    1.47    1.47    1.47    1.47
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TR20 ------------------------------------------------------------------- SCS -
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     2.73 ELEV   700.37  700.37  700.37  700.37  700.37  700.37  700.37  700.37
     2.79 CFS      1.47    1.47    1.47    1.47    1.47    1.47    1.47    1.47
     2.79 ELEV   700.37  700.37  700.37  700.37  700.37  700.37  700.37  700.37
     2.86 CFS      1.47    1.47    1.47    1.47    1.47    1.47    1.47    1.47
     2.86 ELEV   700.37  700.37  700.37  700.37  700.37  700.37  700.37  700.37
     2.92 CFS      1.47    1.47    1.47    1.47    1.47    1.47    1.47    1.47
     2.92 ELEV   700.37  700.37  700.37  700.37  700.37  700.37  700.37  700.37
     2.98 CFS      1.47    1.47    1.47    1.47    1.47    1.47    1.47    1.47
     2.98 ELEV   700.37  700.37  700.37  700.37  700.37  700.37  700.37  700.37
     3.05 CFS      1.47    1.47    1.47    1.47    1.47    1.47    1.47    1.47
     3.05 ELEV   700.37  700.37  700.37  700.37  700.37  700.37  700.37  700.37
     3.11 CFS      1.47    1.47    1.47    1.47    1.47    1.47    1.47    1.47
     3.11 ELEV   700.37  700.37  700.37  700.37  700.37  700.37  700.37  700.37
     3.18 CFS      1.47    1.47    1.47
     3.18 ELEV   700.37  700.37  700.37

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                    .01 WATERSHED INCHES;       4 CFS-HRS;        .3 ACRE-FEET.

 --- STRUCTURE  7, ALTERNATE  0, STORM  1, HYDROGRAPH ADDED TO READHD FILE ---


OPERATION RUNOFF    XSECTION  49

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .14                          2.5                       (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                    .23 WATERSHED INCHES;       0 CFS-HRS;        .0 ACRE-FEET.


OPERATION ADDHYD    XSECTION  50

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .14                          2.8                       (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                    .01 WATERSHED INCHES;       4 CFS-HRS;        .4 ACRE-FEET.


OPERATION RESVOR    STRUCTURE 39

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                    .00 WATERSHED INCHES;       1 CFS-HRS;        .0 ACRE-FEET.


EXECUTIVE CONTROL  ENDCMP    COMPUTATIONS COMPLETED FOR PASS   1
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EXECUTIVE CONTROL  COMPUT    FROM XSECTION  91  TO STRUCTURE 39           10-MIN
    STARTING TIME =   .00       RAIN DEPTH =  1.67       RAIN DURATION =   .17
    ANT. RUNOFF COND. = 2       MAIN TIME INCREMENT =   .008 HOURS
    ALTERNATE NO. = 0           STORM NO. = 2            RAIN TABLE NO. = 1


OPERATION RUNOFF    XSECTION  91

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .60                         20.2                       (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                    .23 WATERSHED INCHES;      14 CFS-HRS;       1.1 ACRE-FEET.


OPERATION RUNOFF    XSECTION  92

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .69                         38.3                       (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                    .37 WATERSHED INCHES;      31 CFS-HRS;       2.6 ACRE-FEET.


OPERATION ADDHYD    XSECTION  93

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .64                         57.8                       (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                    .31 WATERSHED INCHES;      45 CFS-HRS;       3.7 ACRE-FEET.


OPERATION RUNOFF    XSECTION  94

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .66                         1.0 *                      (RUNOFF)
                                       * FIRST POINT OF FLAT PEAK

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                    .06 WATERSHED INCHES;       1 CFS-HRS;        .1 ACRE-FEET.


OPERATION RESVOR    STRUCTURE 11

                    HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM = 2
     HRS      MAIN TIME INCREMENT =  .008 hr,       DRAINAGE AREA =    .02 SQ.MI.
      .14 CFS       .00     .01     .01     .01     .01     .02     .02     .02
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TR20 ------------------------------------------------------------------------ SCS -
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      .14 ELEV   737.50  737.51  737.51  737.51  737.51  737.52  737.52  737.52
      .21 CFS       .03     .03     .04     .04     .05     .05     .06     .07
      .21 ELEV   737.53  737.53  737.54  737.54  737.55  737.55  737.56  737.57
      .27 CFS       .08     .09     .09     .10     .11     .13     .14     .15
      .27 ELEV   737.58  737.59  737.59  737.60  737.61  737.63  737.64  737.65
      .34 CFS       .16     .17     .19     .20     .22     .23     .25     .27
      .34 ELEV   737.66  737.67  737.69  737.70  737.72  737.73  737.75  737.77
      .40 CFS       .28     .30     .32     .34     .36     .38     .40     .42
      .40 ELEV   737.78  737.80  737.82  737.84  737.86  737.88  737.90  737.92
      .46 CFS       .44     .46     .48     .50     .50     .51     .51     .51
      .46 ELEV   737.94  737.96  737.98  738.00  738.01  738.01  738.02  738.03
      .53 CFS       .52     .52     .53     .53     .53     .54     .54     .55
      .53 ELEV   738.04  738.04  738.05  738.06  738.07  738.08  738.09  738.09
      .59 CFS       .55     .56     .56     .56     .57     .57     .58     .58
      .59 ELEV   738.10  738.11  738.12  738.13  738.14  738.15  738.16  738.16
      .66 CFS       .59     .59     .60     .60     .60     .61     .61     .62
      .66 ELEV   738.17  738.18  738.19  738.20  738.21  738.22  738.22  738.23
      .72 CFS       .62     .62     .63     .63     .63     .64     .64     .64
      .72 ELEV   738.24  738.25  738.25  738.26  738.27  738.27  738.28  738.29
      .78 CFS       .65     .65     .65     .65     .66     .66     .66     .66
      .78 ELEV   738.29  738.30  738.30  738.31  738.31  738.32  738.32  738.33
      .85 CFS       .67     .67     .67     .67     .67     .67     .67     .68
      .85 ELEV   738.33  738.34  738.34  738.34  738.34  738.35  738.35  738.35
      .91 CFS       .68     .68     .68     .68     .68     .68     .68     .68
      .91 ELEV   738.35  738.35  738.35  738.36  738.36  738.36  738.36  738.36
      .98 CFS       .68     .68     .68     .67     .67     .67     .67     .67
      .98 ELEV   738.35  738.35  738.35  738.35  738.35  738.35  738.34  738.34
     1.04 CFS       .67     .67     .67     .66     .66     .66     .66     .65
     1.04 ELEV   738.34  738.33  738.33  738.33  738.32  738.32  738.31  738.31
     1.10 CFS       .65     .65     .65     .65     .64     .64     .64     .63
     1.10 ELEV   738.31  738.30  738.30  738.29  738.29  738.28  738.28  738.27
     1.17 CFS       .63     .63     .63     .62     .62     .62     .61     .61
     1.17 ELEV   738.26  738.26  738.25  738.25  738.24  738.23  738.23  738.22
     1.23 CFS       .61     .61     .60     .60     .60     .59     .59     .59
     1.23 ELEV   738.22  738.21  738.20  738.20  738.19  738.18  738.18  738.17
     1.30 CFS       .58     .58     .58     .57     .57     .57     .56     .56
     1.30 ELEV   738.17  738.16  738.15  738.15  738.14  738.13  738.12  738.12
     1.36 CFS       .56     .55     .55     .55     .54     .54     .53     .53
     1.36 ELEV   738.11  738.10  738.10  738.09  738.08  738.08  738.07  738.06
     1.42 CFS       .53     .52     .52     .52     .51     .51     .51     .50
     1.42 ELEV   738.06  738.05  738.04  738.03  738.03  738.02  738.01  738.01
     1.49 CFS       .50     .48     .45     .43     .41     .39     .38     .36
     1.49 ELEV   738.00  737.98  737.95  737.93  737.91  737.89  737.88  737.86
     1.55 CFS       .34     .33     .31     .30     .29     .28     .26     .25
     1.55 ELEV   737.84  737.83  737.81  737.80  737.79  737.78  737.76  737.75
     1.62 CFS       .24     .23     .22     .21     .21     .20     .19     .18
     1.62 ELEV   737.74  737.73  737.72  737.71  737.71  737.70  737.69  737.68
     1.68 CFS       .18     .17     .16     .16     .15     .15     .14     .14
     1.68 ELEV   737.68  737.67  737.66  737.66  737.65  737.65  737.64  737.64
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TR20 ------------------------------------------------------------------------ SCS -
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     1.74 CFS       .13     .13     .12     .12     .11     .11     .11     .10
     1.74 ELEV   737.63  737.63  737.62  737.62  737.61  737.61  737.61  737.60
     1.81 CFS       .10     .10     .09     .09     .09     .09     .08     .08
     1.81 ELEV   737.60  737.60  737.59  737.59  737.59  737.59  737.58  737.58
     1.87 CFS       .08     .08     .07     .07     .07     .07     .07     .06
     1.87 ELEV   737.58  737.58  737.57  737.57  737.57  737.57  737.57  737.56
     1.94 CFS       .06     .06     .06     .06     .05     .05     .05     .05
     1.94 ELEV   737.56  737.56  737.56  737.56  737.55  737.55  737.55  737.55
     2.00 CFS       .05     .05     .05     .05     .04     .04     .04     .04
     2.00 ELEV   737.55  737.55  737.55  737.55  737.54  737.54  737.54  737.54
     2.06 CFS       .04     .04     .04     .04     .04     .03     .03     .03
     2.06 ELEV   737.54  737.54  737.54  737.54  737.54  737.53  737.53  737.53
     2.13 CFS       .03     .03     .03     .03     .03     .03     .03     .03
     2.13 ELEV   737.53  737.53  737.53  737.53  737.53  737.53  737.53  737.53
     2.19 CFS       .03     .03     .03     .02     .02     .02     .02     .02
     2.19 ELEV   737.53  737.53  737.53  737.52  737.52  737.52  737.52  737.52
     2.26 CFS       .02     .02     .02     .02     .02     .02     .02     .02
     2.26 ELEV   737.52  737.52  737.52  737.52  737.52  737.52  737.52  737.52
     2.32 CFS       .02     .02     .02     .02     .02     .02     .02     .01
     2.32 ELEV   737.52  737.52  737.52  737.52  737.52  737.52  737.52  737.52
     2.38 CFS       .01     .01     .01     .01     .01     .01     .01     .01
     2.38 ELEV   737.51  737.51  737.51  737.51  737.51  737.51  737.51  737.51
     2.45 CFS       .01     .01     .01     .01     .01     .01     .01     .01
     2.45 ELEV   737.51  737.51  737.51  737.51  737.51  737.51  737.51  737.51
     2.51 CFS       .01     .01     .01     .01     .01     .01     .01     .01
     2.51 ELEV   737.51  737.51  737.51  737.51  737.51  737.51  737.51  737.51
     2.58 CFS       .01     .01     .01     .01     .01     .01     .01     .01
     2.58 ELEV   737.51  737.51  737.51  737.51  737.51  737.51  737.51  737.51
     2.64 CFS       .01     .01     .00
     2.64 ELEV   737.51  737.51  737.50

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                    .06 WATERSHED INCHES;       1 CFS-HRS;        .1 ACRE-FEET.

    DURATION(HRS)   2      1
    FLOW(CFS)       3      0

 --- STRUCTURE 11, ALTERNATE  0, STORM  2, HYDROGRAPH ADDED TO READHD FILE ---


OPERATION RUNOFF    XSECTION  96

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .14                          44.1                       (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  1.45 WATERSHED INCHES;       8 CFS-HRS;        .6 ACRE-FEET.
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TR20 ------------------------------------------------------------------------ SCS -
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OPERATION ADDHYD    XSECTION  97

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .15                          47.1                        (NULL)
         .64                          58.4                        (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .33 WATERSHED INCHES;      54 CFS-HRS;       4.4 ACRE-FEET.


OPERATION RESVOR    STRUCTURE  6

                  HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM = 2
     HRS      MAIN TIME INCREMENT =  .008 hr,      DRAINAGE AREA =    .28 SQ.MI.
      .02 CFS      .00     .01     .02     .05     .11     .19     .31     .47
      .02 ELEV   707.00  707.00  707.00  707.01  707.01  707.02  707.04  707.06
      .08 CFS      .69     .96    1.29    1.66    2.09    2.55    3.03    3.54
      .08 ELEV   707.08  707.11  707.15  707.20  707.25  707.30  707.36  707.42
      .14 CFS     4.06    4.59    5.11    5.62    6.12    6.60    7.06    7.50
      .14 ELEV   707.48  707.55  707.61  707.67  707.73  707.79  707.84  707.89
      .21 CFS     7.92    8.32    8.76    9.20    9.61    9.99   10.34   10.66
      .21 ELEV   707.94  707.99  708.03  708.07  708.10  708.14  708.17  708.19
      .27 CFS    10.95   11.21   11.45   11.68   11.88   12.07   12.25   12.42
      .27 ELEV   708.22  708.24  708.26  708.28  708.30  708.32  708.33  708.35
      .34 CFS    12.58   12.74   12.89   13.04   13.20   13.35   13.51   13.67
      .34 ELEV   708.36  708.37  708.39  708.40  708.41  708.43  708.44  708.45
      .40 CFS    13.83   14.00   14.17   14.34   14.52   14.71   14.90   15.09
      .40 ELEV   708.47  708.48  708.50  708.51  708.53  708.54  708.56  708.58
      .46 CFS    15.29   15.50   15.71   15.92   16.14   16.36   16.58   16.81
      .46 ELEV   708.59  708.61  708.63  708.65  708.67  708.69  708.71  708.72
      .53 CFS    17.04   17.27   17.51   17.75   17.99   18.23   18.47   18.71
      .53 ELEV   708.74  708.77  708.79  708.81  708.83  708.85  708.87  708.89
      .59 CFS    18.96   19.20   19.45   19.69   19.93   20.25   20.60   20.94
      .59 ELEV   708.91  708.93  708.95  708.97  708.99  709.01  709.03  709.05
      .66 CFS    21.28   21.61   21.94   22.27   22.59   22.91   23.23   23.53
      .66 ELEV   709.07  709.09  709.11  709.13  709.14  709.16  709.18  709.20
      .72 CFS    23.84   24.13   24.42   24.71   24.99   25.26   25.52   25.78
      .72 ELEV   709.21  709.23  709.25  709.26  709.28  709.29  709.31  709.32
      .78 CFS    26.03   26.27   26.51   26.74   26.96   27.17   27.37   27.57
      .78 ELEV   709.33  709.35  709.36  709.37  709.39  709.40  709.41  709.42
      .85 CFS    27.76   27.94   28.11   28.27   28.43   28.58   28.72   28.85
      .85 ELEV   709.43  709.44  709.45  709.46  709.47  709.48  709.48  709.49
      .91 CFS    28.97   29.09   29.19   29.29   29.38   29.47   29.54   29.61
      .91 ELEV   709.50  709.50  709.51  709.52  709.52  709.53  709.53  709.53
      .98 CFS    29.67   29.72   29.77   29.81   29.83   29.86   29.87   29.88
      .98 ELEV   709.54  709.54  709.54  709.54  709.55  709.55  709.55  709.55
     1.04 CFS    29.88   29.88   29.87   29.85   29.83   29.80   29.76   29.73
     1.04 ELEV   709.55  709.55  709.55  709.55  709.55  709.54  709.54  709.54
     1.10 CFS    29.68   29.63   29.58   29.52   29.46   29.39   29.32   29.24
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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
08/14/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
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     1.10 ELEV   709.54  709.54  709.53  709.53  709.53  709.52  709.52  709.51
     1.17 CFS     29.16   29.08   29.00   28.91   28.82   28.73   28.63   28.53
     1.17 ELEV   709.51  709.50  709.50  709.50  709.49  709.48  709.48  709.47
     1.23 CFS     28.43   28.32   28.22   28.11   28.00   27.88   27.77   27.65
     1.23 ELEV   709.47  709.46  709.46  709.45  709.44  709.44  709.43  709.42
     1.30 CFS     27.53   27.41   27.29   27.16   27.04   26.91   26.78   26.65
     1.30 ELEV   709.42  709.41  709.40  709.40  709.39  709.38  709.38  709.37
     1.36 CFS     26.52   26.39   26.26   26.13   25.99   25.86   25.72   25.58
     1.36 ELEV   709.36  709.36  709.35  709.34  709.33  709.33  709.32  709.31
     1.42 CFS     25.45   25.31   25.17   25.03   24.89   24.75   24.60   24.46
     1.42 ELEV   709.30  709.29  709.29  709.28  709.27  709.26  709.26  709.25
     1.49 CFS     24.32   24.18   24.03   23.89   23.74   23.60   23.45   23.31
     1.49 ELEV   709.24  709.23  709.22  709.22  709.21  709.20  709.19  709.18
     1.55 CFS     23.16   23.01   22.87   22.72   22.58   22.43   22.28   22.14
     1.55 ELEV   709.18  709.17  709.16  709.15  709.14  709.13  709.13  709.12
     1.62 CFS     21.99   21.84   21.70   21.55   21.41   21.26   21.11   20.97
     1.62 ELEV   709.11  709.10  709.09  709.09  709.08  709.07  709.06  709.05
     1.68 CFS     20.82   20.68   20.54   20.39   20.25   20.11   19.97   19.87
     1.68 ELEV   709.05  709.04  709.03  709.02  709.01  709.01  709.00  708.99
     1.74 CFS     19.77   19.68   19.58   19.48   19.38   19.28   19.18   19.08
     1.74 ELEV   708.98  708.97  708.96  708.95  708.95  708.94  708.93  708.92
     1.81 CFS     18.98   18.88   18.78   18.69   18.59   18.49   18.39   18.29
     1.81 ELEV   708.91  708.90  708.90  708.89  708.88  708.87  708.86  708.85
     1.87 CFS     18.20   18.10   18.00   17.91   17.81   17.71   17.62   17.52
     1.87 ELEV   708.84  708.84  708.83  708.82  708.81  708.80  708.79  708.79
     1.94 CFS     17.43   17.33   17.23   17.14   17.05   16.95   16.86   16.76
     1.94 ELEV   708.78  708.77  708.76  708.75  708.75  708.74  708.73  708.72
     2.00 CFS     16.67   16.58   16.48   16.39   16.30   16.21   16.12   16.03
     2.00 ELEV   708.71  708.70  708.70  708.69  708.68  708.67  708.67  708.66
     2.06 CFS     15.94   15.85   15.76   15.67   15.58   15.49   15.40   15.31
     2.06 ELEV   708.65  708.64  708.63  708.63  708.62  708.61  708.60  708.60
     2.13 CFS     15.22   15.13   15.05   14.96   14.87   14.79   14.70   14.62
     2.13 ELEV   708.59  708.58  708.57  708.57  708.56  708.55  708.54  708.54
     2.19 CFS     14.53   14.45   14.36   14.28   14.20   14.11   14.03   13.95
     2.19 ELEV   708.53  708.52  708.51  708.51  708.50  708.49  708.49  708.48
     2.26 CFS     13.87   13.79   13.70   13.62   13.54   13.46   13.38   13.30
     2.26 ELEV   708.47  708.46  708.46  708.45  708.44  708.44  708.43  708.42
     2.32 CFS     13.23   13.15   13.07   12.99   12.91   12.84   12.76   12.68
     2.32 ELEV   708.42  708.41  708.40  708.40  708.39  708.38  708.38  708.37
     2.38 CFS     12.61   12.53   12.46   12.38   12.31   12.24   12.16   12.09
     2.38 ELEV   708.36  708.36  708.35  708.34  708.34  708.33  708.32  708.32
     2.45 CFS     12.02   11.94   11.87   11.80   11.73   11.66   11.59   11.52
     2.45 ELEV   708.31  708.31  708.30  708.29  708.29  708.28  708.27  708.27
     2.51 CFS     11.45   11.38   11.31   11.24   11.17   11.10   11.04   10.97
     2.51 ELEV   708.26  708.26  708.25  708.24  708.24  708.23  708.23  708.22
     2.58 CFS     10.90   10.84   10.77   10.70   10.64   10.57   10.51   10.44
     2.58 ELEV   708.22  708.21  708.20  708.20  708.19  708.19  708.18  708.18
     2.64 CFS     10.38   10.32   10.25   10.19   10.13   10.06   10.00    9.94
     2.64 ELEV   708.17  708.17  708.16  708.15  708.15  708.14  708.14  708.13
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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
08/14/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
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     2.70 CFS      9.88    9.82    9.76    9.70    9.64    9.58    9.52    9.46
     2.70 ELEV   708.13  708.12  708.12  708.11  708.11  708.10  708.10  708.09
     2.77 CFS      9.40    9.34    9.29    9.23    9.17    9.12    9.06    9.00
     2.77 ELEV   708.09  708.08  708.08  708.07  708.07  708.06  708.06  708.05
     2.83 CFS      8.95    8.89    8.84    8.78    8.73    8.67    8.62    8.57
     2.83 ELEV   708.05  708.04  708.04  708.03  708.03  708.02  708.02  708.01
     2.90 CFS      8.51    8.46    8.41    8.36    8.32    8.28    8.24    8.20
     2.90 ELEV   708.01  708.01  708.00  708.00  707.99  707.99  707.98  707.98
     2.96 CFS      8.16    8.12    8.08    8.04    8.00    7.96    7.92    7.88
     2.96 ELEV   707.97  707.97  707.96  707.96  707.95  707.95  707.94  707.94
     3.02 CFS      7.84    7.80    7.76    7.73    7.69    7.65    7.61    7.57
     3.02 ELEV   707.93  707.93  707.92  707.92  707.92  707.91  707.91  707.90
     3.09 CFS      7.54    7.50    7.46    7.42    7.39    7.35    7.31    7.28
     3.09 ELEV   707.90  707.89  707.89  707.88  707.88  707.87  707.87  707.87
     3.15 CFS      7.24    7.20    7.17    7.13    7.10    7.06
     3.15 ELEV   707.86  707.86  707.85  707.85  707.84  707.84

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                    .30 WATERSHED INCHES;      53 CFS-HRS;       4.4 ACRE-FEET.

    DURATION(HRS)   2      3
    FLOW(CFS)      13      7 TRUNCATED

 --- STRUCTURE  6, ALTERNATE  0, STORM  2, HYDROGRAPH ADDED TO READHD FILE ---


OPERATION RUNOFF    XSECTION  99

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .15                          361.8                       (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                    .66 WATERSHED INCHES;      65 CFS-HRS;       5.3 ACRE-FEET.


OPERATION ADDHYD    XSECTION  90

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .16                          366.6                       (NULL)
        1.04                           29.9                       (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                    .43 WATERSHED INCHES;     118 CFS-HRS;       9.8 ACRE-FEET.


OPERATION RESVOR    STRUCTURE  7

                    HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM = 2
     HRS      MAIN TIME INCREMENT =  .008 hr,      DRAINAGE AREA =    .54 SQ.MI.
      .03 CFS       .00     .01     .02     .03     .05     .08     .13     .18
      .03 ELEV   700.00  700.00  700.00  700.01  700.01  700.02  700.03  700.05
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TR20 ------------------------------------------------------------------- SCS -
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      .10 CFS       .25     .34     .43     .54     .66     .79     .92    1.06
      .10 ELEV   700.06  700.08  700.11  700.13  700.16  700.20  700.23  700.27
      .16 CFS      1.21    1.36    1.51    1.65    1.80    1.95    2.10    2.24
      .16 ELEV   700.30  700.34  700.38  700.41  700.45  700.49  700.52  700.56
      .22 CFS      2.38    2.51    2.64    2.77    2.88    3.00    3.10    3.21
      .22 ELEV   700.59  700.63  700.66  700.69  700.72  700.75  700.78  700.80
      .29 CFS      3.30    3.39    3.47    3.55    3.62    3.69    3.75    3.81
      .29 ELEV   700.83  700.85  700.87  700.89  700.91  700.92  700.94  700.95
      .35 CFS      3.87    3.92    3.97    4.01    4.06    4.11    4.16    4.20
      .35 ELEV   700.97  700.98  700.99  701.00  701.01  701.01  701.02  701.03
      .42 CFS      4.24    4.28    4.31    4.34    4.37    4.40    4.43    4.45
      .42 ELEV   701.03  701.03  701.04  701.04  701.05  701.05  701.05  701.06
      .48 CFS      4.48    4.50    4.52    4.54    4.56    4.57    4.59    4.61
      .48 ELEV   701.06  701.06  701.06  701.07  701.07  701.07  701.07  701.08
      .54 CFS      4.62    4.63    4.65    4.66    4.67    4.69    4.70    4.71
      .54 ELEV   701.08  701.08  701.08  701.08  701.08  701.09  701.09  701.09
      .61 CFS      4.72    4.73    4.74    4.75    4.76    4.77    4.78    4.79
      .61 ELEV   701.09  701.09  701.09  701.09  701.10  701.10  701.10  701.10
      .67 CFS      4.80    4.81    4.82    4.83    4.84    4.85    4.86    4.87
      .67 ELEV   701.10  701.10  701.10  701.10  701.11  701.11  701.11  701.11
      .74 CFS      4.88    4.89    4.90    4.91    4.92    4.93    4.94    4.95
      .74 ELEV   701.11  701.11  701.11  701.11  701.11  701.12  701.12  701.12
      .80 CFS      4.96    4.97    4.97    4.98    4.99    5.00    5.01    5.02
      .80 ELEV   701.12  701.12  701.12  701.12  701.12  701.13  701.13  701.13
      .86 CFS      5.03    5.04    5.05    5.06    5.07    5.08    5.09    5.10
      .86 ELEV   701.13  701.13  701.13  701.13  701.13  701.14  701.14  701.14
      .93 CFS      5.11    5.12    5.13    5.14    5.15    5.16    5.17    5.18
      .93 ELEV   701.14  701.14  701.14  701.14  701.14  701.14  701.15  701.15
      .99 CFS      5.19    5.20    5.21    5.22    5.23    5.24    5.25    5.25
      .99 ELEV   701.15  701.15  701.15  701.15  701.15  701.15  701.16  701.16
     1.06 CFS      5.26    5.27    5.28    5.29    5.30    5.31    5.32    5.33
     1.06 ELEV   701.16  701.16  701.16  701.16  701.16  701.16  701.17  701.17
     1.12 CFS      5.34    5.35    5.36    5.37    5.38    5.39    5.40    5.41
     1.12 ELEV   701.17  701.17  701.17  701.17  701.17  701.17  701.17  701.18
     1.18 CFS      5.42    5.43    5.43    5.44    5.45    5.46    5.47    5.48
     1.18 ELEV   701.18  701.18  701.18  701.18  701.18  701.18  701.18  701.18
     1.25 CFS      5.49    5.50    5.51    5.52    5.52    5.53    5.54    5.55
     1.25 ELEV   701.19  701.19  701.19  701.19  701.19  701.19  701.19  701.19
     1.31 CFS      5.56    5.57    5.58    5.58    5.59    5.60    5.61    5.62
     1.31 ELEV   701.19  701.20  701.20  701.20  701.20  701.20  701.20  701.20
     1.38 CFS      5.63    5.63    5.64    5.65    5.66    5.66    5.67    5.68
     1.38 ELEV   701.20  701.20  701.21  701.21  701.21  701.21  701.21  701.21
     1.44 CFS      5.69    5.70    5.70    5.71    5.72    5.73    5.73    5.74
     1.44 ELEV   701.21  701.21  701.21  701.21  701.21  701.22  701.22  701.22
     1.50 CFS      5.75    5.75    5.76    5.77    5.78    5.78    5.79    5.80
     1.50 ELEV   701.22  701.22  701.22  701.22  701.22  701.22  701.22  701.22
     1.57 CFS      5.80    5.81    5.82    5.82    5.83    5.84    5.84    5.85
     1.57 ELEV   701.23  701.23  701.23  701.23  701.23  701.23  701.23  701.23
     1.63 CFS      5.85    5.86    5.87    5.87    5.88    5.88    5.89    5.90
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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
08/14/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
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1.63	ELEV	701.23	701.23	701.23	701.23	701.23	701.24	701.24	701.24
1.70	CFS	5.90	5.91	5.91	5.92	5.92	5.93	5.94	5.94
1.70	ELEV	701.24	701.24	701.24	701.24	701.24	701.24	701.24	701.24
1.76	CFS	5.95	5.95	5.96	5.96	5.97	5.97	5.98	5.98
1.76	ELEV	701.24	701.24	701.24	701.25	701.25	701.25	701.25	701.25
1.82	CFS	5.99	5.99	6.00	6.00	6.01	6.01	6.02	6.02
1.82	ELEV	701.25	701.25	701.25	701.25	701.25	701.25	701.25	701.25
1.89	CFS	6.03	6.03	6.04	6.04	6.04	6.05	6.05	6.06
1.89	ELEV	701.25	701.25	701.25	701.26	701.26	701.26	701.26	701.26
1.95	CFS	6.06	6.07	6.07	6.08	6.08	6.08	6.09	6.09
1.95	ELEV	701.26	701.26	701.26	701.26	701.26	701.26	701.26	701.26
2.02	CFS	6.10	6.10	6.10	6.11	6.11	6.12	6.12	6.12
2.02	ELEV	701.26	701.26	701.26	701.26	701.26	701.26	701.27	701.27
2.08	CFS	6.13	6.13	6.14	6.14	6.14	6.15	6.15	6.15
2.08	ELEV	701.27	701.27	701.27	701.27	701.27	701.27	701.27	701.27
2.14	CFS	6.16	6.16	6.16	6.17	6.17	6.17	6.18	6.18
2.14	ELEV	701.27	701.27	701.27	701.27	701.27	701.27	701.27	701.27
2.21	CFS	6.18	6.19	6.19	6.19	6.20	6.20	6.20	6.21
2.21	ELEV	701.27	701.27	701.27	701.27	701.27	701.27	701.28	701.28
2.27	CFS	6.21	6.21	6.21	6.22	6.22	6.22	6.23	6.23
2.27	ELEV	701.28	701.28	701.28	701.28	701.28	701.28	701.28	701.28
2.34	CFS	6.23	6.23	6.24	6.24	6.24	6.24	6.25	6.25
2.34	ELEV	701.28	701.28	701.28	701.28	701.28	701.28	701.28	701.28
2.40	CFS	6.25	6.25	6.26	6.26	6.26	6.26	6.27	6.27
2.40	ELEV	701.28	701.28	701.28	701.28	701.28	701.28	701.28	701.28
2.46	CFS	6.27	6.27	6.27	6.28	6.28	6.28	6.28	6.28
2.46	ELEV	701.28	701.28	701.28	701.28	701.28	701.29	701.29	701.29
2.53	CFS	6.29	6.29	6.29	6.29	6.29	6.30	6.30	6.30
2.53	ELEV	701.29	701.29	701.29	701.29	701.29	701.29	701.29	701.29
2.59	CFS	6.30	6.30	6.30	6.31	6.31	6.31	6.31	6.31
2.59	ELEV	701.29	701.29	701.29	701.29	701.29	701.29	701.29	701.29
2.66	CFS	6.31	6.32	6.32	6.32	6.32	6.32	6.32	6.32
2.66	ELEV	701.29	701.29	701.29	701.29	701.29	701.29	701.29	701.29
2.72	CFS	6.33	6.33	6.33	6.33	6.33	6.33	6.33	6.33
2.72	ELEV	701.29	701.29	701.29	701.29	701.29	701.29	701.29	701.29
2.78	CFS	6.34	6.34	6.34	6.34	6.34	6.34	6.34	6.34
2.78	ELEV	701.29	701.29	701.29	701.29	701.29	701.29	701.29	701.29
2.85	CFS	6.34	6.35	6.35	6.35	6.35	6.35	6.35	6.35
2.85	ELEV	701.29	701.29	701.29	701.29	701.29	701.29	701.29	701.29
2.91	CFS	6.35	6.35	6.35	6.35	6.35	6.36	6.36	6.36
2.91	ELEV	701.29	701.29	701.29	701.29	701.29	701.29	701.29	701.29
2.98	CFS	6.36	6.36	6.36	6.36	6.36	6.36	6.36	6.36
2.98	ELEV	701.29	701.29	701.29	701.29	701.30	701.30	701.30	701.30
3.04	CFS	6.36	6.36	6.36	6.36	6.36	6.37	6.37	6.37
3.04	ELEV	701.30	701.30	701.30	701.30	701.30	701.30	701.30	701.30
3.10	CFS	6.37	6.37	6.37	6.37	6.37	6.37	6.37	6.37
3.10	ELEV	701.30	701.30	701.30	701.30	701.30	701.30	701.30	701.30
3.17	CFS	6.37	6.37	6.37	6.37				
3.17	ELEV	701.30	701.30	701.30	701.30				


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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
08/14/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
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    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .05 WATERSHED INCHES;      17 CFS-HRS;       1.4 ACRE-FEET.

 --- STRUCTURE  7, ALTERNATE  0, STORM  2, HYDROGRAPH ADDED TO READHD FILE ---


OPERATION RUNOFF    XSECTION  49

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .15                          6.4                        (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .76 WATERSHED INCHES;       1 CFS-HRS;        .1 ACRE-FEET.


OPERATION ADDHYD    XSECTION  50

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .17                          7.5                        (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .05 WATERSHED INCHES;      18 CFS-HRS;       1.5 ACRE-FEET.


OPERATION RESVOR    STRUCTURE 39

                  HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM = 2
     HRS      MAIN TIME INCREMENT =   .008 hr,      DRAINAGE AREA =    .61 SQ.MI.
```

.06	CFS	.00	.01	.01	.02	.03	.04	.05	.06
.06	ELEV	693.19	693.19	693.19	693.20	693.20	693.20	693.21	693.21
.12	CFS	.07	.09	.11	.12	.14	.16	.17	.19
.12	ELEV	693.22	693.22	693.23	693.24	693.24	693.25	693.26	693.26
.18	CFS	.20	.22	.23	.25	.26	.27	.28	.30
.18	ELEV	693.27	693.27	693.28	693.28	693.29	693.29	693.30	693.30
.25	CFS	.31	.32	.33	.33	.34	.35	.36	.36
.25	ELEV	693.31	693.31	693.31	693.32	693.32	693.32	693.33	693.33
.31	CFS	.37	.38	.38	.39	.39	.40	.40	.41
.31	ELEV	693.33	693.33	693.34	693.34	693.34	693.34	693.34	693.35
.38	CFS	.41	.42	.42	.43	.43	.44	.44	.45
.38	ELEV	693.35	693.35	693.35	693.35	693.35	693.36	693.36	693.36
.44	CFS	.45	.46	.46	.47	.47	.48	.48	.49
.44	ELEV	693.36	693.36	693.37	693.37	693.37	693.37	693.37	693.38
.50	CFS	.49	.50	.50	.51	.51	.52	.52	.53
.50	ELEV	693.38	693.38	693.38	693.38	693.39	693.39	693.39	693.39
.57	CFS	.53	.54	.54	.55	.55	.56	.56	.57
.57	ELEV	693.39	693.40	693.40	693.40	693.40	693.40	693.41	693.41
.63	CFS	.57	.58	.58	.59	.59	.60	.60	.61
.63	ELEV	693.41	693.41	693.41	693.41	693.42	693.42	693.42	693.42
.70	CFS	.61	.61	.62	.62	.63	.63	.64	.64
.70	ELEV	693.42	693.42	693.43	693.43	693.43	693.43	693.43	693.43

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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
08/14/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
16:04:24                    PASS   2   JOB NO.   1                     PAGE  17

      .76 CFS      .64     .65     .65     .66     .66     .66     .67     .67
      .76 ELEV   693.44  693.44  693.44  693.44  693.44  693.44  693.44  693.45
      .82 CFS      .67     .68     .68     .68     .69     .69     .69     .70
      .82 ELEV   693.45  693.45  693.45  693.45  693.45  693.45  693.45  693.46
      .89 CFS      .70     .70     .70     .71     .71     .71     .72     .72
      .89 ELEV   693.46  693.46  693.46  693.46  693.46  693.46  693.46  693.46
      .95 CFS      .72     .72     .73     .73     .73     .73     .74     .74
      .95 ELEV   693.47  693.47  693.47  693.47  693.47  693.47  693.47  693.47
     1.02 CFS      .74     .74     .75     .75     .75     .75     .76     .76
     1.02 ELEV   693.47  693.47  693.48  693.48  693.48  693.48  693.48  693.48
     1.08 CFS      .76     .76     .76     .77     .77     .77     .77     .77
     1.08 ELEV   693.48  693.48  693.48  693.48  693.48  693.48  693.49  693.49
     1.14 CFS      .78     .78     .78     .78     .78     .79     .79     .79
     1.14 ELEV   693.49  693.49  693.49  693.49  693.49  693.49  693.49  693.49
     1.21 CFS      .79     .79     .80     .80     .80     .80     .80     .81
     1.21 ELEV   693.49  693.49  693.49  693.50  693.50  693.50  693.50  693.50
     1.27 CFS      .81     .81     .81     .81     .82     .82     .82     .82
     1.27 ELEV   693.50  693.50  693.50  693.50  693.50  693.50  693.50  693.50
     1.34 CFS      .82     .82     .83     .83     .83     .83     .83     .84
     1.34 ELEV   693.50  693.51  693.51  693.51  693.51  693.51  693.51  693.51
     1.40 CFS      .84     .84     .84     .84     .84     .85     .85     .85
     1.40 ELEV   693.51  693.51  693.51  693.51  693.51  693.51  693.51  693.51
     1.46 CFS      .85     .85     .85     .86     .86     .86     .86     .86
     1.46 ELEV   693.52  693.52  693.52  693.52  693.52  693.52  693.52  693.52
     1.53 CFS      .86     .87     .87     .87     .87     .87     .88     .88
     1.53 ELEV   693.52  693.52  693.52  693.52  693.52  693.52  693.52  693.53
     1.59 CFS      .88     .88     .88     .88     .89     .89     .89     .89
     1.59 ELEV   693.53  693.53  693.53  693.53  693.53  693.53  693.53  693.53
     1.66 CFS      .89     .89     .90     .90     .90     .90     .90     .90
     1.66 ELEV   693.53  693.53  693.53  693.53  693.53  693.53  693.53  693.54
     1.72 CFS      .91     .91     .91     .91     .91     .91     .92     .92
     1.72 ELEV   693.54  693.54  693.54  693.54  693.54  693.54  693.54  693.54
     1.78 CFS      .92     .92     .92     .92     .93     .93     .93     .93
     1.78 ELEV   693.54  693.54  693.54  693.54  693.54  693.54  693.54  693.55
     1.85 CFS      .93     .93     .93     .94     .94     .94     .94     .94
     1.85 ELEV   693.55  693.55  693.55  693.55  693.55  693.55  693.55  693.55
     1.91 CFS      .94     .95     .95     .95     .95     .95     .95     .96
     1.91 ELEV   693.55  693.55  693.55  693.55  693.55  693.55  693.55  693.56
     1.98 CFS      .96     .96     .96     .96     .96     .97     .97     .97
     1.98 ELEV   693.56  693.56  693.56  693.56  693.56  693.56  693.56  693.56
     2.04 CFS      .97     .97     .97     .98     .98     .98     .98     .98
     2.04 ELEV   693.56  693.56  693.56  693.56  693.56  693.56  693.56  693.57
     2.10 CFS      .98     .99     .99     .99     .99     .99     .99    1.00
     2.10 ELEV   693.57  693.57  693.57  693.57  693.57  693.57  693.57  693.57
     2.17 CFS     1.00    1.00    1.00    1.00    1.00    1.01    1.01    1.01
     2.17 ELEV   693.57  693.57  693.57  693.57  693.57  693.57  693.57  693.58
     2.23 CFS     1.01    1.01    1.01    1.02    1.02    1.02    1.02    1.02
     2.23 ELEV   693.58  693.58  693.58  693.58  693.58  693.58  693.58  693.58
     2.30 CFS     1.02    1.03    1.03    1.03    1.03    1.03    1.03    1.04
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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
08/14/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
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     2.30 ELEV   693.58  693.58  693.58  693.58  693.58  693.58  693.58  693.59
     2.36 CFS      1.04    1.04    1.04    1.04    1.04    1.05    1.05    1.05
     2.36 ELEV   693.59  693.59  693.59  693.59  693.59  693.59  693.59  693.59
     2.42 CFS      1.05    1.05    1.05    1.06    1.06    1.06    1.06    1.06
     2.42 ELEV   693.59  693.59  693.59  693.59  693.59  693.59  693.60  693.60
     2.49 CFS      1.06    1.06    1.07    1.07    1.07    1.07    1.07    1.07
     2.49 ELEV   693.60  693.60  693.60  693.60  693.60  693.60  693.60  693.60
     2.55 CFS      1.08    1.08    1.08    1.08    1.08    1.08    1.09    1.09
     2.55 ELEV   693.60  693.60  693.60  693.60  693.60  693.60  693.61  693.61
     2.62 CFS      1.09    1.09    1.09    1.09    1.10    1.10    1.10    1.10
     2.62 ELEV   693.61  693.61  693.61  693.61  693.61  693.61  693.61  693.61
     2.68 CFS      1.10    1.10    1.11    1.11    1.11    1.11    1.11    1.11
     2.68 ELEV   693.61  693.61  693.61  693.61  693.61  693.61  693.62  693.62
     2.74 CFS      1.12    1.12    1.12    1.12    1.12    1.12    1.13    1.13
     2.74 ELEV   693.62  693.62  693.62  693.62  693.62  693.62  693.62  693.62
     2.81 CFS      1.13    1.13    1.13    1.13    1.14    1.14    1.14    1.14
     2.81 ELEV   693.62  693.62  693.62  693.62  693.62  693.62  693.63  693.63
     2.87 CFS      1.14    1.14    1.15    1.15    1.15    1.15    1.15    1.15
     2.87 ELEV   693.63  693.63  693.63  693.63  693.63  693.63  693.63  693.63
     2.94 CFS      1.16    1.16    1.16    1.16    1.16    1.16    1.17    1.17
     2.94 ELEV   693.63  693.63  693.63  693.63  693.63  693.63  693.64  693.64
     3.00 CFS      1.17    1.17    1.17    1.17    1.18    1.18    1.18    1.18
     3.00 ELEV   693.64  693.64  693.64  693.64  693.64  693.64  693.64  693.64
     3.06 CFS      1.18    1.18    1.18    1.19    1.19    1.19    1.19    1.19
     3.06 ELEV   693.64  693.64  693.64  693.64  693.64  693.64  693.65  693.65
     3.13 CFS      1.19    1.20    1.20    1.20    1.20    1.20    1.20    1.21
     3.13 ELEV   693.65  693.65  693.65  693.65  693.65  693.65  693.65  693.65
     3.19 CFS      1.21
     3.19 ELEV   693.65

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                    .01 WATERSHED INCHES;       3 CFS-HRS;        .2 ACRE-FEET.

 --- STRUCTURE 39, ALTERNATE  0, STORM  2, HYDROGRAPH ADDED TO READHD FILE ---


EXECUTIVE CONTROL  ENDCMP    COMPUTATIONS COMPLETED FOR PASS   2


EXECUTIVE CONTROL  COMPUT    FROM XSECTION  91  TO STRUCTURE 39           15-MIN
    STARTING TIME =   .00       RAIN DEPTH =  2.05       RAIN DURATION =   .25
    ANT. RUNOFF COND. = 2       MAIN TIME INCREMENT =   .008 HOURS
    ALTERNATE NO. = 0           STORM NO. = 3            RAIN TABLE NO. = 1


OPERATION RUNOFF    XSECTION  91
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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
08/14/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
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    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .63                         34.7                        (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                   .41 WATERSHED INCHES;      24 CFS-HRS;       2.0 ACRE-FEET.


OPERATION RUNOFF    XSECTION  92

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .71                         60.2                        (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                   .59 WATERSHED INCHES;      49 CFS-HRS;       4.1 ACRE-FEET.


OPERATION ADDHYD    XSECTION  93

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .68                         93.9                        (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                   .52 WATERSHED INCHES;      74 CFS-HRS;       6.1 ACRE-FEET.


OPERATION RUNOFF    XSECTION  94

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .69                          2.6                        (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                   .15 WATERSHED INCHES;       2 CFS-HRS;        .2 ACRE-FEET.


OPERATION RESVOR    STRUCTURE 11

                  HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM = 3
     HRS      MAIN TIME INCREMENT =  .008 hr,      DRAINAGE AREA =    .02 SQ.MI.
      .13 CFS       .00     .01     .01     .01     .01     .02     .02     .03
      .13 ELEV   737.50  737.51  737.51  737.51  737.51  737.52  737.52  737.53
      .19 CFS       .03     .04     .04     .05     .06     .07     .08     .09
      .19 ELEV   737.53  737.54  737.54  737.55  737.56  737.57  737.58  737.59
      .26 CFS       .11     .12     .14     .15     .17     .19     .21     .23
      .26 ELEV   737.61  737.62  737.64  737.65  737.67  737.69  737.71  737.73
      .32 CFS       .25     .28     .30     .33     .36     .39     .42     .45
      .32 ELEV   737.75  737.78  737.80  737.83  737.86  737.89  737.92  737.95
      .38 CFS       .49     .50     .51     .52     .52     .53     .54     .55
      .38 ELEV   737.99  738.01  738.02  738.03  738.04  738.06  738.07  738.09
      .45 CFS       .55     .56     .57     .58     .59     .61     .62     .63
      .45 ELEV   738.11  738.13  738.15  738.17  738.19  738.21  738.23  738.26
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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
08/14/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
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      .51 CFS       .64     .65     .67     .68     .70     .71     .72     .74
      .51 ELEV   738.28  738.31  738.34  738.36  738.39  738.42  738.45  738.48
      .58 CFS       .75     .77     .79     .80     .82     .83     .85     .86
      .58 ELEV   738.51  738.54  738.57  738.60  738.63  738.66  738.70  738.73
      .64 CFS       .88     .90     .91     .93     .94     .96     .97     .99
      .64 ELEV   738.76  738.79  738.82  738.85  738.89  738.92  738.95  738.98
      .70 CFS      1.01    1.05    1.08    1.12    1.15    1.18    1.21    1.24
      .70 ELEV   739.01  739.02  739.04  739.06  739.07  739.09  739.11  739.12
      .77 CFS      1.27    1.30    1.33    1.35    1.38    1.40    1.43    1.45
      .77 ELEV   739.14  739.15  739.16  739.18  739.19  739.20  739.21  739.22
      .83 CFS      1.47    1.49    1.51    1.53    1.54    1.56    1.57    1.59
      .83 ELEV   739.23  739.24  739.25  739.26  739.27  739.28  739.29  739.29
      .90 CFS      1.60    1.61    1.62    1.63    1.64    1.65    1.65    1.66
      .90 ELEV   739.30  739.30  739.31  739.31  739.32  739.32  739.33  739.33
      .96 CFS      1.66    1.66    1.67    1.67    1.67    1.67    1.67    1.67
      .96 ELEV   739.33  739.33  739.33  739.33  739.33  739.33  739.33  739.33
     1.02 CFS      1.66    1.66    1.65    1.65    1.64    1.64    1.63    1.62
     1.02 ELEV   739.33  739.33  739.33  739.32  739.32  739.32  739.31  739.31
     1.09 CFS      1.61    1.60    1.59    1.58    1.57    1.56    1.55    1.54
     1.09 ELEV   739.31  739.30  739.30  739.29  739.29  739.28  739.28  739.27
     1.15 CFS      1.53    1.52    1.50    1.49    1.48    1.46    1.45    1.44
     1.15 ELEV   739.26  739.26  739.25  739.25  739.24  739.23  739.23  739.22
     1.22 CFS      1.42    1.41    1.40    1.38    1.37    1.35    1.34    1.33
     1.22 ELEV   739.21  739.21  739.20  739.19  739.18  739.18  739.17  739.16
     1.28 CFS      1.31    1.30    1.28    1.27    1.25    1.24    1.23    1.21
     1.28 ELEV   739.16  739.15  739.14  739.13  739.13  739.12  739.11  739.11
     1.34 CFS      1.20    1.18    1.17    1.15    1.14    1.13    1.11    1.10
     1.34 ELEV   739.10  739.09  739.08  739.08  739.07  739.06  739.06  739.05
     1.41 CFS      1.08    1.07    1.06    1.04    1.03    1.02    1.00    1.00
     1.41 ELEV   739.04  739.04  739.03  739.02  739.01  739.01  739.00  738.99
     1.47 CFS       .99     .98     .98     .97     .97     .96     .96     .95
     1.47 ELEV   738.98  738.97  738.96  738.94  738.93  738.92  738.91  738.90
     1.54 CFS       .94     .94     .93     .93     .92     .91     .91     .90
     1.54 ELEV   738.89  738.88  738.86  738.85  738.84  738.83  738.82  738.80
     1.60 CFS       .90     .89     .88     .88     .87     .87     .86     .85
     1.60 ELEV   738.79  738.78  738.77  738.76  738.74  738.73  738.72  738.71
     1.66 CFS       .85     .84     .84     .83     .83     .82     .81     .81
     1.66 ELEV   738.70  738.69  738.67  738.66  738.65  738.64  738.63  738.61
     1.73 CFS       .80     .80     .79     .78     .78     .77     .77     .76
     1.73 ELEV   738.60  738.59  738.58  738.57  738.56  738.55  738.53  738.52
     1.79 CFS       .76     .75     .74     .74     .73     .73     .72     .72
     1.79 ELEV   738.51  738.50  738.49  738.48  738.47  738.45  738.44  738.43
     1.86 CFS       .71     .70     .70     .69     .69     .68     .68     .67
     1.86 ELEV   738.42  738.41  738.40  738.39  738.38  738.37  738.36  738.34
     1.92 CFS       .67     .66     .66     .65     .65     .64     .64     .63
     1.92 ELEV   738.33  738.32  738.31  738.30  738.29  738.28  738.27  738.26
     1.98 CFS       .63     .62     .62     .61     .61     .60     .60     .59
     1.98 ELEV   738.25  738.24  738.23  738.22  738.21  738.20  738.19  738.18
     2.05 CFS       .59     .58     .58     .57     .57     .56     .56     .55
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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
08/14/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
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     2.05 ELEV   738.17  738.16  738.15  738.14  738.13  738.12  738.11  738.10
     2.11 CFS       .55     .54     .54     .53     .53     .52     .52     .52
     2.11 ELEV   738.09  738.09  738.08  738.07  738.06  738.05  738.04  738.03
     2.18 CFS       .51     .51     .50     .49     .46     .43     .41     .39
     2.18 ELEV   738.02  738.01  738.01  737.99  737.96  737.93  737.91  737.89
     2.24 CFS       .36     .34     .32     .31     .29     .27     .26     .24
     2.24 ELEV   737.86  737.84  737.82  737.81  737.79  737.77  737.76  737.74
     2.30 CFS       .23     .22     .21     .19     .18     .17     .16     .16
     2.30 ELEV   737.73  737.72  737.71  737.69  737.68  737.67  737.66  737.66
     2.37 CFS       .15     .14     .13     .13     .12     .11     .11     .10
     2.37 ELEV   737.65  737.64  737.63  737.63  737.62  737.61  737.61  737.60
     2.43 CFS       .10     .09     .09     .08     .08     .08     .07     .07
     2.43 ELEV   737.60  737.59  737.59  737.58  737.58  737.58  737.57  737.57
     2.50 CFS       .07     .06     .06     .06     .05     .05     .05     .05
     2.50 ELEV   737.57  737.56  737.56  737.56  737.55  737.55  737.55  737.55
     2.56 CFS       .05     .04     .04     .04     .04     .04     .04     .03
     2.56 ELEV   737.55  737.54  737.54  737.54  737.54  737.54  737.54  737.53
     2.62 CFS       .03     .03     .03     .03     .03     .03     .03     .03
     2.62 ELEV   737.53  737.53  737.53  737.53  737.53  737.53  737.53  737.53
     2.69 CFS       .02     .02     .02     .02     .02     .02     .02     .02
     2.69 ELEV   737.52  737.52  737.52  737.52  737.52  737.52  737.52  737.52
     2.75 CFS       .02     .02     .02     .02     .01     .01     .01     .01
     2.75 ELEV   737.52  737.52  737.52  737.52  737.51  737.51  737.51  737.51
     2.82 CFS       .01     .01     .01     .01     .01     .01     .01     .01
     2.82 ELEV   737.51  737.51  737.51  737.51  737.51  737.51  737.51  737.51
     2.88 CFS       .01     .01     .01     .01     .01     .00
     2.88 ELEV   737.51  737.51  737.51  737.51  737.51  737.50

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                    .15 WATERSHED INCHES;       2 CFS-HRS;        .2 ACRE-FEET.

    DURATION(HRS)   2      2
    FLOW(CFS)      13      0

 --- STRUCTURE 11, ALTERNATE  0, STORM  3, HYDROGRAPH ADDED TO READHD FILE ---


OPERATION RUNOFF    XSECTION  96

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .15                          48.5                       (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                   1.82 WATERSHED INCHES;      10 CFS-HRS;        .8 ACRE-FEET.


OPERATION ADDHYD    XSECTION  97
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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
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    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .16                          52.6                       (NULL)
         .68                          94.8                       (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                    .53 WATERSHED INCHES;      85 CFS-HRS;       7.1 ACRE-FEET.


OPERATION RESVOR    STRUCTURE  6

                  HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM = 3
     HRS      MAIN TIME INCREMENT =  .008 hr,      DRAINAGE AREA =    .28 SQ.MI.
      .02 CFS      .00     .01     .02     .05     .09     .17     .28     .43
      .02 ELEV   707.00  707.00  707.00  707.01  707.01  707.02  707.03  707.05
      .08 CFS      .64     .90    1.23    1.61    2.05    2.53    3.06    3.63
      .08 ELEV   707.08  707.11  707.15  707.19  707.24  707.30  707.36  707.43
      .14 CFS     4.21    4.82    5.43    6.05    6.65    7.24    7.82    8.37
      .14 ELEV   707.50  707.57  707.65  707.72  707.79  707.86  707.93  708.00
      .21 CFS     9.03    9.68   10.30   10.90   11.47   12.02   12.56   13.07
      .21 ELEV   708.05  708.11  708.16  708.22  708.26  708.31  708.36  708.40
      .27 CFS    13.57   14.06   14.52   14.97   15.41   15.83   16.23   16.61
      .27 ELEV   708.45  708.49  708.53  708.57  708.60  708.64  708.67  708.71
      .34 CFS    16.97   17.32   17.65   17.97   18.28   18.58   18.87   19.16
      .34 ELEV   708.74  708.77  708.80  708.83  708.85  708.88  708.90  708.93
      .40 CFS    19.45   19.73   20.02   20.43   20.84   21.26   21.69   22.12
      .40 ELEV   708.95  708.98  709.00  709.02  709.05  709.07  709.09  709.12
      .46 CFS    22.56   23.01   23.47   23.93   24.41   24.89   25.38   25.87
      .46 ELEV   709.14  709.17  709.19  709.22  709.24  709.27  709.30  709.33
      .53 CFS    26.38   26.89   27.41   27.93   28.46   29.00   29.54   30.08
      .53 ELEV   709.35  709.38  709.41  709.44  709.47  709.50  709.53  709.56
      .59 CFS    30.62   31.17   31.72   32.27   32.82   33.37   33.91   34.46
      .59 ELEV   709.59  709.62  709.65  709.68  709.71  709.74  709.77  709.80
      .66 CFS    35.00   35.54   36.08   36.61   37.14   37.66   38.15   38.61
      .66 ELEV   709.83  709.86  709.89  709.92  709.95  709.98  710.01  710.04
      .72 CFS    39.06   39.50   39.94   40.36   40.79   41.20   41.61   42.01
      .72 ELEV   710.06  710.09  710.11  710.14  710.16  710.19  710.21  710.24
      .78 CFS    42.40   42.78   43.15   43.51   43.86   44.20   44.53   44.86
      .78 ELEV   710.26  710.28  710.30  710.32  710.34  710.36  710.38  710.40
      .85 CFS    45.17   45.47   45.76   46.03   46.30   46.56   46.80   47.03
      .85 ELEV   710.42  710.44  710.46  710.47  710.49  710.50  710.52  710.53
      .91 CFS    47.26   47.47   47.67   47.85   48.03   48.19   48.35   48.49
      .91 ELEV   710.54  710.56  710.57  710.58  710.59  710.60  710.61  710.62
      .98 CFS    48.62   48.74   48.85   48.94   49.03   49.10   49.17   49.22
      .98 ELEV   710.62  710.63  710.64  710.64  710.65  710.65  710.66  710.66
     1.04 CFS    49.26   49.30   49.32   49.33   49.33   49.33   49.31   49.29
     1.04 ELEV   710.66  710.66  710.67  710.67  710.67  710.67  710.67  710.66
     1.10 CFS    49.26   49.22   49.17   49.12   49.05   48.98   48.91   48.82
     1.10 ELEV   710.66  710.66  710.66  710.65  710.65  710.64  710.64  710.64
     1.17 CFS    48.73   48.64   48.53   48.43   48.31   48.19   48.07   47.94
     1.17 ELEV   710.63  710.63  710.62  710.61  710.61  710.60  710.59  710.58
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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
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     1.23 CFS     47.81   47.67   47.53   47.38   47.23   47.07   46.91   46.75
     1.23 ELEV   710.58  710.57  710.56  710.55  710.54  710.53  710.52  710.51
     1.30 CFS     46.59   46.42   46.25   46.07   45.90   45.72   45.53   45.35
     1.30 ELEV   710.51  710.50  710.49  710.47  710.46  710.45  710.44  710.43
     1.36 CFS     45.16   44.97   44.78   44.59   44.39   44.19   43.99   43.79
     1.36 ELEV   710.42  710.41  710.40  710.39  710.38  710.36  710.35  710.34
     1.42 CFS     43.59   43.38   43.18   42.97   42.76   42.55   42.34   42.13
     1.42 ELEV   710.33  710.32  710.30  710.29  710.28  710.27  710.26  710.24
     1.49 CFS     41.91   41.70   41.48   41.27   41.05   40.83   40.61   40.39
     1.49 ELEV   710.23  710.22  710.20  710.19  710.18  710.17  710.15  710.14
     1.55 CFS     40.17   39.95   39.73   39.51   39.29   39.07   38.85   38.63
     1.55 ELEV   710.13  710.11  710.10  710.09  710.08  710.06  710.05  710.04
     1.62 CFS     38.41   38.18   37.96   37.71   37.46   37.21   36.96   36.72
     1.62 ELEV   710.02  710.01  710.00  709.98  709.97  709.96  709.94  709.93
     1.68 CFS     36.47   36.22   35.97   35.73   35.48   35.24   34.99   34.75
     1.68 ELEV   709.91  709.90  709.89  709.87  709.86  709.85  709.83  709.82
     1.74 CFS     34.51   34.27   34.03   33.79   33.55   33.31   33.07   32.83
     1.74 ELEV   709.81  709.79  709.78  709.77  709.75  709.74  709.73  709.71
     1.81 CFS     32.60   32.36   32.13   31.89   31.66   31.43   31.20   30.97
     1.81 ELEV   709.70  709.69  709.67  709.66  709.65  709.63  709.62  709.61
     1.87 CFS     30.74   30.51   30.28   30.06   29.83   29.61   29.39   29.17
     1.87 ELEV   709.60  709.58  709.57  709.56  709.55  709.53  709.52  709.51
     1.94 CFS     28.95   28.73   28.51   28.29   28.08   27.86   27.65   27.44
     1.94 ELEV   709.50  709.48  709.47  709.46  709.45  709.44  709.42  709.41
     2.00 CFS     27.22   27.01   26.81   26.60   26.39   26.19   25.98   25.78
     2.00 ELEV   709.40  709.39  709.38  709.37  709.36  709.34  709.33  709.32
     2.06 CFS     25.58   25.38   25.18   24.98   24.78   24.59   24.39   24.20
     2.06 ELEV   709.31  709.30  709.29  709.28  709.27  709.25  709.24  709.23
     2.13 CFS     24.01   23.82   23.63   23.44   23.25   23.07   22.88   22.70
     2.13 ELEV   709.22  709.21  709.20  709.19  709.18  709.17  709.16  709.15
     2.19 CFS     22.52   22.34   22.16   21.98   21.80   21.62   21.45   21.27
     2.19 ELEV   709.14  709.13  709.12  709.11  709.10  709.09  709.08  709.07
     2.26 CFS     21.10   20.92   20.75   20.58   20.41   20.24   20.08   19.94
     2.26 ELEV   709.06  709.05  709.04  709.03  709.02  709.01  709.00  708.99
     2.32 CFS     19.82   19.71   19.59   19.48   19.36   19.25   19.14   19.03
     2.32 ELEV   708.98  708.97  708.96  708.96  708.95  708.94  708.93  708.92
     2.38 CFS     18.91   18.80   18.69   18.58   18.47   18.36   18.25   18.15
     2.38 ELEV   708.91  708.90  708.89  708.88  708.87  708.86  708.85  708.84
     2.45 CFS     18.04   17.93   17.82   17.72   17.61   17.51   17.40   17.30
     2.45 ELEV   708.83  708.82  708.81  708.80  708.79  708.79  708.78  708.77
     2.51 CFS     17.19   17.09   16.99   16.89   16.78   16.68   16.58   16.48
     2.51 ELEV   708.76  708.75  708.74  708.73  708.72  708.71  708.71  708.70
     2.58 CFS     16.38   16.28   16.18   16.09   15.99   15.89   15.79   15.70
     2.58 ELEV   708.69  708.68  708.67  708.66  708.65  708.65  708.64  708.63
     2.64 CFS     15.60   15.51   15.41   15.32   15.23   15.13   15.04   14.95
     2.64 ELEV   708.62  708.61  708.60  708.60  708.59  708.58  708.57  708.56
     2.70 CFS     14.86   14.77   14.68   14.59   14.50   14.41   14.32   14.23
     2.70 ELEV   708.56  708.55  708.54  708.53  708.53  708.52  708.51  708.50
     2.77 CFS     14.14   14.06   13.97   13.88   13.80   13.71   13.63   13.54
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TR20 ------------------------------------------------------------------------ SCS -
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     2.77 ELEV   708.50  708.49  708.48  708.47  708.47  708.46  708.45  708.44
     2.83 CFS     13.46   13.38   13.29   13.21   13.13   13.05   12.97   12.89
     2.83 ELEV   708.44  708.43  708.42  708.41  708.41  708.40  708.39  708.39
     2.90 CFS     12.81   12.73   12.65   12.57   12.49   12.42   12.34   12.26
     2.90 ELEV   708.38  708.37  708.37  708.36  708.35  708.35  708.34  708.33
     2.96 CFS     12.19   12.11   12.03   11.96   11.88   11.81   11.74   11.66
     2.96 ELEV   708.33  708.32  708.31  708.31  708.30  708.29  708.29  708.28
     3.02 CFS     11.59   11.52   11.45   11.37   11.30   11.23   11.16   11.09
     3.02 ELEV   708.27  708.27  708.26  708.26  708.25  708.24  708.24  708.23
     3.09 CFS     11.02   10.95   10.88   10.81   10.75   10.68   10.61   10.54
     3.09 ELEV   708.23  708.22  708.21  708.21  708.20  708.20  708.19  708.18
     3.15 CFS     10.48   10.41   10.35   10.28   10.22   10.15
     3.15 ELEV   708.18  708.17  708.17  708.16  708.16  708.15

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                    .48 WATERSHED INCHES;      86 CFS-HRS;       7.1 ACRE-FEET.

    DURATION(HRS)   2      3
    FLOW(CFS)      19     10 TRUNCATED

 --- STRUCTURE  6, ALTERNATE  0, STORM  3, HYDROGRAPH ADDED TO READHD FILE ---


OPERATION RUNOFF    XSECTION  99

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .16                          438.1                       (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                    .94 WATERSHED INCHES;      93 CFS-HRS;       7.7 ACRE-FEET.


OPERATION ADDHYD    XSECTION  90

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .17                          444.0                       (NULL)
        1.07                           49.3                       (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                    .65 WATERSHED INCHES;     179 CFS-HRS;      14.8 ACRE-FEET.


OPERATION RESVOR    STRUCTURE  7

                    HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM = 3
     HRS      MAIN TIME INCREMENT =  .008 hr,      DRAINAGE AREA =    .54 SQ.MI.
      .03 CFS      .00     .01     .01     .03     .05     .08     .12     .17
      .03 ELEV   700.00  700.00  700.00  700.01  700.01  700.02  700.03  700.04
      .10 CFS      .24     .33     .43     .54     .67     .81     .97    1.13
      .10 ELEV   700.06  700.08  700.11  700.14  700.17  700.20  700.24  700.28
      .16 CFS     1.30    1.48    1.66    1.84    2.02    2.20    2.38    2.56
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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
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      .16 ELEV   700.33  700.37  700.41  700.46  700.50  700.55  700.60  700.64
      .22 CFS      2.74    2.91    3.09    3.26    3.43    3.59    3.76    3.91
      .22 ELEV   700.68  700.73  700.77  700.81  700.86  700.90  700.94  700.98
      .29 CFS      4.09    4.28    4.47    4.65    4.82    4.98    5.13    5.28
      .29 ELEV   701.01  701.04  701.06  701.08  701.10  701.12  701.14  701.16
      .35 CFS      5.41    5.54    5.66    5.77    5.88    5.97    6.06    6.15
      .35 ELEV   701.18  701.19  701.21  701.22  701.23  701.25  701.26  701.27
      .42 CFS      6.23    6.30    6.37    6.44    6.50    6.55    6.61    6.66
      .42 ELEV   701.28  701.29  701.30  701.30  701.31  701.32  701.33  701.33
      .48 CFS      6.71    6.75    6.79    6.83    6.87    6.90    6.93    6.96
      .48 ELEV   701.34  701.34  701.35  701.35  701.36  701.36  701.37  701.37
      .54 CFS      6.99    7.02    7.05    7.07    7.10    7.12    7.14    7.16
      .54 ELEV   701.37  701.38  701.38  701.38  701.39  701.39  701.39  701.40
      .61 CFS      7.19    7.21    7.23    7.25    7.26    7.28    7.30    7.32
      .61 ELEV   701.40  701.40  701.40  701.41  701.41  701.41  701.41  701.41
      .67 CFS      7.34    7.35    7.37    7.39    7.40    7.42    7.44    7.45
      .67 ELEV   701.42  701.42  701.42  701.42  701.43  701.43  701.43  701.43
      .74 CFS      7.47    7.49    7.50    7.52    7.53    7.55    7.57    7.58
      .74 ELEV   701.43  701.44  701.44  701.44  701.44  701.44  701.45  701.45
      .80 CFS      7.60    7.61    7.63    7.65    7.66    7.68    7.69    7.71
      .80 ELEV   701.45  701.45  701.45  701.46  701.46  701.46  701.46  701.46
      .86 CFS      7.73    7.74    7.76    7.77    7.79    7.81    7.82    7.84
      .86 ELEV   701.47  701.47  701.47  701.47  701.47  701.48  701.48  701.48
      .93 CFS      7.85    7.87    7.89    7.90    7.92    7.94    7.95    7.97
      .93 ELEV   701.48  701.48  701.49  701.49  701.49  701.49  701.49  701.50
      .99 CFS      7.98    8.00    8.02    8.03    8.05    8.07    8.08    8.10
      .99 ELEV   701.50  701.50  701.50  701.50  701.51  701.51  701.51  701.51
     1.06 CFS      8.11    8.13    8.15    8.16    8.18    8.20    8.21    8.23
     1.06 ELEV   701.51  701.52  701.52  701.52  701.52  701.52  701.53  701.53
     1.12 CFS      8.24    8.26    8.28    8.29    8.31    8.32    8.34    8.36
     1.12 ELEV   701.53  701.53  701.53  701.54  701.54  701.54  701.54  701.54
     1.18 CFS      8.37    8.39    8.40    8.42    8.43    8.45    8.46    8.48
     1.18 ELEV   701.55  701.55  701.55  701.55  701.55  701.56  701.56  701.56
     1.25 CFS      8.50    8.51    8.53    8.54    8.56    8.57    8.59    8.60
     1.25 ELEV   701.56  701.56  701.57  701.57  701.57  701.57  701.57  701.58
     1.31 CFS      8.62    8.63    8.64    8.66    8.67    8.69    8.70    8.72
     1.31 ELEV   701.58  701.58  701.58  701.58  701.58  701.59  701.59  701.59
     1.38 CFS      8.73    8.75    8.76    8.77    8.79    8.80    8.81    8.83
     1.38 ELEV   701.59  701.59  701.59  701.60  701.60  701.60  701.60  701.60
     1.44 CFS      8.84    8.86    8.87    8.88    8.89    8.91    8.92    8.93
     1.44 ELEV   701.61  701.61  701.61  701.61  701.61  701.61  701.62  701.62
     1.50 CFS      8.95    8.96    8.97    8.98    9.00    9.01    9.02    9.03
     1.50 ELEV   701.62  701.62  701.62  701.62  701.62  701.63  701.63  701.63
     1.57 CFS      9.05    9.06    9.07    9.08    9.09    9.10    9.12    9.13
     1.57 ELEV   701.63  701.63  701.63  701.64  701.64  701.64  701.64  701.64
     1.63 CFS      9.14    9.15    9.16    9.17    9.18    9.19    9.20    9.22
     1.63 ELEV   701.64  701.64  701.65  701.65  701.65  701.65  701.65  701.65
     1.70 CFS      9.23    9.24    9.25    9.26    9.27    9.28    9.29    9.30
     1.70 ELEV   701.65  701.65  701.66  701.66  701.66  701.66  701.66  701.66
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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
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16:04:24                    PASS   3   JOB NO.   1                      PAGE  26

     1.76 CFS      9.31    9.32    9.33    9.34    9.34    9.35    9.36    9.37
     1.76 ELEV   701.66  701.66  701.67  701.67  701.67  701.67  701.67  701.67
     1.82 CFS      9.38    9.39    9.40    9.41    9.42    9.42    9.43    9.44
     1.82 ELEV   701.67  701.67  701.67  701.68  701.68  701.68  701.68  701.68
     1.89 CFS      9.45    9.46    9.47    9.47    9.48    9.49    9.50    9.50
     1.89 ELEV   701.68  701.68  701.68  701.68  701.69  701.69  701.69  701.69
     1.95 CFS      9.51    9.52    9.53    9.53    9.54    9.55    9.56    9.56
     1.95 ELEV   701.69  701.69  701.69  701.69  701.69  701.69  701.69  701.70
     2.02 CFS      9.57    9.58    9.58    9.59    9.60    9.60    9.61    9.61
     2.02 ELEV   701.70  701.70  701.70  701.70  701.70  701.70  701.70  701.70
     2.08 CFS      9.62    9.63    9.63    9.64    9.64    9.65    9.66    9.66
     2.08 ELEV   701.70  701.70  701.70  701.70  701.71  701.71  701.71  701.71
     2.14 CFS      9.67    9.67    9.68    9.68    9.69    9.69    9.70    9.70
     2.14 ELEV   701.71  701.71  701.71  701.71  701.71  701.71  701.71  701.71
     2.21 CFS      9.71    9.71    9.72    9.72    9.73    9.73    9.74    9.74
     2.21 ELEV   701.71  701.71  701.71  701.72  701.72  701.72  701.72  701.72
     2.27 CFS      9.74    9.75    9.75    9.76    9.76    9.77    9.77    9.77
     2.27 ELEV   701.72  701.72  701.72  701.72  701.72  701.72  701.72  701.72
     2.34 CFS      9.78    9.78    9.78    9.79    9.79    9.80    9.80    9.80
     2.34 ELEV   701.72  701.72  701.72  701.72  701.72  701.72  701.72  701.73
     2.40 CFS      9.81    9.81    9.81    9.82    9.82    9.82    9.83    9.83
     2.40 ELEV   701.73  701.73  701.73  701.73  701.73  701.73  701.73  701.73
     2.46 CFS      9.83    9.84    9.84    9.84    9.85    9.85    9.85    9.85
     2.46 ELEV   701.73  701.73  701.73  701.73  701.73  701.73  701.73  701.73
     2.53 CFS      9.86    9.86    9.86    9.86    9.87    9.87    9.87    9.88
     2.53 ELEV   701.73  701.73  701.73  701.73  701.73  701.73  701.73  701.73
     2.59 CFS      9.88    9.88    9.88    9.88    9.89    9.89    9.89    9.89
     2.59 ELEV   701.73  701.74  701.74  701.74  701.74  701.74  701.74  701.74
     2.66 CFS      9.90    9.90    9.90    9.90    9.90    9.91    9.91    9.91
     2.66 ELEV   701.74  701.74  701.74  701.74  701.74  701.74  701.74  701.74
     2.72 CFS      9.91    9.91    9.92    9.92    9.92    9.92    9.92    9.92
     2.72 ELEV   701.74  701.74  701.74  701.74  701.74  701.74  701.74  701.74
     2.78 CFS      9.93    9.93    9.93    9.93    9.93    9.93    9.94    9.94
     2.78 ELEV   701.74  701.74  701.74  701.74  701.74  701.74  701.74  701.74
     2.85 CFS      9.94    9.94    9.94    9.94    9.94    9.94    9.95    9.95
     2.85 ELEV   701.74  701.74  701.74  701.74  701.74  701.74  701.74  701.74
     2.91 CFS      9.95    9.95    9.95    9.95    9.95    9.95    9.95    9.95
     2.91 ELEV   701.74  701.74  701.74  701.74  701.74  701.74  701.74  701.74
     2.98 CFS      9.95    9.96    9.96    9.96    9.96    9.96    9.96    9.96
     2.98 ELEV   701.74  701.74  701.74  701.74  701.74  701.74  701.74  701.74
     3.04 CFS      9.96    9.96    9.96    9.96    9.96    9.96    9.96    9.96
     3.04 ELEV   701.75  701.75  701.75  701.75  701.75  701.75  701.75  701.75
     3.10 CFS      9.96    9.96    9.96    9.97    9.97    9.97    9.97    9.97
     3.10 ELEV   701.75  701.75  701.75  701.75  701.75  701.75  701.75  701.75
     3.17 CFS      9.97    9.97    9.97    9.97
     3.17 ELEV   701.75  701.75  701.75  701.75

   RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                .07 WATERSHED INCHES;      26 CFS-HRS;       2.1 ACRE-FEET.
```

DURATION(HRS) 2 1
FLOW(CFS) 19 10 TRUNCATED

--- STRUCTURE 7, ALTERNATE 0, STORM 3, HYDROGRAPH ADDED TO READHD FILE ---

OPERATION RUNOFF XSECTION 49

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
.16	7.6	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
1.07 WATERSHED INCHES; 2 CFS-HRS; .1 ACRE-FEET.

OPERATION ADDHYD XSECTION 50

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
.18	9.1	(NULL)
3.19	10.0	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
.08 WATERSHED INCHES; 28 CFS-HRS; 2.3 ACRE-FEET.

OPERATION RESVOR STRUCTURE 39

HYDROGRAPH POINTS FOR ALTERNATE = 0, STORM = 3
MAIN TIME INCREMENT = .008 hr, DRAINAGE AREA = .61 SQ.MI.

HRS									
.06	CFS	.00	.01	.01	.02	.03	.03	.05	.06
.06	ELEV	693.19	693.19	693.19	693.20	693.20	693.20	693.21	693.21
.12	CFS	.07	.09	.11	.13	.15	.17	.19	.21
.12	ELEV	693.22	693.22	693.23	693.24	693.25	693.25	693.26	693.27
.18	CFS	.22	.24	.26	.28	.30	.31	.33	.35
.18	ELEV	693.28	693.28	693.29	693.30	693.30	693.31	693.32	693.32
.25	CFS	.36	.38	.39	.40	.42	.43	.44	.46
.25	ELEV	693.33	693.33	693.34	693.34	693.35	693.35	693.36	693.36
.31	CFS	.47	.48	.49	.50	.52	.53	.54	.55
.31	ELEV	693.37	693.37	693.38	693.38	693.39	693.39	693.39	693.40
.38	CFS	.55	.56	.57	.58	.59	.60	.61	.62
.38	ELEV	693.40	693.41	693.41	693.41	693.42	693.42	693.42	693.43
.44	CFS	.62	.63	.64	.65	.66	.67	.67	.68
.44	ELEV	693.43	693.43	693.43	693.44	693.44	693.44	693.45	693.45
.50	CFS	.69	.70	.71	.72	.73	.74	.74	.75
.50	ELEV	693.45	693.46	693.46	693.46	693.47	693.47	693.47	693.48
.57	CFS	.76	.77	.78	.79	.80	.81	.81	.82
.57	ELEV	693.48	693.48	693.49	693.49	693.49	693.50	693.50	693.50
.63	CFS	.83	.84	.85	.86	.87	.87	.88	.89
.63	ELEV	693.51	693.51	693.51	693.52	693.52	693.52	693.53	693.53
.70	CFS	.90	.91	.91	.92	.93	.94	.94	.95

.70	ELEV	693.53	693.54	693.54	693.54	693.55	693.55	693.55	693.55
.76	CFS	.96	.97	.97	.98	.99	.99	1.00	1.01
.76	ELEV	693.56	693.56	693.56	693.56	693.57	693.57	693.57	693.57
.82	CFS	1.01	1.02	1.03	1.03	1.04	1.04	1.05	1.05
.82	ELEV	693.58	693.58	693.58	693.58	693.59	693.59	693.59	693.59
.89	CFS	1.06	1.06	1.07	1.08	1.08	1.09	1.09	1.09
.89	ELEV	693.59	693.60	693.60	693.60	693.60	693.60	693.61	693.61
.95	CFS	1.10	1.10	1.11	1.11	1.12	1.12	1.13	1.13
.95	ELEV	693.61	693.61	693.61	693.62	693.62	693.62	693.62	693.62
1.02	CFS	1.14	1.14	1.14	1.15	1.15	1.16	1.16	1.16
1.02	ELEV	693.62	693.63	693.63	693.63	693.63	693.63	693.63	693.63
1.08	CFS	1.17	1.17	1.17	1.18	1.18	1.19	1.19	1.19
1.08	ELEV	693.64	693.64	693.64	693.64	693.64	693.64	693.64	693.65
1.14	CFS	1.20	1.20	1.20	1.21	1.21	1.21	1.22	1.22
1.14	ELEV	693.65	693.65	693.65	693.65	693.65	693.65	693.65	693.66
1.21	CFS	1.22	1.23	1.23	1.23	1.24	1.24	1.24	1.25
1.21	ELEV	693.66	693.66	693.66	693.66	693.66	693.66	693.66	693.67
1.27	CFS	1.25	1.25	1.26	1.26	1.26	1.26	1.27	1.27
1.27	ELEV	693.67	693.67	693.67	693.67	693.67	693.67	693.67	693.68
1.34	CFS	1.27	1.28	1.28	1.28	1.28	1.29	1.29	1.29
1.34	ELEV	693.68	693.68	693.68	693.68	693.68	693.68	693.68	693.68
1.40	CFS	1.30	1.30	1.30	1.31	1.31	1.31	1.31	1.32
1.40	ELEV	693.69	693.69	693.69	693.69	693.69	693.69	693.69	693.69
1.46	CFS	1.32	1.32	1.32	1.33	1.33	1.33	1.34	1.34
1.46	ELEV	693.69	693.70	693.70	693.70	693.70	693.70	693.70	693.70
1.53	CFS	1.34	1.34	1.35	1.35	1.35	1.35	1.36	1.36
1.53	ELEV	693.70	693.70	693.70	693.71	693.71	693.71	693.71	693.71
1.59	CFS	1.36	1.37	1.37	1.37	1.37	1.38	1.38	1.38
1.59	ELEV	693.71	693.71	693.71	693.71	693.71	693.72	693.72	693.72
1.66	CFS	1.38	1.39	1.39	1.39	1.39	1.40	1.40	1.40
1.66	ELEV	693.72	693.72	693.72	693.72	693.72	693.72	693.72	693.73
1.72	CFS	1.41	1.41	1.41	1.41	1.42	1.42	1.42	1.42
1.72	ELEV	693.73	693.73	693.73	693.73	693.73	693.73	693.73	693.73
1.78	CFS	1.43	1.43	1.43	1.43	1.44	1.44	1.44	1.44
1.78	ELEV	693.73	693.74	693.74	693.74	693.74	693.74	693.74	693.74
1.85	CFS	1.45	1.45	1.45	1.46	1.46	1.46	1.46	1.47
1.85	ELEV	693.74	693.74	693.74	693.75	693.75	693.75	693.75	693.75
1.91	CFS	1.47	1.47	1.47	1.48	1.48	1.48	1.48	1.49
1.91	ELEV	693.75	693.75	693.75	693.75	693.75	693.76	693.76	693.76
1.98	CFS	1.49	1.49	1.49	1.50	1.50	1.50	1.50	1.51
1.98	ELEV	693.76	693.76	693.76	693.76	693.76	693.76	693.76	693.77
2.04	CFS	1.51	1.51	1.51	1.52	1.52	1.52	1.53	1.53
2.04	ELEV	693.77	693.77	693.77	693.77	693.77	693.77	693.77	693.77
2.10	CFS	1.53	1.53	1.54	1.54	1.54	1.54	1.55	1.55
2.10	ELEV	693.77	693.78	693.78	693.78	693.78	693.78	693.78	693.78
2.17	CFS	1.55	1.55	1.56	1.56	1.56	1.56	1.57	1.57
2.17	ELEV	693.78	693.78	693.78	693.79	693.79	693.79	693.79	693.79
2.23	CFS	1.57	1.57	1.58	1.58	1.58	1.59	1.59	1.59
2.23	ELEV	693.79	693.79	693.79	693.79	693.79	693.80	693.80	693.80

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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
08/14/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
16:04:24                    PASS   3   JOB NO.   1                      PAGE  29

     2.30 CFS      1.59    1.60    1.60    1.60    1.60    1.61    1.61    1.61
     2.30 ELEV   693.80  693.80  693.80  693.80  693.80  693.80  693.80  693.81
     2.36 CFS      1.61    1.62    1.62    1.62    1.62    1.63    1.63    1.63
     2.36 ELEV   693.81  693.81  693.81  693.81  693.81  693.81  693.81  693.81
     2.42 CFS      1.63    1.64    1.64    1.64    1.64    1.65    1.65    1.65
     2.42 ELEV   693.81  693.82  693.82  693.82  693.82  693.82  693.82  693.82
     2.49 CFS      1.65    1.66    1.66    1.66    1.67    1.67    1.67    1.67
     2.49 ELEV   693.82  693.82  693.82  693.83  693.83  693.83  693.83  693.83
     2.55 CFS      1.68    1.68    1.68    1.68    1.69    1.69    1.69    1.69
     2.55 ELEV   693.83  693.83  693.83  693.83  693.83  693.84  693.84  693.84
     2.62 CFS      1.70    1.70    1.70    1.70    1.71    1.71    1.71    1.71
     2.62 ELEV   693.84  693.84  693.84  693.84  693.84  693.84  693.84  693.84
     2.68 CFS      1.72    1.72    1.72    1.72    1.73    1.73    1.73    1.73
     2.68 ELEV   693.85  693.85  693.85  693.85  693.85  693.85  693.85  693.85
     2.74 CFS      1.74    1.74    1.74    1.75    1.75    1.75    1.75    1.76
     2.74 ELEV   693.85  693.85  693.86  693.86  693.86  693.86  693.86  693.86
     2.81 CFS      1.76    1.76    1.76    1.77    1.77    1.77    1.77    1.78
     2.81 ELEV   693.86  693.86  693.86  693.86  693.87  693.87  693.87  693.87
     2.87 CFS      1.78    1.78    1.78    1.79    1.79    1.79    1.79    1.80
     2.87 ELEV   693.87  693.87  693.87  693.87  693.87  693.87  693.88  693.88
     2.94 CFS      1.80    1.80    1.80    1.81    1.81    1.81    1.81    1.82
     2.94 ELEV   693.88  693.88  693.88  693.88  693.88  693.88  693.88  693.88
     3.00 CFS      1.82    1.82    1.83    1.83    1.83    1.83    1.84    1.84
     3.00 ELEV   693.89  693.89  693.89  693.89  693.89  693.89  693.89  693.89
     3.06 CFS      1.84    1.84    1.85    1.85    1.85    1.85    1.86    1.86
     3.06 ELEV   693.89  693.89  693.90  693.90  693.90  693.90  693.90  693.90
     3.13 CFS      1.86    1.86    1.87    1.87    1.87    1.87    1.88    1.88
     3.13 ELEV   693.90  693.90  693.90  693.90  693.90  693.91  693.91  693.91
     3.19 CFS      1.88
     3.19 ELEV   693.91

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                    .01 WATERSHED INCHES;       4 CFS-HRS;        .3 ACRE-FEET.

    DURATION(HRS)   2      1
    FLOW(CFS)      19      2 TRUNCATED

 --- STRUCTURE 39, ALTERNATE  0, STORM  3, HYDROGRAPH ADDED TO READHD FILE ---


EXECUTIVE CONTROL  ENDCMP    COMPUTATIONS COMPLETED FOR PASS   3


EXECUTIVE CONTROL  COMPUT    FROM XSECTION  91  TO STRUCTURE 39           30-MIN
    STARTING TIME =   .00       RAIN DEPTH =  2.80       RAIN DURATION =   .50
    ANT. RUNOFF COND. = 2       MAIN TIME INCREMENT =   .008 HOURS
    ALTERNATE NO. = 0           STORM NO. = 4            RAIN TABLE NO. = 1
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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
08/14/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
16:04:24                    PASS   4   JOB NO.   1                      PAGE  30


OPERATION RUNOFF    XSECTION  91

    PEAK TIME(HRS)              PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .75                          64.8                        (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                    .83 WATERSHED INCHES;      50 CFS-HRS;       4.1 ACRE-FEET.


OPERATION RUNOFF    XSECTION  92

    PEAK TIME(HRS)              PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .82                          104.4                       (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                   1.10 WATERSHED INCHES;      92 CFS-HRS;       7.6 ACRE-FEET.


OPERATION ADDHYD    XSECTION  93

    PEAK TIME(HRS)              PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .79                          167.9                       (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                    .99 WATERSHED INCHES;     141 CFS-HRS;      11.7 ACRE-FEET.


OPERATION RUNOFF    XSECTION  94

    PEAK TIME(HRS)              PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .82                           6.8                        (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                    .42 WATERSHED INCHES;       5 CFS-HRS;        .5 ACRE-FEET.


OPERATION RESVOR    STRUCTURE 11

                    HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM = 4
     HRS      MAIN TIME INCREMENT =  .008 hr,       DRAINAGE AREA =    .02 SQ.MI.
      .14 CFS      .00     .01     .01     .01     .01     .02     .02     .03
      .14 ELEV   737.50  737.51  737.51  737.51  737.51  737.52  737.52  737.53
      .20 CFS      .04     .04     .05     .06     .08     .09     .10     .12
      .20 ELEV   737.54  737.54  737.55  737.56  737.58  737.59  737.60  737.62
      .26 CFS      .14     .16     .18     .20     .23     .26     .29     .32
      .26 ELEV   737.64  737.66  737.68  737.70  737.73  737.76  737.79  737.82
      .33 CFS      .35     .39     .43     .47     .50     .51     .52     .53
      .33 ELEV   737.85  737.89  737.93  737.97  738.00  738.02  738.03  738.05
      .39 CFS      .54     .55     .56     .57     .58     .60     .61     .63
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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
08/14/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
16:04:24                    PASS   4   JOB NO.   1                      PAGE  31

      .39 ELEV   738.07  738.09  738.11  738.14  738.17  738.19  738.22  738.26
      .46 CFS       .65     .66     .68     .70     .73     .75     .77     .80
      .46 ELEV   738.29  738.33  738.37  738.41  738.45  738.50  738.55  738.60
      .52 CFS       .82     .85     .88     .91     .94     .97    1.00    1.08
      .52 ELEV   738.65  738.70  738.76  738.82  738.88  738.94  739.00  739.04
      .58 CFS      1.16    1.24    1.32    1.41    1.49    1.57    1.66    1.74
      .58 ELEV   739.08  739.12  739.16  739.20  739.24  739.29  739.33  739.37
      .65 CFS      1.83    1.92    2.00    2.09    2.18    2.26    2.35    2.44
      .65 ELEV   739.42  739.46  739.50  739.54  739.59  739.63  739.68  739.72
      .71 CFS      2.52    2.61    2.69    2.78    2.86    2.95    3.02    3.08
      .71 ELEV   739.76  739.80  739.85  739.89  739.93  739.97  740.01  740.04
      .78 CFS      3.14    3.20    3.26    3.32    3.38    3.44    3.49    3.55
      .78 ELEV   740.07  740.10  740.13  740.16  740.19  740.22  740.25  740.28
      .84 CFS      3.61    3.66    3.71    3.76    3.81    3.86    3.91    3.95
      .84 ELEV   740.30  740.33  740.36  740.38  740.41  740.43  740.45  740.48
      .90 CFS      4.00    4.04    4.08    4.12    4.16    4.20    4.23    4.27
      .90 ELEV   740.50  740.52  740.54  740.56  740.58  740.60  740.62  740.63
      .97 CFS      4.30    4.33    4.36    4.38    4.41    4.43    4.45    4.47
      .97 ELEV   740.65  740.66  740.68  740.69  740.70  740.71  740.73  740.73
     1.03 CFS      4.49    4.50    4.52    4.53    4.54    4.55    4.55    4.56
     1.03 ELEV   740.74  740.75  740.76  740.76  740.77  740.77  740.78  740.78
     1.10 CFS      4.56    4.56    4.56    4.56    4.56    4.56    4.55    4.55
     1.10 ELEV   740.78  740.78  740.78  740.78  740.78  740.78  740.78  740.77
     1.16 CFS      4.54    4.53    4.52    4.51    4.49    4.48    4.46    4.45
     1.16 ELEV   740.77  740.76  740.76  740.75  740.75  740.74  740.73  740.72
     1.22 CFS      4.43    4.41    4.39    4.37    4.35    4.33    4.30    4.28
     1.22 ELEV   740.71  740.71  740.70  740.69  740.67  740.66  740.65  740.64
     1.29 CFS      4.26    4.23    4.21    4.18    4.15    4.12    4.09    4.07
     1.29 ELEV   740.63  740.62  740.60  740.59  740.58  740.56  740.55  740.53
     1.35 CFS      4.04    4.01    3.98    3.95    3.91    3.88    3.85    3.82
     1.35 ELEV   740.52  740.50  740.49  740.47  740.46  740.44  740.43  740.41
     1.42 CFS      3.79    3.75    3.72    3.69    3.66    3.62    3.59    3.56
     1.42 ELEV   740.39  740.38  740.36  740.34  740.33  740.31  740.30  740.28
     1.48 CFS      3.52    3.49    3.46    3.42    3.39    3.36    3.32    3.29
     1.48 ELEV   740.26  740.25  740.23  740.21  740.19  740.18  740.16  740.14
     1.54 CFS      3.26    3.22    3.19    3.16    3.12    3.09    3.06    3.02
     1.54 ELEV   740.13  740.11  740.09  740.08  740.06  740.05  740.03  740.01
     1.61 CFS      2.99    2.95    2.90    2.86    2.82    2.78    2.73    2.69
     1.61 ELEV   739.99  739.97  739.95  739.93  739.91  739.89  739.87  739.85
     1.67 CFS      2.65    2.61    2.57    2.53    2.50    2.46    2.42    2.38
     1.67 ELEV   739.83  739.81  739.79  739.77  739.75  739.73  739.71  739.69
     1.74 CFS      2.34    2.31    2.27    2.24    2.20    2.17    2.13    2.10
     1.74 ELEV   739.67  739.65  739.64  739.62  739.60  739.58  739.57  739.55
     1.80 CFS      2.06    2.03    2.00    1.97    1.93    1.90    1.87    1.84
     1.80 ELEV   739.53  739.52  739.50  739.48  739.47  739.45  739.44  739.42
     1.86 CFS      1.81    1.78    1.75    1.72    1.70    1.67    1.64    1.61
     1.86 ELEV   739.41  739.39  739.38  739.36  739.35  739.33  739.32  739.31
     1.93 CFS      1.59    1.56    1.53    1.51    1.48    1.46    1.43    1.41
     1.93 ELEV   739.29  739.28  739.27  739.25  739.24  739.23  739.22  739.20
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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
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     1.99 CFS      1.38    1.36    1.34    1.31    1.29    1.27    1.25    1.23
     1.99 ELEV   739.19  739.18  739.17  739.16  739.15  739.13  739.12  739.11
     2.06 CFS      1.21    1.18    1.16    1.14    1.12    1.10    1.08    1.07
     2.06 ELEV   739.10  739.09  739.08  739.07  739.06  739.05  739.04  739.03
     2.12 CFS      1.05    1.03    1.01    1.00     .99     .98     .98     .97
     2.12 ELEV   739.02  739.01  739.01  738.99  738.98  738.96  738.95  738.94
     2.18 CFS       .96     .95     .95     .94     .93     .92     .92     .91
     2.18 ELEV   738.92  738.91  738.89  738.88  738.86  738.85  738.84  738.82
     2.25 CFS       .90     .90     .89     .88     .88     .87     .86     .86
     2.25 ELEV   738.81  738.79  738.78  738.77  738.75  738.74  738.72  738.71
     2.31 CFS       .85     .84     .83     .83     .82     .82     .81     .80
     2.31 ELEV   738.70  738.68  738.67  738.66  738.64  738.63  738.62  738.60
     2.38 CFS       .80     .79     .78     .78     .77     .76     .76     .75
     2.38 ELEV   738.59  738.58  738.57  738.55  738.54  738.53  738.51  738.50
     2.44 CFS       .74     .74     .73     .73     .72     .71     .71     .70
     2.44 ELEV   738.49  738.48  738.47  738.45  738.44  738.43  738.42  738.41
     2.50 CFS       .70     .69     .69     .68     .67     .67     .66     .66
     2.50 ELEV   738.39  738.38  738.37  738.36  738.35  738.34  738.32  738.31
     2.57 CFS       .65     .65     .64     .63     .63     .62     .62     .61
     2.57 ELEV   738.30  738.29  738.28  738.27  738.26  738.25  738.24  738.23
     2.63 CFS       .61     .60     .60     .59     .59     .58     .58     .57
     2.63 ELEV   738.22  738.21  738.19  738.18  738.17  738.16  738.15  738.14
     2.70 CFS       .57     .56     .56     .55     .55     .54     .54     .53
     2.70 ELEV   738.13  738.12  738.11  738.10  738.10  738.09  738.08  738.07
     2.76 CFS       .53     .52     .52     .51     .51     .51     .50     .48
     2.76 ELEV   738.06  738.05  738.04  738.03  738.02  738.01  738.00  737.98
     2.82 CFS       .45     .42     .40     .37     .35     .33     .31     .29
     2.82 ELEV   737.95  737.92  737.90  737.87  737.85  737.83  737.81  737.79
     2.89 CFS       .27     .26     .24     .23     .21     .20     .19     .18
     2.89 ELEV   737.77  737.76  737.74  737.73  737.71  737.70  737.69  737.68
     2.95 CFS       .17     .16     .15     .14     .13     .12     .11     .11
     2.95 ELEV   737.67  737.66  737.65  737.64  737.63  737.62  737.61  737.61
     3.02 CFS       .10     .09     .09     .08     .08     .07     .07     .06
     3.02 ELEV   737.60  737.59  737.59  737.58  737.58  737.57  737.57  737.56
     3.08 CFS       .06     .06     .05     .05     .05     .04     .04     .04
     3.08 ELEV   737.56  737.56  737.55  737.55  737.55  737.54  737.54  737.54
     3.14 CFS       .04     .03     .03     .03     .03     .03     .02     .02
     3.14 ELEV   737.54  737.53  737.53  737.53  737.53  737.53  737.52  737.52
     3.21 CFS       .02     .02     .02     .02     .02
     3.21 ELEV   737.52  737.52  737.52  737.52  737.52

   RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                .42 WATERSHED INCHES;       5 CFS-HRS;        .5 ACRE-FEET.

   DURATION(HRS)   2      2
   FLOW(CFS)       1      0

 --- STRUCTURE 11, ALTERNATE  0, STORM  4, HYDROGRAPH ADDED TO READHD FILE ---
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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
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OPERATION RUNOFF    XSECTION  96

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .17                          49.1                        (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  2.57 WATERSHED INCHES;      14 CFS-HRS;       1.2 ACRE-FEET.


OPERATION ADDHYD    XSECTION  97

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .19                          54.9                        (NULL)
         .79                         171.4                        (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  1.00 WATERSHED INCHES;     161 CFS-HRS;      13.3 ACRE-FEET.


OPERATION RESVOR    STRUCTURE  6

                  HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM = 4
     HRS      MAIN TIME INCREMENT =  .008 hr,      DRAINAGE AREA =    .28 SQ.MI.
      .02 CFS       .00     .01     .01     .03     .06     .10     .18     .28
      .02 ELEV   707.00  707.00  707.00  707.00  707.01  707.01  707.02  707.03
      .08 CFS       .43     .62     .87    1.17    1.52    1.93    2.39    2.89
      .08 ELEV   707.05  707.07  707.10  707.14  707.18  707.23  707.28  707.34
      .14 CFS      3.43    4.02    4.63    5.26    5.92    6.58    7.25    7.91
      .14 ELEV   707.41  707.48  707.55  707.63  707.70  707.78  707.86  707.94
      .21 CFS      8.63    9.46   10.28   11.08   11.87   12.65   13.40   14.14
      .21 ELEV   708.02  708.09  708.16  708.23  708.30  708.37  708.43  708.49
      .27 CFS     14.86   15.56   16.24   16.91   17.56   18.20   18.81   19.42
      .27 ELEV   708.56  708.62  708.68  708.73  708.79  708.84  708.90  708.95
      .34 CFS     20.02   20.85   21.66   22.47   23.27   24.06   24.85   25.64
      .34 ELEV   709.00  709.05  709.09  709.14  709.18  709.23  709.27  709.31
      .40 CFS     26.44   27.24   28.06   28.88   29.72   30.57   31.44   32.33
      .40 ELEV   709.36  709.40  709.45  709.49  709.54  709.59  709.64  709.68
      .46 CFS     33.22   34.14   35.06   35.99   36.94   37.89   38.76   39.63
      .46 ELEV   709.73  709.79  709.84  709.89  709.94  709.99  710.04  710.10
      .53 CFS     40.50   41.38   42.28   43.17   44.07   44.97   45.88   46.77
      .53 ELEV   710.15  710.20  710.25  710.30  710.36  710.41  710.46  710.52
      .59 CFS     47.67   48.57   49.46   50.34   51.22   52.10   52.98   53.85
      .59 ELEV   710.57  710.62  710.67  710.73  710.78  710.83  710.88  710.93
      .66 CFS     54.72   55.35   55.88   56.40   56.93   57.46   57.99   58.52
      .66 ELEV   710.98  711.03  711.08  711.13  711.18  711.22  711.27  711.32
      .72 CFS     59.05   59.58   60.11   60.65   61.18   61.71   62.25   62.78
      .72 ELEV   711.37  711.42  711.46  711.51  711.56  711.61  711.66  711.71
      .78 CFS     63.30   63.83   64.35   64.87   65.39   65.90   69.25   73.17
      .78 ELEV   711.75  711.80  711.85  711.90  711.94  711.99  712.03  712.07
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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
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      .85 CFS     76.91   80.48   83.88   87.11   90.17   93.08   95.82   98.41
      .85 ELEV   712.11  712.15  712.19  712.22  712.25  712.28  712.31  712.34
      .91 CFS      101     103     105     107     109     111     112     114
      .91 ELEV   712.36  712.39  712.41  712.43  712.45  712.47  712.48  712.50
      .98 CFS      115     116     118     118     119     120     121     121
      .98 ELEV   712.51  712.53  712.54  712.55  712.56  712.56  712.57  712.58
     1.04 CFS      122     122     122     122     122     122     122     122
     1.04 ELEV   712.58  712.58  712.59  712.59  712.59  712.59  712.59  712.58
     1.10 CFS      122     122     121     121     120     120     119     118
     1.10 ELEV   712.58  712.58  712.57  712.57  712.56  712.56  712.55  712.54
     1.17 CFS      118     117     116     115     114     113     112     111
     1.17 ELEV   712.54  712.53  712.52  712.51  712.50  712.49  712.48  712.47
     1.23 CFS      110     109     108     107     106     104     103     102
     1.23 ELEV   712.46  712.45  712.44  712.42  712.41  712.40  712.39  712.38
     1.30 CFS      101     100      98      97      96      95      93      92
     1.30 ELEV   712.36  712.35  712.34  712.32  712.31  712.30  712.29  712.27
     1.36 CFS     90.90   89.63   88.37   87.10   85.84   84.57   83.32   82.06
     1.36 ELEV   712.26  712.25  712.23  712.22  712.21  712.19  712.18  712.17
     1.42 CFS     80.82   79.58   78.34   77.11   75.90   74.69   73.48   72.29
     1.42 ELEV   712.15  712.14  712.13  712.12  712.10  712.09  712.08  712.07
     1.49 CFS     71.11   69.94   68.79   67.64   66.50   65.92   65.78   65.64
     1.49 ELEV   712.05  712.04  712.03  712.02  712.01  711.99  711.98  711.97
     1.55 CFS     65.49   65.34   65.19   65.03   64.88   64.72   64.55   64.39
     1.55 ELEV   711.95  711.94  711.93  711.91  711.90  711.88  711.87  711.85
     1.62 CFS     64.22   64.05   63.88   63.70   63.53   63.35   63.17   62.99
     1.62 ELEV   711.84  711.82  711.81  711.79  711.78  711.76  711.74  711.73
     1.68 CFS     62.80   62.62   62.43   62.24   62.05   61.86   61.67   61.47
     1.68 ELEV   711.71  711.69  711.68  711.66  711.64  711.62  711.61  711.59
     1.74 CFS     61.28   61.08   60.88   60.68   60.48   60.28   60.08   59.88
     1.74 ELEV   711.57  711.55  711.53  711.52  711.50  711.48  711.46  711.44
     1.81 CFS     59.67   59.47   59.26   59.05   58.85   58.64   58.43   58.22
     1.81 ELEV   711.42  711.41  711.39  711.37  711.35  711.33  711.31  711.29
     1.87 CFS     58.01   57.80   57.59   57.38   57.17   56.95   56.74   56.53
     1.87 ELEV   711.27  711.25  711.24  711.22  711.20  711.18  711.16  711.14
     1.94 CFS     56.32   56.10   55.89   55.67   55.46   55.25   55.03   54.70
     1.94 ELEV   711.12  711.10  711.08  711.06  711.04  711.02  711.00  710.98
     2.00 CFS     54.34   53.98   53.63   53.28   52.92   52.57   52.22   51.88
     2.00 ELEV   710.96  710.94  710.92  710.90  710.88  710.86  710.84  710.82
     2.06 CFS     51.53   51.18   50.84   50.50   50.15   49.81   49.47   49.14
     2.06 ELEV   710.80  710.78  710.76  710.74  710.71  710.69  710.67  710.66
     2.13 CFS     48.80   48.47   48.13   47.80   47.47   47.14   46.81   46.49
     2.13 ELEV   710.64  710.62  710.60  710.58  710.56  710.54  710.52  710.50
     2.19 CFS     46.16   45.84   45.52   45.20   44.89   44.57   44.26   43.94
     2.19 ELEV   710.48  710.46  710.44  710.42  710.41  710.39  710.37  710.35
     2.26 CFS     43.63   43.32   43.02   42.71   42.41   42.10   41.80   41.50
     2.26 ELEV   710.33  710.31  710.29  710.28  710.26  710.24  710.22  710.21
     2.32 CFS     41.21   40.91   40.62   40.32   40.03   39.74   39.46   39.17
     2.32 ELEV   710.19  710.17  710.15  710.14  710.12  710.10  710.09  710.07
     2.38 CFS     38.89   38.60   38.32   38.04   37.74   37.43   37.12   36.82
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TR20 ------------------------------------------------------------------------ SCS -
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```

2.38 ELEV	710.05	710.04	710.02	710.00	709.99	709.97	709.95	709.93
2.45 CFS	36.51	36.21	35.92	35.62	35.33	35.03	34.74	34.46
2.45 ELEV	709.92	709.90	709.88	709.87	709.85	709.84	709.82	709.80
2.51 CFS	34.17	33.89	33.60	33.32	33.05	32.77	32.50	32.23
2.51 ELEV	709.79	709.77	709.76	709.74	709.72	709.71	709.69	709.68
2.58 CFS	31.96	31.69	31.42	31.16	30.90	30.64	30.38	30.13
2.58 ELEV	709.66	709.65	709.63	709.62	709.61	709.59	709.58	709.56
2.64 CFS	29.87	29.62	29.37	29.12	28.88	28.63	28.39	28.15
2.64 ELEV	709.55	709.53	709.52	709.51	709.49	709.48	709.47	709.45
2.70 CFS	27.91	27.67	27.44	27.21	26.97	26.75	26.52	26.29
2.70 ELEV	709.44	709.43	709.41	709.40	709.39	709.37	709.36	709.35
2.77 CFS	26.07	25.85	25.62	25.41	25.19	24.97	24.76	24.55
2.77 ELEV	709.34	709.32	709.31	709.30	709.29	709.28	709.26	709.25
2.83 CFS	24.34	24.13	23.92	23.71	23.51	23.31	23.10	22.90
2.83 ELEV	709.24	709.23	709.22	709.21	709.19	709.18	709.17	709.16
2.90 CFS	22.70	22.51	22.31	22.12	21.92	21.73	21.54	21.35
2.90 ELEV	709.15	709.14	709.13	709.12	709.11	709.10	709.09	709.08
2.96 CFS	21.17	20.98	20.80	20.61	20.43	20.25	20.07	19.93
2.96 ELEV	709.06	709.05	709.04	709.03	709.02	709.01	709.00	708.99
3.02 CFS	19.81	19.68	19.56	19.44	19.32	19.20	19.08	18.96
3.02 ELEV	708.98	708.97	708.96	708.95	708.94	708.93	708.92	708.91
3.09 CFS	18.85	18.73	18.61	18.50	18.38	18.27	18.15	18.04
3.09 ELEV	708.90	708.89	708.88	708.87	708.86	708.85	708.84	708.83
3.15 CFS	17.93	17.81	17.70	17.59	17.48	17.37		
3.15 ELEV	708.82	708.81	708.80	708.79	708.78	708.77		

```
    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                    .91 WATERSHED INCHES;     163 CFS-HRS;      13.5 ACRE-FEET.

    DURATION(HRS)   2      3
    FLOW(CFS)      35     17 TRUNCATED

 --- STRUCTURE  6, ALTERNATE  0, STORM  4, HYDROGRAPH ADDED TO READHD FILE ---


OPERATION RUNOFF    XSECTION  99

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .20                         497.5                       (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                   1.57 WATERSHED INCHES;     154 CFS-HRS;      12.7 ACRE-FEET.


OPERATION ADDHYD    XSECTION  90

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .20                         505.6                       (NULL)
        1.07                         122.5                       (NULL)
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TR20 ------------------------------------------------------------------------ SCS -
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    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                   1.14 WATERSHED INCHES;     317 CFS-HRS;      26.2 ACRE-FEET.


OPERATION RESVOR    STRUCTURE  7

                  HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM = 4
     HRS      MAIN TIME INCREMENT =  .008 hr,      DRAINAGE AREA =    .54 SQ.MI.
```

.04 CFS	.00	.01	.01	.03	.04	.07	.11	.16
.04 ELEV	700.00	700.00	700.00	700.01	700.01	700.02	700.03	700.04
.10 CFS	.22	.30	.39	.50	.62	.76	.91	1.07
.10 ELEV	700.06	700.07	700.10	700.12	700.16	700.19	700.23	700.27
.17 CFS	1.25	1.43	1.63	1.83	2.04	2.25	2.47	2.68
.17 ELEV	700.31	700.36	700.41	700.46	700.51	700.56	700.62	700.67
.23 CFS	2.90	3.13	3.35	3.57	3.79	4.01	4.28	4.55
.23 ELEV	700.73	700.78	700.84	700.89	700.95	701.00	701.03	701.07
.30 CFS	4.82	5.08	5.34	5.59	5.84	6.08	6.31	6.54
.30 ELEV	701.10	701.14	701.17	701.20	701.23	701.26	701.29	701.32
.36 CFS	6.76	6.97	7.18	7.39	7.59	7.78	7.97	8.16
.36 ELEV	701.34	701.37	701.40	701.42	701.45	701.47	701.50	701.52
.42 CFS	8.34	8.52	8.70	8.87	9.05	9.21	9.38	9.54
.42 ELEV	701.54	701.57	701.59	701.61	701.63	701.65	701.67	701.69
.49 CFS	9.70	9.85	10.00	10.15	10.29	10.43	10.57	10.71
.49 ELEV	701.71	701.73	701.75	701.77	701.79	701.80	701.82	701.84
.55 CFS	10.84	10.96	11.08	11.20	11.31	11.42	11.52	11.62
.55 ELEV	701.85	701.87	701.89	701.90	701.91	701.93	701.94	701.95
.62 CFS	11.71	11.80	11.88	11.96	12.02	12.07	12.12	12.17
.62 ELEV	701.96	701.97	701.99	701.99	702.00	702.01	702.02	702.03
.68 CFS	12.21	12.25	12.29	12.33	12.37	12.40	12.43	12.46
.68 ELEV	702.04	702.04	702.05	702.05	702.06	702.07	702.07	702.08
.74 CFS	12.50	12.52	12.55	12.58	12.61	12.63	12.66	12.68
.74 ELEV	702.08	702.09	702.09	702.10	702.10	702.11	702.11	702.11
.81 CFS	12.70	12.73	12.75	12.77	12.80	12.82	12.84	12.87
.81 ELEV	702.12	702.12	702.13	702.13	702.13	702.14	702.14	702.14
.87 CFS	12.89	12.92	12.95	12.97	13.00	13.03	13.06	13.09
.87 ELEV	702.15	702.15	702.16	702.16	702.17	702.17	702.18	702.18
.94 CFS	13.11	13.14	13.17	13.20	13.23	13.26	13.29	13.32
.94 ELEV	702.19	702.19	702.20	702.20	702.21	702.21	702.22	702.22
1.00 CFS	13.35	13.39	13.42	13.45	13.48	13.51	13.54	13.57
1.00 ELEV	702.23	702.23	702.24	702.24	702.25	702.25	702.26	702.26
1.06 CFS	13.60	13.64	13.67	13.70	13.73	13.76	13.79	13.82
1.06 ELEV	702.27	702.27	702.28	702.28	702.29	702.29	702.30	702.30
1.13 CFS	13.85	13.88	13.91	13.94	13.97	14.00	14.03	14.06
1.13 ELEV	702.31	702.31	702.32	702.32	702.33	702.33	702.34	702.34
1.19 CFS	14.09	14.12	14.14	14.17	14.20	14.23	14.25	14.28
1.19 ELEV	702.35	702.35	702.36	702.36	702.37	702.37	702.38	702.38
1.26 CFS	14.31	14.33	14.36	14.38	14.41	14.43	14.46	14.48
1.26 ELEV	702.38	702.39	702.39	702.40	702.40	702.41	702.41	702.41
1.32 CFS	14.50	14.53	14.55	14.57	14.59	14.61	14.64	14.66
1.32 ELEV	702.42	702.42	702.42	702.43	702.43	702.44	702.44	702.44

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     1.38 CFS     14.68   14.70   14.72   14.74   14.76   14.77   14.79   14.81
     1.38 ELEV   702.45  702.45  702.45  702.46  702.46  702.46  702.47  702.47
     1.45 CFS     14.83   14.85   14.86   14.88   14.90   14.91   14.93   14.94
     1.45 ELEV   702.47  702.47  702.48  702.48  702.48  702.49  702.49  702.49
     1.51 CFS     14.96   14.97   14.99   15.00   15.01   15.03   15.04   15.06
     1.51 ELEV   702.49  702.50  702.50  702.50  702.50  702.50  702.51  702.51
     1.58 CFS     15.07   15.08   15.10   15.11   15.13   15.14   15.15   15.17
     1.58 ELEV   702.51  702.51  702.52  702.52  702.52  702.52  702.53  702.53
     1.64 CFS     15.18   15.20   15.21   15.22   15.24   15.25   15.26   15.28
     1.64 ELEV   702.53  702.53  702.53  702.54  702.54  702.54  702.54  702.55
     1.70 CFS     15.29   15.30   15.31   15.33   15.34   15.35   15.37   15.38
     1.70 ELEV   702.55  702.55  702.55  702.55  702.56  702.56  702.56  702.56
     1.77 CFS     15.39   15.40   15.42   15.43   15.44   15.46   15.47   15.48
     1.77 ELEV   702.57  702.57  702.57  702.57  702.57  702.58  702.58  702.58
     1.83 CFS     15.49   15.50   15.52   15.53   15.54   15.55   15.56   15.58
     1.83 ELEV   702.58  702.58  702.59  702.59  702.59  702.59  702.59  702.60
     1.90 CFS     15.59   15.60   15.61   15.62   15.63   15.65   15.66   15.67
     1.90 ELEV   702.60  702.60  702.60  702.60  702.61  702.61  702.61  702.61
     1.96 CFS     15.68   15.69   15.70   15.71   15.72   15.73   15.75   15.76
     1.96 ELEV   702.61  702.62  702.62  702.62  702.62  702.62  702.62  702.63
     2.02 CFS     15.77   15.78   15.79   15.80   15.81   15.82   15.83   15.84
     2.02 ELEV   702.63  702.63  702.63  702.63  702.63  702.64  702.64  702.64
     2.09 CFS     15.85   15.86   15.87   15.88   15.89   15.90   15.90   15.91
     2.09 ELEV   702.64  702.64  702.64  702.65  702.65  702.65  702.65  702.65
     2.15 CFS     15.92   15.93   15.94   15.95   15.96   15.97   15.97   15.98
     2.15 ELEV   702.65  702.66  702.66  702.66  702.66  702.66  702.66  702.66
     2.22 CFS     15.99   16.00   16.01   16.02   16.02   16.03   16.04   16.05
     2.22 ELEV   702.67  702.67  702.67  702.67  702.67  702.67  702.67  702.67
     2.28 CFS     16.05   16.06   16.07   16.08   16.08   16.09   16.10   16.10
     2.28 ELEV   702.68  702.68  702.68  702.68  702.68  702.68  702.68  702.68
     2.34 CFS     16.11   16.12   16.12   16.13   16.14   16.14   16.15   16.16
     2.34 ELEV   702.69  702.69  702.69  702.69  702.69  702.69  702.69  702.69
     2.41 CFS     16.16   16.17   16.17   16.18   16.19   16.19   16.20   16.20
     2.41 ELEV   702.69  702.69  702.70  702.70  702.70  702.70  702.70  702.70
     2.47 CFS     16.21   16.21   16.22   16.22   16.23   16.23   16.24   16.24
     2.47 ELEV   702.70  702.70  702.70  702.70  702.70  702.71  702.71  702.71
     2.54 CFS     16.25   16.25   16.26   16.26   16.27   16.27   16.28   16.28
     2.54 ELEV   702.71  702.71  702.71  702.71  702.71  702.71  702.71  702.71
     2.60 CFS     16.29   16.29   16.29   16.30   16.30   16.31   16.31   16.31
     2.60 ELEV   702.71  702.71  702.72  702.72  702.72  702.72  702.72  702.72
     2.66 CFS     16.32   16.32   16.32   16.33   16.33   16.33   16.34   16.34
     2.66 ELEV   702.72  702.72  702.72  702.72  702.72  702.72  702.72  702.72
     2.73 CFS     16.34   16.35   16.35   16.35   16.35   16.36   16.36   16.36
     2.73 ELEV   702.72  702.72  702.72  702.73  702.73  702.73  702.73  702.73
     2.79 CFS     16.37   16.37   16.37   16.37   16.37   16.38   16.38   16.38
     2.79 ELEV   702.73  702.73  702.73  702.73  702.73  702.73  702.73  702.73
     2.86 CFS     16.38   16.39   16.39   16.39   16.39   16.39   16.39   16.40
     2.86 ELEV   702.73  702.73  702.73  702.73  702.73  702.73  702.73  702.73
     2.92 CFS     16.40   16.40   16.40   16.40   16.40   16.41   16.41   16.41
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     2.92 ELEV   702.73  702.73  702.73  702.73  702.73  702.73  702.73  702.73
     2.98 CFS     16.41   16.41   16.41   16.41   16.41   16.41   16.42   16.42
     2.98 ELEV   702.73  702.74  702.74  702.74  702.74  702.74  702.74  702.74
     3.05 CFS     16.42   16.42   16.42   16.42   16.42   16.42   16.42   16.42
     3.05 ELEV   702.74  702.74  702.74  702.74  702.74  702.74  702.74  702.74
     3.11 CFS     16.42   16.42   16.42   16.42   16.43   16.43   16.43   16.43
     3.11 ELEV   702.74  702.74  702.74  702.74  702.74  702.74  702.74  702.74
     3.18 CFS     16.43   16.43   16.43
     3.18 ELEV   702.74  702.74  702.74

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                    .12 WATERSHED INCHES;      42 CFS-HRS;       3.5 ACRE-FEET.

 --- STRUCTURE  7, ALTERNATE  0, STORM  4, HYDROGRAPH ADDED TO READHD FILE ---


OPERATION RUNOFF    XSECTION  49

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .19                          8.4                        (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  1.72 WATERSHED INCHES;       3 CFS-HRS;        .2 ACRE-FEET.


OPERATION ADDHYD    XSECTION  50

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        3.19                         16.4                       (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                    .13 WATERSHED INCHES;      45 CFS-HRS;       3.7 ACRE-FEET.


OPERATION RESVOR    STRUCTURE 39

                    HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM = 4
     HRS      MAIN TIME INCREMENT =  .008 hr,       DRAINAGE AREA =    .61 SQ.MI.
      .06 CFS       .00     .01     .01     .02     .02     .03     .04     .06
      .06 ELEV   693.19  693.19  693.19  693.20  693.20  693.20  693.21  693.21
      .13 CFS       .07     .09     .10     .12     .14     .16     .18     .20
      .13 ELEV   693.22  693.22  693.23  693.24  693.24  693.25  693.26  693.27
      .19 CFS       .22     .25     .27     .29     .31     .33     .36     .38
      .19 ELEV   693.28  693.28  693.29  693.30  693.31  693.32  693.33  693.33
      .26 CFS       .40     .42     .44     .46     .48     .49     .51     .53
      .26 ELEV   693.34  693.35  693.36  693.36  693.37  693.38  693.39  693.39
      .32 CFS       .55     .57     .58     .60     .62     .64     .65     .67
      .32 ELEV   693.40  693.41  693.41  693.42  693.43  693.43  693.44  693.45
      .38 CFS       .69     .70     .72     .74     .75     .77     .79     .81
      .38 ELEV   693.45  693.46  693.46  693.47  693.48  693.48  693.49  693.50
      .45 CFS       .82     .84     .86     .88     .90     .92     .93     .95
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TR20 ------------------------------------------------------------------------ SCS -
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      .45 ELEV   693.50  693.51  693.52  693.53  693.53  693.54  693.55  693.55
      .51 CFS       .97     .99    1.01    1.03    1.05    1.07    1.09    1.11
      .51 ELEV   693.56  693.57  693.58  693.58  693.59  693.60  693.61  693.61
      .58 CFS      1.12    1.14    1.16    1.18    1.20    1.22    1.23    1.25
      .58 ELEV   693.62  693.63  693.63  693.64  693.65  693.65  693.66  693.67
      .64 CFS      1.27    1.29    1.30    1.32    1.34    1.35    1.37    1.39
      .64 ELEV   693.67  693.68  693.69  693.69  693.70  693.71  693.71  693.72
      .70 CFS      1.40    1.42    1.44    1.45    1.47    1.48    1.50    1.52
      .70 ELEV   693.73  693.73  693.74  693.74  693.75  693.76  693.76  693.77
      .77 CFS      1.53    1.55    1.56    1.58    1.59    1.61    1.62    1.64
      .77 ELEV   693.78  693.78  693.79  693.79  693.80  693.80  693.81  693.82
      .83 CFS      1.65    1.67    1.68    1.69    1.71    1.72    1.74    1.75
      .83 ELEV   693.82  693.83  693.83  693.84  693.84  693.85  693.85  693.86
      .90 CFS      1.76    1.77    1.79    1.80    1.81    1.82    1.84    1.85
      .90 ELEV   693.86  693.87  693.87  693.88  693.88  693.89  693.89  693.90
      .96 CFS      1.86    1.87    1.88    1.89    1.90    1.91    1.92    1.93
      .96 ELEV   693.90  693.90  693.91  693.91  693.92  693.92  693.93  693.93
     1.02 CFS      1.94    1.95    1.96    1.97    1.98    1.99    2.00    2.01
     1.02 ELEV   693.93  693.94  693.94  693.94  693.95  693.95  693.96  693.96
     1.09 CFS      2.02    2.03    2.04    2.05    2.06    2.06    2.07    2.08
     1.09 ELEV   693.96  693.97  693.97  693.97  693.98  693.98  693.98  693.98
     1.15 CFS      2.09    2.10    2.10    2.11    2.12    2.13    2.15    2.17
     1.15 ELEV   693.99  693.99  693.99  694.00  694.00  694.00  694.00  694.01
     1.22 CFS      2.19    2.20    2.22    2.24    2.25    2.27    2.28    2.30
     1.22 ELEV   694.01  694.01  694.01  694.02  694.02  694.02  694.02  694.03
     1.28 CFS      2.32    2.33    2.35    2.36    2.38    2.39    2.41    2.42
     1.28 ELEV   694.03  694.03  694.03  694.04  694.04  694.04  694.04  694.04
     1.34 CFS      2.43    2.45    2.46    2.48    2.49    2.50    2.52    2.53
     1.34 ELEV   694.05  694.05  694.05  694.05  694.05  694.06  694.06  694.06
     1.41 CFS      2.54    2.56    2.57    2.58    2.60    2.61    2.62    2.64
     1.41 ELEV   694.06  694.06  694.07  694.07  694.07  694.07  694.07  694.08
     1.47 CFS      2.65    2.66    2.67    2.69    2.70    2.71    2.72    2.73
     1.47 ELEV   694.08  694.08  694.08  694.08  694.09  694.09  694.09  694.09
     1.54 CFS      2.75    2.76    2.77    2.78    2.79    2.80    2.82    2.83
     1.54 ELEV   694.09  694.09  694.10  694.10  694.10  694.10  694.10  694.10
     1.60 CFS      2.84    2.85    2.86    2.87    2.88    2.89    2.91    2.92
     1.60 ELEV   694.11  694.11  694.11  694.11  694.11  694.11  694.12  694.12
     1.66 CFS      2.93    2.94    2.95    2.96    2.97    2.98    2.99    3.00
     1.66 ELEV   694.12  694.12  694.12  694.12  694.13  694.13  694.13  694.13
     1.73 CFS      3.01    3.03    3.04    3.05    3.06    3.07    3.08    3.09
     1.73 ELEV   694.13  694.13  694.13  694.14  694.14  694.14  694.14  694.14
     1.79 CFS      3.10    3.11    3.12    3.13    3.14    3.15    3.16    3.17
     1.79 ELEV   694.14  694.15  694.15  694.15  694.15  694.15  694.15  694.15
     1.86 CFS      3.18    3.19    3.20    3.21    3.22    3.23    3.24    3.25
     1.86 ELEV   694.16  694.16  694.16  694.16  694.16  694.16  694.17  694.17
     1.92 CFS      3.26    3.27    3.28    3.29    3.30    3.31    3.32    3.33
     1.92 ELEV   694.17  694.17  694.17  694.17  694.17  694.18  694.18  694.18
     1.98 CFS      3.34    3.35    3.36    3.37    3.38    3.39    3.40    3.41
     1.98 ELEV   694.18  694.18  694.18  694.18  694.19  694.19  694.19  694.19
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     2.05 CFS      3.42    3.43    3.44    3.45    3.46    3.47    3.48    3.49
     2.05 ELEV   694.19  694.19  694.19  694.20  694.20  694.20  694.20  694.20
     2.11 CFS      3.50    3.51    3.52    3.53    3.54    3.55    3.56    3.57
     2.11 ELEV   694.20  694.21  694.21  694.21  694.21  694.21  694.21  694.21
     2.18 CFS      3.58    3.59    3.60    3.61    3.62    3.63    3.64    3.65
     2.18 ELEV   694.22  694.22  694.22  694.22  694.22  694.22  694.22  694.23
     2.24 CFS      3.66    3.67    3.68    3.69    3.70    3.71    3.72    3.73
     2.24 ELEV   694.23  694.23  694.23  694.23  694.23  694.23  694.24  694.24
     2.30 CFS      3.74    3.75    3.75    3.76    3.77    3.78    3.79    3.80
     2.30 ELEV   694.24  694.24  694.24  694.24  694.24  694.24  694.25  694.25
     2.37 CFS      3.81    3.82    3.83    3.84    3.85    3.86    3.87    3.88
     2.37 ELEV   694.25  694.25  694.25  694.25  694.25  694.26  694.26  694.26
     2.43 CFS      3.89    3.90    3.91    3.92    3.93    3.94    3.95    3.95
     2.43 ELEV   694.26  694.26  694.26  694.26  694.27  694.27  694.27  694.27
     2.50 CFS      3.96    3.97    3.98    3.99    4.00    4.01    4.02    4.03
     2.50 ELEV   694.27  694.27  694.27  694.28  694.28  694.28  694.28  694.28
     2.56 CFS      4.04    4.05    4.06    4.07    4.08    4.09    4.10    4.11
     2.56 ELEV   694.28  694.28  694.29  694.29  694.29  694.29  694.29  694.29
     2.62 CFS      4.11    4.12    4.13    4.14    4.15    4.16    4.17    4.18
     2.62 ELEV   694.29  694.30  694.30  694.30  694.30  694.30  694.30  694.30
     2.69 CFS      4.19    4.20    4.21    4.22    4.23    4.24    4.25    4.25
     2.69 ELEV   694.30  694.31  694.31  694.31  694.31  694.31  694.31  694.31
     2.75 CFS      4.26    4.27    4.28    4.29    4.30    4.31    4.32    4.33
     2.75 ELEV   694.32  694.32  694.32  694.32  694.32  694.32  694.32  694.33
     2.82 CFS      4.34    4.35    4.36    4.37    4.38    4.38    4.39    4.40
     2.82 ELEV   694.33  694.33  694.33  694.33  694.33  694.33  694.33  694.34
     2.88 CFS      4.41    4.42    4.43    4.44    4.45    4.46    4.47    4.48
     2.88 ELEV   694.34  694.34  694.34  694.34  694.34  694.34  694.35  694.35
     2.94 CFS      4.49    4.49    4.50    4.51    4.52    4.53    4.54    4.55
     2.94 ELEV   694.35  694.35  694.35  694.35  694.35  694.36  694.36  694.36
     3.01 CFS      4.56    4.57    4.58    4.59    4.59    4.60    4.61    4.62
     3.01 ELEV   694.36  694.36  694.36  694.36  694.36  694.37  694.37  694.37
     3.07 CFS      4.63    4.64    4.65    4.66    4.67    4.68    4.69    4.69
     3.07 ELEV   694.37  694.37  694.37  694.37  694.38  694.38  694.38  694.38
     3.14 CFS      4.70    4.71    4.72    4.73    4.74    4.75    4.76    4.77
     3.14 ELEV   694.38  694.38  694.38  694.38  694.39  694.39  694.39  694.39

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .02 WATERSHED INCHES;       8 CFS-HRS;        .7 ACRE-FEET.

    DURATION(HRS)   2      0
    FLOW(CFS)      35      5 TRUNCATED

 --- STRUCTURE 39, ALTERNATE  0, STORM  4, HYDROGRAPH ADDED TO READHD FILE ---


EXECUTIVE CONTROL  ENDCMP    COMPUTATIONS COMPLETED FOR PASS   4
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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
08/14/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
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EXECUTIVE CONTROL  COMPUT    FROM XSECTION  91  TO STRUCTURE 39           1-HR
    STARTING TIME =   .00       RAIN DEPTH =  3.56       RAIN DURATION =  1.00
    ANT. RUNOFF COND. = 2       MAIN TIME INCREMENT =   .008 HOURS
    ALTERNATE NO. = 0           STORM NO. = 5            RAIN TABLE NO. = 1


OPERATION RUNOFF    XSECTION  91

    PEAK TIME(HRS)              PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .87                          79.6                        (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  1.34 WATERSHED INCHES;      80 CFS-HRS;       6.6 ACRE-FEET.


OPERATION RUNOFF    XSECTION  92

    PEAK TIME(HRS)              PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .97                          128.1                       (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  1.68 WATERSHED INCHES;     140 CFS-HRS;      11.6 ACRE-FEET.


OPERATION ADDHYD    XSECTION  93

    PEAK TIME(HRS)              PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .93                          206.3                       (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  1.54 WATERSHED INCHES;     220 CFS-HRS;      18.2 ACRE-FEET.


OPERATION RUNOFF    XSECTION  94

    PEAK TIME(HRS)              PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        1.02                          9.8                         (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                   .78 WATERSHED INCHES;      10 CFS-HRS;        .8 ACRE-FEET.


OPERATION RESVOR    STRUCTURE 11

                   HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM = 5
     HRS      MAIN TIME INCREMENT =  .008 hr,      DRAINAGE AREA =    .02 SQ.MI.
      .18 CFS       .00     .01     .01     .01     .02     .02     .02     .03
      .18 ELEV   737.50  737.51  737.51  737.51  737.52  737.52  737.52  737.53
      .24 CFS       .04     .04     .05     .06     .07     .09     .10     .12
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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
08/14/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
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      .24 ELEV   737.54  737.54  737.55  737.56  737.57  737.59  737.60  737.62
      .30 CFS       .13     .15     .17     .20     .22     .25     .28     .31
      .30 ELEV   737.63  737.65  737.67  737.70  737.72  737.75  737.78  737.81
      .37 CFS       .35     .39     .43     .47     .50     .51     .52     .53
      .37 ELEV   737.85  737.89  737.93  737.97  738.00  738.02  738.04  738.05
      .43 CFS       .54     .55     .56     .57     .59     .60     .62     .64
      .43 ELEV   738.07  738.10  738.12  738.15  738.17  738.21  738.24  738.27
      .50 CFS       .66     .68     .70     .72     .74     .77     .79     .82
      .50 ELEV   738.31  738.35  738.39  738.44  738.48  738.53  738.59  738.64
      .56 CFS       .85     .88     .91     .94     .98    1.03    1.12    1.21
      .56 ELEV   738.70  738.76  738.82  738.89  738.96  739.02  739.06  739.10
      .62 CFS      1.30    1.39    1.48    1.58    1.68    1.77    1.87    1.97
      .62 ELEV   739.15  739.19  739.24  739.29  739.34  739.39  739.44  739.49
      .69 CFS      2.08    2.18    2.28    2.39    2.49    2.60    2.71    2.82
      .69 ELEV   739.54  739.59  739.64  739.69  739.75  739.80  739.85  739.91
      .75 CFS      2.92    3.02    3.11    3.19    3.27    3.35    3.44    3.52
      .75 ELEV   739.96  740.01  740.05  740.09  740.14  740.18  740.22  740.26
      .82 CFS      3.61    3.69    3.77    3.86    3.94    4.03    4.11    4.20
      .82 ELEV   740.30  740.34  740.39  740.43  740.47  740.51  740.56  740.60
      .88 CFS      4.28    4.36    4.45    4.53    4.61    4.69    4.77    4.85
      .88 ELEV   740.64  740.68  740.72  740.76  740.81  740.85  740.89  740.93
      .94 CFS      4.93    5.01    5.06    5.12    5.17    5.22    5.28    5.33
      .94 ELEV   740.97  741.00  741.03  741.06  741.09  741.11  741.14  741.16
     1.01 CFS      5.38    5.43    5.48    5.53    5.58    5.63    5.68    5.73
     1.01 ELEV   741.19  741.22  741.24  741.27  741.29  741.32  741.34  741.36
     1.07 CFS      5.78    5.82    5.87    5.91    5.96    6.00    6.04    6.08
     1.07 ELEV   741.39  741.41  741.43  741.46  741.48  741.50  741.52  741.54
     1.14 CFS      6.12    6.16    6.20    6.24    6.27    6.31    6.34    6.38
     1.14 ELEV   741.56  741.58  741.60  741.62  741.64  741.65  741.67  741.69
     1.20 CFS      6.41    6.44    6.47    6.50    6.53    6.56    6.58    6.61
     1.20 ELEV   741.71  741.72  741.74  741.75  741.76  741.78  741.79  741.80
     1.26 CFS      6.63    6.66    6.68    6.70    6.72    6.74    6.75    6.77
     1.26 ELEV   741.82  741.83  741.84  741.85  741.86  741.87  741.88  741.89
     1.33 CFS      6.79    6.80    6.81    6.82    6.83    6.84    6.85    6.86
     1.33 ELEV   741.89  741.90  741.91  741.91  741.92  741.92  741.93  741.93
     1.39 CFS      6.87    6.87    6.87    6.88    6.88    6.88    6.88    6.87
     1.39 ELEV   741.93  741.94  741.94  741.94  741.94  741.94  741.94  741.94
     1.46 CFS      6.87    6.87    6.86    6.85    6.85    6.84    6.83    6.82
     1.46 ELEV   741.94  741.93  741.93  741.93  741.92  741.92  741.91  741.91
     1.52 CFS      6.81    6.79    6.78    6.76    6.75    6.73    6.71    6.69
     1.52 ELEV   741.90  741.90  741.89  741.88  741.87  741.87  741.86  741.85
     1.58 CFS      6.67    6.65    6.63    6.61    6.59    6.56    6.54    6.51
     1.58 ELEV   741.84  741.83  741.82  741.80  741.79  741.78  741.77  741.76
     1.65 CFS      6.48    6.46    6.43    6.40    6.37    6.34    6.31    6.28
     1.65 ELEV   741.74  741.73  741.71  741.70  741.69  741.67  741.66  741.64
     1.71 CFS      6.25    6.21    6.18    6.15    6.11    6.08    6.04    6.01
     1.71 ELEV   741.62  741.61  741.59  741.57  741.56  741.54  741.52  741.50
     1.78 CFS      5.97    5.94    5.90    5.86    5.83    5.79    5.75    5.71
     1.78 ELEV   741.49  741.47  741.45  741.43  741.41  741.39  741.38  741.36
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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
08/14/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
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1.84	CFS	5.67	5.64	5.60	5.56	5.52	5.48	5.44	5.40
1.84	ELEV	741.34	741.32	741.30	741.28	741.26	741.24	741.22	741.20
1.90	CFS	5.36	5.32	5.28	5.24	5.20	5.16	5.12	5.08
1.90	ELEV	741.18	741.16	741.14	741.12	741.10	741.08	741.06	741.04
1.97	CFS	5.04	5.00	4.94	4.88	4.83	4.77	4.71	4.66
1.97	ELEV	741.02	741.00	740.97	740.94	740.91	740.89	740.86	740.83
2.03	CFS	4.60	4.55	4.49	4.44	4.39	4.33	4.28	4.23
2.03	ELEV	740.80	740.77	740.75	740.72	740.69	740.67	740.64	740.61
2.10	CFS	4.18	4.12	4.07	4.02	3.97	3.92	3.87	3.82
2.10	ELEV	740.59	740.56	740.54	740.51	740.49	740.46	740.44	740.41
2.16	CFS	3.78	3.73	3.68	3.63	3.59	3.54	3.49	3.45
2.16	ELEV	740.39	740.36	740.34	740.32	740.29	740.27	740.25	740.22
2.22	CFS	3.40	3.36	3.32	3.27	3.23	3.19	3.14	3.10
2.22	ELEV	740.20	740.18	740.16	740.14	740.11	740.09	740.07	740.05
2.29	CFS	3.06	3.02	2.97	2.92	2.87	2.81	2.76	2.71
2.29	ELEV	740.03	740.01	739.99	739.96	739.93	739.91	739.88	739.86
2.35	CFS	2.66	2.62	2.57	2.52	2.48	2.43	2.39	2.34
2.35	ELEV	739.83	739.81	739.78	739.76	739.74	739.72	739.69	739.67
2.42	CFS	2.30	2.26	2.22	2.18	2.14	2.10	2.06	2.02
2.42	ELEV	739.65	739.63	739.61	739.59	739.57	739.55	739.53	739.51
2.48	CFS	1.98	1.95	1.91	1.87	1.84	1.81	1.77	1.74
2.48	ELEV	739.49	739.47	739.45	739.44	739.42	739.40	739.39	739.37
2.54	CFS	1.71	1.67	1.64	1.61	1.58	1.55	1.52	1.50
2.54	ELEV	739.35	739.34	739.32	739.31	739.29	739.28	739.26	739.25
2.61	CFS	1.47	1.44	1.41	1.39	1.36	1.33	1.31	1.28
2.61	ELEV	739.23	739.22	739.21	739.19	739.18	739.17	739.15	739.14
2.67	CFS	1.26	1.24	1.21	1.19	1.17	1.15	1.12	1.10
2.67	ELEV	739.13	739.12	739.11	739.09	739.08	739.07	739.06	739.05
2.74	CFS	1.08	1.06	1.04	1.02	1.00	.99	.98	.98
2.74	ELEV	739.04	739.03	739.02	739.01	739.00	738.98	738.97	738.95
2.80	CFS	.97	.96	.95	.95	.94	.93	.92	.91
2.80	ELEV	738.94	738.92	738.91	738.89	738.88	738.86	738.84	738.83
2.86	CFS	.91	.90	.89	.88	.88	.87	.86	.86
2.86	ELEV	738.81	738.80	738.78	738.77	738.75	738.74	738.73	738.71
2.93	CFS	.85	.84	.83	.83	.82	.81	.81	.80
2.93	ELEV	738.70	738.68	738.67	738.65	738.64	738.63	738.61	738.60
2.99	CFS	.79	.79	.78	.77	.77	.76	.75	.75
2.99	ELEV	738.58	738.57	738.56	738.54	738.53	738.52	738.50	738.49
3.06	CFS	.74	.73	.73	.72	.71	.71	.70	.69
3.06	ELEV	738.48	738.47	738.45	738.44	738.43	738.41	738.40	738.39
3.12	CFS	.69	.68	.68	.67	.66	.66	.65	.65
3.12	ELEV	738.38	738.37	738.35	738.34	738.33	738.32	738.31	738.29
3.18	CFS	.64	.64	.63	.62	.62	.61	.61	.60
3.18	ELEV	738.28	738.27	738.26	738.25	738.24	738.23	738.22	738.20

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
.77 WATERSHED INCHES; 10 CFS-HRS; .8 ACRE-FEET.


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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
08/14/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
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    DURATION(HRS)   2      3
    FLOW(CFS)       1      1 TRUNCATED

 --- STRUCTURE 11, ALTERNATE  0, STORM  5, HYDROGRAPH ADDED TO READHD FILE ---


OPERATION RUNOFF    XSECTION  96

    PEAK TIME(HRS)              PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        .20                           41.5                        (RUNOFF)
       1.04                            5.3                        (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  3.33 WATERSHED INCHES;      18 CFS-HRS;       1.5 ACRE-FEET.


OPERATION ADDHYD    XSECTION  97

    PEAK TIME(HRS)              PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .92                           217.9                        (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  1.54 WATERSHED INCHES;     248 CFS-HRS;      20.5 ACRE-FEET.


OPERATION RESVOR    STRUCTURE  6

                    HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM = 5
     HRS      MAIN TIME INCREMENT =  .008 hr,       DRAINAGE AREA =    .28 SQ.MI.
      .02 CFS      .00     .01     .02     .04     .06     .10     .16     .24
      .02 ELEV   707.00  707.00  707.00  707.00  707.01  707.01  707.02  707.03
      .09 CFS      .34     .47     .63     .83    1.07    1.36    1.68    2.05
      .09 ELEV   707.04  707.06  707.08  707.10  707.13  707.16  707.20  707.24
      .15 CFS     2.45    2.89    3.35    3.84    4.35    4.88    5.42    5.96
      .15 ELEV   707.29  707.34  707.40  707.46  707.52  707.58  707.64  707.71
      .22 CFS     6.52    7.08    7.64    8.21    8.88    9.60   10.32   11.05
      .22 ELEV   707.78  707.84  707.91  707.98  708.04  708.10  708.17  708.23
      .28 CFS    11.77   12.49   13.21   13.93   14.65   15.36   16.06   16.76
      .28 ELEV   708.29  708.35  708.41  708.48  708.54  708.60  708.66  708.72
      .34 CFS    17.46   18.15   18.84   19.52   20.29   21.26   22.23   23.19
      .34 ELEV   708.78  708.84  708.90  708.96  709.02  709.07  709.12  709.18
      .41 CFS    24.14   25.10   26.05   27.01   27.97   28.93   29.90   30.88
      .41 ELEV   709.23  709.28  709.34  709.39  709.44  709.50  709.55  709.60
      .47 CFS    31.87   32.86   33.87   34.89   35.92   36.97   38.02   38.97
      .47 ELEV   709.66  709.71  709.77  709.83  709.88  709.94  710.00  710.06
      .54 CFS    39.93   40.89   41.87   42.85   43.85   44.84   45.85   46.86
      .54 ELEV   710.11  710.17  710.23  710.29  710.34  710.40  710.46  710.52
      .60 CFS    47.88   48.91   49.94   50.99   52.05   53.11   54.19   55.16
      .60 ELEV   710.58  710.64  710.70  710.76  710.83  710.89  710.95  711.01
      .66 CFS    55.82   56.49   57.17   57.85   58.55   59.25   59.96   60.68
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.66	ELEV	711.07	711.14	711.20	711.26	711.32	711.39	711.45	711.52
.73	CFS	61.40	62.14	62.88	63.62	64.37	65.13	65.89	71.30
.73	ELEV	711.58	711.65	711.72	711.78	711.85	711.92	711.99	712.06
.79	CFS	77	83	89	94	100	105	110	115
.79	ELEV	712.12	712.18	712.24	712.30	712.35	712.40	712.46	712.51
.86	CFS	119	124	128	133	137	141	145	148
.86	ELEV	712.56	712.60	712.65	712.69	712.74	712.78	712.82	712.86
.92	CFS	152	155	158	161	164	167	169	172
.92	ELEV	712.89	712.93	712.96	712.99	713.02	713.05	713.08	713.10
.98	CFS	174	176	178	180	182	184	185	187
.98	ELEV	713.12	713.15	713.17	713.19	713.21	713.23	713.24	713.26
1.05	CFS	189	190	191	192	194	194	195	196
1.05	ELEV	713.28	713.29	713.31	713.32	713.33	713.34	713.35	713.35
1.11	CFS	196	197	197	197	198	198	198	197
1.11	ELEV	713.36	713.36	713.37	713.37	713.37	713.37	713.37	713.37
1.18	CFS	197	197	197	196	196	195	195	194
1.18	ELEV	713.37	713.36	713.36	713.36	713.35	713.35	713.34	713.34
1.24	CFS	194	193	192	191	191	190	189	188
1.24	ELEV	713.33	713.32	713.31	713.31	713.30	713.29	713.28	713.27
1.30	CFS	187	186	185	184	183	182	181	180
1.30	ELEV	713.26	713.25	713.24	713.23	713.22	713.21	713.20	713.19
1.37	CFS	179	178	176	175	174	173	171	170
1.37	ELEV	713.17	713.16	713.15	713.14	713.12	713.11	713.10	713.08
1.43	CFS	169	167	166	164	163	162	160	159
1.43	ELEV	713.07	713.05	713.04	713.03	713.01	713.00	712.98	712.97
1.50	CFS	157	156	154	153	151	150	148	146
1.50	ELEV	712.95	712.93	712.92	712.90	712.89	712.87	712.85	712.84
1.56	CFS	145	143	142	140	138	137	135	133
1.56	ELEV	712.82	712.80	712.79	712.77	712.75	712.74	712.72	712.70
1.62	CFS	132	130	129	127	125	124	122	120
1.62	ELEV	712.69	712.67	712.65	712.64	712.62	712.60	712.58	712.57
1.69	CFS	119	117	116	114	112	111	109	108
1.69	ELEV	712.55	712.53	712.52	712.50	712.48	712.47	712.45	712.43
1.75	CFS	106	104	103	101	100	98	97	95
1.75	ELEV	712.42	712.40	712.38	712.37	712.35	712.34	712.32	712.30
1.82	CFS	93.63	92.14	90.66	89.20	87.75	86.32	84.90	83.49
1.82	ELEV	712.29	712.27	712.26	712.24	712.23	712.21	712.20	712.18
1.88	CFS	82.10	80.73	79.37	78.02	76.69	75.38	74.08	72.80
1.88	ELEV	712.17	712.15	712.14	712.13	712.11	712.10	712.08	712.07
1.94	CFS	71.54	70.29	69.06	67.84	66.64	65.93	65.79	65.64
1.94	ELEV	712.06	712.04	712.03	712.02	712.01	711.99	711.98	711.97
2.01	CFS	65.48	65.33	65.17	65.01	64.84	64.68	64.51	64.34
2.01	ELEV	711.95	711.94	711.92	711.91	711.89	711.88	711.86	711.85
2.07	CFS	64.17	63.99	63.82	63.64	63.46	63.28	63.09	62.91
2.07	ELEV	711.83	711.82	711.80	711.79	711.77	711.75	711.74	711.72
2.14	CFS	62.72	62.53	62.34	62.15	61.96	61.77	61.57	61.38
2.14	ELEV	711.70	711.68	711.67	711.65	711.63	711.62	711.60	711.58
2.20	CFS	61.18	60.98	60.78	60.58	60.38	60.18	59.97	59.77
2.20	ELEV	711.56	711.54	711.53	711.51	711.49	711.47	711.45	711.43

2.26	CFS	59.56	59.36	59.15	58.95	58.74	58.53	58.32	58.11
2.26	ELEV	711.41	711.40	711.38	711.36	711.34	711.32	711.30	711.28
2.33	CFS	57.90	57.69	57.48	57.27	57.06	56.85	56.63	56.42
2.33	ELEV	711.26	711.24	711.23	711.21	711.19	711.17	711.15	711.13
2.39	CFS	56.21	55.99	55.78	55.57	55.35	55.14	54.87	54.52
2.39	ELEV	711.11	711.09	711.07	711.05	711.03	711.01	710.99	710.97
2.46	CFS	54.16	53.81	53.45	53.10	52.75	52.40	52.05	51.71
2.46	ELEV	710.95	710.93	710.91	710.89	710.87	710.85	710.83	710.81
2.52	CFS	51.36	51.02	50.67	50.33	49.99	49.65	49.31	48.97
2.52	ELEV	710.79	710.77	710.75	710.73	710.71	710.69	710.67	710.65
2.58	CFS	48.64	48.30	47.97	47.64	47.31	46.98	46.66	46.33
2.58	ELEV	710.63	710.61	710.59	710.57	710.55	710.53	710.51	710.49
2.65	CFS	46.01	45.68	45.36	45.04	44.73	44.41	44.10	43.78
2.65	ELEV	710.47	710.45	710.43	710.41	710.40	710.38	710.36	710.34
2.71	CFS	43.47	43.16	42.85	42.55	42.24	41.94	41.64	41.34
2.71	ELEV	710.32	710.30	710.29	710.27	710.25	710.23	710.21	710.20
2.78	CFS	41.04	40.74	40.45	40.15	39.86	39.57	39.29	39.00
2.78	ELEV	710.18	710.16	710.14	710.13	710.11	710.09	710.08	710.06
2.84	CFS	38.71	38.43	38.15	37.86	37.54	37.23	36.93	36.62
2.84	ELEV	710.04	710.03	710.01	709.99	709.97	709.96	709.94	709.92
2.90	CFS	36.32	36.02	35.72	35.42	35.13	34.84	34.55	34.26
2.90	ELEV	709.91	709.89	709.87	709.86	709.84	709.82	709.81	709.79
2.97	CFS	33.97	33.69	33.41	33.13	32.85	32.58	32.30	32.03
2.97	ELEV	709.78	709.76	709.74	709.73	709.71	709.70	709.68	709.67
3.03	CFS	31.76	31.50	31.23	30.97	30.71	30.45	30.19	29.93
3.03	ELEV	709.65	709.64	709.62	709.61	709.59	709.58	709.57	709.55
3.10	CFS	29.68	29.43	29.18	28.93	28.69	28.44	28.20	27.96
3.10	ELEV	709.54	709.52	709.51	709.50	709.48	709.47	709.46	709.44
3.16	CFS	27.72	27.49	27.25	27.02	26.79			
3.16	ELEV	709.43	709.42	709.40	709.39	709.38			

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
1.41 WATERSHED INCHES; 253 CFS-HRS; 20.9 ACRE-FEET.

DURATION(HRS) 2 3
FLOW(CFS) 48 27 TRUNCATED

--- STRUCTURE 6, ALTERNATE 0, STORM 5, HYDROGRAPH ADDED TO READHD FILE ---

OPERATION RUNOFF XSECTION 99

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
.27	435.2	(RUNOFF)
1.04	87.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
2.24 WATERSHED INCHES; 220 CFS-HRS; 18.2 ACRE-FEET.

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TR20 ------------------------------------------------------------------------ SCS -
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OPERATION ADDHYD    XSECTION  90

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .28                         446.7                       (NULL)
         .92                         262.9                       (NULL)
        1.05                         274.6                       (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                1.71 WATERSHED INCHES;     473 CFS-HRS;      39.1 ACRE-FEET.


OPERATION RESVOR    STRUCTURE  7

                    HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM = 5
     HRS      MAIN TIME INCREMENT =  .008 hr,      DRAINAGE AREA =    .54 SQ.MI.
      .05 CFS       .00     .01     .01     .02     .03     .05     .07     .10
      .05 ELEV   700.00  700.00  700.00  700.01  700.01  700.01  700.02  700.02
      .11 CFS       .14     .19     .25     .32     .40     .50     .61     .73
      .11 ELEV   700.03  700.05  700.06  700.08  700.10  700.13  700.15  700.18
      .18 CFS       .85     .99    1.14    1.30    1.46    1.63    1.80    1.98
      .18 ELEV   700.21  700.25  700.29  700.32  700.36  700.41  700.45  700.50
      .24 CFS      2.17    2.36    2.55    2.75    2.95    3.16    3.37    3.58
      .24 ELEV   700.54  700.59  700.64  700.69  700.74  700.79  700.84  700.89
      .30 CFS      3.79    4.00    4.28    4.55    4.82    5.09    5.35    5.62
      .30 ELEV   700.95  701.00  701.03  701.07  701.10  701.14  701.17  701.20
      .37 CFS      5.88    6.14    6.40    6.65    6.90    7.14    7.39    7.63
      .37 ELEV   701.24  701.27  701.30  701.33  701.36  701.39  701.42  701.45
      .43 CFS      7.86    8.09    8.32    8.55    8.77    8.99    9.20    9.41
      .43 ELEV   701.48  701.51  701.54  701.57  701.60  701.62  701.65  701.68
      .50 CFS      9.62    9.83   10.03   10.23   10.42   10.62   10.80   10.99
      .50 ELEV   701.70  701.73  701.75  701.78  701.80  701.83  701.85  701.87
      .56 CFS     11.17   11.34   11.51   11.68   11.84   12.00   12.11   12.22
      .56 ELEV   701.90  701.92  701.94  701.96  701.98  702.00  702.02  702.04
      .62 CFS     12.33   12.43   12.53   12.63   12.73   12.83   12.92   13.02
      .62 ELEV   702.05  702.07  702.09  702.11  702.12  702.14  702.15  702.17
      .69 CFS     13.11   13.20   13.29   13.38   13.47   13.56   13.64   13.73
      .69 ELEV   702.19  702.20  702.22  702.23  702.24  702.26  702.27  702.29
      .75 CFS     13.81   13.90   13.98   14.06   14.15   14.23   14.32   14.40
      .75 ELEV   702.30  702.32  702.33  702.34  702.36  702.37  702.39  702.40
      .82 CFS     14.49   14.58   14.67   14.76   14.86   14.95   15.04   15.14
      .82 ELEV   702.42  702.43  702.45  702.46  702.48  702.49  702.51  702.52
      .88 CFS     15.23   15.33   15.43   15.53   15.62   15.72   15.82   15.91
      .88 ELEV   702.54  702.56  702.57  702.59  702.60  702.62  702.64  702.65
      .94 CFS     16.01   16.10   16.20   16.29   16.38   16.48   16.57   16.66
      .94 ELEV   702.67  702.68  702.70  702.72  702.73  702.75  702.76  702.78
     1.01 CFS     16.76   16.85   16.94   17.04   17.13   17.22   17.32   17.41
     1.01 ELEV   702.79  702.81  702.82  702.84  702.86  702.87  702.89  702.90
     1.07 CFS     17.50   17.59   17.68   17.77   17.85   17.94   18.01   18.06
     1.07 ELEV   702.92  702.93  702.95  702.96  702.98  702.99  703.00  703.02
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     1.14 CFS     18.11   18.16   18.20   18.25   18.29   18.34   18.38   18.42
     1.14 ELEV   703.03  703.04  703.05  703.06  703.07  703.08  703.09  703.11
     1.20 CFS     18.46   18.50   18.54   18.58   18.62   18.66   18.69   18.73
     1.20 ELEV   703.12  703.13  703.14  703.15  703.16  703.16  703.17  703.18
     1.26 CFS     18.77   18.80   18.84   18.87   18.91   18.94   18.97   19.00
     1.26 ELEV   703.19  703.20  703.21  703.22  703.23  703.23  703.24  703.25
     1.33 CFS     19.04   19.07   19.10   19.13   19.16   19.19   19.22   19.25
     1.33 ELEV   703.26  703.27  703.28  703.28  703.29  703.30  703.31  703.31
     1.39 CFS     19.28   19.31   19.34   19.37   19.39   19.42   19.45   19.48
     1.39 ELEV   703.32  703.33  703.33  703.34  703.35  703.36  703.36  703.37
     1.46 CFS     19.50   19.53   19.56   19.58   19.61   19.63   19.66   19.68
     1.46 ELEV   703.38  703.38  703.39  703.40  703.40  703.41  703.41  703.42
     1.52 CFS     19.71   19.73   19.75   19.78   19.80   19.82   19.85   19.87
     1.52 ELEV   703.43  703.43  703.44  703.44  703.45  703.46  703.46  703.47
     1.58 CFS     19.89   19.91   19.93   19.95   19.97   19.99   20.01   20.03
     1.58 ELEV   703.47  703.48  703.48  703.49  703.49  703.50  703.50  703.51
     1.65 CFS     20.05   20.07   20.09   20.11   20.13   20.14   20.16   20.18
     1.65 ELEV   703.51  703.52  703.52  703.53  703.53  703.54  703.54  703.54
     1.71 CFS     20.20   20.21   20.23   20.24   20.26   20.28   20.29   20.31
     1.71 ELEV   703.55  703.55  703.56  703.56  703.57  703.57  703.57  703.58
     1.78 CFS     20.32   20.33   20.35   20.36   20.38   20.39   20.40   20.41
     1.78 ELEV   703.58  703.58  703.59  703.59  703.59  703.60  703.60  703.60
     1.84 CFS     20.43   20.44   20.45   20.46   20.47   20.48   20.50   20.51
     1.84 ELEV   703.61  703.61  703.61  703.62  703.62  703.62  703.62  703.63
     1.90 CFS     20.52   20.53   20.54   20.55   20.56   20.56   20.57   20.58
     1.90 ELEV   703.63  703.63  703.63  703.64  703.64  703.64  703.64  703.65
     1.97 CFS     20.59   20.60   20.61   20.62   20.62   20.63   20.64   20.65
     1.97 ELEV   703.65  703.65  703.65  703.65  703.66  703.66  703.66  703.66
     2.03 CFS     20.66   20.66   20.67   20.68   20.69   20.69   20.70   20.71
     2.03 ELEV   703.66  703.67  703.67  703.67  703.67  703.67  703.68  703.68
     2.10 CFS     20.72   20.73   20.73   20.74   20.75   20.76   20.76   20.77
     2.10 ELEV   703.68  703.68  703.68  703.68  703.69  703.69  703.69  703.69
     2.16 CFS     20.78   20.78   20.79   20.80   20.81   20.81   20.82   20.83
     2.16 ELEV   703.69  703.70  703.70  703.70  703.70  703.70  703.71  703.71
     2.22 CFS     20.84   20.84   20.85   20.86   20.86   20.87   20.88   20.88
     2.22 ELEV   703.71  703.71  703.71  703.71  703.72  703.72  703.72  703.72
     2.29 CFS     20.89   20.90   20.90   20.91   20.92   20.92   20.93   20.94
     2.29 ELEV   703.72  703.72  703.73  703.73  703.73  703.73  703.73  703.73
     2.35 CFS     20.94   20.95   20.96   20.96   20.97   20.98   20.98   20.99
     2.35 ELEV   703.74  703.74  703.74  703.74  703.74  703.74  703.75  703.75
     2.42 CFS     20.99   21.00   21.01   21.01   21.02   21.02   21.03   21.04
     2.42 ELEV   703.75  703.75  703.75  703.75  703.75  703.76  703.76  703.76
     2.48 CFS     21.04   21.05   21.05   21.06   21.06   21.07   21.07   21.08
     2.48 ELEV   703.76  703.76  703.76  703.76  703.77  703.77  703.77  703.77
     2.54 CFS     21.09   21.09   21.10   21.10   21.11   21.11   21.12   21.12
     2.54 ELEV   703.77  703.77  703.77  703.78  703.78  703.78  703.78  703.78
     2.61 CFS     21.13   21.13   21.13   21.14   21.14   21.15   21.15   21.16
     2.61 ELEV   703.78  703.78  703.78  703.78  703.79  703.79  703.79  703.79
     2.67 CFS     21.16   21.17   21.17   21.17   21.18   21.18   21.19   21.19
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     2.67 ELEV   703.79  703.79  703.79  703.79  703.79  703.80  703.80  703.80
     2.74 CFS     21.19   21.20   21.20   21.20   21.21   21.21   21.21   21.22
     2.74 ELEV   703.80  703.80  703.80  703.80  703.80  703.80  703.80  703.80
     2.80 CFS     21.22   21.23   21.23   21.23   21.23   21.24   21.24   21.24
     2.80 ELEV   703.81  703.81  703.81  703.81  703.81  703.81  703.81  703.81
     2.86 CFS     21.25   21.25   21.25   21.26   21.26   21.26   21.26   21.27
     2.86 ELEV   703.81  703.81  703.81  703.81  703.81  703.82  703.82  703.82
     2.93 CFS     21.27   21.27   21.27   21.28   21.28   21.28   21.28   21.29
     2.93 ELEV   703.82  703.82  703.82  703.82  703.82  703.82  703.82  703.82
     2.99 CFS     21.29   21.29   21.29   21.29   21.30   21.30   21.30   21.30
     2.99 ELEV   703.82  703.82  703.82  703.82  703.82  703.82  703.82  703.83
     3.06 CFS     21.30   21.30   21.31   21.31   21.31   21.31   21.31   21.31
     3.06 ELEV   703.83  703.83  703.83  703.83  703.83  703.83  703.83  703.83
     3.12 CFS     21.31   21.32   21.32   21.32   21.32   21.32   21.32   21.32
     3.12 ELEV   703.83  703.83  703.83  703.83  703.83  703.83  703.83  703.83
     3.18 CFS     21.32   21.33
     3.18 ELEV   703.83  703.83

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .15 WATERSHED INCHES;      53 CFS-HRS;       4.4 ACRE-FEET.

 --- STRUCTURE  7, ALTERNATE  0, STORM  5, HYDROGRAPH ADDED TO READHD FILE ---


OPERATION RUNOFF    XSECTION  49

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        .26                          7.2                        (RUNOFF)
       1.04                          1.3                        (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                 2.41 WATERSHED INCHES;       4 CFS-HRS;        .3 ACRE-FEET.


OPERATION ADDHYD    XSECTION  50

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        3.19                         21.3                       (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .16 WATERSHED INCHES;      57 CFS-HRS;       4.7 ACRE-FEET.


OPERATION RESVOR    STRUCTURE 39

                   HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM = 5
      HRS      MAIN TIME INCREMENT =  .008 hr,      DRAINAGE AREA =    .61 SQ.MI.
      .07 CFS       .00     .01     .01     .01     .02     .02     .03     .04
      .07 ELEV   693.19  693.19  693.19  693.19  693.20  693.20  693.20  693.20
      .14 CFS       .05     .06     .07     .08     .10     .11     .13     .15
      .14 ELEV   693.21  693.21  693.22  693.22  693.23  693.23  693.24  693.25
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TR20 ------------------------------------------------------------------------ SCS -
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      .20 CFS       .16     .18     .20     .22     .24     .26     .28     .29
      .20 ELEV   693.25  693.26  693.27  693.27  693.28  693.29  693.30  693.30
      .26 CFS       .31     .33     .35     .37     .39     .41     .43     .45
      .26 ELEV   693.31  693.32  693.33  693.33  693.34  693.35  693.36  693.36
      .33 CFS       .47     .49     .51     .53     .55     .57     .59     .61
      .33 ELEV   693.37  693.38  693.39  693.39  693.40  693.41  693.42  693.42
      .39 CFS       .63     .65     .67     .69     .71     .73     .75     .77
      .39 ELEV   693.43  693.44  693.45  693.45  693.46  693.47  693.48  693.48
      .46 CFS       .79     .81     .83     .85     .87     .89     .91     .93
      .46 ELEV   693.49  693.50  693.51  693.51  693.52  693.53  693.54  693.55
      .52 CFS       .95     .98    1.00    1.02    1.04    1.06    1.08    1.11
      .52 ELEV   693.55  693.56  693.57  693.58  693.59  693.60  693.60  693.61
      .58 CFS      1.13    1.15    1.17    1.19    1.22    1.24    1.26    1.28
      .58 ELEV   693.62  693.63  693.64  693.65  693.65  693.66  693.67  693.68
      .65 CFS      1.31    1.33    1.35    1.37    1.40    1.42    1.44    1.46
      .65 ELEV   693.69  693.70  693.71  693.71  693.72  693.73  693.74  693.75
      .71 CFS      1.49    1.51    1.53    1.56    1.58    1.60    1.63    1.65
      .71 ELEV   693.76  693.77  693.78  693.79  693.79  693.80  693.81  693.82
      .78 CFS      1.68    1.70    1.72    1.75    1.77    1.79    1.82    1.84
      .78 ELEV   693.83  693.84  693.85  693.86  693.87  693.88  693.88  693.89
      .84 CFS      1.86    1.89    1.91    1.94    1.96    1.98    2.01    2.03
      .84 ELEV   693.90  693.91  693.92  693.93  693.94  693.95  693.96  693.97
      .90 CFS      2.05    2.08    2.10    2.12    2.18    2.23    2.28    2.34
      .90 ELEV   693.97  693.98  693.99  694.00  694.01  694.02  694.02  694.03
      .97 CFS      2.39    2.44    2.49    2.55    2.60    2.65    2.70    2.75
      .97 ELEV   694.04  694.05  694.06  694.06  694.07  694.08  694.09  694.09
     1.03 CFS      2.80    2.85    2.90    2.95    3.00    3.05    3.10    3.15
     1.03 ELEV   694.10  694.11  694.12  694.12  694.13  694.14  694.14  694.15
     1.10 CFS      3.19    3.24    3.28    3.33    3.37    3.42    3.46    3.50
     1.10 ELEV   694.16  694.16  694.17  694.18  694.18  694.19  694.20  694.20
     1.16 CFS      3.54    3.58    3.62    3.66    3.70    3.74    3.78    3.82
     1.16 ELEV   694.21  694.22  694.22  694.23  694.23  694.24  694.24  694.25
     1.22 CFS      3.85    3.89    3.93    3.96    4.00    4.04    4.07    4.11
     1.22 ELEV   694.26  694.26  694.27  694.27  694.28  694.28  694.29  694.29
     1.29 CFS      4.14    4.17    4.21    4.24    4.27    4.31    4.34    4.37
     1.29 ELEV   694.30  694.30  694.31  694.31  694.32  694.32  694.33  694.33
     1.35 CFS      4.40    4.43    4.46    4.50    4.53    4.56    4.58    4.61
     1.35 ELEV   694.34  694.34  694.35  694.35  694.35  694.36  694.36  694.37
     1.42 CFS      4.64    4.67    4.70    4.73    4.75    4.78    4.81    4.83
     1.42 ELEV   694.37  694.38  694.38  694.38  694.39  694.39  694.40  694.40
     1.48 CFS      4.86    4.88    4.91    4.93    4.96    4.98    5.00    5.03
     1.48 ELEV   694.40  694.41  694.41  694.41  694.42  694.42  694.42  694.43
     1.54 CFS      5.05    5.07    5.09    5.12    5.14    5.16    5.18    5.20
     1.54 ELEV   694.43  694.43  694.44  694.44  694.44  694.45  694.45  694.45
     1.61 CFS      5.22    5.24    5.26    5.28    5.30    5.32    5.34    5.36
     1.61 ELEV   694.46  694.46  694.46  694.47  694.47  694.47  694.47  694.48
     1.67 CFS      5.38    5.40    5.42    5.43    5.45    5.47    5.49    5.50
     1.67 ELEV   694.48  694.48  694.49  694.49  694.49  694.49  694.50  694.50
     1.74 CFS      5.52    5.54    5.56    5.57    5.59    5.60    5.62    5.64
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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
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     1.74 ELEV   694.50  694.50  694.51  694.51  694.51  694.51  694.52  694.52
     1.80 CFS      5.65    5.67    5.68    5.70    5.72    5.73    5.75    5.76
     1.80 ELEV   694.52  694.52  694.52  694.53  694.53  694.53  694.53  694.54
     1.86 CFS      5.78    5.79    5.81    5.82    5.83    5.85    5.86    5.88
     1.86 ELEV   694.54  694.54  694.54  694.54  694.55  694.55  694.55  694.55
     1.93 CFS      5.89    5.91    5.92    5.93    5.95    5.96    5.97    5.99
     1.93 ELEV   694.56  694.56  694.56  694.56  694.56  694.57  694.57  694.57
     1.99 CFS      6.00    6.02    6.03    6.04    6.06    6.07    6.08    6.09
     1.99 ELEV   694.57  694.57  694.58  694.58  694.58  694.58  694.58  694.59
     2.06 CFS      6.11    6.12    6.13    6.15    6.16    6.17    6.18    6.20
     2.06 ELEV   694.59  694.59  694.59  694.59  694.59  694.60  694.60  694.60
     2.12 CFS      6.21    6.22    6.24    6.25    6.26    6.27    6.28    6.30
     2.12 ELEV   694.60  694.60  694.61  694.61  694.61  694.61  694.61  694.62
     2.18 CFS      6.31    6.32    6.33    6.35    6.36    6.37    6.38    6.39
     2.18 ELEV   694.62  694.62  694.62  694.62  694.62  694.63  694.63  694.63
     2.25 CFS      6.41    6.42    6.43    6.44    6.45    6.47    6.48    6.49
     2.25 ELEV   694.63  694.63  694.63  694.64  694.64  694.64  694.64  694.64
     2.31 CFS      6.50    6.51    6.53    6.54    6.55    6.56    6.57    6.58
     2.31 ELEV   694.65  694.65  694.65  694.65  694.65  694.65  694.66  694.66
     2.38 CFS      6.59    6.61    6.62    6.63    6.64    6.65    6.66    6.68
     2.38 ELEV   694.66  694.66  694.66  694.66  694.67  694.67  694.67  694.67
     2.44 CFS      6.69    6.70    6.71    6.72    6.73    6.74    6.76    6.77
     2.44 ELEV   694.67  694.67  694.68  694.68  694.68  694.68  694.68  694.68
     2.50 CFS      6.78    6.79    6.80    6.81    6.82    6.83    6.85    6.86
     2.50 ELEV   694.69  694.69  694.69  694.69  694.69  694.69  694.70  694.70
     2.57 CFS      6.87    6.88    6.89    6.90    6.91    6.92    6.93    6.95
     2.57 ELEV   694.70  694.70  694.70  694.70  694.71  694.71  694.71  694.71
     2.63 CFS      6.96    6.97    6.98    6.99    7.00    7.01    7.02    7.03
     2.63 ELEV   694.71  694.71  694.72  694.72  694.72  694.72  694.72  694.72
     2.70 CFS      7.04    7.06    7.07    7.08    7.09    7.10    7.11    7.12
     2.70 ELEV   694.73  694.73  694.73  694.73  694.73  694.73  694.73  694.74
     2.76 CFS      7.13    7.14    7.15    7.16    7.18    7.19    7.20    7.21
     2.76 ELEV   694.74  694.74  694.74  694.74  694.74  694.75  694.75  694.75
     2.82 CFS      7.22    7.23    7.24    7.25    7.26    7.27    7.28    7.29
     2.82 ELEV   694.75  694.75  694.75  694.76  694.76  694.76  694.76  694.76
     2.89 CFS      7.31    7.32    7.33    7.34    7.35    7.36    7.37    7.38
     2.89 ELEV   694.76  694.77  694.77  694.77  694.77  694.77  694.77  694.77
     2.95 CFS      7.39    7.40    7.41    7.42    7.43    7.45    7.46    7.47
     2.95 ELEV   694.78  694.78  694.78  694.78  694.78  694.78  694.79  694.79
     3.02 CFS      7.48    7.49    7.50    7.51    7.52    7.53    7.54    7.55
     3.02 ELEV   694.79  694.79  694.79  694.79  694.80  694.80  694.80  694.80
     3.08 CFS      7.56    7.57    7.58    7.59    7.60    7.61    7.63    7.64
     3.08 ELEV   694.80  694.80  694.80  694.81  694.81  694.81  694.81  694.81
     3.14 CFS      7.65    7.66    7.67    7.68    7.69    7.70    7.71
     3.14 ELEV   694.81  694.82  694.82  694.82  694.82  694.82  694.82

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                    .04 WATERSHED INCHES;      14 CFS-HRS;       1.1 ACRE-FEET.
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TR20 ------------------------------------------------------------------------ SCS -
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    DURATION(HRS)   2      0
    FLOW(CFS)      48      8 TRUNCATED

 --- STRUCTURE 39, ALTERNATE  0, STORM  5, HYDROGRAPH ADDED TO READHD FILE ---


EXECUTIVE CONTROL  ENDCMP    COMPUTATIONS COMPLETED FOR PASS   5


EXECUTIVE CONTROL  INCREM    MAIN TIME INCREMENT =   .100 HOURS


EXECUTIVE CONTROL  COMPUT    FROM XSECTION  91  TO STRUCTURE 39           2-HR
    STARTING TIME =   .00        RAIN DEPTH =  4.47       RAIN DURATION =  2.00
    ANT. RUNOFF COND. = 2        MAIN TIME INCREMENT =   .100 HOURS
    ALTERNATE NO. = 0            STORM NO. = 6            RAIN TABLE NO. = 1


OPERATION RUNOFF    XSECTION  91

    PEAK TIME(HRS)              PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        1.06                          81.9                       (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                    2.03 WATERSHED INCHES;     121 CFS-HRS;      10.0 ACRE-FEET.


OPERATION RUNOFF    XSECTION  92

    PEAK TIME(HRS)              PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        1.14                          131.1                      (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                    2.44 WATERSHED INCHES;     203 CFS-HRS;      16.8 ACRE-FEET.


OPERATION ADDHYD    XSECTION  93

    PEAK TIME(HRS)              PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        1.11                          212.5                      (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                    2.27 WATERSHED INCHES;     324 CFS-HRS;      26.8 ACRE-FEET.


OPERATION RUNOFF    XSECTION  94
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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
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    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        1.21                          10.9                       (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  1.31 WATERSHED INCHES;      17 CFS-HRS;       1.4 ACRE-FEET.


OPERATION RESVOR    STRUCTURE 11

                  HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM = 6
     HRS      MAIN TIME INCREMENT =  .100 hr,      DRAINAGE AREA =    .02 SQ.MI.
      .10 CFS       .00     .01     .08     .30     .56     .77    1.30    2.45
      .10 ELEV   737.50  737.51  737.58  737.80  738.12  738.53  739.15  739.73
      .90 CFS      3.58    4.65    5.51    6.23    6.86    7.26    7.53    7.71
      .90 ELEV   740.29  740.83  741.26  741.62  741.93  742.13  742.26  742.36
     1.70 CFS      7.82    7.88    7.88    7.84    7.77    7.65    7.49    7.28
     1.70 ELEV   742.41  742.44  742.44  742.42  742.38  742.33  742.25  742.14
     2.50 CFS      7.02    6.59    6.10    5.60    5.08    4.40    3.76    3.19
     2.50 ELEV   742.01  741.79  741.55  741.30  741.04  740.70  740.38  740.10
     3.30 CFS      2.61    2.07    1.64    1.29    1.02     .91     .82     .74
     3.30 ELEV   739.80  739.53  739.32  739.15  739.01  738.82  738.64  738.48
     4.10 CFS       .66     .59     .53     .36     .16     .07     .03     .01
     4.10 ELEV   738.32  738.19  738.06  737.86  737.66  737.57  737.53  737.51

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  1.31 WATERSHED INCHES;      17 CFS-HRS;       1.4 ACRE-FEET.

    DURATION(HRS)   2      4
    FLOW(CFS)       4      0

 --- STRUCTURE 11, ALTERNATE  0, STORM  6, HYDROGRAPH ADDED TO READHD FILE ---


OPERATION RUNOFF    XSECTION  96

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .27                          31.4                       (RUNOFF)
        1.55                           4.8                       (RUNOFF)
        1.99                           3.4                       (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                 4.23 WATERSHED INCHES;      23 CFS-HRS;       1.9 ACRE-FEET.


OPERATION ADDHYD    XSECTION  97

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        1.10                          224.6                       (NULL)
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TR20 ------------------------------------------------------------------------ SCS -
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    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  2.25 WATERSHED INCHES;     364 CFS-HRS;      30.1 ACRE-FEET.


OPERATION RESVOR    STRUCTURE  6

                  HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM = 6
     HRS      MAIN TIME INCREMENT =  .100 hr,      DRAINAGE AREA =    .28 SQ.MI.
      .00 CFS       .00     .56    3.28    8.38   15.92   25.81   38.82   51.78
      .00 ELEV   707.00  707.07  707.39  708.00  708.65  709.32  710.05  710.81
      .80 CFS        62     101     156     191     210     218     218     213
      .80 ELEV   711.61  712.36  712.94  713.30  713.50  713.58  713.58  713.53
     1.60 CFS       204     194     182     170     159     148     136     123
     1.60 ELEV   713.44  713.33  713.21  713.08  712.96  712.86  712.73  712.59
     2.40 CFS       111      98      86      73      65      64      61      59
     2.40 ELEV   712.46  712.33  712.21  712.08  711.94  711.78  711.59  711.37
     3.20 CFS     56.61   53.44   49.26   45.26   41.47   37.90   34.20   30.82
     3.20 ELEV   711.15  710.91  710.66  710.43  710.20  709.99  709.79  709.60
     4.00 CFS     27.74   24.95   22.42   20.13   18.62   17.25   15.95   14.75
     4.00 ELEV   709.43  709.27  709.13  709.01  708.88  708.76  708.65  708.55
     4.80 CFS     13.64   12.60   11.64   10.76    9.94    9.18    8.48    7.95
     4.80 ELEV   708.45  708.36  708.28  708.20  708.13  708.07  708.01  707.95
     5.60 CFS      7.47    7.01    6.59    6.19    5.81    5.46    5.13    4.82
     5.60 ELEV   707.89  707.84  707.78  707.74  707.69  707.65  707.61  707.57
     6.40 CFS      4.53    4.25    3.99    3.75    3.52    3.31    3.11    2.92
     6.40 ELEV   707.54  707.51  707.48  707.45  707.42  707.39  707.37  707.35
     7.20 CFS      2.74    2.58    2.42    2.27    2.14    2.01    1.89    1.77
     7.20 ELEV   707.33  707.31  707.29  707.27  707.25  707.24  707.22  707.21
     8.00 CFS      1.66    1.56    1.47    1.38    1.30    1.22    1.14    1.07
     8.00 ELEV   707.20  707.19  707.17  707.16  707.15  707.14  707.14  707.13
     8.80 CFS      1.01     .95     .89     .84     .79     .74     .69     .65
     8.80 ELEV   707.12  707.11  707.11  707.10  707.09  707.09  707.08  707.08
     9.60 CFS       .61     .57     .54     .51     .48     .45     .42     .39
     9.60 ELEV   707.07  707.07  707.06  707.06  707.06  707.05  707.05  707.05
    10.40 CFS       .37     .35     .33     .31     .29     .27     .25     .24
    10.40 ELEV   707.04  707.04  707.04  707.04  707.03  707.03  707.03  707.03
    11.20 CFS       .22     .21     .20     .19     .17     .16     .15     .15
    11.20 ELEV   707.03  707.03  707.02  707.02  707.02  707.02  707.02  707.02
    12.00 CFS       .14     .13     .12     .11     .11     .10     .09     .09
    12.00 ELEV   707.02  707.02  707.01  707.01  707.01  707.01  707.01  707.01
    12.80 CFS       .08     .08     .07     .07     .06     .06     .06     .05
    12.80 ELEV   707.01  707.01  707.01  707.01  707.01  707.01  707.01  707.01
    13.60 CFS       .05     .05     .04     .04     .04     .04     .03     .03
    13.60 ELEV   707.01  707.01  707.01  707.00  707.00  707.00  707.00  707.00
    14.40 CFS       .03     .03     .03     .03     .02     .02     .02     .02
    14.40 ELEV   707.00  707.00  707.00  707.00  707.00  707.00  707.00  707.00
    15.20 CFS       .02     .02     .02     .02     .01     .01     .01     .01
    15.20 ELEV   707.00  707.00  707.00  707.00  707.00  707.00  707.00  707.00
    16.00 CFS       .01     .01
    16.00 ELEV   707.00  707.00
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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
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    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                2.33 WATERSHED INCHES;     416 CFS-HRS;      34.4 ACRE-FEET.

    DURATION(HRS)   2      4      6      8     10
    FLOW(CFS)      64     17      5      1      0

 --- STRUCTURE  6, ALTERNATE  0, STORM  6, HYDROGRAPH ADDED TO READHD FILE ---


OPERATION RUNOFF    XSECTION  99

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .34                          347.0                       (RUNOFF)
        1.65                           83.4                       (RUNOFF)
        1.99                           60.1                       (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                3.06 WATERSHED INCHES;     302 CFS-HRS;      24.9 ACRE-FEET.


OPERATION ADDHYD    XSECTION  90

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .34                          358.1                       (NULL)
        1.05                          301.0                       (NULL)
        1.34                          299.4                       (NULL)
        1.96                          221.2                       (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                2.59 WATERSHED INCHES;     719 CFS-HRS;      59.4 ACRE-FEET.


OPERATION RESVOR    STRUCTURE  7

                  HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM = 6
     HRS      MAIN TIME INCREMENT =  .100 hr,      DRAINAGE AREA =    .54 SQ.MI.
      .00 CFS       .00     .10     .76    2.30    4.43    7.14    9.77   12.12
      .00 ELEV   700.00  700.02  700.19  700.57  701.05  701.39  701.72  702.02
      .80 CFS     13.62   15.01   16.41   17.80   18.70   19.49   20.26   21.02
      .80 ELEV   702.27  702.50  702.73  702.97  703.18  703.37  703.57  703.75
     1.60 CFS     21.75   22.44   23.07   23.62   24.12   24.59   24.96   25.23
     1.60 ELEV   703.94  704.11  704.27  704.40  704.53  704.65  704.74  704.81
     2.40 CFS     25.45   25.62   25.77   25.88   25.98   26.56   27.28   27.94
     2.40 ELEV   704.86  704.91  704.94  704.97  704.99  705.01  705.03  705.05
     3.20 CFS     28.54   29.07   29.52   29.88   30.15   30.34   30.45   30.49
     3.20 ELEV   705.06  705.08  705.09  705.10  705.10  705.11  705.11  705.11
     4.00 CFS     30.47   30.39   30.25   30.07   29.86   29.62   29.36   29.08
     4.00 ELEV   705.11  705.11  705.11  705.10  705.10  705.09  705.08  705.08
     4.80 CFS     28.78   28.47   28.14   27.80   27.45   27.09   26.72   26.35
     4.80 ELEV   705.07  705.06  705.05  705.04  705.04  705.03  705.02  705.01
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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
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     5.60 CFS     26.00   25.96   25.92   25.88   25.83   25.79   25.75   25.70
     5.60 ELEV   705.00  704.99  704.98  704.97  704.96  704.95  704.94  704.93
     6.40 CFS     25.66   25.61   25.57   25.52   25.48   25.43   25.38   25.33
     6.40 ELEV   704.91  704.90  704.89  704.88  704.87  704.86  704.85  704.83
     7.20 CFS     25.29   25.24   25.19   25.14   25.09   25.04   25.00   24.95
     7.20 ELEV   704.82  704.81  704.80  704.79  704.77  704.76  704.75  704.74
     8.00 CFS     24.90   24.85   24.80   24.75   24.70   24.65   24.60   24.55
     8.00 ELEV   704.72  704.71  704.70  704.69  704.67  704.66  704.65  704.64
     8.80 CFS     24.50   24.45   24.40   24.35   24.30   24.25   24.20   24.15
     8.80 ELEV   704.62  704.61  704.60  704.59  704.58  704.56  704.55  704.54
     9.60 CFS     24.10   24.05   24.00   23.95   23.90   23.85   23.80   23.75
     9.60 ELEV   704.53  704.51  704.50  704.49  704.48  704.46  704.45  704.44
    10.40 CFS     23.70   23.65   23.60   23.55   23.50   23.46   23.41   23.36
    10.40 ELEV   704.43  704.41  704.40  704.39  704.38  704.36  704.35  704.34
    11.20 CFS     23.31   23.26   23.21   23.16   23.11   23.06   23.02   22.97
    11.20 ELEV   704.33  704.31  704.30  704.29  704.28  704.27  704.25  704.24
    12.00 CFS     22.92   22.87   22.82   22.77   22.73   22.68   22.63   22.58
    12.00 ELEV   704.23  704.22  704.21  704.19  704.18  704.17  704.16  704.15
    12.80 CFS     22.53   22.49   22.44   22.39   22.34   22.30   22.25   22.20
    12.80 ELEV   704.13  704.12  704.11  704.10  704.09  704.07  704.06  704.05
    13.60 CFS     22.16   22.11   22.06   22.02   21.97   21.92   21.87   21.82
    13.60 ELEV   704.04  704.03  704.02  704.00  703.99  703.98  703.97  703.96
    14.40 CFS     21.77   21.73   21.68   21.63   21.58   21.53   21.49   21.44
    14.40 ELEV   703.94  703.93  703.92  703.91  703.90  703.88  703.87  703.86
    15.20 CFS     21.39   21.34   21.29   21.25   21.20   21.15   21.11   21.06
    15.20 ELEV   703.85  703.84  703.82  703.81  703.80  703.79  703.78  703.76
    16.00 CFS     21.01   20.97
    16.00 ELEV   703.75  703.74

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                1.08 WATERSHED INCHES;     376 CFS-HRS;      31.1 ACRE-FEET.

    DURATION(HRS)   2      4      6      8     10     12     14     15
    FLOW(CFS)      28     26     25     24     23     22     21     21 TRUNCATED

 --- STRUCTURE  7, ALTERNATE  0, STORM  6, HYDROGRAPH ADDED TO READHD FILE ---


OPERATION RUNOFF    XSECTION  49

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .33                            5.8                       (RUNOFF)
        1.65                            1.3                       (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                3.26 WATERSHED INCHES;       5 CFS-HRS;        .4 ACRE-FEET.


OPERATION ADDHYD    XSECTION  50
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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
08/14/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
16:04:24                    PASS   6   JOB NO.   1                      PAGE  57


    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        3.91                         30.5                       (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                1.08 WATERSHED INCHES;     381 CFS-HRS;      31.5 ACRE-FEET.


OPERATION RESVOR    STRUCTURE 39

                  HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM = 6
     HRS      MAIN TIME INCREMENT =  .100 hr,      DRAINAGE AREA =    .61 SQ.MI.
      .00 CFS      .00     .01     .10     .26     .47     .69     .95    1.23
      .00 ELEV   693.19  693.20  693.23  693.29  693.37  693.45  693.55  693.66
      .80 CFS     1.53    1.84    2.19    2.93    3.63    4.28    4.89    5.47
      .80 ELEV   693.77  693.89  694.01  694.12  694.22  694.32  694.41  694.49
     1.60 CFS     6.02    6.55    7.05    7.52    7.97    8.40    8.78    9.01
     1.60 ELEV   694.58  694.65  694.73  694.80  694.86  694.92  694.98  695.03
     2.40 CFS     9.16    9.30    9.42    9.53    9.63    9.73    9.82    9.92
     2.40 ELEV   695.07  695.11  695.15  695.18  695.21  695.23  695.26  695.29
     3.20 CFS    10.01   10.10   10.20   10.29   10.39   10.48   10.58   10.67
     3.20 ELEV   695.31  695.34  695.37  695.39  695.42  695.45  695.48  695.50
     4.00 CFS    10.77   10.86   10.95   11.04   11.13   11.22   11.31   11.39
     4.00 ELEV   695.53  695.56  695.58  695.61  695.63  695.66  695.68  695.71
     4.80 CFS    11.47   11.56   11.63   11.71   11.79   11.86   11.93   12.00
     4.80 ELEV   695.73  695.76  695.78  695.80  695.82  695.84  695.86  695.88
     5.60 CFS    12.07   12.13   12.20   12.26   12.33   12.39   12.45   12.49
     5.60 ELEV   695.90  695.92  695.94  695.96  695.98  696.00  696.01  696.03
     6.40 CFS    12.54   12.59   12.63   12.68   12.72   12.77   12.81   12.86
     6.40 ELEV   696.05  696.06  696.08  696.10  696.11  696.13  696.15  696.16
     7.20 CFS    12.90   12.95   12.99   13.03   13.08   13.12   13.16   13.20
     7.20 ELEV   696.18  696.19  696.21  696.22  696.24  696.26  696.27  696.29
     8.00 CFS    13.25   13.29   13.33   13.37   13.41   13.45   13.49   13.53
     8.00 ELEV   696.30  696.32  696.33  696.34  696.36  696.37  696.39  696.40
     8.80 CFS    13.57   13.61   13.65   13.68   13.72   13.76   13.80   13.83
     8.80 ELEV   696.42  696.43  696.44  696.46  696.47  696.48  696.50  696.51
     9.60 CFS    13.87   13.91   13.94   13.98   14.01   14.05   14.08   14.12
     9.60 ELEV   696.52  696.54  696.55  696.56  696.58  696.59  696.60  696.61
    10.40 CFS    14.15   14.19   14.22   14.25   14.29   14.32   14.35   14.38
    10.40 ELEV   696.63  696.64  696.65  696.66  696.67  696.69  696.70  696.71
    11.20 CFS    14.42   14.45   14.56   14.86   15.14   15.42   15.68   15.93
    11.20 ELEV   696.72  696.73  696.74  696.75  696.76  696.77  696.78  696.79
    12.00 CFS    16.17   16.40   16.63   16.84   17.04   17.24   17.42   17.60
    12.00 ELEV   696.80  696.81  696.82  696.83  696.83  696.84  696.85  696.85
    12.80 CFS    17.77   17.94   18.09   18.24   18.38   18.52   18.65   18.77
    12.80 ELEV   696.86  696.87  696.87  696.88  696.88  696.89  696.89  696.90
    13.60 CFS    18.89   19.00   19.11   19.21   19.30   19.39   19.48   19.56
    13.60 ELEV   696.90  696.91  696.91  696.91  696.92  696.92  696.92  696.93
    14.40 CFS    19.64   19.71   19.78   19.84   19.90   19.96   20.01   20.06
    14.40 ELEV   696.93  696.93  696.93  696.94  696.94  696.94  696.94  696.95
    15.20 CFS    20.11   20.15   20.19   20.23   20.27   20.30   20.33   20.35
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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
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    15.20 ELEV   696.95  696.95  696.95  696.95  696.95  696.95  696.96  696.96
    16.00 CFS     20.38   20.40
    16.00 ELEV   696.96  696.96

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .53 WATERSHED INCHES;     209 CFS-HRS;      17.3 ACRE-FEET.

 --- STRUCTURE 39, ALTERNATE  0, STORM  6, HYDROGRAPH ADDED TO READHD FILE ---


EXECUTIVE CONTROL  ENDCMP    COMPUTATIONS COMPLETED FOR PASS   6


EXECUTIVE CONTROL  COMPUT    FROM XSECTION  91  TO STRUCTURE 39           3-HR
    STARTING TIME =   .00       RAIN DEPTH =  4.85       RAIN DURATION =  3.00
    ANT. RUNOFF COND. = 2       MAIN TIME INCREMENT =   .100 HOURS
    ALTERNATE NO. = 0           STORM NO. = 7            RAIN TABLE NO. = 1


OPERATION RUNOFF    XSECTION  91

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        1.23                         73.3                       (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                2.33 WATERSHED INCHES;     139 CFS-HRS;      11.5 ACRE-FEET.


OPERATION RUNOFF    XSECTION  92

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        1.29                         118.0                      (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                2.76 WATERSHED INCHES;     230 CFS-HRS;      19.0 ACRE-FEET.


OPERATION ADDHYD    XSECTION  93

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        1.26                         191.0                      (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                2.58 WATERSHED INCHES;     369 CFS-HRS;      30.5 ACRE-FEET.


OPERATION RUNOFF    XSECTION  94
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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
08/14/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
16:04:24                     PASS   7   JOB NO.   1                       PAGE  59


    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        1.44                          10.0                       (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  1.55 WATERSHED INCHES;      20 CFS-HRS;       1.7 ACRE-FEET.


OPERATION RESVOR    STRUCTURE 11

                  HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM = 7
     HRS      MAIN TIME INCREMENT =  .100 hr,      DRAINAGE AREA =    .02 SQ.MI.
      .10 CFS      .00     .01     .04     .16     .43     .58     .78    1.22
      .10 ELEV   737.50  737.51  737.54  737.66  737.93  738.17  738.56  739.11
      .90 CFS     2.19    3.21    4.11    5.01    5.63    6.21    6.73    7.11
      .90 ELEV   739.59  740.11  740.55  741.01  741.32  741.61  741.86  742.06
     1.70 CFS     7.35    7.53    7.64    7.68    7.66    7.59    7.49    7.36
     1.70 ELEV   742.18  742.27  742.32  742.34  742.33  742.30  742.24  742.18
     2.50 CFS     7.22    7.08    6.91    6.71    6.50    6.29    6.08    5.85
     2.50 ELEV   742.11  742.04  741.95  741.85  741.75  741.65  741.54  741.42
     3.30 CFS     5.61    5.34    5.05    4.63    4.16    3.70    3.24    2.76
     3.30 ELEV   741.30  741.17  741.03  740.81  740.58  740.35  740.12  739.88
     4.10 CFS     2.26    1.83    1.48    1.20     .98     .89     .81     .73
     4.10 ELEV   739.63  739.42  739.24  739.10  738.96  738.79  738.62  738.46
     4.90 CFS      .66     .59     .53     .36     .16     .08     .04     .02
     4.90 ELEV   738.32  738.18  738.06  737.86  737.66  737.58  737.54  737.52
     5.70 CFS      .01     .00
     5.70 ELEV   737.51  737.50

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  1.55 WATERSHED INCHES;      20 CFS-HRS;       1.7 ACRE-FEET.

    DURATION(HRS)   2      4      5
    FLOW(CFS)       6      1      0

 --- STRUCTURE 11, ALTERNATE  0, STORM  7, HYDROGRAPH ADDED TO READHD FILE ---


OPERATION RUNOFF    XSECTION  96

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        .33                           26.3                       (RUNOFF)
       2.45                            3.5                       (RUNOFF)
       3.00                            3.0                       (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  4.61 WATERSHED INCHES;      25 CFS-HRS;       2.1 ACRE-FEET.


OPERATION ADDHYD    XSECTION  97
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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
08/14/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
16:04:24                     PASS   7   JOB NO.   1                       PAGE  60


    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        1.27                          203.7                      (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  2.57 WATERSHED INCHES;     414 CFS-HRS;      34.2 ACRE-FEET.


OPERATION RESVOR    STRUCTURE  6

                  HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM = 7
     HRS      MAIN TIME INCREMENT =  .100 hr,      DRAINAGE AREA =    .28 SQ.MI.
      .00 CFS      .00     .44    1.97    5.33   10.51   16.89   25.61   37.27
      .00 ELEV   707.00  707.05  707.23  707.63  708.18  708.73  709.31  709.96
      .80 CFS       49      59      78     133     168     190     203     207
      .80 ELEV   710.66  711.40  712.12  712.69  713.07  713.30  713.42  713.47
     1.60 CFS      206     200     191     181     171     160     149     140
     1.60 ELEV   713.45  713.39  713.30  713.20  713.09  712.98  712.87  712.77
     2.40 CFS      131     124     118     112     106     100      96      92
     2.40 ELEV   712.68  712.61  712.54  712.48  712.41  712.36  712.31  712.27
     3.20 CFS     85.13   77.73   70.59   65.62   64.39   62.79   60.85   58.66
     3.20 ELEV   712.20  712.12  712.05  711.97  711.85  711.71  711.53  711.33
     4.00 CFS     56.29   53.05   49.00   45.10   41.39   37.88   34.24   30.89
     4.00 ELEV   711.12  710.89  710.65  710.42  710.20  709.99  709.79  709.61
     4.80 CFS     27.84   25.07   22.55   20.27   18.72   17.34   16.05   14.85
     4.80 ELEV   709.44  709.28  709.14  709.01  708.89  708.77  708.66  708.56
     5.60 CFS     13.73   12.69   11.73   10.84   10.02    9.25    8.55    8.00
     5.60 ELEV   708.46  708.37  708.29  708.21  708.14  708.07  708.01  707.95
     6.40 CFS      7.51    7.06    6.63    6.23    5.85    5.50    5.16    4.85
     6.40 ELEV   707.89  707.84  707.79  707.74  707.70  707.65  707.61  707.58
     7.20 CFS      4.56    4.28    4.02    3.78    3.55    3.33    3.13    2.94
     7.20 ELEV   707.54  707.51  707.48  707.45  707.42  707.40  707.37  707.35
     8.00 CFS      2.76    2.59    2.44    2.29    2.15    2.02    1.90    1.78
     8.00 ELEV   707.33  707.31  707.29  707.27  707.26  707.24  707.23  707.21
     8.80 CFS      1.67    1.57    1.48    1.39    1.30    1.22    1.15    1.08
     8.80 ELEV   707.20  707.19  707.18  707.17  707.16  707.15  707.14  707.13
     9.60 CFS      1.01     .95     .90     .84     .79     .74     .70     .66
     9.60 ELEV   707.12  707.11  707.11  707.10  707.09  707.09  707.08  707.08
    10.40 CFS      .62     .58     .54     .51     .48     .45     .42     .40
    10.40 ELEV   707.07  707.07  707.06  707.06  707.06  707.05  707.05  707.05
    11.20 CFS      .37     .35     .33     .31     .29     .27     .26     .24
    11.20 ELEV   707.04  707.04  707.04  707.04  707.03  707.03  707.03  707.03
    12.00 CFS      .23     .21     .20     .19     .18     .17     .16     .15
    12.00 ELEV   707.03  707.03  707.02  707.02  707.02  707.02  707.02  707.02
    12.80 CFS      .14     .13     .12     .11     .11     .10     .09     .09
    12.80 ELEV   707.02  707.02  707.01  707.01  707.01  707.01  707.01  707.01
    13.60 CFS      .08     .08     .07     .07     .06     .06     .06     .05
    13.60 ELEV   707.01  707.01  707.01  707.01  707.01  707.01  707.01  707.01
    14.40 CFS      .05     .05     .04     .04     .04     .04     .03     .03
    14.40 ELEV   707.01  707.01  707.01  707.00  707.00  707.00  707.00  707.00
    15.20 CFS      .03     .03     .03     .03     .02     .02     .02     .02
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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
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    15.20 ELEV   707.00  707.00  707.00  707.00  707.00  707.00  707.00  707.00
    16.00 CFS       .02     .02     .02     .02     .01     .01     .01     .01
    16.00 ELEV   707.00  707.00  707.00  707.00  707.00  707.00  707.00  707.00
    16.80 CFS       .01     .01
    16.80 ELEV   707.00  707.00

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  2.65 WATERSHED INCHES;     473 CFS-HRS;      39.1 ACRE-FEET.

    DURATION(HRS)   2      4      6      8     10     11
    FLOW(CFS)      92     31      8      2      1      0

 --- STRUCTURE  6, ALTERNATE  0, STORM  7, HYDROGRAPH ADDED TO READHD FILE ---


OPERATION RUNOFF    XSECTION  99

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .39                         273.6                       (RUNOFF)
        2.45                          59.7                       (RUNOFF)
        3.00                          52.2                       (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  3.42 WATERSHED INCHES;     337 CFS-HRS;      27.8 ACRE-FEET.


OPERATION ADDHYD    XSECTION  90

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .40                         283.7                       (NULL)
         .70                         264.3                       (NULL)
        1.39                         315.5                       (NULL)
        2.99                         148.7                       (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  2.92 WATERSHED INCHES;     810 CFS-HRS;      66.9 ACRE-FEET.


OPERATION RESVOR    STRUCTURE  7

                   HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM = 7
     HRS      MAIN TIME INCREMENT =  .100 hr,      DRAINAGE AREA =    .54 SQ.MI.
      .00 CFS       .00     .08     .41    1.36    2.91    4.79    6.95    9.09
      .00 ELEV   700.00  700.02  700.10  700.34  700.73  701.10  701.37  701.64
      .80 CFS     11.19   12.83   14.14   15.44   16.78   18.08   18.94   19.77
      .80 ELEV   701.90  702.14  702.36  702.57  702.80  703.02  703.23  703.44
     1.60 CFS     20.55   21.25   21.89   22.47   23.02   23.54   24.04   24.51
     1.60 ELEV   703.64  703.81  703.97  704.12  704.25  704.39  704.51  704.63
     2.40 CFS     24.97   25.40   25.82   27.84   30.84   33.50   36.22   38.83
     2.40 ELEV   704.74  704.85  704.95  705.05  705.12  705.19  705.26  705.32
     3.20 CFS     40.72   41.92   42.72   43.29   43.75   44.16   44.52   44.83
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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
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     3.20 ELEV   705.37  705.40  705.42  705.43  705.44  705.45  705.46  705.47
     4.00 CFS     45.08   45.27   45.39   45.42   45.38   45.26   45.08   44.83
     4.00 ELEV   705.48  705.48  705.48  705.49  705.48  705.48  705.48  705.47
     4.80 CFS     44.52   44.16   43.75   43.30   42.82   42.33   41.81   41.28
     4.80 ELEV   705.46  705.45  705.44  705.43  705.42  705.41  705.40  705.38
     5.60 CFS     40.74   40.19   39.63   39.06   38.49   37.91   37.33   36.74
     5.60 ELEV   705.37  705.35  705.34  705.33  705.31  705.30  705.28  705.27
     6.40 CFS     36.16   35.58   35.01   34.43   33.86   33.30   32.74   32.18
     6.40 ELEV   705.25  705.24  705.23  705.21  705.20  705.18  705.17  705.15
     7.20 CFS     31.63   31.09   30.55   30.01   29.48   28.96   28.44   27.94
     7.20 ELEV   705.14  705.13  705.11  705.10  705.09  705.07  705.06  705.05
     8.00 CFS     27.43   26.94   26.45   26.00   25.95   25.90   25.84   25.79
     8.00 ELEV   705.04  705.02  705.01  705.00  704.99  704.97  704.96  704.95
     8.80 CFS     25.74   25.69   25.64   25.59   25.54   25.49   25.43   25.38
     8.80 ELEV   704.94  704.92  704.91  704.90  704.88  704.87  704.86  704.85
     9.60 CFS     25.33   25.28   25.23   25.18   25.12   25.07   25.02   24.97
     9.60 ELEV   704.83  704.82  704.81  704.79  704.78  704.77  704.76  704.74
    10.40 CFS     24.92   24.87   24.81   24.76   24.71   24.66   24.61   24.56
    10.40 ELEV   704.73  704.72  704.70  704.69  704.68  704.67  704.65  704.64
    11.20 CFS     24.51   24.46   24.40   24.35   24.30   24.25   24.20   24.15
    11.20 ELEV   704.63  704.61  704.60  704.59  704.58  704.56  704.55  704.54
    12.00 CFS     24.10   24.05   24.00   23.95   23.90   23.85   23.80   23.75
    12.00 ELEV   704.52  704.51  704.50  704.49  704.47  704.46  704.45  704.44
    12.80 CFS     23.70   23.65   23.60   23.55   23.50   23.45   23.40   23.35
    12.80 ELEV   704.42  704.41  704.40  704.39  704.37  704.36  704.35  704.34
    13.60 CFS     23.30   23.25   23.20   23.15   23.10   23.05   23.00   22.96
    13.60 ELEV   704.32  704.31  704.30  704.29  704.28  704.26  704.25  704.24
    14.40 CFS     22.91   22.86   22.81   22.76   22.71   22.67   22.62   22.57
    14.40 ELEV   704.23  704.21  704.20  704.19  704.18  704.17  704.15  704.14
    15.20 CFS     22.52   22.47   22.43   22.38   22.33   22.28   22.24   22.19
    15.20 ELEV   704.13  704.12  704.11  704.09  704.08  704.07  704.06  704.05
    16.00 CFS     22.14   22.10   22.05   22.00   21.95   21.91   21.86   21.81
    16.00 ELEV   704.04  704.02  704.01  704.00  703.99  703.98  703.96  703.95
    16.80 CFS     21.76   21.71
    16.80 ELEV   703.94  703.93

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  1.31 WATERSHED INCHES;     459 CFS-HRS;      38.0 ACRE-FEET.

    DURATION(HRS)   2      4      6      8     10     12     14     15
    FLOW(CFS)      42     33     26     25     24     23     22     22 TRUNCATED

 --- STRUCTURE  7, ALTERNATE  0, STORM  7, HYDROGRAPH ADDED TO READHD FILE ---


OPERATION RUNOFF    XSECTION  49

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .37                         4.6                         (RUNOFF)
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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
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    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                 3.62 WATERSHED INCHES;       5 CFS-HRS;        .4 ACRE-FEET.


OPERATION ADDHYD    XSECTION  50

    PEAK TIME(HRS)            PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        4.29                        45.4                        (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                 1.32 WATERSHED INCHES;     465 CFS-HRS;      38.4 ACRE-FEET.


OPERATION RESVOR    STRUCTURE 39

                  HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM = 7
     HRS      MAIN TIME INCREMENT =  .100 hr,      DRAINAGE AREA =    .61 SQ.MI.
      .00 CFS       .00     .01     .06     .16     .32     .50     .69     .91
      .00 ELEV   693.19  693.19  693.21  693.25  693.31  693.38  693.45  693.54
      .80 CFS      1.17    1.44    1.72    2.01    2.53    3.22    3.88    4.52
      .80 ELEV   693.64  693.74  693.85  693.96  694.06  694.16  694.26  694.35
     1.60 CFS      5.12    5.67    6.20    6.69    7.16    7.61    8.04    8.46
     1.60 ELEV   694.44  694.52  694.60  694.67  694.74  694.81  694.87  694.93
     2.40 CFS      8.87    9.09    9.29    9.48    9.68    9.88   10.09   10.31
     2.40 ELEV   694.99  695.05  695.11  695.16  695.22  695.28  695.34  695.40
     3.20 CFS     10.53   10.73   10.93   11.12   11.31   11.49   11.66   11.83
     3.20 ELEV   695.46  695.52  695.58  695.63  695.69  695.74  695.79  695.83
     4.00 CFS     12.00   12.16   12.32   12.46   12.58   12.70   12.82   12.93
     4.00 ELEV   695.88  695.93  695.97  696.02  696.06  696.10  696.15  696.19
     4.80 CFS     13.05   13.16   13.27   13.37   13.48   13.58   13.69   13.78
     4.80 ELEV   696.23  696.27  696.31  696.35  696.38  696.42  696.46  696.49
     5.60 CFS     13.88   13.98   14.07   14.16   14.25   14.33   14.42   14.72
     5.60 ELEV   696.53  696.56  696.60  696.63  696.66  696.69  696.72  696.75
     6.40 CFS     15.47   16.17   16.83   17.44   18.02   18.56   19.05   19.51
     6.40 ELEV   696.78  696.80  696.83  696.85  696.87  696.89  696.91  696.93
     7.20 CFS     19.94   20.33   20.70   21.03   21.33   21.65   22.16   22.59
     7.20 ELEV   696.94  696.96  696.97  696.98  696.99  697.00  697.01  697.02
     8.00 CFS     22.96   23.27   23.51   23.71   23.87   24.02   24.15   24.27
     8.00 ELEV   697.02  697.03  697.03  697.03  697.04  697.04  697.04  697.04
     8.80 CFS     24.38   24.48   24.56   24.64   24.71   24.76   24.82   24.86
     8.80 ELEV   697.05  697.05  697.05  697.05  697.05  697.05  697.05  697.05
     9.60 CFS     24.89   24.92   24.95   24.97   24.98   24.99   24.99   24.99
     9.60 ELEV   697.05  697.05  697.05  697.05  697.05  697.06  697.06  697.06
    10.40 CFS     24.99   24.98   24.97   24.96   24.94   24.92   24.90   24.88
    10.40 ELEV   697.06  697.05  697.05  697.05  697.05  697.05  697.05  697.05
    11.20 CFS     24.85   24.83   24.80   24.77   24.74   24.70   24.67   24.63
    11.20 ELEV   697.05  697.05  697.05  697.05  697.05  697.05  697.05  697.05
    12.00 CFS     24.60   24.56   24.52   24.48   24.44   24.40   24.36   24.31
    12.00 ELEV   697.05  697.05  697.05  697.05  697.05  697.05  697.04  697.04
    12.80 CFS     24.27   24.23   24.18   24.14   24.10   24.05   24.01   23.96
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TR20 ------------------------------------------------------------------------ SCS -
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    12.80 ELEV   697.04  697.04  697.04  697.04  697.04  697.04  697.04  697.04
    13.60 CFS     23.91   23.87   23.82   23.77   23.73   23.68   23.63   23.59
    13.60 ELEV   697.04  697.04  697.04  697.04  697.03  697.03  697.03  697.03
    14.40 CFS     23.54   23.49   23.44   23.40   23.35   23.30   23.25   23.21
    14.40 ELEV   697.03  697.03  697.03  697.03  697.03  697.03  697.03  697.03
    15.20 CFS     23.16   23.11   23.06   23.02   22.97   22.92   22.87   22.82
    15.20 ELEV   697.03  697.02  697.02  697.02  697.02  697.02  697.02  697.02
    16.00 CFS     22.78   22.73   22.68   22.64   22.59   22.54   22.49   22.44
    16.00 ELEV   697.02  697.02  697.02  697.02  697.02  697.02  697.02  697.01
    16.80 CFS     22.40   22.35
    16.80 ELEV   697.01  697.01

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .76 WATERSHED INCHES;     302 CFS-HRS;      25.0 ACRE-FEET.

    DURATION(HRS)   2      4      6      8      9
    FLOW(CFS)      25     24     24     23     22 TRUNCATED

 --- STRUCTURE 39, ALTERNATE  0, STORM  7, HYDROGRAPH ADDED TO READHD FILE ---


EXECUTIVE CONTROL  ENDCMP    COMPUTATIONS COMPLETED FOR PASS   7


EXECUTIVE CONTROL  COMPUT    FROM XSECTION  91  TO STRUCTURE 39           6-HR
    STARTING TIME =   .00       RAIN DEPTH =  5.68       RAIN DURATION =  6.00
    ANT. RUNOFF COND. = 2       MAIN TIME INCREMENT =   .100 HOURS
    ALTERNATE NO. = 0           STORM NO. = 8            RAIN TABLE NO. = 1


OPERATION RUNOFF    XSECTION  91

    PEAK TIME(HRS)            PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        1.72                        57.5                        (RUNOFF)
        5.00                        18.5                        (RUNOFF)
        6.18                        13.0                        (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                 3.01 WATERSHED INCHES;     179 CFS-HRS;      14.8 ACRE-FEET.


OPERATION RUNOFF    XSECTION  92

    PEAK TIME(HRS)            PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        1.74                        93.1                        (RUNOFF)
        6.16                        19.5                        (RUNOFF)
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TR20 ------------------------------------------------------------------------ SCS -
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    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  3.49 WATERSHED INCHES;     291 CFS-HRS;      24.1 ACRE-FEET.


OPERATION ADDHYD    XSECTION  93

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        1.73                        150.6                       (NULL)
        6.17                         32.4                       (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  3.29 WATERSHED INCHES;     470 CFS-HRS;      38.9 ACRE-FEET.


OPERATION RUNOFF    XSECTION  94

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        1.95                          8.3                       (RUNOFF)
        5.07                          3.4                       (RUNOFF)
        6.17                          2.4                       (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  2.12 WATERSHED INCHES;      28 CFS-HRS;       2.3 ACRE-FEET.


OPERATION RESVOR    STRUCTURE 11

                   HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM = 8
     HRS      MAIN TIME INCREMENT =  .100 hr,      DRAINAGE AREA =    .02 SQ.MI.
      .30 CFS      .00     .01     .07     .21     .48     .58     .73     .95
      .30 ELEV   737.50  737.51  737.57  737.71  737.98  738.16  738.46  738.90
     1.10 CFS     1.54    2.27    3.01    3.59    4.19    4.78    5.25    5.64
     1.10 ELEV  739.27  739.63  740.01  740.29  740.59  740.89  741.12  741.32
     1.90 CFS     6.00    6.32    6.58    6.80    6.96    7.05    7.09    7.10
     1.90 ELEV  741.50  741.66  741.79  741.90  741.98  742.02  742.05  742.05
     2.70 CFS     7.09    7.06    7.01    6.93    6.82    6.70    6.55    6.38
     2.70 ELEV  742.05  742.03  742.01  741.96  741.91  741.85  741.77  741.69
     3.50 CFS     6.18    5.97    5.74    5.51    5.28    5.07    4.82    4.57
     3.50 ELEV  741.59  741.48  741.37  741.26  741.14  741.03  740.91  740.78
     4.30 CFS     4.36    4.18    4.03    3.91    3.80    3.72    3.65    3.60
     4.30 ELEV  740.68  740.59  740.51  740.45  740.40  740.36  740.33  740.30
     5.10 CFS     3.55    3.52    3.48    3.44    3.38    3.30    3.20    3.08
     5.10 ELEV  740.28  740.26  740.24  740.22  740.19  740.15  740.10  740.04
     5.90 CFS     2.95    2.80    2.69    2.61    2.54    2.47    2.36    2.20
     5.90 ELEV  739.97  739.90  739.84  739.80  739.77  739.73  739.68  739.60
     6.70 CFS     2.01    1.79    1.56    1.33    1.12     .97     .89     .82
     6.70 ELEV  739.51  739.39  739.28  739.16  739.06  738.94  738.79  738.63
     7.50 CFS      .74     .67     .61     .55     .47     .22     .11     .06
     7.50 ELEV  738.49  738.35  738.22  738.10  737.97  737.72  737.61  737.56
     8.30 CFS      .03     .02     .01     .01     .00
```



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TR20 ------------------------------------------------------------------------ SCS -
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     8.30 ELEV   737.53  737.52  737.51  737.51  737.50

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  2.12 WATERSHED INCHES;      28 CFS-HRS;       2.3 ACRE-FEET.

    DURATION(HRS)   2      4      6      7
    FLOW(CFS)       6      3      1      0

 --- STRUCTURE 11, ALTERNATE  0, STORM  8, HYDROGRAPH ADDED TO READHD FILE ---


OPERATION RUNOFF    XSECTION  96

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .56                         17.2                       (RUNOFF)
        4.95                          2.0                       (RUNOFF)
        5.96                          2.1                       (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  5.44 WATERSHED INCHES;      29 CFS-HRS;       2.4 ACRE-FEET.


OPERATION ADDHYD    XSECTION  97

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        1.74                        162.2                       (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  3.27 WATERSHED INCHES;     528 CFS-HRS;      43.6 ACRE-FEET.


OPERATION RESVOR    STRUCTURE  6

                   HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM = 8
     HRS      MAIN TIME INCREMENT =  .100 hr,      DRAINAGE AREA =    .28 SQ.MI.
      .00 CFS      .00     .30    1.20    2.48    4.32    7.18   11.57   16.87
      .00 ELEV   707.00  707.04  707.14  707.30  707.51  707.85  708.27  708.73
      .80 CFS       24      33      42      52      59      65     104     134
      .80 ELEV   709.20  709.70  710.24  710.80  711.37  711.94  712.40  712.71
     1.60 CFS      153     164     170     173     173     172     168     164
     1.60 ELEV  712.90  713.02  713.09  713.12  713.12  713.10  713.07  713.02
     2.40 CFS      158     152     147     141     136     130     124     119
     2.40 ELEV  712.96  712.90  712.84  712.78  712.73  712.67  712.61  712.55
     3.20 CFS      113     107     102      96      90      85      80      76
     3.20 ELEV  712.49  712.43  712.37  712.31  712.25  712.20  712.15  712.10
     4.00 CFS     72.41   69.36   66.86   65.83   65.53   65.21   64.87   64.53
     4.00 ELEV  712.07  712.03  712.01  711.98  711.96  711.93  711.90  711.87
     4.80 CFS     64.19   63.86   63.53   63.22   62.87   62.40   61.83   61.17
     4.80 ELEV  711.84  711.81  711.78  711.75  711.72  711.67  711.62  711.56
     5.60 CFS     60.41   59.53   58.60   57.69   56.84   55.91   54.74   52.86
     5.60 ELEV  711.49  711.41  711.33  711.24  711.17  711.08  710.98  710.87
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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
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     6.40 CFS     50.96   48.96   46.77   44.37   41.79   39.10   36.17   33.17
     6.40 ELEV   710.76  710.64  710.52  710.37  710.22  710.06  709.90  709.73
     7.20 CFS     30.29   27.58   25.04   22.70   20.53   18.97   17.65   16.40
     7.20 ELEV   709.57  709.42  709.28  709.15  709.03  708.91  708.80  708.69
     8.00 CFS     15.22   14.11   13.07   12.09   11.19   10.35    9.57    8.84
     8.00 ELEV   708.59  708.49  708.40  708.32  708.24  708.17  708.10  708.04
     8.80 CFS      8.22    7.72    7.26    6.82    6.40    6.01    5.65    5.31
     8.80 ELEV   707.98  707.92  707.86  707.81  707.76  707.72  707.67  707.63
     9.60 CFS      4.98    4.68    4.40    4.13    3.88    3.65    3.42    3.22
     9.60 ELEV   707.59  707.56  707.52  707.49  707.46  707.43  707.41  707.38
    10.40 CFS      3.02    2.84    2.67    2.50    2.35    2.21    2.08    1.95
    10.40 ELEV   707.36  707.34  707.32  707.30  707.28  707.26  707.25  707.23
    11.20 CFS      1.83    1.72    1.62    1.52    1.43    1.34    1.26    1.18
    11.20 ELEV   707.22  707.20  707.19  707.18  707.17  707.16  707.15  707.14
    12.00 CFS      1.11    1.04     .98     .92     .86     .81     .76     .72
    12.00 ELEV   707.13  707.12  707.12  707.11  707.10  707.10  707.09  707.09
    12.80 CFS       .67     .63     .59     .56     .52     .49     .46     .43
    12.80 ELEV   707.08  707.08  707.07  707.07  707.06  707.06  707.06  707.05
    13.60 CFS       .41     .38     .36     .34     .32     .30     .28     .26
    13.60 ELEV   707.05  707.05  707.04  707.04  707.04  707.04  707.03  707.03
    14.40 CFS       .25     .23     .22     .21     .19     .18     .17     .16
    14.40 ELEV   707.03  707.03  707.03  707.02  707.02  707.02  707.02  707.02
    15.20 CFS       .15     .14     .13     .12     .12     .11     .10     .10
    15.20 ELEV   707.02  707.02  707.02  707.01  707.01  707.01  707.01  707.01
    16.00 CFS       .09     .09     .08     .08     .07     .07     .06     .06
    16.00 ELEV   707.01  707.01  707.01  707.01  707.01  707.01  707.01  707.01
    16.80 CFS       .06     .05     .05     .05     .04     .04     .04     .04
    16.80 ELEV   707.01  707.01  707.01  707.01  707.01  707.00  707.00  707.00
    17.60 CFS       .03     .03     .03     .03     .03     .02     .02     .02
    17.60 ELEV   707.00  707.00  707.00  707.00  707.00  707.00  707.00  707.00
    18.40 CFS       .02     .02     .02     .02     .02     .01     .01     .01
    18.40 ELEV   707.00  707.00  707.00  707.00  707.00  707.00  707.00  707.00
    19.20 CFS       .01     .01     .01     .01
    19.20 ELEV   707.00  707.00  707.00  707.00

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                3.36 WATERSHED INCHES;     600 CFS-HRS;      49.6 ACRE-FEET.

    DURATION(HRS)   2      4      6      8     10     12     13
    FLOW(CFS)     102     62     36     10      3      1      0

 --- STRUCTURE  6, ALTERNATE  0, STORM  8, HYDROGRAPH ADDED TO READHD FILE ---


OPERATION RUNOFF    XSECTION  99
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TR20 ------------------------------------------------------------------------ SCS -
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    PEAK TIME(HRS)            PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .59                         204.6                       (RUNOFF)
        2.65                          70.1                       (RUNOFF)
        5.05                          36.3                       (RUNOFF)
        5.96                          36.5                       (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                4.21 WATERSHED INCHES;     414 CFS-HRS;      34.2 ACRE-FEET.


OPERATION ADDHYD    XSECTION  90

    PEAK TIME(HRS)            PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .60                         215.8                       (NULL)
        1.62                         270.7                       (NULL)
        1.79                         271.8                       (NULL)
        5.95                          93.8                       (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                3.66 WATERSHED INCHES;    1014 CFS-HRS;      83.8 ACRE-FEET.


OPERATION RESVOR    STRUCTURE  7

                    HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM = 8
     HRS      MAIN TIME INCREMENT =  .100 hr,       DRAINAGE AREA =    .54 SQ.MI.
      .00 CFS      .00     .06     .27     .59    1.13    2.05    3.27    4.73
      .00 ELEV   700.00  700.02  700.07  700.15  700.28  700.51  700.82  701.09
      .80 CFS     6.30    7.77    9.22   10.67   12.10   13.14   14.24   15.42
      .80 ELEV   701.29  701.47  701.65  701.83  702.02  702.19  702.37  702.57
     1.60 CFS    16.65   17.86   18.66   19.39   20.10   20.78   21.44   22.06
     1.60 ELEV   702.78  702.98  703.17  703.35  703.52  703.70  703.86  704.01
     2.40 CFS    22.62   23.16   23.69   24.20   24.68   25.14   25.56   25.95
     2.40 ELEV   704.15  704.29  704.42  704.55  704.67  704.78  704.89  704.99
     3.20 CFS    28.89   31.87   34.60   37.13   39.49   41.68   43.73   45.64
     3.20 ELEV   705.07  705.15  705.22  705.28  705.34  705.39  705.44  705.49
     4.00 CFS    48.57   51.56   54.34   56.96   59.46   61.86   64.17   66.39
     4.00 ELEV   705.54  705.58  705.62  705.65  705.69  705.72  705.75  705.78
     4.80 CFS    68.51   70.55   72.50   74.37   76.00   77.17   77.96   78.57
     4.80 ELEV   705.81  705.84  705.87  705.89  705.92  705.93  705.94  705.95
     5.60 CFS    79.07   79.51   80.05   80.93   82.07   82.96   83.03   82.40
     5.60 ELEV   705.96  705.97  705.97  705.99  706.00  706.01  706.01  706.00
     6.40 CFS    81.47   80.42   79.28   78.09   76.84   75.54   74.18   72.77
     6.40 ELEV   705.99  705.98  705.96  705.95  705.93  705.91  705.89  705.87
     7.20 CFS    71.30   69.78   68.22   66.64   65.02   63.40   61.79   60.18
     7.20 ELEV   705.85  705.83  705.81  705.79  705.76  705.74  705.72  705.70
     8.00 CFS    58.60   57.02   55.47   53.93   52.42   50.93   49.46   48.02
     8.00 ELEV   705.67  705.65  705.63  705.61  705.59  705.57  705.55  705.53
     8.80 CFS    46.60   45.56   44.80   44.04   43.29   42.55   41.81   41.08
     8.80 ELEV   705.51  705.49  705.47  705.45  705.43  705.41  705.40  705.38
```

9.60	CFS	40.36	39.65	38.95	38.25	37.56	36.89	36.22	35.56
9.60	ELEV	705.36	705.34	705.32	705.31	705.29	705.27	705.26	705.24
10.40	CFS	34.91	34.27	33.63	33.01	32.40	31.79	31.20	30.61
10.40	ELEV	705.22	705.21	705.19	705.18	705.16	705.14	705.13	705.12
11.20	CFS	30.04	29.47	28.91	28.37	27.83	27.30	26.77	26.26
11.20	ELEV	705.10	705.09	705.07	705.06	705.05	705.03	705.02	705.01
12.00	CFS	25.97	25.92	25.87	25.82	25.76	25.71	25.66	25.60
12.00	ELEV	704.99	704.98	704.97	704.95	704.94	704.93	704.91	704.90
12.80	CFS	25.55	25.50	25.45	25.39	25.34	25.29	25.24	25.18
12.80	ELEV	704.89	704.87	704.86	704.85	704.84	704.82	704.81	704.80
13.60	CFS	25.13	25.08	25.03	24.97	24.92	24.87	24.82	24.76
13.60	ELEV	704.78	704.77	704.76	704.74	704.73	704.72	704.70	704.69
14.40	CFS	24.71	24.66	24.61	24.56	24.51	24.45	24.40	24.35
14.40	ELEV	704.68	704.67	704.65	704.64	704.63	704.61	704.60	704.59
15.20	CFS	24.30	24.25	24.20	24.15	24.10	24.04	23.99	23.94
15.20	ELEV	704.57	704.56	704.55	704.54	704.52	704.51	704.50	704.49
16.00	CFS	23.89	23.84	23.79	23.74	23.69	23.64	23.59	23.54
16.00	ELEV	704.47	704.46	704.45	704.44	704.42	704.41	704.40	704.39
16.80	CFS	23.49	23.44	23.39	23.34	23.29	23.24	23.19	23.15
16.80	ELEV	704.37	704.36	704.35	704.34	704.32	704.31	704.30	704.29
17.60	CFS	23.10	23.05	23.00	22.95	22.90	22.85	22.80	22.76
17.60	ELEV	704.27	704.26	704.25	704.24	704.23	704.21	704.20	704.19
18.40	CFS	22.71	22.66	22.61	22.56	22.52	22.47	22.42	22.37
18.40	ELEV	704.18	704.16	704.15	704.14	704.13	704.12	704.11	704.09
19.20	CFS	22.33	22.28	22.23	22.18				
19.20	ELEV	704.08	704.07	704.06	704.05				

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
2.00 WATERSHED INCHES; 699 CFS-HRS; 57.8 ACRE-FEET.

DURATION(HRS)	2	4	6	8	10	12	14	16
FLOW(CFS)	73	54	40	29	25	25	24	23

DURATION(HRS) 17
FLOW(CFS) 22 TRUNCATED

--- STRUCTURE 7, ALTERNATE 0, STORM 8, HYDROGRAPH ADDED TO READHD FILE ---

OPERATION RUNOFF XSECTION 49

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
.58	3.4	(RUNOFF)
2.65	1.1	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
4.42 WATERSHED INCHES; 7 CFS-HRS; .5 ACRE-FEET.

OPERATION ADDHYD XSECTION 50

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.13	83.3	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
2.01 WATERSHED INCHES; 706 CFS-HRS; 58.3 ACRE-FEET.

OPERATION RESVOR STRUCTURE 39

HYDROGRAPH POINTS FOR ALTERNATE = 0, STORM = 8

HRS		MAIN TIME INCREMENT = .100 hr,				DRAINAGE AREA =			.61 SQ.MI.
.00	CFS	.00	.01	.03	.07	.13	.23	.35	.50
.00	ELEV	693.19	693.19	693.20	693.22	693.24	693.28	693.32	693.38
.80	CFS	.65	.82	1.01	1.21	1.43	1.65	1.89	2.14
.80	ELEV	693.44	693.50	693.58	693.65	693.74	693.82	693.91	694.00
1.60	CFS	2.73	3.31	3.89	4.45	5.00	5.54	6.05	6.55
1.60	ELEV	694.09	694.18	694.26	694.34	694.42	694.50	694.58	694.65
2.40	CFS	7.04	7.51	7.97	8.42	8.85	9.09	9.30	9.49
2.40	ELEV	694.72	694.79	694.86	694.93	694.99	695.05	695.11	695.17
3.20	CFS	9.69	9.89	10.10	10.31	10.53	10.75	10.98	11.21
3.20	ELEV	695.22	695.28	695.34	695.40	695.46	695.53	695.59	695.66
4.00	CFS	11.45	11.71	11.98	12.25	12.51	12.73	12.97	13.20
4.00	ELEV	695.73	695.80	695.88	695.96	696.04	696.12	696.20	696.29
4.80	CFS	13.45	13.70	13.96	14.23	14.71	17.30	19.80	22.94
4.80	ELEV	696.37	696.46	696.56	696.65	696.75	696.84	696.94	697.02
5.60	CFS	27.75	32.20	36.35	40.29	44.07	47.60	50.80	53.66
5.60	ELEV	697.10	697.17	697.24	697.30	697.36	697.42	697.47	697.51
6.40	CFS	56.19	58.38	60.25	61.81	63.10	64.17	65.02	65.69
6.40	ELEV	697.55	697.59	697.62	697.64	697.67	697.68	697.70	697.71
7.20	CFS	66.19	66.54	66.74	66.80	66.74	66.57	66.29	65.91
7.20	ELEV	697.71	697.72	697.72	697.72	697.72	697.72	697.72	697.71
8.00	CFS	65.44	64.89	64.27	63.58	62.83	62.02	61.17	60.27
8.00	ELEV	697.70	697.69	697.68	697.67	697.66	697.65	697.63	697.62
8.80	CFS	59.33	58.38	57.42	56.48	55.56	54.65	53.75	52.86
8.80	ELEV	697.60	697.59	697.57	697.56	697.54	697.53	697.52	697.50
9.60	CFS	51.98	51.12	50.26	49.42	48.59	47.77	46.96	46.16
9.60	ELEV	697.49	697.47	697.46	697.45	697.43	697.42	697.41	697.39
10.40	CFS	45.37	44.59	43.82	43.07	42.32	41.58	40.85	40.13
10.40	ELEV	697.38	697.37	697.36	697.34	697.33	697.32	697.31	697.30
11.20	CFS	39.43	38.73	38.04	37.36	36.69	36.03	35.38	34.74
11.20	ELEV	697.29	697.28	697.26	697.25	697.24	697.23	697.22	697.21
12.00	CFS	34.12	33.53	32.98	32.46	31.98	31.53	31.11	30.71
12.00	ELEV	697.20	697.19	697.18	697.17	697.17	697.16	697.15	697.15
12.80	CFS	30.34	29.99	29.67	29.36	29.07	28.80	28.55	28.30
12.80	ELEV	697.14	697.14	697.13	697.13	697.12	697.12	697.11	697.11
13.60	CFS	28.08	27.86	27.66	27.47	27.29	27.11	26.95	26.79
13.60	ELEV	697.10	697.10	697.10	697.09	697.09	697.09	697.09	697.08

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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
08/14/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
16:04:24                    PASS   8   JOB NO.   1                      PAGE  71

    14.40 CFS     26.64   26.50   26.37   26.24   26.12   26.00   25.88   25.78
    14.40 ELEV   697.08  697.08  697.08  697.08  697.07  697.07  697.07  697.07
    15.20 CFS     25.67   25.57   25.47   25.38   25.29   25.20   25.11   25.03
    15.20 ELEV   697.07  697.06  697.06  697.06  697.06  697.06  697.06  697.06
    16.00 CFS     24.95   24.87   24.80   24.72   24.65   24.58   24.51   24.44
    16.00 ELEV   697.05  697.05  697.05  697.05  697.05  697.05  697.05  697.05
    16.80 CFS     24.37   24.31   24.24   24.18   24.12   24.06   24.00   23.94
    16.80 ELEV   697.05  697.04  697.04  697.04  697.04  697.04  697.04  697.04
    17.60 CFS     23.88   23.82   23.76   23.71   23.65   23.59   23.54   23.48
    17.60 ELEV   697.04  697.04  697.04  697.03  697.03  697.03  697.03  697.03
    18.40 CFS     23.43   23.38   23.32   23.27   23.22   23.16   23.11   23.06
    18.40 ELEV   697.03  697.03  697.03  697.03  697.03  697.03  697.03  697.02
    19.20 CFS     23.01   22.96   22.91   22.86
    19.20 ELEV   697.02  697.02  697.02  697.02

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  1.45 WATERSHED INCHES;     574 CFS-HRS;      47.5 ACRE-FEET.

    DURATION(HRS)   2      4      6      8     10     12     14     14
    FLOW(CFS)      60     48     35     28     25     24     23     23 TRUNCATED

 --- STRUCTURE 39, ALTERNATE  0, STORM  8, HYDROGRAPH ADDED TO READHD FILE ---


EXECUTIVE CONTROL  ENDCMP    COMPUTATIONS COMPLETED FOR PASS   8


EXECUTIVE CONTROL  INCREM    MAIN TIME INCREMENT =   .500 HOURS


EXECUTIVE CONTROL  COMPUT    FROM XSECTION  91  TO STRUCTURE 39           12-HR
    STARTING TIME =   .00       RAIN DEPTH =  6.59       RAIN DURATION = 12.00
    ANT. RUNOFF COND. = 2       MAIN TIME INCREMENT =   .500 HOURS
    ALTERNATE NO. = 0           STORM NO. = 9            RAIN TABLE NO. = 2


OPERATION RUNOFF    XSECTION  91

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        5.51                         50.3                       (RUNOFF)
       11.91                          9.0                       (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  3.79 WATERSHED INCHES;     226 CFS-HRS;      18.6 ACRE-FEET.


OPERATION RUNOFF    XSECTION  92
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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
08/14/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
16:04:24                    PASS   9   JOB NO.   1                      PAGE  72

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        5.56                         78.0                       (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  4.31 WATERSHED INCHES;     360 CFS-HRS;      29.7 ACRE-FEET.


OPERATION ADDHYD    XSECTION  93

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        5.54                        128.3                       (NULL)
       11.85                         21.9                       (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  4.09 WATERSHED INCHES;     585 CFS-HRS;      48.4 ACRE-FEET.


OPERATION RUNOFF    XSECTION  94

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        5.70                          8.1                       (RUNOFF)
       11.88                          1.7                       (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  2.79 WATERSHED INCHES;      36 CFS-HRS;       3.0 ACRE-FEET.


OPERATION RESVOR    STRUCTURE 11

                    HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM = 9
     HRS      MAIN TIME INCREMENT =  .500 hr,       DRAINAGE AREA =    .02 SQ.MI.
    2.50 CFS       .00     .16     .57    1.01    2.82    4.61    6.11    7.04
    2.50 ELEV   737.50  737.66  738.14  739.01  739.91  740.81  741.56  742.02
    6.50 CFS      7.14    6.73    6.03    5.31    4.46    3.72    3.23    2.72
    6.50 ELEV   742.07  741.87  741.51  741.15  740.73  740.36  740.12  739.86
   10.50 CFS      2.32    2.16    1.88    1.66    1.53     .99     .65     .15
   10.50 ELEV   739.66  739.58  739.44  739.33  739.27  738.98  738.30  737.65
   14.50 CFS      -.04
   14.50 ELEV   737.46

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  2.79 WATERSHED INCHES;      37 CFS-HRS;       3.0 ACRE-FEET.

    DURATION(HRS)   2      4      6      8     10     11
    FLOW(CFS)       6      4      2      2      1      0

 --- STRUCTURE 11, ALTERNATE  0, STORM  9, HYDROGRAPH ADDED TO READHD FILE ---


OPERATION RUNOFF    XSECTION  96
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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
08/14/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
16:04:24                    PASS   9   JOB NO.   1                      PAGE  73


    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        4.61                          7.1                        (RUNOFF)
       10.25                          1.3                        (RUNOFF)
       11.86                          1.2                        (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  6.34 WATERSHED INCHES;      34 CFS-HRS;       2.8 ACRE-FEET.


OPERATION ADDHYD    XSECTION  97

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        5.55                        140.2                        (NULL)
       11.84                         24.9                        (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  4.06 WATERSHED INCHES;     656 CFS-HRS;      54.2 ACRE-FEET.


OPERATION RESVOR    STRUCTURE  6

                   HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM = 9
     HRS      MAIN TIME INCREMENT =  .500 hr,      DRAINAGE AREA =    .28 SQ.MI.
      .00 CFS       .00     .08     .59    1.60    3.11    5.80   11.26   21.21
      .00 ELEV   707.00  707.01  707.07  707.19  707.37  707.69  708.25  709.07
     4.00 CFS     39.94   60.06  118.70  154.63  150.35  131.23  109.36   92.29
     4.00 ELEV  710.11  711.46  712.55  712.92  712.88  712.68  712.45  712.27
     8.00 CFS     77.95   65.80   63.54   59.95   55.22   47.99   42.34   36.92
     8.00 ELEV  712.12  711.98  711.78  711.45  711.02  710.59  710.26  709.94
    12.00 CFS     32.56   28.61   21.63   15.50   10.82    7.54    5.51    4.02
    12.00 ELEV  709.70  709.48  709.09  708.61  708.21  707.90  707.66  707.48
    16.00 CFS      2.93    2.14    1.56    1.14     .83     .61     .44     .32
    16.00 ELEV  707.35  707.25  707.19  707.14  707.10  707.07  707.05  707.04
    20.00 CFS       .24     .17     .13     .09     .07     .05     .04     .03
    20.00 ELEV  707.03  707.02  707.01  707.01  707.01  707.01  707.00  707.00
    24.00 CFS       .02     .01     .01
    24.00 ELEV  707.00  707.00  707.00

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  4.15 WATERSHED INCHES;     742 CFS-HRS;      61.3 ACRE-FEET.

    DURATION(HRS)   2      4      6      8     10     12     14     16
    FLOW(CFS)     109     64     48     33     15      6      3      1

    DURATION(HRS)  18
    FLOW(CFS)       0

 --- STRUCTURE  6, ALTERNATE  0, STORM  9, HYDROGRAPH ADDED TO READHD FILE ---
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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
08/14/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
16:04:24                    PASS   9   JOB NO.   1                      PAGE  74


OPERATION RUNOFF    XSECTION  99

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        4.68                        114.2                        (RUNOFF)
        8.75                         32.3                        (RUNOFF)
       10.25                         21.9                        (RUNOFF)
       11.86                         21.9                        (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  5.13 WATERSHED INCHES;     505 CFS-HRS;      41.8 ACRE-FEET.


OPERATION ADDHYD    XSECTION  90

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        5.52                        250.1                        (NULL)
       11.78                         56.0                        (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  4.49 WATERSHED INCHES;    1243 CFS-HRS;     102.7 ACRE-FEET.


OPERATION RESVOR    STRUCTURE  7

                   HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM = 9
     HRS      MAIN TIME INCREMENT =  .500 hr,      DRAINAGE AREA =    .54 SQ.MI.
      .50 CFS       .00     .10     .44    1.06    1.92    3.20    5.33    8.93
      .50 ELEV   700.00  700.02  700.11  700.26  700.48  700.80  701.17  701.62
     4.50 CFS     13.49   18.09   21.41   24.48   35.20   57.89   78.70   91.16
     4.50 ELEV  702.25  703.02  703.85  704.62  705.23  705.67  705.95  706.10
     8.50 CFS     97.60  101.22  102.20  100.74   98.48   94.39   88.98   84.75
     8.50 ELEV  706.17  706.21  706.22  706.20  706.18  706.13  706.08  706.03
    12.50 CFS     78.67   69.79   61.23   53.20   45.91   42.11   38.51   35.14
    12.50 ELEV  705.95  705.83  705.71  705.60  705.50  705.40  705.31  705.23
    16.50 CFS     31.99   29.09   26.41   25.78   25.51   25.25   24.99   24.72
    16.50 ELEV  705.15  705.08  705.01  704.94  704.88  704.81  704.75  704.68
    20.50 CFS     24.47   24.21   23.95   23.70   23.45   23.21   22.96   22.72
    20.50 ELEV  704.62  704.55  704.49  704.43  704.36  704.30  704.24  704.18
    24.50 CFS     22.48   22.24
    24.50 ELEV  704.12  704.06

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  2.85 WATERSHED INCHES;     995 CFS-HRS;      82.2 ACRE-FEET.

    DURATION(HRS)   2      4      6      8     10     12     14     16
    FLOW(CFS)      98     85     61     42     32     26     24     24

    DURATION(HRS)  18     19
    FLOW(CFS)      23     22 TRUNCATED
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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
08/14/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
16:04:24                    PASS   9   JOB NO.   1                       PAGE  75


 --- STRUCTURE  7, ALTERNATE  0, STORM  9, HYDROGRAPH ADDED TO READHD FILE ---


OPERATION RUNOFF    XSECTION  49

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        4.66                          1.8                        (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                5.36 WATERSHED INCHES;       8 CFS-HRS;        .7 ACRE-FEET.


OPERATION ADDHYD    XSECTION  50

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        9.43                        102.5                        (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                2.86 WATERSHED INCHES;    1003 CFS-HRS;      82.9 ACRE-FEET.


OPERATION RESVOR    STRUCTURE 39

                   HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM = 9
     HRS      MAIN TIME INCREMENT =  .500 hr,      DRAINAGE AREA =    .61 SQ.MI.
      .50 CFS       .00     .01     .05     .12     .23     .42     .73    1.22
      .50 ELEV   693.19  693.19  693.21  693.24  693.28  693.35  693.47  693.66
     4.50 CFS      1.97    4.12    6.74    9.09   10.33   11.80   13.34   18.71
     4.50 ELEV  693.94  694.30  694.68  695.05  695.41  695.83  696.33  696.90
     8.50 CFS     44.74   66.34   81.29   88.18   92.17   94.61   95.38   95.07
     8.50 ELEV  697.37  697.72  697.96  698.08  698.16  698.21  698.23  698.22
    12.50 CFS     93.57   90.21   85.49   77.53   68.71   60.92   54.42   48.87
    12.50 ELEV  698.19  698.12  698.03  697.90  697.76  697.63  697.53  697.44
    16.50 CFS     44.04   39.78   35.99   32.87   30.59   28.94   27.74   26.83
    16.50 ELEV  697.36  697.29  697.23  697.18  697.14  697.12  697.10  697.08
    20.50 CFS     26.12   25.56   25.09   24.69   24.34   24.02   23.73   23.45
    20.50 ELEV  697.07  697.06  697.06  697.05  697.04  697.04  697.03  697.03
    24.50 CFS     23.18   22.92
    24.50 ELEV  697.03  697.02

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                2.30 WATERSHED INCHES;     908 CFS-HRS;      75.1 ACRE-FEET.

    DURATION(HRS)   2      4      6      8     10     12     14     16
    FLOW(CFS)      92     81     61     44     31     26     24     23

    DURATION(HRS)  17
    FLOW(CFS)      23 TRUNCATED

 --- STRUCTURE 39, ALTERNATE  0, STORM  9, HYDROGRAPH ADDED TO READHD FILE ---
```



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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
08/14/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
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EXECUTIVE CONTROL  ENDCMP    COMPUTATIONS COMPLETED FOR PASS   9


EXECUTIVE CONTROL  COMPUT    FROM XSECTION  91  TO STRUCTURE 39          18-HR
    STARTING TIME =   .00       RAIN DEPTH =  6.97       RAIN DURATION = 18.00
    ANT. RUNOFF COND. = 2       MAIN TIME INCREMENT =   .500 HOURS
    ALTERNATE NO. = 0           STORM NO. =10            RAIN TABLE NO. = 2


OPERATION RUNOFF    XSECTION  91

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        7.96                         37.3                       (RUNOFF)
       17.98                          7.3                       (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                4.12 WATERSHED INCHES;     246 CFS-HRS;      20.3 ACRE-FEET.


OPERATION RUNOFF    XSECTION  92

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        7.98                         57.8                       (RUNOFF)
       18.03                         10.1                       (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                4.66 WATERSHED INCHES;     389 CFS-HRS;      32.1 ACRE-FEET.


OPERATION ADDHYD    XSECTION  93

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        7.97                         95.1                       (NULL)
       18.01                         17.4                       (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                4.44 WATERSHED INCHES;     634 CFS-HRS;      52.4 ACRE-FEET.


OPERATION RUNOFF    XSECTION  94

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        8.21                          6.2                       (RUNOFF)
       18.00                          1.4                       (RUNOFF)
```

```
TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
08/14/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
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    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  3.08 WATERSHED INCHES;      40 CFS-HRS;       3.3 ACRE-FEET.


OPERATION RESVOR    STRUCTURE 11

                   HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM =10
     HRS      MAIN TIME INCREMENT =  .500 hr,      DRAINAGE AREA =    .02 SQ.MI.
    3.50 CFS       .00     .07     .31     .57     .80    1.51    2.62    3.65
    3.50 ELEV   737.50  737.57  737.81  738.13  738.60  739.26  739.81  740.32
    7.50 CFS      4.67    5.37    5.76    5.76    5.44    4.98    4.37    3.94
    7.50 ELEV   740.84  741.19  741.38  741.38  741.22  740.99  740.69  740.47
   11.50 CFS      3.57    3.21    2.82    2.45    2.30    2.16    1.89    1.66
   11.50 ELEV   740.28  740.11  739.91  739.73  739.65  739.58  739.45  739.33
   15.50 CFS      1.57    1.54    1.50    1.29    1.06    1.17    1.19     .86
   15.50 ELEV   739.28  739.27  739.25  739.14  739.03  739.08  739.09  738.72
   19.50 CFS       .55    -.02     .02    -.01
   19.50 ELEV   738.10  737.48  737.52  737.49

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  3.07 WATERSHED INCHES;      40 CFS-HRS;       3.3 ACRE-FEET.

    DURATION(HRS)   2      4      6      8     10     12     14     15
    FLOW(CFS)       5      4      3      2      2      1      1      0

 --- STRUCTURE 11, ALTERNATE  0, STORM 10, HYDROGRAPH ADDED TO READHD FILE ---


OPERATION RUNOFF    XSECTION  96

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        6.86                          5.0                       (RUNOFF)
       12.79                          1.3                       (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  6.73 WATERSHED INCHES;      37 CFS-HRS;       3.0 ACRE-FEET.


OPERATION ADDHYD    XSECTION  97

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        7.97                        105.1                       (NULL)
       17.99                         19.4                       (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  4.40 WATERSHED INCHES;     711 CFS-HRS;      58.7 ACRE-FEET.


OPERATION RESVOR    STRUCTURE  6
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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
08/14/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
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                   HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM =10
     HRS      MAIN TIME INCREMENT =  .500 hr,      DRAINAGE AREA =    .28 SQ.MI.
     .00 CFS       .00     .06     .28     .73    1.38    2.28    3.59    5.46
     .00 ELEV   707.00  707.01  707.03  707.09  707.16  707.27  707.43  707.65
    4.00 CFS         8      14      20      31      43      56      68     114
    4.00 ELEV   708.00  708.46  709.02  709.60  710.27  711.09  712.02  712.50
    8.00 CFS       117     114     104      91      79      70      65      63
    8.00 ELEV   712.53  712.50  712.39  712.26  712.13  712.04  711.93  711.73
   12.00 CFS      59.71   55.60   49.37   44.55   40.51   35.92   31.64   28.77
   12.00 ELEV   711.43  711.05  710.67  710.39  710.15  709.88  709.65  709.49
   16.00 CFS      27.04   25.45   22.74   20.19   19.97   19.36   16.15   11.91
   16.00 ELEV   709.39  709.30  709.15  709.01  709.00  708.94  708.67  708.30
   20.00 CFS       8.31    6.11    4.47    3.26    2.38    1.74    1.27     .92
   20.00 ELEV   707.99  707.73  707.53  707.39  707.28  707.21  707.15  707.11
   24.00 CFS        .67     .49     .36     .26     .19     .14     .10     .07
   24.00 ELEV   707.08  707.06  707.04  707.03  707.02  707.02  707.01  707.01
   28.00 CFS        .05     .04     .03     .02     .02     .01
   28.00 ELEV   707.01  707.00  707.00  707.00  707.00  707.00

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  4.51 WATERSHED INCHES;     805 CFS-HRS;      66.5 ACRE-FEET.

    DURATION(HRS)  2      4      6      8     10     12     14     16
    FLOW(CFS)     91     65     56     41     29     20     16      8

    DURATION(HRS) 18     20     22     23
    FLOW(CFS)      4      2      1      0

 --- STRUCTURE  6, ALTERNATE  0, STORM 10, HYDROGRAPH ADDED TO READHD FILE ---


OPERATION RUNOFF    XSECTION  99

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        6.92                         80.5                       (RUNOFF)
       13.25                         21.9                       (RUNOFF)
       15.75                         15.6                       (RUNOFF)
       17.75                         16.6                       (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  5.54 WATERSHED INCHES;     545 CFS-HRS;      45.1 ACRE-FEET.


OPERATION ADDHYD    XSECTION  90

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        7.80                        195.5                       (NULL)
       17.73                         35.4                       (NULL)
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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
08/14/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
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    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                 4.86 WATERSHED INCHES;    1346 CFS-HRS;     111.2 ACRE-FEET.


OPERATION RESVOR    STRUCTURE  7

                   HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM =10
     HRS      MAIN TIME INCREMENT =  .500 hr,      DRAINAGE AREA =    .54 SQ.MI.
      .50 CFS       .00     .03     .13     .39     .77    1.28    1.87    2.73
      .50 ELEV   700.00  700.01  700.03  700.10  700.19  700.32  700.47  700.68
     4.50 CFS      3.87    5.64    7.96   10.97   14.02   17.22   19.84   22.36
     4.50 ELEV   700.97  701.20  701.49  701.87  702.34  702.87  703.46  704.09
     8.50 CFS     24.58   30.83   45.64   64.18   77.10   85.42   90.81   93.52
     8.50 ELEV   704.65  705.12  705.49  705.75  705.93  706.04  706.10  706.13
    12.50 CFS     94.02   93.43   91.98   88.95   84.59   80.27   76.17   72.37
    12.50 ELEV   706.13  706.12  706.11  706.08  706.03  705.98  705.92  705.87
    16.50 CFS     67.99   62.92   59.15   56.84   52.80   46.99   43.40   40.19
    16.50 ELEV   705.81  705.73  705.68  705.65  705.59  705.51  705.43  705.35
    20.50 CFS     37.01   33.95   31.05   28.33   25.98   25.72   25.46   25.20
    20.50 ELEV   705.28  705.20  705.13  705.06  704.99  704.93  704.86  704.80
    24.50 CFS     24.94   24.68   24.42   24.17   23.91   23.66   23.41   23.17
    24.50 ELEV   704.73  704.67  704.61  704.54  704.48  704.42  704.35  704.29
    28.50 CFS     22.92   22.68   22.44   22.21   21.97
    28.50 ELEV   704.23  704.17  704.11  704.05  703.99

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                 3.23 WATERSHED INCHES;    1130 CFS-HRS;      93.4 ACRE-FEET.

    DURATION(HRS)   2      4      6      8     10     12     14     16
    FLOW(CFS)      91     80     68     57     43     31     26     25

    DURATION(HRS)  18     20     22     23
    FLOW(CFS)      24     23     22     22 TRUNCATED

 --- STRUCTURE  7, ALTERNATE  0, STORM 10, HYDROGRAPH ADDED TO READHD FILE ---


OPERATION RUNOFF    XSECTION  49

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        6.90                          1.3                        (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                 5.77 WATERSHED INCHES;       9 CFS-HRS;        .7 ACRE-FEET.


OPERATION ADDHYD    XSECTION  50

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
       12.48                         94.4                        (NULL)
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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
08/14/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
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    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                 3.24 WATERSHED INCHES;    1138 CFS-HRS;      94.1 ACRE-FEET.


OPERATION RESVOR    STRUCTURE 39

                   HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM =10
     HRS      MAIN TIME INCREMENT =  .500 hr,      DRAINAGE AREA =    .61 SQ.MI.
     1.00 CFS       .00     .02     .05     .09     .15     .24     .38     .57
     1.00 ELEV   693.19  693.20  693.21  693.23  693.25  693.28  693.33  693.41
     5.00 CFS       .84    1.19    1.68    2.58    4.43    6.47    8.57    9.77
     5.00 ELEV   693.51  693.65  693.83  694.07  694.34  694.64  694.95  695.24
     9.00 CFS     10.79   11.95   13.16   14.60   33.83   55.32   70.79   81.38
     9.00 ELEV   695.54  695.87  696.27  696.74  697.20  697.54  697.79  697.96
    13.00 CFS     86.67   89.68   91.48   91.94   91.36   90.05   88.22   85.84
    13.00 ELEV   698.05  698.11  698.15  698.16  698.15  698.12  698.08  698.04
    17.00 CFS     81.96   76.71   72.53   68.30   62.97   57.45   52.53   48.14
    17.00 ELEV   697.97  697.88  697.82  697.75  697.66  697.57  697.50  697.43
    21.00 CFS     44.14   40.47   37.07   33.94   31.39   29.56   28.22   27.23
    21.00 ELEV   697.36  697.30  697.25  697.20  697.16  697.13  697.11  697.09
    25.00 CFS     26.47   25.86   25.37   24.95   24.58   24.25   23.95   23.66
    25.00 ELEV   697.08  697.07  697.06  697.05  697.05  697.04  697.04  697.03
    29.00 CFS     23.39   23.13   22.88   22.63
    29.00 ELEV   697.03  697.03  697.02  697.02

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                 2.67 WATERSHED INCHES;    1058 CFS-HRS;      87.5 ACRE-FEET.

    DURATION(HRS)   2      4      6      8     10     12     14     16
    FLOW(CFS)      90     82     71     55     40     31     26     25

    DURATION(HRS)  18     20
    FLOW(CFS)      23     23 TRUNCATED

 --- STRUCTURE 39, ALTERNATE  0, STORM 10, HYDROGRAPH ADDED TO READHD FILE ---


EXECUTIVE CONTROL  ENDCMP    COMPUTATIONS COMPLETED FOR PASS  10
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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
08/14/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
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SUMMARY TABLE 1

SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.
A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:
F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED HYDROGRAPH

XSECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RUNOFF AMOUNT (IN)	PEAK DISCHARGE ELEVATION (FT)	PEAK DISCHARGE TIME (HR)	PEAK DISCHARGE RATE (CFS)	PEAK DISCHARGE RATE (CSM)
RAINFALL OF .91 inches AND .10 hr DURATION, BEGINS AT .0 hrs.							
RAINTABLE NUMBER 1, ARC 2							
MAIN TIME INCREMENT .008 HOURS							
ALTERNATE 0 STORM 1							
XSECTION 91	RUNOFF	.09	.02	---	.57F	1F	11.1
XSECTION 92	RUNOFF	.13	.06	---	.66F	6F	46.2
XSECTION 93	ADDHYD	.22	.04	---	.63	7	31.8
XSECTION 94	RUNOFF	.02	.00	---	.00	0	.0
STRUCTURE 11	RESVOR	.02	.00	---	.00	0	.0
XSECTION 95	ADDHYD	.24	.04	---	.63	7	29.2
XSECTION 96	RUNOFF	.01	.70	---	.13	26	2600.0
XSECTION 97	ADDHYD	.25	.06	---	.13	26	104.0
XSECTION 10	RUNOFF	.03	.18	---	.14	22	733.3
XSECTION 98	ADDHYD	.28	.07	---	.13	48	171.4
STRUCTURE 6	RESVOR	.28	.06	707.56	.95F	5F	17.9
XSECTION 99	RUNOFF	.15	.18	---	.14	127	846.7
XSECTION 90	ADDHYD	.43	.10	---	.14	129	300.0
XSECTION 17	RUNOFF	.11	.20	---	.22	59	536.4
XSECTION 13	ADDHYD	.54	.12	---	.15	165	305.6
STRUCTURE 7	RESVOR	.54	.01	700.37	3.19R	1R	1.9
XSECTION 49	RUNOFF	.00	.23	---	.14T	2T********	
XSECTION 50	ADDHYD	.54	.01	---	.14T	3T	5.6
XSECTION 24	RUNOFF	.01	.26	---	.13	18	1800.0
XSECTION 17	ADDHYD	.56	.02	---	.14	21	37.5
XSECTION 19	RUNOFF	.05	.01	---	.51R	1R	20.0
XSECTION 15	ADDHYD	.61	.02	---	.14	21	34.4
STRUCTURE 39	RESVOR	.61	.00	---	.95	0	.0
RAINFALL OF 1.67 inches AND .20 hr DURATION, BEGINS AT .0 hrs.							
ALTERNATE 0 STORM 2							


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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
08/14/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
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SUMMARY TABLE 1

SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.
A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:
F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED HYDROGRAPH

XSECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RUNOFF AMOUNT (IN)	PEAK DISCHARGE ELEVATION (FT)	PEAK DISCHARGE TIME (HR)	PEAK DISCHARGE RATE (CFS)	PEAK DISCHARGE RATE (CSM)
ALTERNATE 0 STORM 2							
XSECTION 91	RUNOFF	.09	.23	---	.60	20	222.2
XSECTION 92	RUNOFF	.13	.37	---	.69	38	292.3
XSECTION 93	ADDHYD	.22	.31	---	.64	58	263.6
XSECTION 94	RUNOFF	.02	.06	---	.66F	1F	50.0
STRUCTURE 11	RESVOR	.02	.06	738.36	.95R	1R	50.0
XSECTION 95	ADDHYD	.24	.29	---	.64	58	241.7
XSECTION 96	RUNOFF	.01	1.45	---	.14	44	4400.0
XSECTION 97	ADDHYD	.25	.33	---	.64	58	232.0
XSECTION 10	RUNOFF	.03	.66	---	.15	63	2100.0
XSECTION 98	ADDHYD	.28	.36	---	.15	110	392.9
STRUCTURE 6	RESVOR	.28	.30	709.55	1.04T	30T	107.1
XSECTION 99	RUNOFF	.15	.66	---	.15	362	2413.3
XSECTION 90	ADDHYD	.43	.43	---	.16	367	853.5
XSECTION 17	RUNOFF	.11	.71	---	.26	186	1690.9
XSECTION 13	ADDHYD	.54	.48	---	.18	488	903.7
STRUCTURE 7	RESVOR	.54	.05	701.30	3.19R	6R	11.1
XSECTION 49	RUNOFF	.00	.76	---	.15	6 ********	
XSECTION 50	ADDHYD	.54	.05	---	.17T	8T	14.8
XSECTION 24	RUNOFF	.01	.82	---	.15	44	4400.0
XSECTION 17	ADDHYD	.56	.07	---	.15T	52T	92.9
XSECTION 19	RUNOFF	.05	.21	---	.54	12	240.0
XSECTION 15	ADDHYD	.61	.08	---	.15T	53T	86.9
STRUCTURE 39	RESVOR	.61	.01	693.65	3.19R	1R	1.6

TR20 ---------- SCS -
001 CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE VERSION
08/14/** PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
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SUMMARY TABLE 1

SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.
A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:
F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED HYDROGRAPH

XSECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RUNOFF AMOUNT (IN)	PEAK DISCHARGE ELEVATION (FT)	TIME (HR)	RATE (CFS)	RATE (CSM)
RAINFALL OF 2.05 inches AND .30 hr DURATION, BEGINS AT .0 hrs.							
ALTERNATE 0 STORM 3							
XSECTION 91	RUNOFF	.09	.41	---	.63	35	388.9
XSECTION 92	RUNOFF	.13	.59	---	.71	60	461.5
XSECTION 93	ADDHYD	.22	.52	---	.68	94	427.3
XSECTION 94	RUNOFF	.02	.15	---	.69T	3T	150.0
STRUCTURE 11	RESVOR	.02	.15	739.33	.99F	2F	100.0
XSECTION 95	ADDHYD	.24	.48	---	.68	95	395.8
XSECTION 96	RUNOFF	.01	1.82	---	.15	49	4900.0
XSECTION 97	ADDHYD	.25	.53	---	.68	95	380.0
XSECTION 10	RUNOFF	.03	.94	---	.16	76	2533.3
XSECTION 98	ADDHYD	.28	.57	---	.16	128	457.1
STRUCTURE 6	RESVOR	.28	.48	710.67	1.07T	49T	175.0
XSECTION 99	RUNOFF	.15	.94	---	.16	438	2920.0
XSECTION 90	ADDHYD	.43	.65	---	.17	444	1032.6
XSECTION 17	RUNOFF	.11	1.01	---	.28	236	2145.5
XSECTION 13	ADDHYD	.54	.72	---	.19	594	1100.0
STRUCTURE 7	RESVOR	.54	.07	701.75	3.19R	10R	18.5
XSECTION 49	RUNOFF	.00	1.07	---	.16	8	********
XSECTION 50	ADDHYD	.54	.08	---	3.19R	10R	18.5
XSECTION 24	RUNOFF	.01	1.14	---	.16	52	5200.0
XSECTION 17	ADDHYD	.56	.11	---	.16T	61T	108.9
XSECTION 19	RUNOFF	.05	.37	---	.57	21	420.0
XSECTION 15	ADDHYD	.61	.13	---	.16T	63T	103.3
STRUCTURE 39	RESVOR	.61	.01	693.91	3.19R	2R	3.3

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SUMMARY TABLE 1

SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.
A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:
F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED HYDROGRAPH

XSECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RUNOFF AMOUNT (IN)	PEAK DISCHARGE ELEVATION (FT)	TIME (HR)	RATE (CFS)	RATE (CSM)
RAINFALL OF 2.80 inches AND .50 hr DURATION, BEGINS AT .0 hrs.							
ALTERNATE 0 STORM 4							
XSECTION 91	RUNOFF	.09	.83	---	.75	65	722.2
XSECTION 92	RUNOFF	.13	1.10	---	.82	104	800.0
XSECTION 93	ADDHYD	.22	.99	---	.79	168	763.6
XSECTION 94	RUNOFF	.02	.42	---	.82	7	350.0
STRUCTURE 11	RESVOR	.02	.42	740.78	1.11F	5F	250.0
XSECTION 95	ADDHYD	.24	.94	---	.79	171	712.5
XSECTION 96	RUNOFF	.01	2.57	---	.17	49	4900.0
XSECTION 97	ADDHYD	.25	1.00	---	.79	171	684.0
XSECTION 10	RUNOFF	.03	1.57	---	.20	86	2866.7
XSECTION 98	ADDHYD	.28	1.05	---	.79	172	614.3
STRUCTURE 6	RESVOR	.28	.91	712.59	1.07T	122T	435.7
XSECTION 99	RUNOFF	.15	1.57	---	.20	498	3320.0
XSECTION 90	ADDHYD	.43	1.14	---	.20	506	1176.7
XSECTION 17	RUNOFF	.11	1.64	---	.31	290	2636.4
XSECTION 13	ADDHYD	.54	1.25	---	.24	721	1335.2
STRUCTURE 7	RESVOR	.54	.12	702.74	3.19R	16R	29.6
XSECTION 49	RUNOFF	.00	1.72	---	.19	8	********
XSECTION 50	ADDHYD	.54	.13	---	3.19R	16R	29.6
XSECTION 24	RUNOFF	.01	1.80	---	.19	57	5700.0
XSECTION 17	ADDHYD	.56	.17	---	.20T	68T	121.4
XSECTION 19	RUNOFF	.05	.78	---	.69	40	800.0
XSECTION 15	ADDHYD	.61	.23	---	.20T	70T	114.8
STRUCTURE 39	RESVOR	.61	.02	694.39	3.19R	5R	8.2

SUMMARY TABLE 1

SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.
A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:
F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED HYDROGRAPH

XSECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RUNOFF AMOUNT (IN)	PEAK DISCHARGE ELEVATION (FT)	PEAK DISCHARGE TIME (HR)	PEAK DISCHARGE RATE (CFS)	PEAK DISCHARGE RATE (CSM)
RAINFALL OF 3.56 inches AND 1.00 hr DURATION, BEGINS AT .0 hrs.							
ALTERNATE 0 STORM 5							
XSECTION 91	RUNOFF	.09	1.34	---	.87	80	888.9
XSECTION 92	RUNOFF	.13	1.68	---	.97	128	984.6
XSECTION 93	ADDHYD	.22	1.54	---	.93	206	936.4
XSECTION 94	RUNOFF	.02	.78	---	1.02	10	500.0
STRUCTURE 11	RESVOR	.02	.77	741.94	1.43F	7F	350.0
XSECTION 95	ADDHYD	.24	1.48	---	.94	211	879.2
XSECTION 96	RUNOFF	.01	3.33	---	.20	42	4200.0
XSECTION 97	ADDHYD	.25	1.54	---	.92	218	872.0
XSECTION 10	RUNOFF	.03	2.24	---	.27	76	2533.3
XSECTION 98	ADDHYD	.28	1.61	---	.89	238	850.0
STRUCTURE 6	RESVOR	.28	1.41	713.37	1.15T	198T	707.1
XSECTION 99	RUNOFF	.15	2.24	---	.27	435	2900.0
XSECTION 90	ADDHYD	.43	1.71	---	.28	447	1039.5
XSECTION 17	RUNOFF	.11	2.32	---	.38	281	2554.5
XSECTION 13	ADDHYD	.54	1.83	---	.32	696	1288.9
STRUCTURE 7	RESVOR	.54	.15	703.83	3.19R	21R	38.9
XSECTION 49	RUNOFF	.00	2.41	---	.26	7	********
XSECTION 50	ADDHYD	.54	.16	---	3.19R	21R	38.9
XSECTION 24	RUNOFF	.01	2.50	---	.25	49	4900.0
XSECTION 17	ADDHYD	.56	.22	---	.27T	59T	105.4
XSECTION 19	RUNOFF	.05	1.28	---	.80	48	960.0
XSECTION 15	ADDHYD	.61	.32	---	.82T	77T	126.2
STRUCTURE 39	RESVOR	.61	.04	694.82	3.19R	8R	13.1

SUMMARY TABLE 1

SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.
A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:
F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED HYDROGRAPH

XSECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RUNOFF AMOUNT (IN)	PEAK DISCHARGE ELEVATION (FT)	PEAK DISCHARGE TIME (HR)	PEAK DISCHARGE RATE (CFS)	PEAK DISCHARGE RATE (CSM)
RAINFALL OF 4.47 inches AND 2.00 hr DURATION, BEGINS AT .0 hrs.							
MAIN TIME INCREMENT .100 HOURS							
ALTERNATE 0 STORM 6							
XSECTION 91	RUNOFF	.09	2.03	---	1.06	82	911.1
XSECTION 92	RUNOFF	.13	2.44	---	1.14	131	1007.7
XSECTION 93	ADDHYD	.22	2.27	---	1.11	212	963.6
XSECTION 94	RUNOFF	.02	1.31	---	1.21	11	550.0
STRUCTURE 11	RESVOR	.02	1.31	742.44	1.86	8	400.0
XSECTION 95	ADDHYD	.24	2.19	---	1.12	218	908.3
XSECTION 96	RUNOFF	.01	4.23	---	.27	31	3100.0
XSECTION 97	ADDHYD	.25	2.25	---	1.10	225	900.0
XSECTION 10	RUNOFF	.03	3.06	---	.34	60	2000.0
XSECTION 98	ADDHYD	.28	2.33	---	1.03	246	878.6
STRUCTURE 6	RESVOR	.28	2.33	713.59	1.35	219	782.1
XSECTION 99	RUNOFF	.15	3.06	---	.34	347	2313.3
XSECTION 90	ADDHYD	.43	2.59	---	.34	358	832.6
XSECTION 17	RUNOFF	.11	3.16	---	.51	229	2081.8
XSECTION 13	ADDHYD	.54	2.71	---	.46	565	1046.3
STRUCTURE 7	RESVOR	.54	1.08	705.11	3.91T	30T	55.6
XSECTION 49	RUNOFF	.00	3.26	---	.33	6	********
XSECTION 50	ADDHYD	.54	1.08	---	3.91T	30T	55.6
XSECTION 24	RUNOFF	.01	3.36	---	.32	39	3900.0
XSECTION 17	ADDHYD	.56	1.15	---	.34T	48T	85.7
XSECTION 19	RUNOFF	.05	1.95	---	1.00	48	960.0
XSECTION 15	ADDHYD	.61	1.22	---	.95T	82T	134.4

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SUMMARY TABLE 1

SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.
A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:
F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED HYDROGRAPH

XSECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RUNOFF AMOUNT (IN)	PEAK DISCHARGE ELEVATION (FT)	TIME (HR)	RATE (CFS)	RATE (CSM)
ALTERNATE 0 STORM 6							
STRUCTURE 39	RESVOR	.61	.53	696.96	16.10R	20R	32.8
RAINFALL OF 4.85 inches AND 3.00 hr DURATION, BEGINS AT .0 hrs.							
ALTERNATE 0 STORM 7							
XSECTION 91	RUNOFF	.09	2.33	---	1.23	73	811.1
XSECTION 92	RUNOFF	.13	2.76	---	1.29	118	907.7
XSECTION 93	ADDHYD	.22	2.58	---	1.26	191	868.2
XSECTION 94	RUNOFF	.02	1.55	---	1.44	10	500.0
STRUCTURE 11	RESVOR	.02	1.55	742.34	2.02	8	400.0
XSECTION 95	ADDHYD	.24	2.49	---	1.28	196	816.7
XSECTION 96	RUNOFF	.01	4.61	---	.33	26	2600.0
XSECTION 97	ADDHYD	.25	2.57	---	1.27	204	816.0
XSECTION 10	RUNOFF	.03	3.42	---	.39	48	1600.0
XSECTION 98	ADDHYD	.28	2.65	---	1.24	224	800.0
STRUCTURE 6	RESVOR	.28	2.65	713.47	1.52	208	742.9
XSECTION 99	RUNOFF	.15	3.42	---	.39	274	1826.7
XSECTION 90	ADDHYD	.43	2.92	---	1.39	315	732.6
XSECTION 17	RUNOFF	.11	3.52	---	.54	187	1700.0
XSECTION 13	ADDHYD	.54	3.05	---	.46	449	831.5
STRUCTURE 7	RESVOR	.54	1.31	705.49	4.29T	45T	83.3
XSECTION 49	RUNOFF	.00	3.62	---	.37T	5T	********
XSECTION 50	ADDHYD	.54	1.32	---	4.29T	45T	83.3
XSECTION 24	RUNOFF	.01	3.73	---	.36	31	3100.0
XSECTION 17	ADDHYD	.56	1.39	---	4.29T	45T	80.4
XSECTION 19	RUNOFF	.05	2.24	---	1.16	43	860.0
XSECTION 15	ADDHYD	.61	1.46	---	1.10T	75T	123.0
STRUCTURE 39	RESVOR	.61	.76	697.06	10.26T	25T	41.0

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SUMMARY TABLE 1

SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.
A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:
F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED HYDROGRAPH

XSECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RUNOFF AMOUNT (IN)	PEAK DISCHARGE ELEVATION (FT)	TIME (HR)	RATE (CFS)	RATE (CSM)
RAINFALL OF 5.68 inches AND 6.00 hr DURATION, BEGINS AT .0 hrs.							
ALTERNATE 0 STORM 8							
XSECTION 91	RUNOFF	.09	3.01	---	1.72	58	644.4
XSECTION 92	RUNOFF	.13	3.49	---	1.74	93	715.4
XSECTION 93	ADDHYD	.22	3.29	---	1.73	151	686.4
XSECTION 94	RUNOFF	.02	2.12	---	1.95	8	400.0
STRUCTURE 11	RESVOR	.02	2.12	742.05	2.60	7	350.0
XSECTION 95	ADDHYD	.24	3.19	---	1.76	156	650.0
XSECTION 96	RUNOFF	.01	5.44	---	.56	17	1700.0
XSECTION 97	ADDHYD	.25	3.27	---	1.74	162	648.0
XSECTION 10	RUNOFF	.03	4.21	---	.59	36	1200.0
XSECTION 98	ADDHYD	.28	3.36	---	1.57	182	650.0
STRUCTURE 6	RESVOR	.28	3.36	713.12	1.96	174	621.4
XSECTION 99	RUNOFF	.15	4.21	---	.59	205	1366.7
XSECTION 90	ADDHYD	.43	3.66	---	1.79	272	632.6
XSECTION 17	RUNOFF	.11	4.31	---	.71	142	1290.9
XSECTION 13	ADDHYD	.54	3.80	---	1.56	368	681.5
STRUCTURE 7	RESVOR	.54	2.00	706.01	6.16T	83T	153.7
XSECTION 49	RUNOFF	.00	4.42	---	.58	3	********
XSECTION 50	ADDHYD	.54	2.01	---	6.13T	83T	153.7
XSECTION 24	RUNOFF	.01	4.53	---	.58	23	2300.0
XSECTION 17	ADDHYD	.56	2.08	---	6.01T	86T	153.6
XSECTION 19	RUNOFF	.05	2.91	---	1.67	33	660.0
XSECTION 15	ADDHYD	.61	2.15	---	6.02T	93T	152.5
STRUCTURE 39	RESVOR	.61	1.45	697.72	7.50T	67T	109.8

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SUMMARY TABLE 1

SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.
A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:
F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED HYDROGRAPH

XSECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RUNOFF AMOUNT (IN)	PEAK DISCHARGE ELEVATION (FT)	PEAK DISCHARGE TIME (HR)	PEAK DISCHARGE RATE (CFS)	PEAK DISCHARGE RATE (CSM)
RAINFALL OF 6.59 inches AND 12.00 hr DURATION, BEGINS AT .0 hrs.							
RAINTABLE NUMBER 2, ARC 2							
MAIN TIME INCREMENT .500 HOURS							
ALTERNATE 0 STORM 9							
XSECTION 91	RUNOFF	.09	3.79	---	5.51	50	555.6
XSECTION 92	RUNOFF	.13	4.31	---	5.56	78	600.0
XSECTION 93	ADDHYD	.22	4.09	---	5.54	128	581.8
XSECTION 94	RUNOFF	.02	2.79	---	5.70	8	400.0
STRUCTURE 11	RESVOR	.02	2.79	742.08	6.35	7	350.0
XSECTION 95	ADDHYD	.24	3.98	---	5.57	135	562.5
XSECTION 96	RUNOFF	.01	6.34	---	4.61	7	700.0
XSECTION 97	ADDHYD	.25	4.06	---	5.55	140	560.0
XSECTION 10	RUNOFF	.03	5.13	---	4.68	20	666.7
XSECTION 98	ADDHYD	.28	4.16	---	5.49	157	560.7
STRUCTURE 6	RESVOR	.28	4.15	712.96	5.70	158	564.3
XSECTION 99	RUNOFF	.15	5.13	---	4.68	114	760.0
XSECTION 90	ADDHYD	.43	4.49	---	5.52	250	581.4
XSECTION 17	RUNOFF	.11	5.27	---	4.94	82	745.5
XSECTION 13	ADDHYD	.54	4.63	---	5.41	329	609.3
STRUCTURE 7	RESVOR	.54	2.85	706.22	9.45T	102T	188.9
XSECTION 49	RUNOFF	.00	5.36	---	4.66T	2T********	
XSECTION 50	ADDHYD	.54	2.86	---	9.43T	103T	190.7
XSECTION 24	RUNOFF	.01	5.47	---	4.66	12	1200.0
XSECTION 17	ADDHYD	.56	2.93	---	9.22T	105T	187.5


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SUMMARY TABLE 1

SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.
A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:
F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED HYDROGRAPH

XSECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RUNOFF AMOUNT (IN)	PEAK DISCHARGE ELEVATION (FT)	PEAK DISCHARGE TIME (HR)	PEAK DISCHARGE RATE (CFS)	PEAK DISCHARGE RATE (CSM)
ALTERNATE 0 STORM 9							
XSECTION 19	RUNOFF	.05	3.67	---	5.46	29	580.0
XSECTION 15	ADDHYD	.61	2.99	---	9.06T	115T	188.5
STRUCTURE 39	RESVOR	.61	2.30	698.23	11.61T	95T	155.7
RAINFALL OF 6.97 inches AND 18.00 hr DURATION, BEGINS AT .0 hrs.							
ALTERNATE 0 STORM 10							
XSECTION 91	RUNOFF	.09	4.12	---	7.96	37	411.1
XSECTION 92	RUNOFF	.13	4.66	---	7.98	58	446.2
XSECTION 93	ADDHYD	.22	4.44	---	7.97	95	431.8
XSECTION 94	RUNOFF	.02	3.08	---	8.21	6	300.0
STRUCTURE 11	RESVOR	.02	3.07	741.40	8.75	6	300.0
XSECTION 95	ADDHYD	.24	4.32	---	8.01	100	416.7
XSECTION 96	RUNOFF	.01	6.73	---	6.86	5	500.0
XSECTION 97	ADDHYD	.25	4.40	---	7.97	105	420.0
XSECTION 10	RUNOFF	.03	5.54	---	6.92	14	466.7
XSECTION 98	ADDHYD	.28	4.50	---	7.91	119	425.0
STRUCTURE 6	RESVOR	.28	4.51	712.53	7.99	117	417.9
XSECTION 99	RUNOFF	.15	5.54	---	6.92	81	540.0
XSECTION 90	ADDHYD	.43	4.86	---	7.80	196	455.8
XSECTION 17	RUNOFF	.11	5.55	---	7.13	60	545.5
XSECTION 13	ADDHYD	.54	5.00	---	7.77	254	470.4
STRUCTURE 7	RESVOR	.54	3.23	706.13	12.48T	94T	174.1
XSECTION 49	RUNOFF	.00	5.77	---	6.90T	1T********	
XSECTION 50	ADDHYD	.54	3.24	---	12.48T	94T	174.1
XSECTION 24	RUNOFF	.01	5.88	---	6.89	8	800.0
XSECTION 17	ADDHYD	.56	3.31	---	12.48T	97T	173.2
XSECTION 19	RUNOFF	.05	4.02	---	7.92	22	440.0
XSECTION 15	ADDHYD	.61	3.38	---	12.00T	105T	172.1
STRUCTURE 39	RESVOR	.61	2.67	698.16	14.47T	92T	150.8

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SUMMARY TABLE 3

STORM DISCHARGES (CFS) AT XSECTIONS AND STRUCTURES FOR ALL ALTERNATES
QUESTION MARK (?) AFTER: OUTFLOW PEAK - RISING TRUNCATED HYDROGRAPH.

XSECTION/ STRUCTURE ID		DRAINAGE AREA (SQ MI)	STORM NUMBERS..... 1	2	3	4	5
STRUCTURE 39		.61					
	ALTERNATE 0		0	1?	2?	5?	8?
STRUCTURE 11		.02					
	ALTERNATE 0		0	1?	2	5	7
STRUCTURE 7		.54					
	ALTERNATE 0		1?	6?	10?	16?	21?
STRUCTURE 6		.28					
	ALTERNATE 0		5	30	49	122	198
XSECTION 10		.03					
	ALTERNATE 0		22	63	76	86	76
XSECTION 13		.54					
	ALTERNATE 0		165	488	594	721	696
XSECTION 15		.61					
	ALTERNATE 0		21	53	63	70	77
XSECTION 17		.56					
	ALTERNATE 0		21	52	61	68	59
XSECTION 19		.05					
	ALTERNATE 0		1?	12	21	40	48
XSECTION 24		.01					
	ALTERNATE 0		18	44	52	57	49
XSECTION 49		.00					
	ALTERNATE 0		2	6	8	8	7
XSECTION 50		.54					
	ALTERNATE 0		3	8	10?	16?	21?
XSECTION 90		.43					

	ALTERNATE 0		129	367	444	506	447
XSECTION 91		.09					

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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
08/14/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
16:04:24                    SUMMARY, JOB NO.   1                       PAGE  92
```

SUMMARY TABLE 3

STORM DISCHARGES (CFS) AT XSECTIONS AND STRUCTURES FOR ALL ALTERNATES
QUESTION MARK (?) AFTER: OUTFLOW PEAK - RISING TRUNCATED HYDROGRAPH.

XSECTION/ STRUCTURE ID		DRAINAGE AREA (SQ MI)	STORM NUMBERS..... 1	2	3	4	5
XSECTION 91		.09					
	ALTERNATE 0		1	20	35	65	80
XSECTION 92		.13					
	ALTERNATE 0		6	38	60	104	128
XSECTION 93		.22					
	ALTERNATE 0		7	58	94	168	206
XSECTION 94		.02					
	ALTERNATE 0		0	1	3	7	10
XSECTION 95		.24					
	ALTERNATE 0		7	58	95	171	211
XSECTION 96		.01					
	ALTERNATE 0		26	44	49	49	42
XSECTION 97		.25					
	ALTERNATE 0		26	58	95	171	218
XSECTION 98		.28					
	ALTERNATE 0		48	110	128	172	238
XSECTION 99		.15					
	ALTERNATE 0		127	362	438	498	435

SUMMARY TABLE 3

STORM DISCHARGES (CFS) AT XSECTIONS AND STRUCTURES FOR ALL ALTERNATES
QUESTION MARK (?) AFTER: OUTFLOW PEAK - RISING TRUNCATED HYDROGRAPH.

XSECTION/ STRUCTURE ID		DRAINAGE AREA (SQ MI)	STORM NUMBERS..... 6	7	8	9	10
STRUCTURE 39		.61					
	ALTERNATE 0		20?	25	67	95	92

STRUCTURE 11		.02					
	ALTERNATE 0		8	8	7	7	6
STRUCTURE 7		.54					
	ALTERNATE 0		30	45	83	102	94
STRUCTURE 6		.28					
	ALTERNATE 0		219	208	174	158	117
XSECTION 10		.03					
	ALTERNATE 0		60	48	36	20	14

TR20 ---------- SCS -
001 CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE VERSION
08/14/** PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
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SUMMARY TABLE 3

STORM DISCHARGES (CFS) AT XSECTIONS AND STRUCTURES FOR ALL ALTERNATES
QUESTION MARK (?) AFTER: OUTFLOW PEAK - RISING TRUNCATED HYDROGRAPH.

XSECTION/ STRUCTURE ID		DRAINAGE AREA (SQ MI)	STORM NUMBERS..... 6	7	8	9	10
XSECTION 13		.54					
ALTERNATE	0		565	449	368	329	254
XSECTION 15		.61					
ALTERNATE	0		82	75	93	115	105
XSECTION 17		.56					
ALTERNATE	0		48	45	86	105	97
XSECTION 19		.05					
ALTERNATE	0		48	43	33	29	22
XSECTION 24		.01					
ALTERNATE	0		39	31	23	12	8
XSECTION 49		.00					
ALTERNATE	0		6	5	3	2	1
XSECTION 50		.54					
ALTERNATE	0		30	45	83	103	94
XSECTION 90		.43					
ALTERNATE	0		358	315	272	250	196
XSECTION 91		.09					
ALTERNATE	0		82	73	58	50	37
XSECTION 92		.13					
ALTERNATE	0		131	118	93	78	58
XSECTION 93		.22					
ALTERNATE	0		212	191	151	128	95
XSECTION 94		.02					
ALTERNATE	0		11	10	8	8	6
XSECTION 95		.24					

ALTERNATE	0	218	196	156	135	100	

```
TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
08/14/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
16:04:24                    SUMMARY, JOB NO.   1                       PAGE  94
```

SUMMARY TABLE 3

STORM DISCHARGES (CFS) AT XSECTIONS AND STRUCTURES FOR ALL ALTERNATES
QUESTION MARK (?) AFTER: OUTFLOW PEAK - RISING TRUNCATED HYDROGRAPH.

XSECTION/ STRUCTURE ID		DRAINAGE AREA (SQ MI)	STORM NUMBERS..... 6	7	8	9	10
XSECTION 96		.01					
ALTERNATE	0		31	26	17	7	5
XSECTION 97		.25					
ALTERNATE	0		225	204	162	140	105
XSECTION 98		.28					
ALTERNATE	0		246	224	182	157	119
XSECTION 99		.15					
ALTERNATE	0		347	274	205	114	81


```
TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
08/14/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST


END OF  1 JOBS IN THIS RUN




                    SCS  TR-20,  VERSION 2.04TEST
                           001       FILES

     INPUT  = C:\TR20\EXA.DAT                        , GIVEN DATA FILE
     OUTPUT = C:\TR20\EXA.OUT                        , DATED 08/14/**,16:04:24

              FILES GENERATED - DATED 08/14/**,16:04:24

    FILE C:\TR20\EXA.TRD CONTAINS READHD INFORMATION

    FILE C:\TR20\EXA.TMG CONTAINS MESSAGE + WARNING INFORMATION


           TOTAL NUMBER OF WARNINGS = 135,  MESSAGES =  76

                       JOB ENDED AT 16:04:24
                   *** TR-20 RUN COMPLETED ***
```

Cantera Subarea C. Lot 2
Existing Conditions
100-yr Event
Revised Based on Surveyed Outlet


```
******************80-80 LIST OF INPUT DATA FOR TR-20 HYDROLOGY******************

JOB TR-20 001                          PASS=     SUMMARY
TITLE     CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE
TITLE     PROPERTY NORTH OF THE EAST-WEST TOLLWAY (JRB 11/1/95 FILE: 8935-i1X.DA
 5 RAINFL 1              0.05
 8          0.00         0.16         0.33         0.43         0.52
 8          0.60         0.66         0.71         0.75         0.79
 8          0.82         0.84         0.86         0.88         0.90
 8          0.92         0.94         0.96         0.97         0.98
 8          1.00         1.00         1.00         1.00         1.00
 9 ENDTBL
 5 RAINFL 2              0.05
 8          0.00         0.03         0.08         0.12         0.16
 8          0.22         0.29         0.39         0.51         0.62
 8          0.70         0.76         0.81         0.85         0.88
 8          0.91         0.93         0.95         0.97         0.98
 8          1.00         1.00         1.00         1.00         1.00
 9 ENDTBL
 5 RAINFL 3              0.05
 8          0.00         0.03         0.06         0.09         0.12
 8          0.15         0.19         0.23         0.27         0.32
 8          0.38         0.45         0.57         0.70         0.79
 8          0.85         0.89         0.92         0.95         0.97
 8          1.00         1.00         1.00         1.00         1.00
 9 ENDTBL
 5 RAINFL 4              0.05
 8          0.00         0.02         0.05         0.08         0.10
 8          0.13         0.16         0.19         0.22         0.25
 8          0.28         0.32         0.35         0.39         0.45
 8          0.51         0.59         0.72         0.84         0.92
 8          1.00         1.00         1.00         1.00         1.00
 9 ENDTBL
 3 STRUCT      06
 8                       707.0        0.00         0.00           POND-B6 - AEAST
 8                       708.0        8.40         1.11           36" DIA. RCP
 8                       709.0        20.0         2.32           INLET CONTROL
 8                       710.0        38.0         3.63
 8                       711.0        55.0         5.02
 8                       712.0        66.0         6.52           12' WEIR; C=3.0
 8                       712.5       114.0         7.32
 9 ENDTBL
 3 STRUCT      11
 8                       737.5         0.0          0.0
 8                       738.          0.5         .005           DRYBASIN
 8                       739.          1.0         .040
 8                       740.          3.0         .098
 8                       741.          5.0         .176
 8                       742.          7.0         .288
 8                       743.          9.0         .446
 8                       744.         33.9         .566
 9 ENDTBL
 3 STRUCT      07
 8                       700.          0.0          0.0           POND-D7
 8                       701.          4.0         8.59           REINDEER LAKE
 8                       702.          12.        22.08           INCLUDES PONDS F
 8                       703.          18.        36.22           21" DIA RCP
 8                       704.          22.        51.08           INLET CONTROL
```

```
**********80-80 LIST OF INPUT DATA (CONTINUED)**********

 8                     705.         26.        66.65
 8                     705.5        46.        74.81          20' WEIR; C=2.6
 8                     706.         82.        82.97
 8                     706.5       128.        92.99
 9 ENDTBL
 3 STRUCT      39
 8                     693.19        0.0         0.0           POND-C2
 8                     694.         2.12         4.44          REVISED STAGE-D
 8                     695.         8.91        10.28          FOR PHASE 1 IMP
 8                     696.         12.41       16.37
 8                     696.74       14.47       21.14
 8                     697.         21.55       22.81
 8                     698.         84.00       29.70
 8                     699.         134.55      39.42
 8                     700.         159.53      54.35
 8                     700.25       173.51      58.74
 9 ENDTBL
 6 RUNOFF 1 091       1 0.0923      75.00       0.84       1         1
 6 RUNOFF 1 092       2 0.1292      80.00       1.00       1         1
 6 ADDHYD 4 093   1 2 3                                     1
 6 RUNOFF 1 094       4 0.0203      65.00       0.91       1         1
 6 RESVOR 2    11 4   5                                       1 1 1 1 1
 6 ADDHYD 4 095   3 5 6
 6 RUNOFF 1 096       1 0.0084      98.00       0.16       1         1
 6 ADDHYD 4 097   6 1 7                                     1
 6 RUNOFF 1 010       4 0.0265      87.00       0.15
 6 ADDHYD 4 098   7 4 1
 6 RESVOR 2     6 1   5                                     1 1 1 1 1
 6 RUNOFF 1 099       7 0.1526      87.00       0.15       1         1
 6 ADDHYD 4 090   5 7 2                                     1
 6 RUNOFF 1 017       7 0.1120      88.00       0.30
 6 ADDHYD 4 013   2 7 1
 6 RESVOR 2     7 1   2                                     1 1 1 1 1
 6 RUNOFF 1 049       7 0.0023      89.00       0.15       1         1
 6 ADDHYD 4 050   2 7 1                                     1
 6 RUNOFF 1 024       7 0.0149      90.00       0.15
 6 ADDHYD 4 017   1 7 2
 6 RUNOFF 1 019       6 0.0546      74.00       0.74
 6 ADDHYD 4 015   2 6 7
 6 RESVOR 2    39 7   1                                       1 1 1 1 1
   ENDATA
 7 INCREM 6            1.00
 7 COMPUT 7 091      39 0.00        7.58        24.0       3 2      11   24-HR
   ENDCMP 1
 7 COMPUT 7 091      39 0.00        8.16        48.0       4 2      12   48-HR
   ENDCMP 1
 7 INCREM 6            1.00
 7 COMPUT 7 091      39 0.00        8.78        72.0       4 2      13   72-HR
   ENDCMP 1
 7 COMPUT 7 091      39 0.00        9.96        120.0      4 2      14   120-HR
   ENDCMP 1
 7 COMPUT 7 091      39 0.00        11.14       240.0      4 2      15   240-HR
   ENDCMP 1
   ENDJOB 2

*******************************END OF 80-80 LIST*******************************
```



```
TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
08/14/**  PROPERTY NORTH OF THE EAST-WEST TOLLWAY (JRB 11/1/95 FILE: 8932.04TEST
16:04:41                    PASS   1   JOB NO.   1                      PAGE   1


EXECUTIVE CONTROL  INCREM    MAIN TIME INCREMENT =  1.000 HOURS


EXECUTIVE CONTROL  COMPUT    FROM XSECTION  91  TO STRUCTURE 39           24-HR
    STARTING TIME =   .00       RAIN DEPTH =  7.58       RAIN DURATION = 24.00
    ANT. RUNOFF COND. = 2       MAIN TIME INCREMENT =  1.000 HOURS
    ALTERNATE NO. = 0           STORM NO. =11            RAIN TABLE NO. = 3


OPERATION RUNOFF    XSECTION  91

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
       15.55                          37.2                       (RUNOFF)
       23.75                          10.1                       (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  4.64 WATERSHED INCHES;     276 CFS-HRS;      22.8 ACRE-FEET.


OPERATION RUNOFF    XSECTION  92

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
       15.66                          56.9                       (RUNOFF)
       23.76                          14.4                       (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  5.25 WATERSHED INCHES;     437 CFS-HRS;      36.1 ACRE-FEET.


OPERATION ADDHYD    XSECTION  93

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
       15.62                          94.1                       (NULL)
       23.75                          24.5                       (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  5.01 WATERSHED INCHES;     717 CFS-HRS;      59.2 ACRE-FEET.


OPERATION RUNOFF    XSECTION  94

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
       15.75                           6.6                       (RUNOFF)
       23.76                           1.9                       (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  3.54 WATERSHED INCHES;      46 CFS-HRS;       3.8 ACRE-FEET.
```

```
TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
08/14/**  PROPERTY NORTH OF THE EAST-WEST TOLLWAY (JRB 11/1/95 FILE: 8932.04TEST
16:04:41                    PASS   1   JOB NO.   1                      PAGE   2


OPERATION RESVOR    STRUCTURE 11

                    HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM =11
     HRS      MAIN TIME INCREMENT = 1.000 hr,      DRAINAGE AREA =    .02 SQ.MI.
     5.00 CFS       .00     .01     .16     .42     .56     .73    1.03    1.73
     5.00 ELEV   737.50  737.51  737.66  737.92  738.12  738.45  739.01  739.36
    13.00 CFS      2.35    3.73    5.36    6.22    5.98    4.74    3.25    2.32
    13.00 ELEV   739.68  740.36  741.18  741.61  741.49  740.87  740.13  739.66
    21.00 CFS      1.97    1.84    1.54    1.64    1.04     .29    -.16     .10
    21.00 ELEV   739.49  739.42  739.27  739.32  739.02  737.79  737.34  737.60
    29.00 CFS      -.06     .04    -.02
    29.00 ELEV   737.44  737.54  737.48

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  3.55 WATERSHED INCHES;      47 CFS-HRS;       3.8 ACRE-FEET.

    DURATION(HRS)   2      4      6      8     10     12     14     16
    FLOW(CFS)       5      4      2      2      2      2      1      1

    DURATION(HRS)  17
    FLOW(CFS)       0

 --- STRUCTURE 11, ALTERNATE  0, STORM 11, HYDROGRAPH ADDED TO READHD FILE ---


OPERATION RUNOFF    XSECTION  96

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
       14.70                          4.5                       (RUNOFF)
       20.50                          1.1                       (RUNOFF)
       23.55                          1.1                       (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  7.21 WATERSHED INCHES;      39 CFS-HRS;       3.2 ACRE-FEET.


OPERATION ADDHYD    XSECTION  97

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
       15.59                        103.6                       (NULL)
       23.74                         27.3                       (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  4.93 WATERSHED INCHES;     796 CFS-HRS;      65.8 ACRE-FEET.


OPERATION RESVOR    STRUCTURE  6

                    HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM =11
     HRS      MAIN TIME INCREMENT = 1.000 hr,      DRAINAGE AREA =    .28 SQ.MI.
      .00 CFS       .00     .10     .40     .98    1.92    3.47    5.62    9.14
```



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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
08/14/**  PROPERTY NORTH OF THE EAST-WEST TOLLWAY (JRB 11/1/95 FILE: 8932.04TEST
16:04:41                    PASS   1   JOB NO.   1                      PAGE   3

      .00 ELEV   707.00  707.01  707.05  707.12  707.23  707.41  707.67  708.06
     8.00 CFS       14      18      23      29      37      46      61     108
     8.00 ELEV   708.50  708.86  709.16  709.51  709.94  710.44  711.55  712.44
    16.00 CFS      113      93      68      60      49      38      32      27
    16.00 ELEV   712.49  712.28  712.02  711.48  710.62  709.98  709.64  709.39
    24.00 CFS    26.44   20.24   10.67    5.34    2.79    1.47     .76     .40
    24.00 ELEV   709.36  709.01  708.20  707.64  707.33  707.17  707.09  707.05
    32.00 CFS      .21
    32.00 ELEV   707.02

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  5.10 WATERSHED INCHES;     910 CFS-HRS;      75.2 ACRE-FEET.

    DURATION(HRS)  3      6      9     12     15     18     21     24
    FLOW(CFS)      68     49     37     27     20     11      5      2

    DURATION(HRS)  27     28
    FLOW(CFS)       1      0

 --- STRUCTURE  6, ALTERNATE  0, STORM 11, HYDROGRAPH ADDED TO READHD FILE ---


OPERATION RUNOFF    XSECTION  99

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
       14.76                         76.6                       (RUNOFF)
       20.51                         18.8                       (RUNOFF)
       23.53                         20.0                       (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  6.00 WATERSHED INCHES;     591 CFS-HRS;      48.8 ACRE-FEET.


OPERATION ADDHYD    XSECTION  90

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
       15.26                        186.4                       (NULL)
       23.50                         47.4                       (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  5.41 WATERSHED INCHES;    1498 CFS-HRS;     123.8 ACRE-FEET.


OPERATION RESVOR    STRUCTURE  7

                    HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM =11
     HRS      MAIN TIME INCREMENT = 1.000 hr,      DRAINAGE AREA =    .54 SQ.MI.
     1.00 CFS       .00     .06     .31     .80    1.47    2.25    3.32    4.95
     1.00 ELEV   700.00  700.01  700.08  700.20  700.37  700.56  700.83  701.12
     9.00 CFS      7.04    9.53   12.44   14.99   18.00   20.82   24.84   56.81
     9.00 ELEV   701.38  701.69  702.07  702.50  703.00  703.70  704.71  705.65
```

```
TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
08/14/**  PROPERTY NORTH OF THE EAST-WEST TOLLWAY (JRB 11/1/95 FILE: 8932.04TEST
16:04:41                    PASS   1   JOB NO.   1                      PAGE   4

    17.00 CFS     97.08  112.97  113.91  106.57   96.33   85.06   75.42   69.58
    17.00 ELEV   706.16  706.34  706.35  706.27  706.16  706.03  705.91  705.83
    25.00 CFS     60.15   46.36   39.16   32.71   27.08   25.58   25.05   24.53
    25.00 ELEV   705.70  705.51  705.33  705.17  705.03  704.89  704.76  704.63

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  3.44 WATERSHED INCHES;    1203 CFS-HRS;      99.4 ACRE-FEET.

    DURATION(HRS)   2      4      6      8     10     12     14     16
    FLOW(CFS)     107     96     75     60     46     33     26     25

    DURATION(HRS)  18
    FLOW(CFS)      25 TRUNCATED

 --- STRUCTURE  7, ALTERNATE  0, STORM 11, HYDROGRAPH ADDED TO READHD FILE ---


OPERATION RUNOFF    XSECTION  49

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
       14.74                          1.2                       (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  6.23 WATERSHED INCHES;       9 CFS-HRS;        .8 ACRE-FEET.


OPERATION ADDHYD    XSECTION  50

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
       18.59                        115.0                       (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  3.46 WATERSHED INCHES;    1212 CFS-HRS;     100.2 ACRE-FEET.


OPERATION RESVOR    STRUCTURE 39

                    HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM =11
     HRS      MAIN TIME INCREMENT = 1.000 hr,      DRAINAGE AREA =    .61 SQ.MI.
     1.00 CFS       .00     .01     .04     .10     .20     .34     .57     .89
     1.00 ELEV   693.19  693.19  693.20  693.23  693.27  693.32  693.41  693.53
     9.00 CFS      1.30    1.84    3.06    5.00    7.24    9.55   11.45   13.71
     9.00 ELEV   693.69  693.89  694.14  694.42  694.75  695.18  695.73  696.47
    17.00 CFS     44.27   86.14  100.48  107.30  108.08  104.49   98.16   91.54
    17.00 ELEV   697.36  698.04  698.33  698.46  698.48  698.41  698.28  698.15
    25.00 CFS     83.38   67.14   53.86   44.09   36.35   30.89   27.85   26.19
    25.00 ELEV   697.99  697.73  697.52  697.36  697.24  697.15  697.10  697.07

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  2.91 WATERSHED INCHES;    1152 CFS-HRS;      95.2 ACRE-FEET.
```



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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
08/14/**  PROPERTY NORTH OF THE EAST-WEST TOLLWAY (JRB 11/1/95 FILE: 8932.04TEST
16:04:41                    PASS   1   JOB NO.   1                      PAGE   5

    DURATION(HRS)   2      4      6      8     10     12     14     15
    FLOW(CFS)     104     98     86     67     44     36     28     26 TRUNCATED

 --- STRUCTURE 39, ALTERNATE  0, STORM 11, HYDROGRAPH ADDED TO READHD FILE ---


EXECUTIVE CONTROL  ENDCMP    COMPUTATIONS COMPLETED FOR PASS   1


EXECUTIVE CONTROL  COMPUT    FROM XSECTION  91  TO STRUCTURE 39           48-HR
    STARTING TIME =   .00       RAIN DEPTH =  8.16       RAIN DURATION = 48.00
    ANT. RUNOFF COND. = 2       MAIN TIME INCREMENT =  1.000 HOURS
    ALTERNATE NO. = 0           STORM NO. =12            RAIN TABLE NO. = 4


OPERATION RUNOFF    XSECTION  91

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
       25.83                          4.7                       (RUNOFF)
       40.73                         21.7                       (RUNOFF)
       47.32                         14.6                       (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  5.19 WATERSHED INCHES;     309 CFS-HRS;      25.6 ACRE-FEET.


OPERATION RUNOFF    XSECTION  92

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
       25.99                          7.7                       (RUNOFF)
       40.84                         32.4                       (RUNOFF)
       47.50                         23.2                       (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  5.75 WATERSHED INCHES;     479 CFS-HRS;      39.6 ACRE-FEET.


OPERATION ADDHYD    XSECTION  93

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
       25.93                         12.3                       (NULL)
       40.80                         54.2                       (NULL)
       47.45                         35.8                       (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  5.51 WATERSHED INCHES;     787 CFS-HRS;      65.1 ACRE-FEET.
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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
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OPERATION RUNOFF    XSECTION  94

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
       42.39                          4.0                        (RUNOFF)
       47.44                          2.9                        (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  4.00 WATERSHED INCHES;      52 CFS-HRS;       4.3 ACRE-FEET.


OPERATION RESVOR    STRUCTURE 11

                    HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM =12
     HRS      MAIN TIME INCREMENT = 1.000 hr,      DRAINAGE AREA =    .02 SQ.MI.
    12.00 CFS       .00     .03     .05     .09     .15     .16     .23     .26
    12.00 ELEV   737.50  737.53  737.55  737.59  737.65  737.66  737.73  737.76
    20.00 CFS       .29     .34     .35     .40     .41     .53     .60     .62
    20.00 ELEV   737.79  737.84  737.85  737.90  737.91  738.06  738.20  738.24
    28.00 CFS       .59     .57     .65     .76     .94    1.30    1.40    1.47
    28.00 ELEV   738.18  738.14  738.30  738.53  738.88  739.15  739.20  739.24
    36.00 CFS      1.53    1.86    2.20    2.68    3.52    3.96    3.98    3.98
    36.00 ELEV   739.26  739.43  739.60  739.84  740.26  740.48  740.49  740.49
    44.00 CFS      3.57    2.98    2.77    2.83    2.86    1.50     .33    -.18
    44.00 ELEV   740.29  739.99  739.88  739.92  739.93  739.25  737.83  737.32
    52.00 CFS       .11    -.07     .04    -.02
    52.00 ELEV   737.61  737.43  737.54  737.48

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  4.00 WATERSHED INCHES;      52 CFS-HRS;       4.3 ACRE-FEET.

    DURATION(HRS)   3      6      9     12     15     18     21     24
    FLOW(CFS)       4      3      3      2      1      1      1      1

    DURATION(HRS)  25
    FLOW(CFS)       0

 --- STRUCTURE 11, ALTERNATE  0, STORM 12, HYDROGRAPH ADDED TO READHD FILE ---


OPERATION RUNOFF    XSECTION  96

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
       39.50                          2.4                        (RUNOFF)
       47.39                          1.5                        (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  7.96 WATERSHED INCHES;      43 CFS-HRS;       3.6 ACRE-FEET.
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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
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OPERATION ADDHYD    XSECTION  97

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
       25.92                         13.7                        (NULL)
       40.87                         60.3                        (NULL)
       47.50                         43.9                        (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  5.47 WATERSHED INCHES;     883 CFS-HRS;      73.0 ACRE-FEET.


OPERATION RESVOR    STRUCTURE  6

                    HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM =12
     HRS      MAIN TIME INCREMENT = 1.000 hr,      DRAINAGE AREA =    .28 SQ.MI.
     .00 CFS       .00     .02     .06     .17     .32     .49     .74     .97
     .00 ELEV   707.00  707.00  707.01  707.02  707.04  707.06  707.09  707.11
    8.00 CFS      1.18    1.44    1.89    2.74    3.59    4.42    5.27    5.97
    8.00 ELEV   707.14  707.17  707.22  707.33  707.43  707.53  707.63  707.71
   16.00 CFS      6.68    7.27    7.85    8.41    8.99    9.52    9.90   10.30
   16.00 ELEV   707.80  707.87  707.93  708.00  708.05  708.10  708.13  708.16
   24.00 CFS     10.65   11.90   13.76   14.34   13.75   13.29   14.26   15.82
   24.00 ELEV   708.19  708.30  708.46  708.51  708.46  708.42  708.51  708.64
   32.00 CFS     18.59   23.30   26.31   27.68   28.43   31.90   36.84   43.54
   32.00 ELEV   708.88  709.18  709.35  709.43  709.47  709.66  709.94  710.33
   40.00 CFS     54.56   60.32   62.98   63.88   61.05   54.79   47.82   45.47
   40.00 ELEV   710.97  711.48  711.73  711.81  711.55  710.99  710.58  710.44
   48.00 CFS     44.83   32.33   14.15    6.66    3.47    1.83     .95     .50
   48.00 ELEV   710.40  709.68  708.50  707.79  707.41  707.22  707.11  707.06
   56.00 CFS       .26
   56.00 ELEV   707.03

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  5.59 WATERSHED INCHES;     998 CFS-HRS;      82.5 ACRE-FEET.

    DURATION(HRS)   6     12     18     24     30     36     42     48
    FLOW(CFS)      48     32     16     13      9      6      2      1

    DURATION(HRS)  50
    FLOW(CFS)       0

 --- STRUCTURE  6, ALTERNATE  0, STORM 12, HYDROGRAPH ADDED TO READHD FILE ---


OPERATION RUNOFF    XSECTION  99
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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
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    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
       25.50                         11.4                       (RUNOFF)
       39.50                         43.0                       (RUNOFF)
       42.50                         39.9                       (RUNOFF)
       46.55                         25.9                       (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  6.65 WATERSHED INCHES;     655 CFS-HRS;      54.1 ACRE-FEET.


OPERATION ADDHYD    XSECTION  90

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
       25.99                         24.8                       (NULL)
       42.55                        103.8                       (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  5.97 WATERSHED INCHES;    1654 CFS-HRS;     136.7 ACRE-FEET.


OPERATION RESVOR    STRUCTURE  7

                    HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM =12
     HRS      MAIN TIME INCREMENT = 1.000 hr,      DRAINAGE AREA =    .54 SQ.MI.
     2.00 CFS       .00     .02     .05     .14     .31     .50     .70     .90
     2.00 ELEV   700.00  700.00  700.01  700.04  700.08  700.13  700.17  700.23
    10.00 CFS      1.19    1.57    1.98    2.43    2.92    3.45    4.01    4.74
    10.00 ELEV  700.30  700.39  700.49  700.61  700.73  700.86  701.00  701.09
    18.00 CFS      5.48    6.22    6.97    7.73    8.48    9.23    9.96   10.83
    18.00 ELEV  701.19  701.28  701.37  701.47  701.56  701.65  701.75  701.85
    26.00 CFS     11.85   12.56   13.13   13.72   14.39   15.12   16.08   17.32
    26.00 ELEV  701.98  702.09  702.19  702.29  702.40  702.52  702.68  702.89
    34.00 CFS     18.43   19.32   20.21   21.26   22.47   24.05   26.60   45.12
    34.00 ELEV  703.11  703.33  703.55  703.81  704.12  704.51  705.01  705.48
    42.00 CFS     70.46   89.12   98.43   99.82   98.68   96.45   94.43   83.78
    42.00 ELEV  705.84  706.08  706.18  706.19  706.18  706.16  706.14  706.02
    50.00 CFS     65.05   48.20   39.38   32.62   26.88   25.55   25.02
    50.00 ELEV  705.76  705.53  705.33  705.17  705.02  704.89  704.76

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  3.96 WATERSHED INCHES;    1383 CFS-HRS;     114.3 ACRE-FEET.

    DURATION(HRS)   2      4      6      8     10     12     14     16
    FLOW(CFS)      98     94     84     65     45     33     27     25 TRUNCATED

 --- STRUCTURE  7, ALTERNATE  0, STORM 12, HYDROGRAPH ADDED TO READHD FILE ---


OPERATION RUNOFF    XSECTION  49
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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
08/14/**  PROPERTY NORTH OF THE EAST-WEST TOLLWAY (JRB 11/1/95 FILE: 8932.04TEST
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    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
       40.00                          .6                       (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  6.89 WATERSHED INCHES;      10 CFS-HRS;        .8 ACRE-FEET.


OPERATION ADDHYD    XSECTION  50

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
       45.05                        100.2                       (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  3.97 WATERSHED INCHES;    1393 CFS-HRS;     115.1 ACRE-FEET.


OPERATION RESVOR    STRUCTURE 39

                    HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM =12
     HRS      MAIN TIME INCREMENT = 1.000 hr,      DRAINAGE AREA =    .61 SQ.MI.
     3.00 CFS       .00     .01     .02     .04     .07     .11     .16     .22
     3.00 ELEV   693.19  693.19  693.20  693.21  693.22  693.23  693.25  693.27
    11.00 CFS       .30     .40     .52     .67     .83    1.02    1.23    1.46
    11.00 ELEV  693.30  693.34  693.39  693.44  693.51  693.58  693.66  693.75
    19.00 CFS      1.72    2.00    2.56    3.30    4.06    4.82    5.64    6.52
    19.00 ELEV  693.85  693.95  694.06  694.17  694.29  694.40  694.52  694.65
    27.00 CFS      7.38    8.18    8.94    9.36    9.81   10.34   10.95   11.60
    27.00 ELEV  694.77  694.89  695.01  695.13  695.26  695.41  695.58  695.77
    35.00 CFS     12.27   12.83   13.41   14.06   17.50   27.27   41.32   59.49
    35.00 ELEV  695.96  696.15  696.36  696.59  696.85  697.09  697.32  697.61
    43.00 CFS     79.63   91.25   98.19  102.59  104.85  105.58  101.94   92.37
    43.00 ELEV  697.93  698.14  698.28  698.37  698.41  698.43  698.35  698.17
    51.00 CFS     77.42   59.09   46.51   37.37   31.29   28.02
    51.00 ELEV  697.89  697.60  697.40  697.25  697.16  697.10

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  3.43 WATERSHED INCHES;    1355 CFS-HRS;     112.0 ACRE-FEET.

    DURATION(HRS)   2      4      6      8     10     12     14     15
    FLOW(CFS)     103     98     91     77     59     41     31     28 TRUNCATED

 --- STRUCTURE 39, ALTERNATE  0, STORM 12, HYDROGRAPH ADDED TO READHD FILE ---


EXECUTIVE CONTROL  ENDCMP    COMPUTATIONS COMPLETED FOR PASS   2


EXECUTIVE CONTROL  INCREM    MAIN TIME INCREMENT =  1.000 HOURS
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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
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EXECUTIVE CONTROL  COMPUT    FROM XSECTION  91  TO STRUCTURE 39          72-HR
    STARTING TIME =   .00       RAIN DEPTH =  8.78       RAIN DURATION = 72.00
    ANT. RUNOFF COND. = 2       MAIN TIME INCREMENT =  1.000 HOURS
    ALTERNATE NO. = 0           STORM NO. =13            RAIN TABLE NO. = 4


OPERATION RUNOFF    XSECTION  91

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
       38.55                          3.5                       (RUNOFF)
       60.52                         15.9                       (RUNOFF)
       70.59                         10.6                       (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  5.75 WATERSHED INCHES;     342 CFS-HRS;      28.3 ACRE-FEET.


OPERATION RUNOFF    XSECTION  92

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
       38.65                          5.8                       (RUNOFF)
       60.58                         23.7                       (RUNOFF)
       71.50                         16.8                       (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  6.35 WATERSHED INCHES;     529 CFS-HRS;      43.7 ACRE-FEET.


OPERATION ADDHYD    XSECTION  93

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
       38.60                          9.3                       (NULL)
       60.56                         39.7                       (NULL)
       70.73                         25.9                       (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  6.10 WATERSHED INCHES;     872 CFS-HRS;      72.0 ACRE-FEET.


OPERATION RUNOFF    XSECTION  94

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
       70.75                          2.1                       (RUNOFF)
       61.00                          3.0                       (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  4.53 WATERSHED INCHES;      59 CFS-HRS;       4.9 ACRE-FEET.
```



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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
08/14/**  PROPERTY NORTH OF THE EAST-WEST TOLLWAY (JRB 11/1/95 FILE: 8932.04TEST
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OPERATION RESVOR    STRUCTURE 11

                    HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM =13
     HRS      MAIN TIME INCREMENT = 1.000 hr,      DRAINAGE AREA =    .02 SQ.MI.
    18.00 CFS       .00     .04     .07     .06     .08     .13     .15     .14
    18.00 ELEV   737.50  737.54  737.57  737.56  737.58  737.63  737.65  737.64
    26.00 CFS       .18     .21     .21     .22     .26     .28     .27     .29
    26.00 ELEV   737.68  737.71  737.71  737.72  737.76  737.78  737.77  737.79
    34.00 CFS       .32     .33     .33     .44     .51     .51     .50     .44
    34.00 ELEV   737.82  737.83  737.83  737.94  738.02  738.01  738.00  737.94
    42.00 CFS       .43     .43     .52     .57     .61     .63     .77     .96
    42.00 ELEV   737.93  737.93  738.03  738.14  738.22  738.26  738.55  738.91
    50.00 CFS      1.03    1.07    1.13    1.15    1.15    1.39    1.65    1.66
    50.00 ELEV   739.02  739.04  739.06  739.08  739.08  739.20  739.32  739.33
    58.00 CFS      1.82    2.50    2.98    2.95    2.95    2.94    2.94    2.91
    58.00 ELEV   739.41  739.75  739.99  739.97  739.98  739.97  739.97  739.96
    66.00 CFS      2.45    2.03    2.05    2.06    2.09    2.10    2.09    1.10
    66.00 ELEV   739.73  739.52  739.52  739.53  739.54  739.55  739.55  739.05
    74.00 CFS       .30    -.16     .10    -.06     .04    -.02
    74.00 ELEV   737.80  737.34  737.60  737.44  737.54  737.48

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  4.51 WATERSHED INCHES;      59 CFS-HRS;       4.9 ACRE-FEET.

    DURATION(HRS)   3      6      9     12     15     18     21     24
    FLOW(CFS)       3      3      2      2      2      1      1      1

    DURATION(HRS)  27     30     33
    FLOW(CFS)       1      1      0

 --- STRUCTURE 11, ALTERNATE  0, STORM 13, HYDROGRAPH ADDED TO READHD FILE ---


OPERATION RUNOFF    XSECTION  96

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
       71.06                          1.1                       (RUNOFF)
       59.00                          1.7                       (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  8.54 WATERSHED INCHES;      46 CFS-HRS;       3.8 ACRE-FEET.


OPERATION ADDHYD    XSECTION  97

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
       38.58                         10.3                       (NULL)
       60.53                         44.3                       (NULL)
       70.86                         29.0                       (NULL)
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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
08/14/**  PROPERTY NORTH OF THE EAST-WEST TOLLWAY (JRB 11/1/95 FILE: 8932.04TEST
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    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  6.05 WATERSHED INCHES;     977 CFS-HRS;      80.7 ACRE-FEET.


OPERATION RESVOR    STRUCTURE  6

                    HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM =13
     HRS      MAIN TIME INCREMENT = 1.000 hr,      DRAINAGE AREA =    .28 SQ.MI.
      .00 CFS       .00     .02     .05     .06     .14     .25     .31     .34
      .00 ELEV   707.00  707.00  707.01  707.01  707.02  707.03  707.04  707.04
     8.00 CFS       .48     .73     .89     .96    1.11    1.33    1.46    1.81
     8.00 ELEV   707.06  707.09  707.11  707.11  707.13  707.16  707.17  707.22
    16.00 CFS      2.47    3.04    3.36    3.78    4.30    4.64    4.88    5.24
    16.00 ELEV   707.29  707.36  707.40  707.45  707.51  707.55  707.58  707.62
    24.00 CFS      5.62    5.84    6.08    6.41    6.66    6.80    7.03    7.30
    24.00 ELEV   707.67  707.69  707.72  707.76  707.79  707.81  707.84  707.87
    32.00 CFS      7.46    7.61    7.82    8.01    8.11    8.93   10.31   11.10
    32.00 ELEV   707.89  707.91  707.93  707.95  707.97  708.05  708.16  708.23
    40.00 CFS     11.22   10.62    9.90    9.54   10.09   11.31   12.16   12.88
    40.00 ELEV   708.24  708.19  708.13  708.10  708.15  708.25  708.32  708.39
    48.00 CFS     15.00   17.65   19.09   19.86   20.55   20.96   21.10   23.47
    48.00 ELEV   708.57  708.80  708.92  708.99  709.03  709.05  709.06  709.19
    56.00 CFS     27.02   28.59   31.20   38.58   45.28   48.04   48.41   47.77
    56.00 ELEV   709.39  709.48  709.62  710.03  710.43  710.59  710.61  710.57
    64.00 CFS     47.33   46.42   41.69   35.67   33.02   32.31   32.23   32.28
    64.00 ELEV   710.55  710.50  710.22  709.87  709.72  709.68  709.68  709.68
    72.00 CFS     32.29   22.99   11.38    5.61    2.92    1.54     .80     .42
    72.00 ELEV   709.68  709.17  708.26  707.67  707.35  707.18  707.10  707.05
    80.00 CFS       .22
    80.00 ELEV   707.03

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  6.17 WATERSHED INCHES;    1102 CFS-HRS;      91.1 ACRE-FEET.

    DURATION(HRS)   6     12     18     24     30     36     42     48
    FLOW(CFS)      42     32     23     18     11     10      7      6

    DURATION(HRS)  54     60     66     70
    FLOW(CFS)       5      2      1      0

 --- STRUCTURE  6, ALTERNATE  0, STORM 13, HYDROGRAPH ADDED TO READHD FILE ---


OPERATION RUNOFF    XSECTION  99

    PEAK TIME(HRS)            PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
       37.50                        8.5                        (RUNOFF)
       59.50                       30.1                        (RUNOFF)
       70.30                       18.9                        (RUNOFF)
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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
08/14/**  PROPERTY NORTH OF THE EAST-WEST TOLLWAY (JRB 11/1/95 FILE: 8932.04TEST
16:04:41                    PASS   3   JOB NO.   1                       PAGE  13


    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  7.32 WATERSHED INCHES;     721 CFS-HRS;      59.6 ACRE-FEET.


OPERATION ADDHYD    XSECTION  90

    PEAK TIME(HRS)            PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
       38.82                       19.3                        (NULL)
       61.13                       78.1                        (NULL)
       71.49                       51.2                        (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  6.57 WATERSHED INCHES;    1819 CFS-HRS;     150.3 ACRE-FEET.


OPERATION RESVOR    STRUCTURE  7

                    HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM =13
     HRS      MAIN TIME INCREMENT = 1.000 hr,      DRAINAGE AREA =    .54 SQ.MI.
      3.00 CFS       .00     .02     .05     .09     .12     .22     .37     .53
      3.00 ELEV   700.00  700.00  700.01  700.02  700.03  700.05  700.09  700.13
     11.00 CFS       .68     .84    1.00    1.15    1.37    1.66    1.97    2.28
     11.00 ELEV   700.17  700.21  700.25  700.29  700.34  700.42  700.49  700.57
     19.00 CFS      2.61    2.97    3.33    3.71    4.12    4.61    5.09    5.58
     19.00 ELEV   700.65  700.74  700.83  700.93  701.02  701.08  701.14  701.20
     27.00 CFS      6.06    6.54    7.02    7.49    7.95    8.40    8.85    9.29
     27.00 ELEV   701.26  701.32  701.38  701.44  701.49  701.55  701.61  701.66
     35.00 CFS      9.72   10.14   10.65   11.29   11.94   12.37   12.70   13.00
     35.00 ELEV   701.72  701.77  701.83  701.91  701.99  702.06  702.12  702.17
     43.00 CFS     13.26   13.59   14.01   14.44   14.98   15.68   16.49   17.34
     43.00 ELEV   702.21  702.27  702.33  702.41  702.50  702.61  702.75  702.89
     51.00 CFS     18.13   18.69   19.25   19.80   20.46   21.25   22.09   23.11
     51.00 ELEV   703.03  703.17  703.31  703.45  703.61  703.81  704.02  704.28
     59.00 CFS     24.43   25.89   38.42   51.81   65.63   75.01   79.75   79.69
     59.00 ELEV   704.61  704.97  705.31  705.58  705.77  705.90  705.97  705.97
     67.00 CFS     77.08   73.94   71.27   69.32   67.96   67.04   59.92   46.74
     67.00 ELEV   705.93  705.89  705.85  705.82  705.81  705.79  705.69  705.51
     75.00 CFS     39.41   32.94   27.29   25.60   25.07   24.55
     75.00 ELEV   705.34  705.17  705.03  704.90  704.77  704.64

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  4.63 WATERSHED INCHES;    1618 CFS-HRS;     133.7 ACRE-FEET.

    DURATION(HRS)   2      4      6      8     10     12     14     16
    FLOW(CFS)      77     74     69     67     60     47     38     27

    DURATION(HRS)  18     20     21
    FLOW(CFS)      26     25     25 TRUNCATED

 --- STRUCTURE  7, ALTERNATE  0, STORM 13, HYDROGRAPH ADDED TO READHD FILE ---
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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
08/14/**  PROPERTY NORTH OF THE EAST-WEST TOLLWAY (JRB 11/1/95 FILE: 8932.04TEST
16:04:41                    PASS   3   JOB NO.   1                      PAGE  14


OPERATION RUNOFF    XSECTION  49

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  4.63 WATERSHED INCHES;      73 CFS-HRS;     133.7 ACRE-FEET.


OPERATION ADDHYD    XSECTION  50

    PEAK TIME(HRS)              PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
       65.48                         80.6                        (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  4.64 WATERSHED INCHES;    1629 CFS-HRS;     134.7 ACRE-FEET.


OPERATION RESVOR    STRUCTURE 39

                     HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM =13
     HRS      MAIN TIME INCREMENT = 1.000 hr,      DRAINAGE AREA =    .61 SQ.MI.
     4.00 CFS       .00     .01     .01     .02     .04     .06     .09     .12
     4.00 ELEV   693.19  693.19  693.20  693.20  693.20  693.21  693.22  693.24
    12.00 CFS       .16     .20     .25     .31     .39     .48     .58     .70
    12.00 ELEV   693.25  693.27  693.29  693.31  693.34  693.37  693.41  693.46
    20.00 CFS       .83     .97    1.12    1.28    1.46    1.65    1.85    2.08
    20.00 ELEV   693.51  693.56  693.62  693.68  693.75  693.82  693.90  693.98
    28.00 CFS      2.56    3.11    3.66    4.21    4.75    5.29    5.82    6.35
    28.00 ELEV   694.07  694.15  694.23  694.31  694.39  694.47  694.55  694.62
    36.00 CFS      6.87    7.43    8.02    8.62    9.06    9.34    9.61    9.88
    36.00 ELEV   694.70  694.78  694.87  694.96  695.04  695.12  695.20  695.28
    44.00 CFS     10.18   10.49   10.82   11.16   11.56   12.01   12.46   12.83
    44.00 ELEV   695.36  695.45  695.55  695.64  695.76  695.89  696.02  696.15
    52.00 CFS     13.22   13.61   14.00   14.44   18.37   21.63   26.93   31.37
    52.00 ELEV   696.29  696.43  696.57  696.73  696.88  697.00  697.09  697.16
    60.00 CFS     34.89   40.33   49.73   61.27   72.82   81.64   85.24   85.76
    60.00 ELEV   697.21  697.30  697.45  697.64  697.82  697.96  698.02  698.03
    68.00 CFS     85.06   83.35   80.77   78.71   77.15   72.15   62.08   51.73
    68.00 ELEV   698.02  697.99  697.95  697.92  697.89  697.81  697.65  697.48
    76.00 CFS     43.25   36.10   30.84   27.84   26.19
    76.00 ELEV   697.35  697.23  697.15  697.10  697.07

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  4.09 WATERSHED INCHES;    1618 CFS-HRS;     133.7 ACRE-FEET.

    DURATION(HRS)   2      4      6      8     10     12     14     16
    FLOW(CFS)      85     82     79     73     62     52     43     36

    DURATION(HRS)  18     20     22
    FLOW(CFS)      31     28     26 TRUNCATED
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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
08/14/**  PROPERTY NORTH OF THE EAST-WEST TOLLWAY (JRB 11/1/95 FILE: 8932.04TEST
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 --- STRUCTURE 39, ALTERNATE  0, STORM 13, HYDROGRAPH ADDED TO READHD FILE ---


EXECUTIVE CONTROL  ENDCMP    COMPUTATIONS COMPLETED FOR PASS   3


EXECUTIVE CONTROL  COMPUT    FROM XSECTION  91  TO STRUCTURE 39          120-HR
    STARTING TIME =   .00       RAIN DEPTH =  9.96       RAIN DURATION =120.00
    ANT. RUNOFF COND. = 2       MAIN TIME INCREMENT =  1.000 HOURS
    ALTERNATE NO. = 0           STORM NO. =14            RAIN TABLE NO. = 4


OPERATION RUNOFF    XSECTION  91

    PEAK TIME(HRS)              PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
      100.50                        11.1                        (RUNOFF)
      106.50                        10.6                        (RUNOFF)
      117.00                         7.3 *                      (RUNOFF)
                                         * FIRST POINT OF FLAT PEAK

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  6.83 WATERSHED INCHES;     407 CFS-HRS;      33.6 ACRE-FEET.


OPERATION RUNOFF    XSECTION  92

    PEAK TIME(HRS)              PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
       64.38                         4.1                        (RUNOFF)
      101.50                        16.5                        (RUNOFF)
      107.50                        16.0                        (RUNOFF)
      119.50                        11.5                        (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  7.48 WATERSHED INCHES;     623 CFS-HRS;      51.5 ACRE-FEET.


OPERATION ADDHYD    XSECTION  93

    PEAK TIME(HRS)              PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
       64.39                         6.7                        (NULL)
      100.50                        27.6                        (NULL)
      118.24                        17.9                        (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  7.21 WATERSHED INCHES;    1030 CFS-HRS;      85.2 ACRE-FEET.
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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
08/14/**  PROPERTY NORTH OF THE EAST-WEST TOLLWAY (JRB 11/1/95 FILE: 8932.04TEST
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OPERATION RUNOFF    XSECTION  94

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
      106.50                          2.1                        (RUNOFF)
      117.00                          1.5 *                      (RUNOFF)
      100.00                          2.1                        (RUNOFF)
                                          * FIRST POINT OF FLAT PEAK

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  5.53 WATERSHED INCHES;      72 CFS-HRS;       6.0 ACRE-FEET.


OPERATION RESVOR    STRUCTURE 11

                    HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM =14
     HRS      MAIN TIME INCREMENT = 1.000 hr,      DRAINAGE AREA =    .02 SQ.MI.
    24.00 CFS       .00     .01     .02     .02     .02     .02     .02     .06
    24.00 ELEV   737.50  737.51  737.52  737.52  737.52  737.52  737.52  737.56
    32.00 CFS       .08     .08     .08     .08     .08     .12     .14     .13
    32.00 ELEV   737.58  737.58  737.58  737.58  737.58  737.62  737.64  737.63
    40.00 CFS       .14     .13     .14     .17     .19     .18     .18     .18
    40.00 ELEV   737.64  737.63  737.64  737.67  737.69  737.68  737.68  737.68
    48.00 CFS       .18     .21     .23     .22     .23     .22     .22     .25
    48.00 ELEV   737.68  737.71  737.73  737.72  737.73  737.72  737.72  737.75
    56.00 CFS       .26     .26     .26     .26     .26     .35     .40     .39
    56.00 ELEV   737.76  737.76  737.76  737.76  737.76  737.85  737.90  737.89
    64.00 CFS       .40     .39     .40     .35     .33     .33     .33     .33
    64.00 ELEV   737.90  737.89  737.90  737.85  737.83  737.83  737.83  737.83
    72.00 CFS       .33     .42     .48     .47     .48     .47     .48     .58
    72.00 ELEV   737.83  737.92  737.98  737.97  737.98  737.97  737.98  738.16
    80.00 CFS       .70     .76     .77     .78     .78     .80     .83     .84
    80.00 ELEV   738.41  738.52  738.55  738.55  738.56  738.60  738.66  738.68
    88.00 CFS       .84     .85     .85     .95    1.18    1.21    1.21    1.21
    88.00 ELEV   738.69  738.69  738.69  738.91  739.09  739.11  739.11  739.11
    96.00 CFS      1.21    1.64    2.09    2.12    2.12    2.12    2.12    2.11
    96.00 ELEV   739.11  739.32  739.55  739.56  739.56  739.56  739.56  739.55
   104.00 CFS      2.09    2.09    2.09    2.09    2.09    1.78    1.46    1.44
   104.00 ELEV   739.54  739.54  739.54  739.54  739.54  739.39  739.23  739.22
   112.00 CFS      1.44    1.44    1.44    1.46    1.48    1.48    1.48    1.48
   112.00 ELEV   739.22  739.22  739.22  739.23  739.24  739.24  739.24  739.24
   120.00 CFS      1.47     .86     .15    -.08     .05    -.03     .02    -.01
   120.00 ELEV   739.24  738.72  737.65  737.42  737.55  737.47  737.52  737.49

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  5.53 WATERSHED INCHES;      72 CFS-HRS;       6.0 ACRE-FEET.
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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
08/14/**  PROPERTY NORTH OF THE EAST-WEST TOLLWAY (JRB 11/1/95 FILE: 8932.04TEST
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    DURATION(HRS)   4      8     12     16     20     24     28     32
    FLOW(CFS)       2      2      2      1      1      1      1      1

    DURATION(HRS)  36     40     43
    FLOW(CFS)       1      1      0

 --- STRUCTURE 11, ALTERNATE  0, STORM 14, HYDROGRAPH ADDED TO READHD FILE ---


OPERATION RUNOFF    XSECTION  96

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
      106.50                          1.1                        (RUNOFF)
      100.00                          1.2                        (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  9.80 WATERSHED INCHES;      53 CFS-HRS;       4.4 ACRE-FEET.


OPERATION ADDHYD    XSECTION  97

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
       64.14                          7.5                        (NULL)
      100.45                         30.9                        (NULL)
      106.50                         29.3                        (NULL)
      118.34                         20.1                        (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  7.16 WATERSHED INCHES;    1156 CFS-HRS;      95.5 ACRE-FEET.


OPERATION RESVOR    STRUCTURE  6

                    HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM =14
     HRS      MAIN TIME INCREMENT = 1.000 hr,      DRAINAGE AREA =    .28 SQ.MI.
     .00 CFS       .00     .02     .04     .05     .06     .06     .07     .12
     .00 ELEV   707.00  707.00  707.00  707.01  707.01  707.01  707.01  707.01
    8.00 CFS       .20     .25     .27     .28     .30     .45     .70     .85
    8.00 ELEV   707.02  707.03  707.03  707.03  707.04  707.05  707.08  707.10
   16.00 CFS       .94     .98    1.00    1.08    1.21    1.30    1.35    1.37
   16.00 ELEV   707.11  707.12  707.12  707.13  707.14  707.15  707.16  707.16
   24.00 CFS      1.39    1.71    2.26    2.61    2.80    2.90    2.95    3.15
   24.00 ELEV   707.17  707.20  707.27  707.31  707.33  707.35  707.35  707.38
   32.00 CFS      3.46    3.67    3.78    3.84    3.87    4.02    4.26    4.42
   32.00 ELEV   707.41  707.44  707.45  707.46  707.46  707.48  707.51  707.53
   40.00 CFS      4.51    4.55    4.58    4.70    4.89    5.02    5.09    5.12
   40.00 ELEV   707.54  707.54  707.54  707.56  707.58  707.60  707.61  707.61
   48.00 CFS      5.14    5.24    5.40    5.50    5.56    5.59    5.60    5.68
   48.00 ELEV   707.61  707.62  707.64  707.66  707.66  707.67  707.67  707.68
   56.00 CFS      5.81    5.90    5.94    5.97    5.99    6.47    7.31    7.85
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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
08/14/**  PROPERTY NORTH OF THE EAST-WEST TOLLWAY (JRB 11/1/95 FILE: 8932.04TEST
16:04:41                    PASS   4   JOB NO.   1                      PAGE  18

    56.00 ELEV   707.69  707.70  707.71  707.71  707.71  707.77  707.87  707.94
    64.00 CFS      8.15    8.30    8.37    8.05    7.47    7.09    6.88    6.77
    64.00 ELEV   707.97  707.99  708.00  707.96  707.89  707.84  707.82  707.81
    72.00 CFS      6.73    7.19    8.03    8.61    8.94    9.09    9.16   10.35
    72.00 ELEV   707.80  707.86  707.96  708.02  708.05  708.06  708.07  708.17
    80.00 CFS     12.28   13.42   13.95   14.18   14.29   14.45   14.66   14.79
    80.00 ELEV   708.33  708.43  708.48  708.50  708.51  708.52  708.54  708.55
    88.00 CFS     14.85   14.88   14.93   16.20   18.27   19.52   20.10   20.40
    88.00 ELEV   708.56  708.56  708.56  708.67  708.85  708.96  709.01  709.02
    96.00 CFS     20.48   24.52   30.61   33.32   34.14   34.36   34.41   33.89
    96.00 ELEV   709.03  709.25  709.59  709.74  709.79  709.80  709.80  709.77
   104.00 CFS     33.13   32.80   32.70   32.67   32.57   29.50   24.97   22.95
   104.00 ELEV   709.73  709.71  709.71  709.70  709.70  709.53  709.28  709.16
   112.00 CFS     22.34   22.17   22.12   22.16   22.25   22.29   22.30   22.31
   112.00 ELEV   709.13  709.12  709.12  709.12  709.12  709.13  709.13  709.13
   120.00 CFS     22.16   16.66    8.65    4.57    2.39    1.25     .65     .34
   120.00 ELEV   709.12  708.71  708.02  707.54  707.28  707.15  707.08  707.04
   128.00 CFS       .18     .09     .05     .03     .01
   128.00 ELEV   707.02  707.01  707.01  707.00  707.00

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  7.28 WATERSHED INCHES;    1300 CFS-HRS;     107.4 ACRE-FEET.

    DURATION(HRS)  12     24     36     48     60     72     84     96
    FLOW(CFS)      25     20     14      8      7      5      4      3

    DURATION(HRS) 108    113
    FLOW(CFS)       1      0

 --- STRUCTURE  6, ALTERNATE  0, STORM 14, HYDROGRAPH ADDED TO READHD FILE ---


OPERATION RUNOFF    XSECTION  99

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
       64.50                          5.8                        (RUNOFF)
       99.00                         20.6 *                      (RUNOFF)
      106.10                         19.2                        (RUNOFF)
      117.28                         12.9                        (RUNOFF)
                                          * FIRST POINT OF FLAT PEAK

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  8.41 WATERSHED INCHES;     828 CFS-HRS;      68.5 ACRE-FEET.


OPERATION ADDHYD    XSECTION  90
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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
08/14/**  PROPERTY NORTH OF THE EAST-WEST TOLLWAY (JRB 11/1/95 FILE: 8932.04TEST
16:04:41                    PASS   4   JOB NO.   1                      PAGE  19

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
       65.00                         14.1                        (NULL)
      101.05                         55.0                        (NULL)
      118.50                         35.5                        (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  7.68 WATERSHED INCHES;    2129 CFS-HRS;     175.9 ACRE-FEET.


OPERATION RESVOR    STRUCTURE  7

                    HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM =14
     HRS      MAIN TIME INCREMENT = 1.000 hr,       DRAINAGE AREA =    .54 SQ.MI.
     4.00 CFS      .00     .01     .01     .03     .06     .10     .13     .17
     4.00 ELEV   700.00  700.00  700.00  700.01  700.02  700.02  700.03  700.04
    12.00 CFS      .20     .29     .41     .54     .67     .79     .91    1.03
    12.00 ELEV   700.05  700.07  700.10  700.13  700.17  700.20  700.23  700.26
    20.00 CFS     1.14    1.26    1.37    1.47    1.58    1.73    1.93    2.15
    20.00 ELEV   700.29  700.31  700.34  700.37  700.39  700.43  700.48  700.54
    28.00 CFS     2.36    2.58    2.79    3.01    3.24    3.48    3.71    3.93
    28.00 ELEV   700.59  700.64  700.70  700.75  700.81  700.87  700.93  700.98
    36.00 CFS     4.20    4.48    4.77    5.06    5.33    5.60    5.86    6.12
    36.00 ELEV   701.02  701.06  701.10  701.13  701.17  701.20  701.23  701.26
    44.00 CFS     6.38    6.63    6.88    7.12    7.35    7.58    7.81    8.04
    44.00 ELEV   701.30  701.33  701.36  701.39  701.42  701.45  701.48  701.50
    52.00 CFS     8.26    8.46    8.67    8.87    9.07    9.26    9.45    9.63
    52.00 ELEV   701.53  701.56  701.58  701.61  701.63  701.66  701.68  701.70
    60.00 CFS     9.81   10.05   10.37   10.72   11.07   11.41   11.73   11.98
    60.00 ELEV   701.73  701.76  701.80  701.84  701.88  701.93  701.97  702.00
    68.00 CFS    12.10   12.20   12.28   12.36   12.43   12.56   12.75   12.95
    68.00 ELEV   702.02  702.03  702.05  702.06  702.07  702.09  702.12  702.16
    76.00 CFS    13.16   13.38   13.59   13.91   14.36   14.85   15.36   15.86
    76.00 ELEV   702.19  702.23  702.26  702.32  702.39  702.48  702.56  702.64
    84.00 CFS    16.35   16.83   17.30   17.76   18.14   18.42   18.70   19.05
    84.00 ELEV   702.72  702.80  702.88  702.96  703.03  703.10  703.17  703.26
    92.00 CFS    19.49   19.95   20.42   20.90   21.36   22.02   22.88   23.82
    92.00 ELEV   703.37  703.49  703.61  703.72  703.84  704.00  704.22  704.46
   100.00 CFS    24.78   25.72   31.70   38.46   43.65   49.01   54.23   57.82
   100.00 ELEV   704.69  704.93  705.14  705.31  705.44  705.54  705.61  705.66
   108.00 CFS    60.12   59.54   56.43   53.28   50.69   48.78   47.42   46.50
   108.00 ELEV   705.70  705.69  705.64  705.60  705.57  705.54  705.52  705.51
   116.00 CFS    45.93   45.68   45.49   45.33   44.98   42.14   36.71   31.18
   116.00 ELEV   705.50  705.49  705.49  705.48  705.47  705.40  705.27  705.13
   124.00 CFS    26.08   25.50   24.98   24.47   23.96   23.46   22.97   22.49
   124.00 ELEV   705.00  704.87  704.75  704.62  704.49  704.37  704.24  704.12
   132.00 CFS    22.02
   132.00 ELEV   704.00

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  6.07 WATERSHED INCHES;    2119 CFS-HRS;     175.1 ACRE-FEET.
```

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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
08/14/**  PROPERTY NORTH OF THE EAST-WEST TOLLWAY (JRB 11/1/95 FILE: 8932.04TEST
16:04:41                    PASS   4   JOB NO.   1                      PAGE  20


    DURATION(HRS)  3      6      9     12     15     18     21     24
    FLOW(CFS)      56     51     47     46     45     38     31     25

    DURATION(HRS)  27     30     33
    FLOW(CFS)      24     23     22 TRUNCATED

 --- STRUCTURE  7, ALTERNATE  0, STORM 14, HYDROGRAPH ADDED TO READHD FILE ---


OPERATION RUNOFF    XSECTION  49

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  6.07 WATERSHED INCHES;     121 CFS-HRS;     175.1 ACRE-FEET.


OPERATION ADDHYD    XSECTION  50

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
      108.27                         60.5                       (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  6.08 WATERSHED INCHES;    2132 CFS-HRS;     176.2 ACRE-FEET.


OPERATION RESVOR    STRUCTURE 39

                  HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM =14
     HRS      MAIN TIME INCREMENT = 1.000 hr,      DRAINAGE AREA =     .61 SQ.MI.
     7.00 CFS      .00    .01    .01    .02    .03    .04    .06    .08
     7.00 ELEV   693.19  693.19  693.20  693.20  693.20  693.21  693.21  693.22
    15.00 CFS      .10    .13    .17    .21    .25    .29    .34    .39
    15.00 ELEV   693.23  693.24  693.25  693.27  693.28  693.30  693.32  693.34
    23.00 CFS      .44    .50    .57    .64    .73    .81    .91   1.01
    23.00 ELEV   693.36  693.38  693.41  693.44  693.47  693.50  693.54  693.57
    31.00 CFS     1.11   1.23   1.35   1.47   1.60   1.74   1.88   2.03
    31.00 ELEV   693.62  693.66  693.71  693.75  693.80  693.85  693.91  693.97
    39.00 CFS     2.28   2.65   3.01   3.37   3.72   4.07   4.42   4.75
    39.00 ELEV   694.02  694.08  694.13  694.18  694.24  694.29  694.34  694.39
    47.00 CFS     5.08   5.40   5.71   6.02   6.33   6.63   6.92   7.20
    47.00 ELEV   694.44  694.48  694.53  694.57  694.62  694.66  694.71  694.75
    55.00 CFS     7.48   7.75   8.02   8.28   8.54   8.79   8.98   9.14
    55.00 ELEV   694.79  694.83  694.87  694.91  694.95  694.98  695.02  695.07
    63.00 CFS     9.31   9.48   9.66   9.85  10.03  10.20  10.37  10.54
    63.00 ELEV   695.11  695.16  695.21  695.27  695.32  695.37  695.42  695.47
    71.00 CFS    10.70  10.86  11.03  11.21  11.40  11.58  11.77  11.96
    71.00 ELEV   695.51  695.56  695.61  695.66  695.71  695.76  695.82  695.87
    79.00 CFS    12.18  12.43  12.64  12.85  13.08  13.31  13.56  13.82
    79.00 ELEV   695.93  696.01  696.08  696.16  696.24  696.32  696.41  696.51
    87.00 CFS    14.08  14.35  15.76  17.75  19.43  20.94  22.64  24.18
    87.00 ELEV   696.60  696.70  696.79  696.86  696.92  696.98  697.02  697.04
```



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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
08/14/**  PROPERTY NORTH OF THE EAST-WEST TOLLWAY (JRB 11/1/95 FILE: 8932.04TEST
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    95.00 CFS     25.13   25.83   27.35   29.44   30.95   32.16   33.23   35.60
    95.00 ELEV   697.06  697.07  697.09  697.13  697.15  697.17  697.19  697.22
   103.00 CFS     40.03   45.19   50.41   55.66   60.45   64.20   65.70   64.66
   103.00 ELEV   697.30  697.38  697.46  697.55  697.62  697.68  697.71  697.69
   111.00 CFS     62.43   59.85   57.45   55.47   53.96   52.88   52.17   51.72
   111.00 ELEV   697.65  697.61  697.57  697.54  697.52  697.50  697.49  697.48
   119.00 CFS     51.42   51.08   48.61   43.73   38.40   33.08   29.11   27.00
   119.00 ELEV   697.48  697.47  697.43  697.36  697.27  697.18  697.12  697.09
   127.00 CFS     25.76   24.92   24.26   23.69   23.17   22.67
   127.00 ELEV   697.07  697.05  697.04  697.03  697.03  697.02

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  5.50 WATERSHED INCHES;    2175 CFS-HRS;     179.8 ACRE-FEET.

    DURATION(HRS)  4      8     12     16     20     24     28     32
    FLOW(CFS)      60     55     52     49     38     32     27     25

    DURATION(HRS)  36     40
    FLOW(CFS)      24     23 TRUNCATED

 --- STRUCTURE 39, ALTERNATE  0, STORM 14, HYDROGRAPH ADDED TO READHD FILE ---


EXECUTIVE CONTROL  ENDCMP    COMPUTATIONS COMPLETED FOR PASS   4


EXECUTIVE CONTROL  COMPUT    FROM XSECTION  91  TO STRUCTURE 39          240-HR
    STARTING TIME =   .00       RAIN DEPTH = 11.14       RAIN DURATION =240.00
    ANT. RUNOFF COND. = 2       MAIN TIME INCREMENT =  1.000 HOURS
    ALTERNATE NO. = 0           STORM NO. =15            RAIN TABLE NO. = 4


OPERATION RUNOFF    XSECTION  91

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
      214.50                         6.0                        (RUNOFF)
      237.64                         4.1                        (RUNOFF)
      196.00                         6.4                        (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  7.92 WATERSHED INCHES;     472 CFS-HRS;      39.0 ACRE-FEET.


OPERATION RUNOFF    XSECTION  92
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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
08/14/**  PROPERTY NORTH OF THE EAST-WEST TOLLWAY (JRB 11/1/95 FILE: 8932.04TEST
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    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
      131.21                          2.4                       (RUNOFF)
      202.50                          9.3                       (RUNOFF)
      214.50                          8.8                       (RUNOFF)
      238.50                          5.9                       (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  8.59 WATERSHED INCHES;     716 CFS-HRS;      59.2 ACRE-FEET.


OPERATION ADDHYD    XSECTION  93

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
      202.35                         15.7                       (NULL)
      214.50                         14.8                       (NULL)
      238.00                         10.1                       (NULL)
      196.00                         15.7                       (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  8.31 WATERSHED INCHES;    1188 CFS-HRS;      98.2 ACRE-FEET.


OPERATION RUNOFF    XSECTION  94

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
      214.00                          1.2 *                     (RUNOFF)
      196.00                          1.2                       (RUNOFF)
                                        * FIRST POINT OF FLAT PEAK

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  6.53 WATERSHED INCHES;      86 CFS-HRS;       7.1 ACRE-FEET.


OPERATION RESVOR    STRUCTURE 11

                    HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM =15
     HRS      MAIN TIME INCREMENT = 1.000 hr,      DRAINAGE AREA =    .02 SQ.MI.
    48.00 CFS       .00     .02     .03     .02     .03     .03     .03     .03
    48.00 ELEV   737.50  737.52  737.53  737.52  737.53  737.53  737.53  737.53
    56.00 CFS       .03     .03     .03     .03     .03     .05     .06     .06
    56.00 ELEV   737.53  737.53  737.53  737.53  737.53  737.55  737.56  737.56
    64.00 CFS       .06     .06     .06     .06     .06     .06     .06     .06
    64.00 ELEV   737.56  737.56  737.56  737.56  737.56  737.56  737.56  737.56
    72.00 CFS       .06     .08     .10     .09     .09     .09     .09     .09
    72.00 ELEV   737.56  737.58  737.60  737.59  737.59  737.59  737.59  737.59
    80.00 CFS       .09     .09     .09     .09     .09     .11     .12     .12
    80.00 ELEV   737.59  737.59  737.59  737.59  737.59  737.61  737.62  737.62
    88.00 CFS       .12     .12     .12     .12     .12     .12     .12     .12
    88.00 ELEV   737.62  737.62  737.62  737.62  737.62  737.62  737.62  737.62
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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
08/14/**  PROPERTY NORTH OF THE EAST-WEST TOLLWAY (JRB 11/1/95 FILE: 8932.04TEST
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    96.00 CFS       .12     .14     .14     .14     .14     .14     .14     .14
    96.00 ELEV   737.62  737.64  737.64  737.64  737.64  737.64  737.64  737.64
   104.00 CFS       .14     .14     .14     .14     .14     .16     .16     .16
   104.00 ELEV   737.64  737.64  737.64  737.64  737.64  737.66  737.66  737.66
   112.00 CFS       .16     .16     .16     .16     .16     .16     .16     .16
   112.00 ELEV   737.66  737.66  737.66  737.66  737.66  737.66  737.66  737.66
   120.00 CFS       .16     .21     .25     .24     .25     .24     .25     .24
   120.00 ELEV   737.66  737.71  737.75  737.74  737.75  737.74  737.75  737.74
   128.00 CFS       .24     .24     .24     .24     .24     .22     .20     .20
   128.00 ELEV   737.74  737.74  737.74  737.74  737.74  737.72  737.70  737.70
   136.00 CFS       .20     .20     .20     .20     .20     .20     .20     .20
   136.00 ELEV   737.70  737.70  737.70  737.70  737.70  737.70  737.70  737.70
   144.00 CFS       .20     .26     .29     .28     .29     .29     .29     .29
   144.00 ELEV   737.70  737.76  737.79  737.78  737.79  737.79  737.79  737.79
   152.00 CFS       .29     .29     .29     .29     .29     .40     .47     .46
   152.00 ELEV   737.79  737.79  737.79  737.79  737.79  737.90  737.97  737.96
   160.00 CFS       .47     .46     .47     .47     .47     .47     .47     .47
   160.00 ELEV   737.97  737.96  737.97  737.97  737.97  737.97  737.97  737.97
   168.00 CFS       .47     .49     .50     .50     .50     .50     .50     .50
   168.00 ELEV   737.97  737.99  738.00  738.00  738.00  738.00  738.00  738.00
   176.00 CFS       .50     .50     .50     .50     .50     .56     .65     .70
   176.00 ELEV   738.00  738.00  738.00  738.00  738.00  738.13  738.31  738.39
   184.00 CFS       .71     .71     .71     .71     .71     .71     .71     .71
   184.00 ELEV   738.41  738.42  738.42  738.42  738.42  738.42  738.42  738.42
   192.00 CFS       .71     .87    1.15    1.25    1.23    1.24    1.24    1.24
   192.00 ELEV   738.43  738.73  739.07  739.12  739.12  739.12  739.12  739.12
   200.00 CFS      1.24    1.24    1.24    1.24    1.24    1.22    1.21    1.20
   200.00 ELEV   739.12  739.12  739.12  739.12  739.12  739.11  739.10  739.10
   208.00 CFS      1.20    1.20    1.20    1.20    1.20    1.20    1.20    1.20
   208.00 ELEV   739.10  739.10  739.10  739.10  739.10  739.10  739.10  739.10
   216.00 CFS      1.20    1.03     .90     .85     .83     .83     .83     .83
   216.00 ELEV   739.10  739.02  738.81  738.70  738.67  738.66  738.66  738.66
   224.00 CFS       .83     .83     .83     .83     .83     .83     .84     .84
   224.00 ELEV   738.66  738.66  738.66  738.66  738.66  738.67  738.68  738.69
   232.00 CFS       .84     .84     .84     .84     .84     .84     .84     .84
   232.00 ELEV   738.69  738.69  738.69  738.69  738.69  738.69  738.69  738.69
   240.00 CFS       .84     .60    -.09     .06    -.04     .02    -.01     .01
   240.00 ELEV   738.69  738.20  737.41  737.56  737.46  737.52  737.49  737.51
   248.00 CFS      -.01
   248.00 ELEV   737.49

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  6.54 WATERSHED INCHES;      86 CFS-HRS;       7.1 ACRE-FEET.

    DURATION(HRS)   6     12     18     24     30     36     42     48
    FLOW(CFS)       1      1      1      1      1      1      1      1

    DURATION(HRS)  54     60     66     72
    FLOW(CFS)       1      1      1      0
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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
08/14/**  PROPERTY NORTH OF THE EAST-WEST TOLLWAY (JRB 11/1/95 FILE: 8932.04TEST
16:04:41                    PASS   5   JOB NO.   1                      PAGE  24


 --- STRUCTURE 11, ALTERNATE  0, STORM 15, HYDROGRAPH ADDED TO READHD FILE ---


OPERATION RUNOFF    XSECTION  96

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
      196.00                          .7                       (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                10.26 WATERSHED INCHES;      56 CFS-HRS;       4.6 ACRE-FEET.


OPERATION ADDHYD    XSECTION  97

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
      130.14                         4.4                       (NULL)
      202.41                        17.6                       (NULL)
      214.50                        16.6                       (NULL)
      229.55                        11.4                       (NULL)
      237.98                        10.9                       (NULL)
      195.00                        17.6                       (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                8.23 WATERSHED INCHES;    1329 CFS-HRS;     109.8 ACRE-FEET.


OPERATION RESVOR    STRUCTURE  6

                  HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM =15
     HRS      MAIN TIME INCREMENT = 1.000 hr,      DRAINAGE AREA =    .28 SQ.MI.
      .00 CFS       .00     .01     .02     .03     .04     .04     .04
      .00 ELEV   707.00  707.00  707.00  707.00  707.00  707.00  707.00  707.00
     8.00 CFS       .04     .04     .04     .04     .04     .08     .13     .16
     8.00 ELEV   707.00  707.00  707.00  707.00  707.01  707.01  707.02  707.02
    16.00 CFS       .18     .18     .19     .19     .19     .19     .19     .19
    16.00 ELEV   707.02  707.02  707.02  707.02  707.02  707.02  707.02  707.02
    24.00 CFS       .20     .31     .50     .62     .69     .72     .74     .75
    24.00 ELEV   707.02  707.04  707.06  707.07  707.08  707.09  707.09  707.09
    32.00 CFS       .75     .76     .76     .76     .76     .78     .84     .88
    32.00 ELEV   707.09  707.09  707.09  707.09  707.09  707.09  707.10  707.11
    40.00 CFS       .91     .92     .93     .93     .93     .93     .93     .93
    40.00 ELEV   707.11  707.11  707.11  707.11  707.11  707.11  707.11  707.11
    48.00 CFS       .93    1.12    1.45    1.67    1.79    1.85    1.88    1.90
    48.00 ELEV   707.11  707.13  707.17  707.20  707.21  707.22  707.22  707.23
    56.00 CFS      1.91    1.91    1.92    1.92    1.92    2.01    2.18    2.29
    56.00 ELEV   707.23  707.23  707.23  707.23  707.23  707.24  707.26  707.27
    64.00 CFS      2.35    2.38    2.39    2.40    2.41    2.41    2.41    2.41
    64.00 ELEV   707.28  707.28  707.29  707.29  707.29  707.29  707.29  707.29
    72.00 CFS      2.41    2.48    2.61    2.70    2.74    2.77    2.78    2.78
    72.00 ELEV   707.29  707.30  707.31  707.32  707.33  707.33  707.33  707.33
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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
08/14/**  PROPERTY NORTH OF THE EAST-WEST TOLLWAY (JRB 11/1/95 FILE: 8932.04TEST
16:04:41                    PASS   5   JOB NO.   1                      PAGE  25

    80.00 CFS      2.79    2.79    2.79    2.79    2.79    2.85    2.95    3.01
    80.00 ELEV   707.33  707.33  707.33  707.33  707.33  707.34  707.35  707.36
    88.00 CFS      3.05    3.07    3.08    3.09    3.09    3.09    3.09    3.09
    88.00 ELEV   707.36  707.37  707.37  707.37  707.37  707.37  707.37  707.37
    96.00 CFS      3.09    3.14    3.22    3.27    3.30    3.31    3.32    3.33
    96.00 ELEV   707.37  707.37  707.38  707.39  707.39  707.39  707.40  707.40
   104.00 CFS      3.33    3.33    3.33    3.33    3.33    3.37    3.43    3.48
   104.00 ELEV   707.40  707.40  707.40  707.40  707.40  707.40  707.41  707.41
   112.00 CFS      3.50    3.51    3.52    3.52    3.53    3.53    3.53    3.53
   112.00 ELEV   707.42  707.42  707.42  707.42  707.42  707.42  707.42  707.42
   120.00 CFS      3.53    3.80    4.27    4.59    4.76    4.85    4.90    4.92
   120.00 ELEV   707.42  707.45  707.51  707.55  707.57  707.58  707.58  707.59
   128.00 CFS      4.94    4.94    4.95    4.95    4.94    4.73    4.38    4.14
   128.00 ELEV   707.59  707.59  707.59  707.59  707.59  707.56  707.52  707.49
   136.00 CFS      4.01    3.94    3.91    3.89    3.88    3.87    3.87    3.87
   136.00 ELEV   707.48  707.47  707.46  707.46  707.46  707.46  707.46  707.46
   144.00 CFS      3.88    4.15    4.63    4.96    5.13    5.22    5.27    5.29
   144.00 ELEV   707.46  707.49  707.55  707.59  707.61  707.62  707.63  707.63
   152.00 CFS      5.31    5.32    5.32    5.32    5.33    5.89    6.87    7.52
   152.00 ELEV   707.63  707.63  707.63  707.63  707.63  707.70  707.82  707.90
   160.00 CFS      7.88    8.07    8.16    8.22    8.24    8.26    8.26    8.27
   160.00 ELEV   707.94  707.96  707.97  707.98  707.98  707.98  707.98  707.98
   168.00 CFS      8.27    8.32    8.41    8.48    8.52    8.53    8.54    8.54
   168.00 ELEV   707.98  707.99  708.00  708.01  708.01  708.01  708.01  708.01
   176.00 CFS      8.54    8.54    8.54    8.54    8.56    9.26   10.41   11.11
   176.00 ELEV   708.01  708.01  708.01  708.01  708.01  708.07  708.17  708.23
   184.00 CFS     11.44   11.59   11.65   11.68   11.70   11.70   11.70   11.70
   184.00 ELEV   708.26  708.27  708.28  708.28  708.28  708.28  708.28  708.28
   192.00 CFS     11.72   13.43   16.33   18.11   18.94   19.30   19.45   19.52
   192.00 ELEV   708.29  708.43  708.68  708.84  708.91  708.94  708.95  708.96
   200.00 CFS     19.55   19.56   19.57   19.57   19.56   19.31   18.91   18.67
   200.00 ELEV   708.96  708.96  708.96  708.96  708.96  708.94  708.91  708.89
   208.00 CFS     18.57   18.52   18.50   18.49   18.49   18.48   18.48   18.48
   208.00 ELEV   708.88  708.87  708.87  708.87  708.87  708.87  708.87  708.87
   216.00 CFS     18.45   17.10   14.91   13.59   12.97   12.69   12.57   12.52
   216.00 ELEV   708.87  708.75  708.56  708.45  708.39  708.37  708.36  708.36
   224.00 CFS     12.50   12.49   12.48   12.48   12.12   11.63   11.44   11.26
   224.00 ELEV   708.35  708.35  708.35  708.35  708.32  708.28  708.26  708.25
   232.00 CFS     11.06   10.98   10.94   10.92   10.92   10.91   10.91   10.91
   232.00 ELEV   708.23  708.22  708.22  708.22  708.22  708.22  708.22  708.22
   240.00 CFS     10.90    8.63    5.22    2.78    1.46     .76     .40     .21
   240.00 ELEV   708.22  708.02  707.62  707.33  707.17  707.09  707.05  707.02
   248.00 CFS       .11     .06     .03     .02     .01     .00
   248.00 ELEV   707.01  707.01  707.00  707.00  707.00  707.00

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                8.27 WATERSHED INCHES;    1477 CFS-HRS;     122.0 ACRE-FEET.
```

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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
08/14/**  PROPERTY NORTH OF THE EAST-WEST TOLLWAY (JRB 11/1/95 FILE: 8932.04TEST
16:04:41                    PASS   5   JOB NO.   1                      PAGE  26


    DURATION(HRS)  24     48     72     96    120    144    168    192
    FLOW(CFS)      15     11      8      5      4      3      3      2

    DURATION(HRS) 216    219
    FLOW(CFS)       1      0

 --- STRUCTURE  6, ALTERNATE  0, STORM 15, HYDROGRAPH ADDED TO READHD FILE ---


OPERATION RUNOFF    XSECTION  99

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
      33.00                          1.1 *                      (RUNOFF)
     130.50                          3.3                        (RUNOFF)
     199.00                         11.6 *                      (RUNOFF)
     225.92                          7.2                        (RUNOFF)
                                        * FIRST POINT OF FLAT PEAK

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  8.67 WATERSHED INCHES;     854 CFS-HRS;      70.6 ACRE-FEET.


OPERATION ADDHYD    XSECTION  90

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
     130.51                          8.3                        (NULL)
     202.52                         31.2                        (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  8.41 WATERSHED INCHES;    2331 CFS-HRS;     192.6 ACRE-FEET.


OPERATION RESVOR    STRUCTURE  7

                    HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM =15
     HRS      MAIN TIME INCREMENT = 1.000 hr,      DRAINAGE AREA =    .54 SQ.MI.
     5.00 CFS       .00     .01     .01     .01     .01     .01     .01     .01
     5.00 ELEV   700.00  700.00  700.00  700.00  700.00  700.00  700.00  700.00
    13.00 CFS       .03     .05     .08     .11     .13     .16     .18     .20
    13.00 ELEV   700.01  700.01  700.02  700.03  700.03  700.04  700.05  700.05
    21.00 CFS       .23     .25     .27     .29     .35     .42     .50     .58
    21.00 ELEV   700.06  700.06  700.07  700.07  700.09  700.11  700.12  700.14
    29.00 CFS       .66     .73     .81     .88     .95    1.01    1.08    1.14
    29.00 ELEV   700.16  700.18  700.20  700.22  700.24  700.25  700.27  700.28
    37.00 CFS      1.20    1.25    1.30    1.35    1.40    1.45    1.50    1.54
    37.00 ELEV   700.30  700.31  700.32  700.34  700.35  700.36  700.37  700.39
    45.00 CFS      1.59    1.63    1.67    1.71    1.77    1.87    1.98    2.09
    45.00 ELEV   700.40  700.41  700.42  700.43  700.44  700.47  700.49  700.52
    53.00 CFS      2.19    2.30    2.40    2.50    2.59    2.69    2.77    2.86
```



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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
08/14/**  PROPERTY NORTH OF THE EAST-WEST TOLLWAY (JRB 11/1/95 FILE: 8932.04TEST
16:04:41                    PASS   5   JOB NO.   1                      PAGE  27

    53.00 ELEV   700.55  700.57  700.60  700.62  700.65  700.67  700.69  700.72
    61.00 CFS      2.95    3.05    3.15    3.25    3.35    3.45    3.54    3.63
    61.00 ELEV   700.74  700.76  700.79  700.81  700.84  700.86  700.88  700.91
    69.00 CFS      3.71    3.80    3.88    3.95    4.04    4.15    4.26    4.37
    69.00 ELEV   700.93  700.95  700.97  700.99  701.01  701.02  701.03  701.05
    77.00 CFS      4.47    4.57    4.66    4.75    4.84    4.92    5.00    5.07
    77.00 ELEV   701.06  701.07  701.08  701.09  701.10  701.12  701.12  701.13
    85.00 CFS      5.15    5.23    5.31    5.39    5.47    5.54    5.62    5.68
    85.00 ELEV   701.14  701.15  701.16  701.17  701.18  701.19  701.20  701.21
    93.00 CFS      5.75    5.81    5.87    5.93    5.98    6.05    6.11    6.17
    93.00 ELEV   701.22  701.23  701.23  701.24  701.25  701.26  701.26  701.27
   101.00 CFS      6.23    6.28    6.34    6.39    6.44    6.49    6.53    6.58
   101.00 ELEV   701.28  701.29  701.29  701.30  701.30  701.31  701.32  701.32
   109.00 CFS      6.62    6.67    6.71    6.76    6.81    6.85    6.89    6.93
   109.00 ELEV   701.33  701.33  701.34  701.35  701.35  701.36  701.36  701.37
   117.00 CFS      6.97    7.01    7.04    7.07    7.15    7.27    7.41    7.56
   117.00 ELEV   701.37  701.38  701.38  701.38  701.39  701.41  701.43  701.44
   125.00 CFS      7.70    7.84    7.97    8.10    8.22    8.34    8.45    8.56
   125.00 ELEV   701.46  701.48  701.50  701.51  701.53  701.54  701.56  701.57
   133.00 CFS      8.61    8.63    8.63    8.62    8.61    8.59    8.58    8.56
   133.00 ELEV   701.58  701.58  701.58  701.58  701.58  701.57  701.57  701.57
   141.00 CFS      8.55    8.53    8.52    8.51    8.55    8.63    8.73    8.84
   141.00 ELEV   701.57  701.57  701.57  701.56  701.57  701.58  701.59  701.60
   149.00 CFS      8.95    9.05    9.16    9.25    9.35    9.44    9.53    9.61
   149.00 ELEV   701.62  701.63  701.64  701.66  701.67  701.68  701.69  701.70
   157.00 CFS      9.77   10.04   10.33   10.64   10.94   11.24   11.52   11.80
   157.00 ELEV   701.72  701.76  701.79  701.83  701.87  701.90  701.94  701.97
   165.00 CFS     12.04   12.22   12.40   12.56   12.73   12.89   13.05   13.21
   165.00 ELEV   702.01  702.04  702.07  702.09  702.12  702.15  702.18  702.20
   173.00 CFS     13.36   13.51   13.65   13.79   13.93   14.05   14.18   14.31
   173.00 ELEV   702.23  702.25  702.28  702.30  702.32  702.34  702.36  702.38
   181.00 CFS     14.50   14.76   15.05   15.34   15.63   15.92   16.19   16.46
   181.00 ELEV   702.42  702.46  702.51  702.56  702.61  702.65  702.70  702.74
   189.00 CFS     16.72   16.97   17.21   17.45   17.84   18.27   18.69   19.13
   189.00 ELEV   702.79  702.83  702.87  702.91  702.97  703.07  703.17  703.28
   197.00 CFS     19.58   20.02   20.45   20.87   21.29   21.69   22.09   22.45
   197.00 ELEV   703.39  703.50  703.61  703.72  703.82  703.92  704.02  704.11
   205.00 CFS     22.80   23.12   23.42   23.71   24.00   24.28   24.55   24.82
   205.00 ELEV   704.20  704.28  704.35  704.43  704.50  704.57  704.64  704.70
   213.00 CFS     25.08   25.33   25.58   25.82   25.97   26.20   26.32   26.23
   213.00 ELEV   704.77  704.83  704.90  704.95  704.99  705.01  705.01  705.01
   221.00 CFS     26.08   25.99   25.97   25.95   25.93   25.92   25.90   25.80
   221.00 ELEV   705.00  705.00  704.99  704.99  704.98  704.98  704.97  704.95
   229.00 CFS     25.62   25.44   25.25   25.07   24.89   24.70   24.53   24.35
   229.00 ELEV   704.90  704.86  704.81  704.77  704.72  704.68  704.63  704.59
   237.00 CFS     24.18   24.02   23.85   23.68   23.44   23.09   22.69   22.26
   237.00 ELEV   704.55  704.50  704.46  704.42  704.36  704.27  704.17  704.07
   245.00 CFS     21.81   21.34   20.88   20.42   19.97   19.54   19.11   18.69
   245.00 ELEV   703.95  703.84  703.72  703.61  703.49  703.38  703.28  703.17
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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
08/14/**  PROPERTY NORTH OF THE EAST-WEST TOLLWAY (JRB 11/1/95 FILE: 8932.04TEST
16:04:41                    PASS   5   JOB NO.   1                      PAGE  28

   253.00 CFS     18.28   17.80
   253.00 ELEV   703.07  702.97

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  7.44 WATERSHED INCHES;    2598 CFS-HRS;     214.7 ACRE-FEET.

    DURATION(HRS)   6     12     18     24     30     36     42     48
    FLOW(CFS)      26     26     25     25     24     23     22     20

    DURATION(HRS)  54     60     62
    FLOW(CFS)      19     18     18 TRUNCATED

 --- STRUCTURE  7, ALTERNATE  0, STORM 15, HYDROGRAPH ADDED TO READHD FILE ---


OPERATION RUNOFF    XSECTION  49

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  7.44 WATERSHED INCHES;     216 CFS-HRS;     214.7 ACRE-FEET.


OPERATION ADDHYD    XSECTION  50

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
      219.06                         26.4                         (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  7.44 WATERSHED INCHES;    2612 CFS-HRS;     215.8 ACRE-FEET.


OPERATION RESVOR    STRUCTURE 39

                    HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM =15
     HRS      MAIN TIME INCREMENT = 1.000 hr,      DRAINAGE AREA =     .61 SQ.MI.
    13.00 CFS       .00     .01     .01     .02     .03     .03     .04     .05
    13.00 ELEV   693.19  693.19  693.20  693.20  693.20  693.20  693.21  693.21
    21.00 CFS       .06     .07     .08     .09     .10     .12     .14     .16
    21.00 ELEV   693.21  693.22  693.22  693.22  693.23  693.24  693.24  693.25
    29.00 CFS       .19     .22     .24     .28     .31     .34     .38     .41
    29.00 ELEV   693.26  693.27  693.28  693.30  693.31  693.32  693.33  693.35
    37.00 CFS       .45     .49     .53     .57     .61     .65     .69     .73
    37.00 ELEV   693.36  693.38  693.39  693.41  693.42  693.44  693.45  693.47
    45.00 CFS       .77     .81     .85     .90     .94     .99    1.05    1.11
    45.00 ELEV   693.48  693.50  693.52  693.53  693.55  693.57  693.59  693.61
    53.00 CFS      1.16    1.22    1.29    1.35    1.42    1.48    1.55    1.62
    53.00 ELEV   693.63  693.66  693.68  693.71  693.73  693.76  693.78  693.81
    61.00 CFS      1.69    1.76    1.84    1.91    1.99    2.07    2.19    2.37
    61.00 ELEV   693.83  693.86  693.89  693.92  693.95  693.98  694.01  694.04
    69.00 CFS      2.54    2.71    2.87    3.02    3.17    3.32    3.47    3.61
    69.00 ELEV   694.06  694.09  694.11  694.13  694.15  694.18  694.20  694.22
    77.00 CFS      3.75    3.88    4.02    4.14    4.27    4.39    4.51    4.62
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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
08/14/**  PROPERTY NORTH OF THE EAST-WEST TOLLWAY (JRB 11/1/95 FILE: 8932.04TEST
16:04:41                    PASS   5   JOB NO.   1                      PAGE  29

    77.00 ELEV   694.24  694.26  694.28  694.30  694.32  694.33  694.35  694.37
    85.00 CFS      4.73    4.85    4.96    5.06    5.17    5.27    5.37    5.47
    85.00 ELEV   694.38  694.40  694.42  694.43  694.45  694.46  694.48  694.49
    93.00 CFS      5.56    5.66    5.74    5.83    5.92    6.00    6.09    6.17
    93.00 ELEV   694.51  694.52  694.53  694.55  694.56  694.57  694.58  694.60
   101.00 CFS      6.25    6.33    6.40    6.48    6.55    6.62    6.69    6.75
   101.00 ELEV   694.61  694.62  694.63  694.64  694.65  694.66  694.67  694.68
   109.00 CFS      6.82    6.88    6.95    7.01    7.07    7.13    7.19    7.25
   109.00 ELEV   694.69  694.70  694.71  694.72  694.73  694.74  694.75  694.76
   117.00 CFS      7.30    7.36    7.41    7.46    7.53    7.61    7.70    7.80
   117.00 ELEV   694.76  694.77  694.78  694.79  694.80  694.81  694.82  694.84
   125.00 CFS      7.90    8.00    8.11    8.22    8.33    8.44    8.55    8.66
   125.00 ELEV   694.85  694.87  694.88  694.90  694.91  694.93  694.95  694.96
   133.00 CFS      8.76    8.84    8.91    8.94    8.97    9.00    9.03    9.05
   133.00 ELEV   694.98  694.99  695.00  695.01  695.02  695.03  695.03  695.04
   141.00 CFS      9.08    9.10    9.12    9.13    9.16    9.20    9.23    9.28
   141.00 ELEV   695.05  695.05  695.06  695.06  695.07  695.08  695.09  695.10
   149.00 CFS      9.32    9.37    9.42    9.47    9.53    9.59    9.64    9.70
   149.00 ELEV   695.12  695.13  695.15  695.16  695.18  695.19  695.21  695.23
   157.00 CFS      9.78    9.89   10.00   10.12   10.25   10.39   10.53   10.68
   157.00 ELEV   695.25  695.28  695.31  695.35  695.38  695.42  695.46  695.51
   165.00 CFS     10.84   10.99   11.15   11.31   11.48   11.64   11.80   11.97
   165.00 ELEV   695.55  695.60  695.64  695.69  695.73  695.78  695.83  695.87
   173.00 CFS     12.13   12.29   12.44   12.56   12.69   12.81   12.93   13.05
   173.00 ELEV   695.92  695.97  696.01  696.06  696.10  696.14  696.19  696.23
   181.00 CFS     13.19   13.35   13.51   13.67   13.84   14.01   14.19   14.37
   181.00 ELEV   696.28  696.34  696.39  696.45  696.51  696.58  696.64  696.70
   189.00 CFS     15.18   16.57   17.62   18.45   19.39   20.46   21.37   22.63
   189.00 ELEV   696.77  696.82  696.86  696.89  696.92  696.96  696.99  697.02
   197.00 CFS     23.59   24.27   24.81   25.29   25.74   26.17   26.58   26.97
   197.00 ELEV   697.03  697.04  697.05  697.06  697.07  697.07  697.08  697.09
   205.00 CFS     27.28   27.53   27.80   28.09   28.38   28.66   28.94   29.22
   205.00 ELEV   697.09  697.10  697.10  697.10  697.11  697.11  697.12  697.12
   213.00 CFS     29.49   29.75   30.01   29.95   29.46   29.04   28.89   28.83
   213.00 ELEV   697.13  697.13  697.14  697.13  697.13  697.12  697.12  697.12
   221.00 CFS     28.74   28.63   28.55   28.51   28.48   28.45   28.43   28.36
   221.00 ELEV   697.12  697.11  697.11  697.11  697.11  697.11  697.11  697.11
   229.00 CFS     28.23   28.08   27.91   27.73   27.55   27.37   27.19   27.01
   229.00 ELEV   697.11  697.10  697.10  697.10  697.10  697.09  697.09  697.09
   237.00 CFS     26.84   26.67   26.50   26.31   25.55   24.41   23.59   22.98
   237.00 ELEV   697.08  697.08  697.08  697.08  697.06  697.05  697.03  697.02
   245.00 CFS     22.47   21.98   21.53   21.26   20.95   20.59   20.21   19.82
   245.00 ELEV   697.01  697.01  697.00  696.99  696.98  696.96  696.95  696.94
   253.00 CFS     19.42   19.01
   253.00 ELEV   696.92  696.91

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  6.81 WATERSHED INCHES;    2694 CFS-HRS;     222.6 ACRE-FEET.
```

DURATION(HRS)	6	12	18	24	30	36	42	48
FLOW(CFS)	29	29	28	28	27	26	25	23

DURATION(HRS)	54	59
FLOW(CFS)	21	19 TRUNCATED

--- STRUCTURE 39, ALTERNATE 0, STORM 15, HYDROGRAPH ADDED TO READHD FILE ---

EXECUTIVE CONTROL ENDCMP COMPUTATIONS COMPLETED FOR PASS 5

SUMMARY TABLE 1

SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.
A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:
F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED HYDROGRAPH

XSECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RUNOFF AMOUNT (IN)	PEAK DISCHARGE ELEVATION (FT)	TIME (HR)	RATE (CFS)	RATE (CSM)
RAINFALL OF 7.58 inches AND 24.00 hr DURATION, BEGINS AT .0 hrs.							
RAINTABLE NUMBER 3, ARC 2							
MAIN TIME INCREMENT 1.000 HOURS							
ALTERNATE 0 STORM 11							
XSECTION 91	RUNOFF	.09	4.64	---	15.55	37	411.1
XSECTION 92	RUNOFF	.13	5.25	---	15.66	57	438.5
XSECTION 93	ADDHYD	.22	5.01	---	15.62	94	427.3
XSECTION 94	RUNOFF	.02	3.54	---	15.75	7	350.0
STRUCTURE 11	RESVOR	.02	3.55	741.63	16.29	6	300.0
XSECTION 95	ADDHYD	.24	4.85	---	15.65	100	416.7
XSECTION 96	RUNOFF	.01	7.21	---	14.70	5	500.0
XSECTION 97	ADDHYD	.25	4.93	---	15.59	104	416.0
XSECTION 10	RUNOFF	.03	6.00	---	14.76	13	433.3
XSECTION 98	ADDHYD	.28	5.03	---	15.43	115	410.7
STRUCTURE 6	RESVOR	.28	5.10	712.50	15.69	114	407.1
XSECTION 99	RUNOFF	.15	6.00	---	14.76	77	513.3
XSECTION 90	ADDHYD	.43	5.41	---	15.26	186	432.6
XSECTION 17	RUNOFF	.11	6.18	---	14.77	57	518.2
XSECTION 13	ADDHYD	.54	5.56	---	15.15	241	446.3
STRUCTURE 7	RESVOR	.54	3.44	706.35	18.61T	115T	213.0
XSECTION 49	RUNOFF	.00	6.23	---	14.74T	1T	********
XSECTION 50	ADDHYD	.54	3.46	---	18.59T	115T	213.0
XSECTION 24	RUNOFF	.01	6.31	---	14.74	8	800.0
XSECTION 17	ADDHYD	.56	3.53	---	18.47T	119T	212.5
XSECTION 19	RUNOFF	.05	4.58	---	15.39	22	440.0
XSECTION 15	ADDHYD	.61	3.62	---	18.23T	129T	211.5
STRUCTURE 39	RESVOR	.61	2.91	698.48	20.68T	108T	177.0

TR20 ---------- SCS -
001 CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE VERSION
08/14/** PROPERTY NORTH OF THE EAST-WEST TOLLWAY (JRB 11/1/95 FILE: 8932.04TEST
16:04:41 SUMMARY, JOB NO. 1 PAGE 32

SUMMARY TABLE 1

SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.
A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:
F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED HYDROGRAPH

XSECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION		DRAINAGE AREA (SQ MI)	RUNOFF AMOUNT (IN)	PEAK DISCHARGE ELEVATION (FT)	TIME (HR)	RATE (CFS)	RATE (CSM)
RAINFALL OF 8.16 inches AND 48.00 hr DURATION, BEGINS AT .0 hrs.								
RAINTABLE NUMBER 4, ARC 2								
ALTERNATE 0 STORM 12								
XSECTION 91	RUNOFF		.09	5.19	---	40.73	22	244.4
XSECTION 92	RUNOFF		.13	5.75	---	40.84	32	246.2
XSECTION 93	ADDHYD		.22	5.51	---	40.80	54	245.5
XSECTION 94	RUNOFF		.02	4.00	---	42.39	4	200.0
STRUCTURE 11	RESVOR		.02	4.00	740.49	42.50	4	200.0
XSECTION 95	ADDHYD		.24	5.38	---	40.90	58	241.7
XSECTION 96	RUNOFF		.01	7.96	---	39.50	2	200.0
XSECTION 97	ADDHYD		.25	5.47	---	40.87	60	240.0
XSECTION 10	RUNOFF		.03	6.65	---	39.50	7	233.3
XSECTION 98	ADDHYD		.28	5.58	---	40.77	67	239.3
STRUCTURE 6	RESVOR		.28	5.59	711.82	42.74	64	228.6
XSECTION 99	RUNOFF		.15	6.65	---	39.50	43	286.7
XSECTION 90	ADDHYD		.43	5.97	---	42.55	104	241.9
XSECTION 17	RUNOFF		.11	6.78	---	39.74	30	272.7
XSECTION 13	ADDHYD		.54	6.14	---	42.53	133	246.3
STRUCTURE 7	RESVOR		.54	3.96	706.19	45.05T	100T	185.2
XSECTION 49	RUNOFF		.00	6.89	---	40.00R	1R	********
XSECTION 50	ADDHYD		.54	3.97	---	45.05T	100T	185.2
XSECTION 24	RUNOFF		.01	7.01	---	39.50	4	400.0
XSECTION 17	ADDHYD		.56	4.05	---	45.05T	103T	183.9
XSECTION 19	RUNOFF		.05	5.08	---	40.60	13	260.0
XSECTION 15	ADDHYD		.61	4.14	---	44.86T	111T	182.0

TR20 ---------- SCS -
001 CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE VERSION
08/14/** PROPERTY NORTH OF THE EAST-WEST TOLLWAY (JRB 11/1/95 FILE: 8932.04TEST
16:04:41 SUMMARY, JOB NO. 1 PAGE 33

SUMMARY TABLE 1

SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.
A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:
F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED HYDROGRAPH

XSECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION		DRAINAGE AREA (SQ MI)	RUNOFF AMOUNT (IN)	PEAK DISCHARGE ELEVATION (FT)	TIME (HR)	RATE (CFS)	RATE (CSM)
ALTERNATE 0 STORM 12								
STRUCTURE 39	RESVOR		.61	3.43	698.43	47.67T	106T	173.8
RAINFALL OF 8.78 inches AND 72.00 hr DURATION, BEGINS AT .0 hrs.								
ALTERNATE 0 STORM 13								
XSECTION 91	RUNOFF		.09	5.75	---	60.52	16	177.8
XSECTION 92	RUNOFF		.13	6.35	---	60.58	24	184.6
XSECTION 93	ADDHYD		.22	6.10	---	60.56	40	181.8
XSECTION 94	RUNOFF		.02	4.53	---	61.00T	3T	150.0
STRUCTURE 11	RESVOR		.02	4.51	739.99	60.00	3	150.0
XSECTION 95	ADDHYD		.24	5.97	---	60.53	43	179.2
XSECTION 96	RUNOFF		.01	8.54	---	59.00	2	200.0
XSECTION 97	ADDHYD		.25	6.05	---	60.53	44	176.0
XSECTION 10	RUNOFF		.03	7.32	---	59.00F	5F	166.7
XSECTION 98	ADDHYD		.28	6.17	---	60.52	50	178.6
STRUCTURE 6	RESVOR		.28	6.17	710.61	61.87	48	171.4
XSECTION 99	RUNOFF		.15	7.32	---	59.50	30	200.0
XSECTION 90	ADDHYD		.43	6.57	---	61.13	78	181.4
XSECTION 17	RUNOFF		.11	7.39	---	60.50	22	200.0
XSECTION 13	ADDHYD		.54	6.72	---	60.98	100	185.2
STRUCTURE 7	RESVOR		.54	4.63	705.98	65.49T	80T	148.1
XSECTION 49	RUNOFF		.00	4.63	---	.00	0	********
XSECTION 50	ADDHYD		.54	4.64	---	65.48T	81T	150.0
XSECTION 24	RUNOFF		.01	7.69	---	62.66	3	300.0
XSECTION 17	ADDHYD		.56	4.72	---	65.43T	83T	148.2
XSECTION 19	RUNOFF		.05	5.62	---	60.50	9	180.0
XSECTION 15	ADDHYD		.61	4.80	---	65.07T	91T	149.2
STRUCTURE 39	RESVOR		.61	4.09	698.03	66.92T	86T	141.0

TR20 ---------- SCS -
001 CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE VERSION
08/14/** PROPERTY NORTH OF THE EAST-WEST TOLLWAY (JRB 11/1/95 FILE: 8932.04TEST
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SUMMARY TABLE 1

SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.
A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:
F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED HYDROGRAPH

XSECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RUNOFF AMOUNT (IN)	PEAK DISCHARGE ELEVATION (FT)	PEAK DISCHARGE TIME (HR)	PEAK DISCHARGE RATE (CFS)	PEAK DISCHARGE RATE (CSM)
RAINFALL OF 9.96 inches AND 120.00 hr DURATION, BEGINS AT .0 hrs.							
ALTERNATE 0 STORM 14							
XSECTION 91	RUNOFF	.09	6.83	---	100.50	11	122.2
XSECTION 92	RUNOFF	.13	7.48	---	101.50	17	130.8
XSECTION 93	ADDHYD	.22	7.21	---	100.50	28	127.3
XSECTION 94	RUNOFF	.02	5.53	---	106.50T	2T	100.0
STRUCTURE 11	RESVOR	.02	5.53	739.54	106.51	2	100.0
XSECTION 95	ADDHYD	.24	7.07	---	100.45	30	125.0
XSECTION 96	RUNOFF	.01	9.80	---	106.50	1	100.0
XSECTION 97	ADDHYD	.25	7.16	---	100.45	31	124.0
XSECTION 10	RUNOFF	.03	8.41	---	99.00	4	133.3
XSECTION 98	ADDHYD	.28	7.28	---	100.44	34	121.4
STRUCTURE 6	RESVOR	.28	7.28	709.80	101.58	34	121.4
XSECTION 99	RUNOFF	.15	8.41	---	99.00F	21F	140.0
XSECTION 90	ADDHYD	.43	7.68	---	101.05	55	127.9
XSECTION 17	RUNOFF	.11	8.43	---	99.72	15	136.4
XSECTION 13	ADDHYD	.54	7.84	---	101.05	70	129.6
STRUCTURE 7	RESVOR	.54	6.07	705.70	108.30T	60T	111.1
XSECTION 49	RUNOFF	.00	6.07	---	.00	0	********
XSECTION 50	ADDHYD	.54	6.08	---	108.27T	61T	113.0
XSECTION 24	RUNOFF	.01	8.79	---	100.50	2	200.0
XSECTION 17	ADDHYD	.56	6.15	---	108.15T	62T	110.7
XSECTION 19	RUNOFF	.05	6.70	---	99.00F	7F	140.0
XSECTION 15	ADDHYD	.61	6.20	---	107.92T	68T	111.5
STRUCTURE 39	RESVOR	.61	5.50	697.71	109.09T	66T	108.2

TR20 ---------- SCS -
001 CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE VERSION
08/14/** PROPERTY NORTH OF THE EAST-WEST TOLLWAY (JRB 11/1/95 FILE: 8932.04TEST
16:04:41 SUMMARY, JOB NO. 1 PAGE 35

SUMMARY TABLE 1

SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.
A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:
F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED HYDROGRAPH

XSECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RUNOFF AMOUNT (IN)	PEAK DISCHARGE ELEVATION (FT)	PEAK DISCHARGE TIME (HR)	PEAK DISCHARGE RATE (CFS)	PEAK DISCHARGE RATE (CSM)
RAINFALL OF 11.14 inches AND 240.00 hr DURATION, BEGINS AT .0 hrs.							
ALTERNATE 0 STORM 15							
XSECTION 91	RUNOFF	.09	7.92	---	214.50	6	66.7
XSECTION 92	RUNOFF	.13	8.59	---	202.50	9	69.2
XSECTION 93	ADDHYD	.22	8.31	---	202.35	16	72.7
XSECTION 94	RUNOFF	.02	6.53	---	214.00F	1F	50.0
STRUCTURE 11	RESVOR	.02	6.54	739.10	214.50	1	50.0
XSECTION 95	ADDHYD	.24	8.16	---	202.35	17	70.8
XSECTION 96	RUNOFF	.01	10.26	---	196.00R	1R	100.0
XSECTION 97	ADDHYD	.25	8.23	---	202.41	18	72.0
XSECTION 10	RUNOFF	.03	8.67	---	199.00F	2F	66.7
XSECTION 98	ADDHYD	.28	8.27	---	202.28	20	71.4
STRUCTURE 6	RESVOR	.28	8.27	708.96	202.71	20	71.4
XSECTION 99	RUNOFF	.15	8.67	---	199.00F	12F	80.0
XSECTION 90	ADDHYD	.43	8.41	---	202.52	31	72.1
XSECTION 17	RUNOFF	.11	9.73	---	202.50	9	81.8
XSECTION 13	ADDHYD	.54	8.68	---	202.51	40	74.1
STRUCTURE 7	RESVOR	.54	7.44	705.01	219.06T	26T	48.1
XSECTION 49	RUNOFF	.00	7.44	---	.00	0	********
XSECTION 50	ADDHYD	.54	7.44	---	219.06T	26T	48.1
XSECTION 24	RUNOFF	.01	8.15	---	214.50	1	100.0
XSECTION 17	ADDHYD	.56	7.46	---	214.73T	27T	48.2
XSECTION 19	RUNOFF	.05	7.76	---	214.50	4	80.0
XSECTION 15	ADDHYD	.61	7.49	---	214.72T	30T	49.2
STRUCTURE 39	RESVOR	.61	6.81	697.14	215.32T	30T	49.2

TR20 ---------- SCS -
001 CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE VERSION
08/14/** PROPERTY NORTH OF THE EAST-WEST TOLLWAY (JRB 11/1/95 FILE: 8932.04TEST
16:04:41 SUMMARY, JOB NO. 1 PAGE 36

SUMMARY TABLE 3

STORM DISCHARGES (CFS) AT XSECTIONS AND STRUCTURES FOR ALL ALTERNATES
QUESTION MARK (?) AFTER: OUTFLOW PEAK - RISING TRUNCATED HYDROGRAPH.

XSECTION/ STRUCTURE ID		DRAINAGE AREA (SQ MI)	STORM NUMBERS..... 11	12	13	14	15
STRUCTURE 39		.61					
	ALTERNATE 0		108	106	86	66	30
STRUCTURE 11		.02					
	ALTERNATE 0		6	4	3	2	1
STRUCTURE 7		.54					
	ALTERNATE 0		115	100	80	60	26
STRUCTURE 6		.28					
	ALTERNATE 0		114	64	48	34	20
XSECTION 10		.03					
	ALTERNATE 0		13	7	5	4	2
XSECTION 13		.54					
	ALTERNATE 0		241	133	100	70	40
XSECTION 15		.61					
	ALTERNATE 0		129	111	91	68	30
XSECTION 17		.56					
	ALTERNATE 0		119	103	83	62	27
XSECTION 19		.05					
	ALTERNATE 0		22	13	9	7	4
XSECTION 24		.01					
	ALTERNATE 0		8	4	3	2	1
XSECTION 49		.00					
	ALTERNATE 0		1	1?	0	0	0
XSECTION 50		.54					
	ALTERNATE 0		115	100	81	61	26
XSECTION 90		.43					

	ALTERNATE 0		186	104	78	55	31
XSECTION 91		.09					

TR20 ---------- SCS -
001 CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE VERSION
08/14/** PROPERTY NORTH OF THE EAST-WEST TOLLWAY (JRB 11/1/95 FILE: 8932.04TEST
16:04:41 SUMMARY, JOB NO. 1 PAGE 37

SUMMARY TABLE 3

STORM DISCHARGES (CFS) AT XSECTIONS AND STRUCTURES FOR ALL ALTERNATES
QUESTION MARK (?) AFTER: OUTFLOW PEAK - RISING TRUNCATED HYDROGRAPH.

XSECTION/ STRUCTURE ID		DRAINAGE AREA (SQ MI)	STORM NUMBERS..... 11	12	13	14	15
XSECTION 91		.09					
ALTERNATE	0		37	22	16	11	6
XSECTION 92		.13					
ALTERNATE	0		57	32	24	17	9
XSECTION 93		.22					
ALTERNATE	0		94	54	40	28	16
XSECTION 94		.02					
ALTERNATE	0		7	4	3	2	1
XSECTION 95		.24					
ALTERNATE	0		100	58	43	30	17
XSECTION 96		.01					
ALTERNATE	0		5	2	2	1	1?
XSECTION 97		.25					
ALTERNATE	0		104	60	44	31	18
XSECTION 98		.28					
ALTERNATE	0		115	67	50	34	20
XSECTION 99		.15					
ALTERNATE	0		77	43	30	21	12

TR20 ---------- SCS -
001 CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE VERSION
08/14/** PROPERTY NORTH OF THE EAST-WEST TOLLWAY (JRB 11/1/95 FILE: 8932.04TEST

END OF 1 JOBS IN THIS RUN

SCS TR-20, VERSION 2.04TEST
001 FILES

INPUT = C:\TR20\EXB.DAT , GIVEN DATA FILE
OUTPUT = C:\TR20\EXB.OUT , DATED 08/14/**,16:04:41

FILES GENERATED - DATED 08/14/**,16:04:41

FILE C:\TR20\EXB.TRD CONTAINS READHD INFORMATION

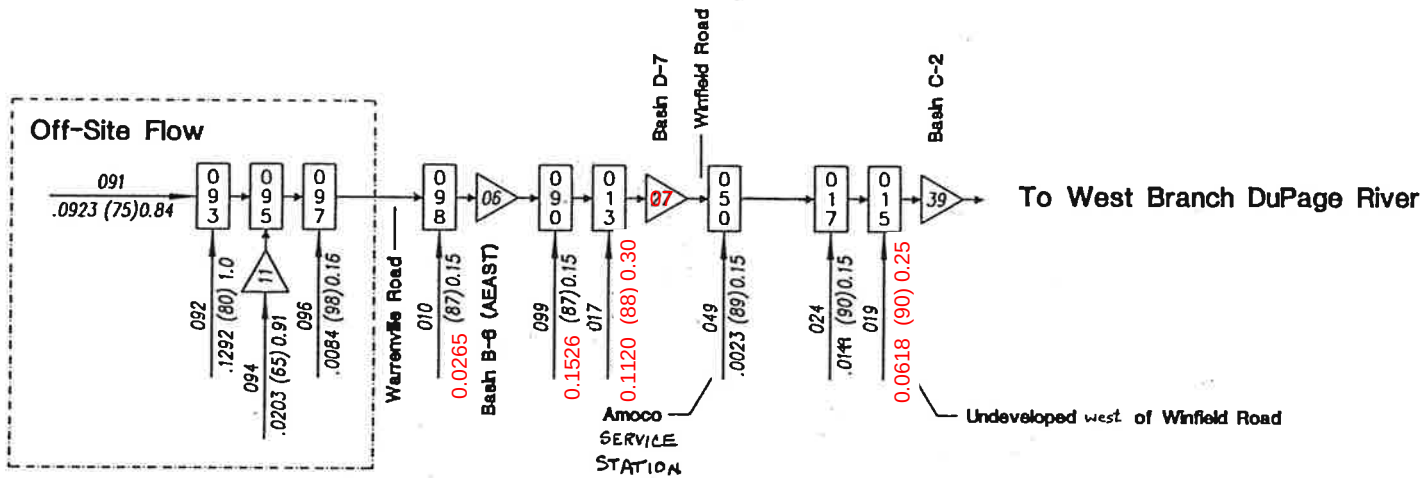
FILE C:\TR20\EXB.TMG CONTAINS MESSAGE + WARNING INFORMATION

TOTAL NUMBER OF WARNINGS = 104, MESSAGES = 35

JOB ENDED AT 16:04:42
*** TR-20 RUN COMPLETED ***

PROPOSED MODEL SCHEMATIC

I) AREA C2 DEVELOPED
II) PROPOSED POND VOLUME ON C2
III) INCLUDES C3 VOLUME AND TRIBUTARY AREA



LEGEND

SUBCATCHMENT ID.
AREA (SQ.MI.) (RCN) TC

STARTING ELEVATION
RESERVOIR ROUTING

DIVERSION

ADD HYDROGRAPHS

REACH ID.
REACH LENGTH

SAVE & MOVE

Proposed Structure Table

Elevation	Discharge	Storage
693	0.00	0.00
694	7.06	6.73
695	12.57	13.95
696	16.03	21.66
696.74	18.12	27.74
697	25.03	29.88
698	87.74	38.61
699	138.39	47.99
700	163.48	58.17
700.25	187.22	60.82
701	329.76	68.76
701.5	460.91	74.05

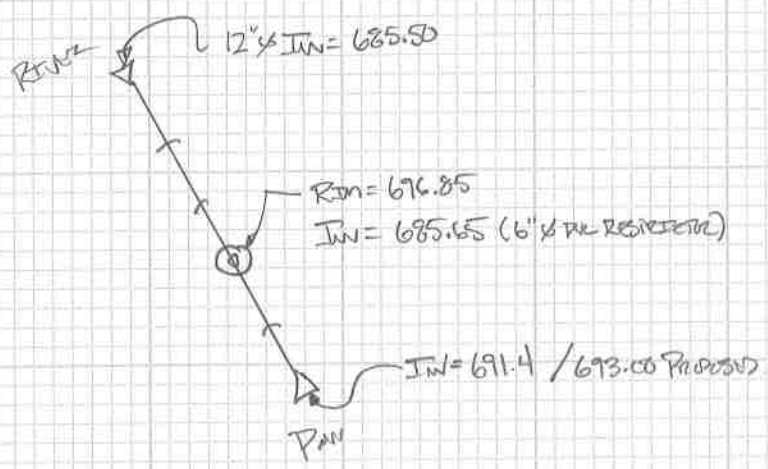
Total Proposed Site Discharge

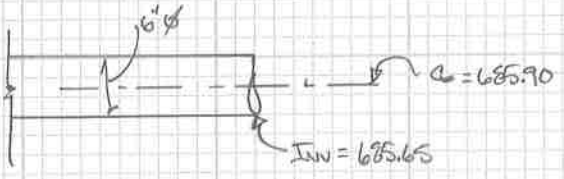
Elevation	Primary Structure Discharge	Structure Overflow	Outlet A Structure Discharge	Spillway Discarge	Total Site Discharge
693	0.00	0.00	0.00	0.00	**0.00**
694	4.33	0.00	2.73	0.00	**7.06**
695	9.67	0.00	2.90	0.00	**12.57**
696	12.98	0.00	3.05	0.00	**16.03**
696.74	14.96	0.00	3.16	0.00	**18.12**
697	15.59	6.24	3.20	0.00	**25.03**
698	17.83	66.57	3.34	0.00	**87.74**
699	19.82	115.09	3.48	0.00	**138.39**
700	21.63	138.24	3.61	0.00	**163.48**
700.25	22.05	143.44	3.64	18.09	**187.22**
701	23.29	158.02	3.73	144.72	**329.76**
701.5	24.08	167.03	3.80	266.00	**460.91**

BL BLA, Inc.

JOB NO.: 080-020		SHEET:	OF:
PROJECT: Riverview West			
SUBJECT: Routed Release Rate Calcs for POD Stormwater Report			
BY: KMK	DATE: 04/13/19	CK:	DATE:

Per DuPat, the existing 12"ø Outlet Pipe from the Detention Pond on Outlet "A" is to remain. The Outlet will be Raised & Reset w/ an Invert of 693.00. The outlet pipe is a 12"ø RCP w/ a 6" Restrictor. Existing Conditions have been Field Verified. The Proposed Storage - Storage - Discharge Table has been Revised to Include Release from Pond on Outlet "A".





$Q = CLA\sqrt{2gH}$

$Q = (0.61)(0.1963)\sqrt{64.4(H)}$

$Q = 0.9609\sqrt{H}$

Elevation	H= Elev - 685.90	$Q = 0.9609\sqrt{H}$
693	0 (No Release)	0
694	8.10	2.73
695	9.10	2.90
696	10.10	3.05
696.74	10.84	3.16
697	11.10	3.20
698	12.10	3.34
699	13.10	3.48
700	14.10	3.61
700.25	14.35	3.64
701	15.10	3.73
701.5	15.60	3.80

CONSULTING ENGINEERS

Bollinger, Lach & Associates, Inc.

JOB NO.:		SHEET:	OF:
PROJECT: Cantua Subdiv, Lot 2			
SUBJECT: Proposed Outlet			
BY: KeK	DATE: 08/10/18	CK:	DATE:

Proposed

Proposed Outlet

Primary Release = 18"ϕ RCP INV = 693.00
Structure Spillway = 54'W w/ RIM = 696.74
Spillway = 54'W w/ Crest = 700

E	Qo	Qstruct	Qspillway	Qtotal
693	0	-	-	0
694	4.33	-	-	4.33
695	9.67	-	-	9.67
696	12.98	-	-	12.98
696.74	14.96	0	-	14.96
697	15.59	6.24	-	21.83
698	17.83	66.57	-	84.40
699	19.82	115.09	-	134.91
700	21.63	138.24	0	159.87
700.25	22.05	143.44	18.09	163.58
701	23.29	158.02	144.72	326.03
701.5	24.08	167.03	266	457.11

CONSULTING ENGINEERS

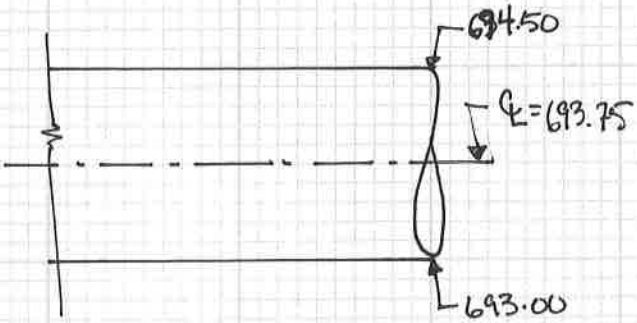
Bollinger, Lach & Associates, Inc.

JOB NO.:		SHEET:	OF:
PROJECT: CANTERA SUBREAC, LOT 2			
SUBJECT: PROPOSED OUTLET			
BY: KCK	DATE: 08/10/18	CK:	DATE:

PROPOSED

PROPOSED OUTLET TO BE RESET AT INV = 693.00

PRIMARY OUTLET = 18"ϕ RCP INV = 693.00



USE ORIFICE EQUATION FOR FLOW:

$Q = CA\sqrt{2gH}$

$C = 0.61$, $A_{18"\phi} = 1.767$, $2g = 64.4$

$Q = (0.61)(1.767)\sqrt{64.4\,(H)}$

$\underline{Q = 8.65\sqrt{H}}$

E	H = E − 693.75	$Q_o = 8.65\sqrt{H}$
693	0	0
694	0.25	4.33
695	1.25	9.67
696	2.25	12.98
696.74	2.99	14.96
697	3.25	15.59
698	4.25	17.83
699	5.25	19.82
700	6.25	21.63
700.25	6.50	22.05
701	7.25	23.29
701.5	7.75	24.08

CONSULTING ENGINEERS

Bollinger, Lach & Associates, Inc.

JOB NO.:		SHEET:	OF:
PROJECT: Cantera Subarea C, Lot 2			
SUBJECT: Proposed Outlet / Overflow			
BY: KEK	DATE: 08/10/18	CK:	DATE:

PROPOSED

SPILLWAY STRUCTURE = 54"Ø w/ RIM = 696.74

- NO CHANGE FROM EXISTING / EXISTING STRUCTURE TO BE USED IN PROPOSED DESIGN.

E	H = E - 696.74	Q WEIR	Q ORIFICE
696.74	0	0	0
697	0.26	6.24	39.04
698	1.26	66.57	85.94
699	2.26	159.92	115.09
700	3.26	277.06	138.24
700.25	3.51	309.55	143.44
701	4.26	413.86	158.02
701.5	4.76	488.83	167.03

WEIR FLOW

$Q_W = CLH^{3/2}$

$C = 3.33$, $L = 14.14$

$Q_W = (3.33)(14.14)(H)^{3/2}$

$Q_W = (47.07)(H)^{3/2}$

ORIFICE FLOW

$Q_O = CA\sqrt{2gH}$

$C = 0.60$, $A_{18"} = 1.767$, $2g = 64.4$

$Q_O = (0.60)(1.767)\sqrt{64.4(H)}$

$Q_O = (76.56)\sqrt{H}$

CONSULTING ENGINEERS

Bollinger, Lach & Associates, Inc.

JOB NO.:		SHEET:	OF:
PROJECT: CANTORA SUBROAC, LOT 2			
SUBJECT: PROPOSED OUTLET / SPILLWAY			
BY: KK	DATE: 08/10/18	CK:	DATE:

PROPOSED

EMERGENCY SPILLWAY

PROPOSED FLOW = 1cfs/ACRE TRIBUTARY

REQUIRED FLOW = 401cfs

CREST = 700.00

@ 700, SPILLWAY STRUCTURE PASSES 138.24cfs.

401 - 138 ≈ 263cfs.

$Q = CLH^{3/2}$

$Q = 263$, $C = 2.68$, $H = 1.5$, $L = ?$

$(263) = (2.68)(L)(1.5)^{1.5}$

$L \approx 54'$

$Q = (2.68)(54)(1.5)^{1.5}$

$Q = 266cfs > 263cfs$ ✓ $266 + 138 = 404 > 401$ ✓

USES 54' WIDE w/ CREST = 700

$Q_w = (2.68)(54)(H)^{1.5}$

$Q_w = (144.72)(H)^{1.5}$

E	H = E - 700	Q_w
700	0	0
700.25	0.25	18.09
701	1	144.72
701.5	1.5	266

4/4/2018
5/8/2018
8/14/2018

CANTERA SUBAREA C, LOT 2
PROPOSED - ADDITIONAL STORAGE PROVIDED IN POND C3

ELEVATION	AREA (SQFT)	AREA (ACRE)	AVERAGE AREA (ACRE)	Δ ELEVATION	VOLUME (AC-FT)	Σ VOLUME (AC-FT)
693	283,022.00	6.50				0.00
			6.73	1.00	6.73	
694	303,405.00	6.97				6.73
			7.22	1.00	7.22	
695	325,382.00	7.47				13.95
			7.71	1.00	7.71	
696	346,451.00	7.95				21.66
			8.22	1.00	8.22	
697	369,416.00	8.48				29.88
			8.73	1.00	8.73	
698	391,344.00	8.98				38.61
			9.38	1.00	9.38	
699	425,940.00	9.78				47.99
			10.18	1.00	10.18	
700	461,025.00	10.58				58.17
			10.58	0.25	2.65	
*700.25	461,025.00	10.58				60.82
			10.58	0.75	7.94	
*701	461,025.00	10.58				68.76
			10.58	0.50	5.29	
*701.5	461,025.00	10.58				74.05

*Assumes vertical wall between 700 & 701.5

Cantera Lot 2, Subarea C

Proposed Model (With OUTlOT A DISCHARGE)

Critical Duration Analysis

	TR-20 Structure 39	100-year Storm Event	
		Elevation	Discharge
		39	39
1	5 Min	693.17	1
2	10 Min	693.58	4
3	15 Min	693.84	6
4	30 Min	694.33	9
5	1 Hour	694.80	11
6	2 Hour	696.46	17
7	3 Hour	696.91	23
8	6 Hour	697.54	59
9	12 Hour	698.12	94
10	18 Hour	698.05	90
11	24 Hour	698.38	107
12	48 Hour	698.39	107
13	72 Hour	697.98	86
14	120 Hour	697.88	66
15	240 Hour	697.09	31

Cantera Subarea C. Lot 2
PROPOSED Conditions
100-yr Event
Revised Based on OUTLET A DISCHARGE


```
******************80-80 LIST OF INPUT DATA FOR TR-20 HYDROLOGY******************

JOB TR-20 001                          PASS=     SUMMARY
TITLE     CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE
TITLE     PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DAT)
 5 RAINFL 1              0.05
 8          0.00         0.16         0.33         0.43         0.52
 8          0.60         0.66         0.71         0.75         0.79
 8          0.82         0.84         0.86         0.88         0.90
 8          0.92         0.94         0.96         0.97         0.98
 8          1.00         1.00         1.00         1.00         1.00
 9 ENDTBL
 5 RAINFL 2              0.05
 8          0.00         0.03         0.08         0.12         0.16
 8          0.22         0.29         0.39         0.51         0.62
 8          0.70         0.76         0.81         0.85         0.88
 8          0.91         0.93         0.95         0.97         0.98
 8          1.00         1.00         1.00         1.00         1.00
 9 ENDTBL
 5 RAINFL 3              0.05
 8          0.00         0.03         0.06         0.09         0.12
 8          0.15         0.19         0.23         0.27         0.32
 8          0.38         0.45         0.57         0.70         0.79
 8          0.85         0.89         0.92         0.95         0.97
 8          1.00         1.00         1.00         1.00         1.00
 9 ENDTBL
 5 RAINFL 4              0.05
 8          0.00         0.02         0.05         0.08         0.10
 8          0.13         0.16         0.19         0.22         0.25
 8          0.28         0.32         0.35         0.39         0.45
 8          0.51         0.59         0.72         0.84         0.92
 8          1.00         1.00         1.00         1.00         1.00
 9 ENDTBL
 3 STRUCT      06
 8                       707.0        0.00         0.00           POND-B6 - AEAST
 8                       708.0        8.40         1.11           36" DIA. RCP
 8                       709.0        20.0         2.32           INLET CONTROL
 8                       710.0        38.0         3.63
 8                       711.0        55.0         5.02
 8                       712.0        66.0         6.52           12' WEIR; C=3.0
 8                       712.5        114.0        7.32
 9 ENDTBL
 3 STRUCT      11
 8                       737.5         0.0          0.0
 8                       738.          0.5         .005           DRYBASIN
 8                       739.          1.0         .040
 8                       740.          3.0         .098
 8                       741.          5.0         .176
 8                       742.          7.0         .288
 8                       743.          9.0         .446
 8                       744.         33.9         .566
 9 ENDTBL
 3 STRUCT      07
 8                       700.          0.0          0.0           POND-D7
 8                       701.          4.0         8.59           REINDEER LAKE
 8                       702.          12.        22.08           INCLUDES PONDS F
 8                       703.          18.        36.22           21" DIA RCP
 8                       704.          22.        51.08           INLET CONTROL
```

```
**********80-80 LIST OF INPUT DATA (CONTINUED)**********

 8                    705.         26.        66.65
 8                    705.5        46.        74.81          20' WEIR; C=2.6
 8                    706.         82.        82.97
 8                    706.5       128.        92.99
 9 ENDTBL
 3 STRUCT      39
 8                    693.          0.0         0.0           POND-C2
 8                    694.         7.06        6.73           REVISED STAGE-D
 8                    695.        12.57       13.95            FOR PHASE 1 IM
 8                    696.        16.03       21.66
 8                    696.74      18.12       27.74
 8                    697.        25.03       29.88
 8                    698.        87.74       38.61
 8                    699.       138.39       47.99
 8                    700.       163.48       58.17
 8                    700.25     187.22       60.82
 8                    701.       329.76       68.76
 8                    701.5      460.91       74.05
 9 ENDTBL
 6 RUNOFF 1 091       1 0.0923      75.00       0.84        1         1
 6 RUNOFF 1 092       2 0.1292      80.00       1.00        1         1
 6 ADDHYD 4 093   1 2 3                                     1
 6 RUNOFF 1 094       4 0.0203      65.00       0.91        1         1
 6 RESVOR 2    11 4   5                                       1 1 1 1 1
 6 ADDHYD 4 095   3 5 6
 6 RUNOFF 1 096       1 0.0084      98.00       0.16        1         1
 6 ADDHYD 4 097   6 1 7                                     1
 6 RUNOFF 1 010       4 0.0265      87.00       0.15
 6 ADDHYD 4 098   7 4 1
 6 RESVOR 2     6 1   5                                       1 1 1 1 1
 6 RUNOFF 1 099       7 0.1526      87.00       0.15        1         1
 6 ADDHYD 4 090   5 7 2                                     1
 6 RUNOFF 1 017       7 0.1120      88.00       0.30
 6 ADDHYD 4 013   2 7 1
 6 RESVOR 2     7 1   2                                       1 1 1 1 1
 6 RUNOFF 1 049       7 0.0023      89.00       0.15        1         1
 6 ADDHYD 4 050   2 7 1                                     1
 6 RUNOFF 1 024       7 0.0149      90.00       0.15
 6 ADDHYD 4 017   1 7 2
 6 RUNOFF 1 019       6 0.0618      90.00       0.25
 6 ADDHYD 4 015   2 6 7
 6 RESVOR 2    39 7   1                                       1 1 1 1 1
   ENDATA
 7 INCREM 6            0.008
 7 COMPUT 7 091      39 0.00        0.91        0.09        1 2      01   5-MIN
   ENDCMP 1
 7 COMPUT 7 091      39 0.00        1.67        0.17        1 2      02   10-MIN
   ENDCMP 1
 7 COMPUT 7 091      39 0.00        2.05        0.25        1 2      03   15-MIN
   ENDCMP 1
 7 COMPUT 7 091      39 0.00        2.80        0.50        1 2      04   30-MIN
   ENDCMP 1
 7 COMPUT 7 091      39 0.00        3.56        1.00        1 2      05   1-HR
   ENDCMP 1
 7 INCREM 6            0.10
 7 COMPUT 7 091      39 0.00        4.47        2.00        1 2      06   2-HR
```



```
**********80-80 LIST OF INPUT DATA (CONTINUED)**********

   ENDCMP 1
 7 COMPUT 7 091      39 0.00        4.85        3.00        1 2      07   3-HR
   ENDCMP 1
 7 COMPUT 7 091      39 0.00        5.68        6.00        1 2      08   6-HR
   ENDCMP 1
 7 INCREM 6            0.50
 7 COMPUT 7 091      39 0.00        6.59        12.0        2 2      09   12-HR
   ENDCMP 1
 7 COMPUT 7 091      39 0.00        6.97        18.0        2 2      10   18-HR
   ENDCMP 1
   ENDJOB 2

*******************************END OF 80-80 LIST*******************************
```

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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
12:29:10                    PASS   1   JOB NO.   1                       PAGE   1


EXECUTIVE CONTROL  INCREM    MAIN TIME INCREMENT =   .008 HOURS


EXECUTIVE CONTROL  COMPUT    FROM XSECTION  91  TO STRUCTURE 39           5-MIN
    STARTING TIME =   .00       RAIN DEPTH =   .91       RAIN DURATION =   .09
    ANT. RUNOFF COND. = 2       MAIN TIME INCREMENT =   .008 HOURS
    ALTERNATE NO. = 0           STORM NO. = 1            RAIN TABLE NO. = 1


OPERATION RUNOFF    XSECTION  91

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .57                          1.5 *                        (RUNOFF)
                                        * FIRST POINT OF FLAT PEAK

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                    .02 WATERSHED INCHES;       1 CFS-HRS;        .1 ACRE-FEET.


OPERATION RUNOFF    XSECTION  92

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .66                          6.0 *                        (RUNOFF)
                                        * FIRST POINT OF FLAT PEAK

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                    .06 WATERSHED INCHES;       5 CFS-HRS;        .4 ACRE-FEET.


OPERATION ADDHYD    XSECTION  93

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .63                          7.4                          (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                    .04 WATERSHED INCHES;       6 CFS-HRS;        .5 ACRE-FEET.


OPERATION RUNOFF    XSECTION  94

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                    .00 WATERSHED INCHES;       0 CFS-HRS;        .0 ACRE-FEET.


OPERATION RESVOR    STRUCTURE 11
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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
12:29:10                    PASS   1   JOB NO.   1                       PAGE   2


    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                    .00 WATERSHED INCHES;      -1 CFS-HRS;        .0 ACRE-FEET.


OPERATION RUNOFF    XSECTION  96

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .13                          26.0                         (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                    .70 WATERSHED INCHES;       4 CFS-HRS;        .3 ACRE-FEET.


OPERATION ADDHYD    XSECTION  97

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .13                          26.4                         (NULL)
         .63                           7.4                         (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                    .06 WATERSHED INCHES;      10 CFS-HRS;        .8 ACRE-FEET.


OPERATION RESVOR    STRUCTURE  6

                    HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM = 1
     HRS      MAIN TIME INCREMENT =  .008 hr,      DRAINAGE AREA =    .28 SQ.MI.
      .02 CFS      .00     .01     .02     .03     .06     .11     .18     .27
      .02 ELEV   707.00  707.00  707.00  707.00  707.01  707.01  707.02  707.03
      .08 CFS      .39     .54     .71     .90    1.11    1.33    1.56    1.80
      .08 ELEV   707.05  707.06  707.08  707.11  707.13  707.16  707.19  707.21
      .14 CFS     2.03    2.25    2.46    2.65    2.83    2.99    3.13    3.25
      .14 ELEV   707.24  707.27  707.29  707.32  707.34  707.36  707.37  707.39
      .21 CFS     3.36    3.45    3.53    3.60    3.66    3.71    3.75    3.79
      .21 ELEV   707.40  707.41  707.42  707.43  707.44  707.44  707.45  707.45
      .27 CFS     3.82    3.85    3.87    3.89    3.90    3.92    3.93    3.94
      .27 ELEV   707.45  707.46  707.46  707.46  707.46  707.47  707.47  707.47
      .34 CFS     3.95    3.96    3.97    3.98    3.98    3.99    4.00    4.01
      .34 ELEV   707.47  707.47  707.47  707.47  707.47  707.48  707.48  707.48
      .40 CFS     4.02    4.02    4.03    4.04    4.05    4.06    4.07    4.08
      .40 ELEV   707.48  707.48  707.48  707.48  707.48  707.48  707.48  707.49
      .46 CFS     4.09    4.10    4.12    4.13    4.14    4.15    4.17    4.18
      .46 ELEV   707.49  707.49  707.49  707.49  707.49  707.49  707.50  707.50
      .53 CFS     4.19    4.21    4.22    4.23    4.25    4.26    4.28    4.29
      .53 ELEV   707.50  707.50  707.50  707.50  707.51  707.51  707.51  707.51
      .59 CFS     4.31    4.32    4.34    4.35    4.37    4.38    4.40    4.41
      .59 ELEV   707.51  707.51  707.52  707.52  707.52  707.52  707.52  707.53
      .66 CFS     4.43    4.44    4.46    4.47    4.49    4.50    4.51    4.53
      .66 ELEV   707.53  707.53  707.53  707.53  707.53  707.54  707.54  707.54
      .72 CFS     4.54    4.55    4.57    4.58    4.59    4.60    4.61    4.62
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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
12:29:10                    PASS   1   JOB NO.   1                      PAGE   3

      .72 ELEV   707.54  707.54  707.54  707.54  707.55  707.55  707.55  707.55
      .78 CFS      4.63    4.64    4.65    4.66    4.67    4.68    4.68    4.69
      .78 ELEV   707.55  707.55  707.55  707.55  707.56  707.56  707.56  707.56
      .85 CFS      4.70    4.70    4.71    4.71    4.72    4.72    4.73    4.73
      .85 ELEV   707.56  707.56  707.56  707.56  707.56  707.56  707.56  707.56
      .91 CFS      4.73    4.73    4.74    4.74    4.74    4.74    4.74    4.74
      .91 ELEV   707.56  707.56  707.56  707.56  707.56  707.56  707.56  707.56
      .98 CFS      4.74    4.73    4.73    4.73    4.72    4.72    4.72    4.71
      .98 ELEV   707.56  707.56  707.56  707.56  707.56  707.56  707.56  707.56
     1.04 CFS      4.71    4.70    4.69    4.69    4.68    4.67    4.66    4.66
     1.04 ELEV   707.56  707.56  707.56  707.56  707.56  707.56  707.56  707.55
     1.10 CFS      4.65    4.64    4.63    4.62    4.61    4.60    4.59    4.58
     1.10 ELEV   707.55  707.55  707.55  707.55  707.55  707.55  707.55  707.55
     1.17 CFS      4.57    4.56    4.55    4.54    4.53    4.52    4.50    4.49
     1.17 ELEV   707.54  707.54  707.54  707.54  707.54  707.54  707.54  707.53
     1.23 CFS      4.48    4.47    4.46    4.44    4.43    4.42    4.40    4.39
     1.23 ELEV   707.53  707.53  707.53  707.53  707.53  707.53  707.52  707.52
     1.30 CFS      4.38    4.37    4.35    4.34    4.32    4.31    4.30    4.28
     1.30 ELEV   707.52  707.52  707.52  707.52  707.51  707.51  707.51  707.51
     1.36 CFS      4.27    4.26    4.24    4.23    4.21    4.20    4.18    4.17
     1.36 ELEV   707.51  707.51  707.50  707.50  707.50  707.50  707.50  707.50
     1.42 CFS      4.15    4.14    4.13    4.11    4.10    4.08    4.07    4.05
     1.42 ELEV   707.49  707.49  707.49  707.49  707.49  707.49  707.48  707.48
     1.49 CFS      4.04    4.02    4.01    3.99    3.97    3.96    3.94    3.93
     1.49 ELEV   707.48  707.48  707.48  707.47  707.47  707.47  707.47  707.47
     1.55 CFS      3.91    3.90    3.88    3.87    3.85    3.84    3.82    3.81
     1.55 ELEV   707.47  707.46  707.46  707.46  707.46  707.46  707.46  707.45
     1.62 CFS      3.79    3.78    3.76    3.75    3.73    3.71    3.70    3.68
     1.62 ELEV   707.45  707.45  707.45  707.45  707.44  707.44  707.44  707.44
     1.68 CFS      3.67    3.65    3.64    3.62    3.61    3.59    3.58    3.56
     1.68 ELEV   707.44  707.43  707.43  707.43  707.43  707.43  707.43  707.42
     1.74 CFS      3.55    3.53    3.52    3.50    3.49    3.47    3.46    3.44
     1.74 ELEV   707.42  707.42  707.42  707.42  707.41  707.41  707.41  707.41
     1.81 CFS      3.43    3.41    3.40    3.38    3.37    3.35    3.34    3.32
     1.81 ELEV   707.41  707.41  707.40  707.40  707.40  707.40  707.40  707.40
     1.87 CFS      3.31    3.29    3.28    3.26    3.25    3.23    3.22    3.20
     1.87 ELEV   707.39  707.39  707.39  707.39  707.39  707.38  707.38  707.38
     1.94 CFS      3.19    3.17    3.16    3.15    3.13    3.12    3.10    3.09
     1.94 ELEV   707.38  707.38  707.38  707.37  707.37  707.37  707.37  707.37
     2.00 CFS      3.07    3.06    3.05    3.03    3.02    3.00    2.99    2.98
     2.00 ELEV   707.37  707.36  707.36  707.36  707.36  707.36  707.36  707.35
     2.06 CFS      2.96    2.95    2.94    2.92    2.91    2.89    2.88    2.87
     2.06 ELEV   707.35  707.35  707.35  707.35  707.35  707.34  707.34  707.34
     2.13 CFS      2.85    2.84    2.83    2.81    2.80    2.79    2.77    2.76
     2.13 ELEV   707.34  707.34  707.34  707.34  707.33  707.33  707.33  707.33
     2.19 CFS      2.75    2.74    2.72    2.71    2.70    2.68    2.67    2.66
     2.19 ELEV   707.33  707.33  707.32  707.32  707.32  707.32  707.32  707.32
     2.26 CFS      2.65    2.63    2.62    2.61    2.60    2.58    2.57    2.56
     2.26 ELEV   707.32  707.31  707.31  707.31  707.31  707.31  707.31  707.30
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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
12:29:10                    PASS   1   JOB NO.   1                      PAGE   4

     2.32 CFS      2.55    2.53    2.52    2.51    2.50    2.49    2.47    2.46
     2.32 ELEV   707.30  707.30  707.30  707.30  707.30  707.30  707.29  707.29
     2.38 CFS      2.45    2.44    2.43    2.42    2.40    2.39    2.38    2.37
     2.38 ELEV   707.29  707.29  707.29  707.29  707.29  707.28  707.28  707.28
     2.45 CFS      2.36    2.35    2.33    2.32    2.31    2.30    2.29    2.28
     2.45 ELEV   707.28  707.28  707.28  707.28  707.28  707.27  707.27  707.27
     2.51 CFS      2.27    2.26    2.25    2.23    2.22    2.21    2.20    2.19
     2.51 ELEV   707.27  707.27  707.27  707.27  707.26  707.26  707.26  707.26
     2.58 CFS      2.18    2.17    2.16    2.15    2.14    2.13    2.12    2.11
     2.58 ELEV   707.26  707.26  707.26  707.26  707.25  707.25  707.25  707.25
     2.64 CFS      2.10    2.09    2.08    2.07    2.06    2.05    2.04    2.03
     2.64 ELEV   707.25  707.25  707.25  707.25  707.24  707.24  707.24  707.24
     2.70 CFS      2.02    2.01    2.00    1.99    1.98    1.97    1.96    1.95
     2.70 ELEV   707.24  707.24  707.24  707.24  707.24  707.23  707.23  707.23
     2.77 CFS      1.94    1.93    1.92    1.91    1.90    1.89    1.88    1.87
     2.77 ELEV   707.23  707.23  707.23  707.23  707.23  707.23  707.22  707.22
     2.83 CFS      1.86    1.85    1.84    1.84    1.83    1.82    1.81    1.80
     2.83 ELEV   707.22  707.22  707.22  707.22  707.22  707.22  707.22  707.21
     2.90 CFS      1.79    1.78    1.77    1.76    1.76    1.75    1.74    1.73
     2.90 ELEV   707.21  707.21  707.21  707.21  707.21  707.21  707.21  707.21
     2.96 CFS      1.72    1.71    1.70    1.70    1.69    1.68    1.67    1.66
     2.96 ELEV   707.20  707.20  707.20  707.20  707.20  707.20  707.20  707.20
     3.02 CFS      1.65    1.65    1.64    1.63    1.62    1.61    1.60    1.60
     3.02 ELEV   707.20  707.20  707.19  707.19  707.19  707.19  707.19  707.19
     3.09 CFS      1.59    1.58    1.57    1.57    1.56    1.55    1.54    1.53
     3.09 ELEV   707.19  707.19  707.19  707.19  707.19  707.18  707.18  707.18
     3.15 CFS      1.53    1.52    1.51    1.50    1.50    1.49
     3.15 ELEV   707.18  707.18  707.18  707.18  707.18  707.18

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                    .06 WATERSHED INCHES;      10 CFS-HRS;        .8 ACRE-FEET.

    DURATION(HRS)   2      3
    FLOW(CFS)       3      1 TRUNCATED

 --- STRUCTURE  6, ALTERNATE  0, STORM  1, HYDROGRAPH ADDED TO READHD FILE ---


OPERATION RUNOFF    XSECTION  99

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .14                          127.0                       (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                    .18 WATERSHED INCHES;      17 CFS-HRS;       1.4 ACRE-FEET.


OPERATION ADDHYD    XSECTION  90
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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
12:29:10                    PASS   1   JOB NO.   1                      PAGE   5


    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .14                         128.8                        (NULL)
         .95                           4.7 *                      (NULL)
                                         * FIRST POINT OF FLAT PEAK

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .10 WATERSHED INCHES;      28 CFS-HRS;       2.3 ACRE-FEET.


OPERATION RESVOR    STRUCTURE  7

                  HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM = 1
     HRS      MAIN TIME INCREMENT =   .008 hr,      DRAINAGE AREA =    .54 SQ.MI.
      .04 CFS      .00     .01     .01     .02     .03     .05     .08     .10
      .04 ELEV   700.00  700.00  700.00  700.01  700.01  700.01  700.02  700.03
      .10 CFS      .14     .18     .22     .26     .31     .36     .41     .46
      .10 ELEV   700.03  700.04  700.05  700.07  700.08  700.09  700.10  700.12
      .17 CFS      .51     .56     .61     .65     .69     .73     .76     .80
      .17 ELEV   700.13  700.14  700.15  700.16  700.17  700.18  700.19  700.20
      .23 CFS      .83     .86     .89     .92     .94     .96     .99    1.01
      .23 ELEV   700.21  700.22  700.22  700.23  700.24  700.24  700.25  700.25
      .30 CFS     1.03    1.05    1.06    1.08    1.09    1.11    1.12    1.13
      .30 ELEV   700.26  700.26  700.27  700.27  700.27  700.28  700.28  700.28
      .36 CFS     1.14    1.15    1.16    1.17    1.18    1.18    1.19    1.20
      .36 ELEV   700.29  700.29  700.29  700.29  700.29  700.30  700.30  700.30
      .42 CFS     1.20    1.21    1.21    1.22    1.22    1.23    1.23    1.24
      .42 ELEV   700.30  700.30  700.30  700.30  700.31  700.31  700.31  700.31
      .49 CFS     1.24    1.24    1.25    1.25    1.25    1.26    1.26    1.26
      .49 ELEV   700.31  700.31  700.31  700.31  700.31  700.31  700.31  700.32
      .55 CFS     1.26    1.27    1.27    1.27    1.27    1.27    1.28    1.28
      .55 ELEV   700.32  700.32  700.32  700.32  700.32  700.32  700.32  700.32
      .62 CFS     1.28    1.28    1.28    1.28    1.29    1.29    1.29    1.29
      .62 ELEV   700.32  700.32  700.32  700.32  700.32  700.32  700.32  700.32
      .68 CFS     1.29    1.29    1.29    1.30    1.30    1.30    1.30    1.30
      .68 ELEV   700.32  700.32  700.32  700.32  700.32  700.32  700.33  700.33
      .74 CFS     1.30    1.30    1.31    1.31    1.31    1.31    1.31    1.31
      .74 ELEV   700.33  700.33  700.33  700.33  700.33  700.33  700.33  700.33
      .81 CFS     1.31    1.31    1.31    1.32    1.32    1.32    1.32    1.32
      .81 ELEV   700.33  700.33  700.33  700.33  700.33  700.33  700.33  700.33
      .87 CFS     1.32    1.32    1.32    1.33    1.33    1.33    1.33    1.33
      .87 ELEV   700.33  700.33  700.33  700.33  700.33  700.33  700.33  700.33
      .94 CFS     1.33    1.33    1.33    1.33    1.33    1.34    1.34    1.34
      .94 ELEV   700.33  700.33  700.33  700.33  700.33  700.33  700.33  700.33
     1.00 CFS     1.34    1.34    1.34    1.34    1.34    1.34    1.35    1.35
     1.00 ELEV   700.33  700.34  700.34  700.34  700.34  700.34  700.34  700.34
     1.06 CFS     1.35    1.35    1.35    1.35    1.35    1.35    1.35    1.35
     1.06 ELEV   700.34  700.34  700.34  700.34  700.34  700.34  700.34  700.34
     1.13 CFS     1.36    1.36    1.36    1.36    1.36    1.36    1.36    1.36
     1.13 ELEV   700.34  700.34  700.34  700.34  700.34  700.34  700.34  700.34
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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
12:29:10                    PASS   1   JOB NO.   1                      PAGE   6

     1.19 CFS     1.36    1.36    1.37    1.37    1.37    1.37    1.37    1.37
     1.19 ELEV   700.34  700.34  700.34  700.34  700.34  700.34  700.34  700.34
     1.26 CFS     1.37    1.37    1.37    1.37    1.37    1.38    1.38    1.38
     1.26 ELEV   700.34  700.34  700.34  700.34  700.34  700.34  700.34  700.34
     1.32 CFS     1.38    1.38    1.38    1.38    1.38    1.38    1.38    1.38
     1.32 ELEV   700.34  700.34  700.35  700.35  700.35  700.35  700.35  700.35
     1.38 CFS     1.39    1.39    1.39    1.39    1.39    1.39    1.39    1.39
     1.38 ELEV   700.35  700.35  700.35  700.35  700.35  700.35  700.35  700.35
     1.45 CFS     1.39    1.39    1.39    1.40    1.40    1.40    1.40    1.40
     1.45 ELEV   700.35  700.35  700.35  700.35  700.35  700.35  700.35  700.35
     1.51 CFS     1.40    1.40    1.40    1.40    1.40    1.40    1.40    1.40
     1.51 ELEV   700.35  700.35  700.35  700.35  700.35  700.35  700.35  700.35
     1.58 CFS     1.41    1.41    1.41    1.41    1.41    1.41    1.41    1.41
     1.58 ELEV   700.35  700.35  700.35  700.35  700.35  700.35  700.35  700.35
     1.64 CFS     1.41    1.41    1.41    1.41    1.41    1.41    1.42    1.42
     1.64 ELEV   700.35  700.35  700.35  700.35  700.35  700.35  700.35  700.35
     1.70 CFS     1.42    1.42    1.42    1.42    1.42    1.42    1.42    1.42
     1.70 ELEV   700.35  700.35  700.35  700.35  700.35  700.36  700.36  700.36
     1.77 CFS     1.42    1.42    1.42    1.42    1.42    1.43    1.43    1.43
     1.77 ELEV   700.36  700.36  700.36  700.36  700.36  700.36  700.36  700.36
     1.83 CFS     1.43    1.43    1.43    1.43    1.43    1.43    1.43    1.43
     1.83 ELEV   700.36  700.36  700.36  700.36  700.36  700.36  700.36  700.36
     1.90 CFS     1.43    1.43    1.43    1.43    1.43    1.43    1.43    1.44
     1.90 ELEV   700.36  700.36  700.36  700.36  700.36  700.36  700.36  700.36
     1.96 CFS     1.44    1.44    1.44    1.44    1.44    1.44    1.44    1.44
     1.96 ELEV   700.36  700.36  700.36  700.36  700.36  700.36  700.36  700.36
     2.02 CFS     1.44    1.44    1.44    1.44    1.44    1.44    1.44    1.44
     2.02 ELEV   700.36  700.36  700.36  700.36  700.36  700.36  700.36  700.36
     2.09 CFS     1.44    1.44    1.44    1.45    1.45    1.45    1.45    1.45
     2.09 ELEV   700.36  700.36  700.36  700.36  700.36  700.36  700.36  700.36
     2.15 CFS     1.45    1.45    1.45    1.45    1.45    1.45    1.45    1.45
     2.15 ELEV   700.36  700.36  700.36  700.36  700.36  700.36  700.36  700.36
     2.22 CFS     1.45    1.45    1.45    1.45    1.45    1.45    1.45    1.45
     2.22 ELEV   700.36  700.36  700.36  700.36  700.36  700.36  700.36  700.36
     2.28 CFS     1.45    1.45    1.45    1.45    1.45    1.46    1.46    1.46
     2.28 ELEV   700.36  700.36  700.36  700.36  700.36  700.36  700.36  700.36
     2.34 CFS     1.46    1.46    1.46    1.46    1.46    1.46    1.46    1.46
     2.34 ELEV   700.36  700.36  700.36  700.36  700.36  700.36  700.36  700.36
     2.41 CFS     1.46    1.46    1.46    1.46    1.46    1.46    1.46    1.46
     2.41 ELEV   700.36  700.36  700.36  700.36  700.36  700.37  700.37  700.37
     2.47 CFS     1.46    1.46    1.46    1.46    1.46    1.46    1.46    1.46
     2.47 ELEV   700.37  700.37  700.37  700.37  700.37  700.37  700.37  700.37
     2.54 CFS     1.46    1.46    1.46    1.46    1.46    1.46    1.46    1.46
     2.54 ELEV   700.37  700.37  700.37  700.37  700.37  700.37  700.37  700.37
     2.60 CFS     1.46    1.47    1.47    1.47    1.47    1.47    1.47    1.47
     2.60 ELEV   700.37  700.37  700.37  700.37  700.37  700.37  700.37  700.37
     2.66 CFS     1.47    1.47    1.47    1.47    1.47    1.47    1.47    1.47
     2.66 ELEV   700.37  700.37  700.37  700.37  700.37  700.37  700.37  700.37
     2.73 CFS     1.47    1.47    1.47    1.47    1.47    1.47    1.47    1.47
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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
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     2.73 ELEV   700.37  700.37  700.37  700.37  700.37  700.37  700.37  700.37
     2.79 CFS      1.47    1.47    1.47    1.47    1.47    1.47    1.47    1.47
     2.79 ELEV   700.37  700.37  700.37  700.37  700.37  700.37  700.37  700.37
     2.86 CFS      1.47    1.47    1.47    1.47    1.47    1.47    1.47    1.47
     2.86 ELEV   700.37  700.37  700.37  700.37  700.37  700.37  700.37  700.37
     2.92 CFS      1.47    1.47    1.47    1.47    1.47    1.47    1.47    1.47
     2.92 ELEV   700.37  700.37  700.37  700.37  700.37  700.37  700.37  700.37
     2.98 CFS      1.47    1.47    1.47    1.47    1.47    1.47    1.47    1.47
     2.98 ELEV   700.37  700.37  700.37  700.37  700.37  700.37  700.37  700.37
     3.05 CFS      1.47    1.47    1.47    1.47    1.47    1.47    1.47    1.47
     3.05 ELEV   700.37  700.37  700.37  700.37  700.37  700.37  700.37  700.37
     3.11 CFS      1.47    1.47    1.47    1.47    1.47    1.47    1.47    1.47
     3.11 ELEV   700.37  700.37  700.37  700.37  700.37  700.37  700.37  700.37
     3.18 CFS      1.47    1.47    1.47
     3.18 ELEV   700.37  700.37  700.37

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .01 WATERSHED INCHES;       4 CFS-HRS;        .3 ACRE-FEET.

 --- STRUCTURE  7, ALTERNATE  0, STORM  1, HYDROGRAPH ADDED TO READHD FILE ---


OPERATION RUNOFF    XSECTION  49

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .14                         2.5                          (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .23 WATERSHED INCHES;       0 CFS-HRS;        .0 ACRE-FEET.


OPERATION ADDHYD    XSECTION  50

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .14                         2.8                          (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .01 WATERSHED INCHES;       4 CFS-HRS;        .4 ACRE-FEET.


OPERATION RESVOR    STRUCTURE 39

                  HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM = 1
     HRS      MAIN TIME INCREMENT =   .008 hr,      DRAINAGE AREA =    .62 SQ.MI.
      .04 CFS      .00     .01     .01     .02     .03     .04     .06     .08
      .04 ELEV   693.00  693.00  693.00  693.00  693.00  693.01  693.01  693.01
      .10 CFS      .10     .13     .16     .20     .24     .28     .32     .36
      .10 ELEV   693.01  693.02  693.02  693.03  693.03  693.04  693.05  693.05
      .17 CFS      .41     .45     .49     .54     .58     .62     .66     .70
      .17 ELEV   693.06  693.06  693.07  693.08  693.08  693.09  693.09  693.10
      .23 CFS      .73     .77     .80     .83     .86     .88     .91     .93
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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
12:29:10                    PASS   1   JOB NO.   1                      PAGE   8

      .23 ELEV   693.10  693.11  693.11  693.12  693.12  693.13  693.13  693.13
      .30 CFS       .95     .97     .98    1.00    1.01    1.03    1.04    1.05
      .30 ELEV   693.13  693.14  693.14  693.14  693.14  693.15  693.15  693.15
      .36 CFS      1.06    1.07    1.07    1.08    1.09    1.09    1.10    1.10
      .36 ELEV   693.15  693.15  693.15  693.15  693.15  693.15  693.16  693.16
      .42 CFS      1.11    1.11    1.12    1.12    1.13    1.13    1.13    1.13
      .42 ELEV   693.16  693.16  693.16  693.16  693.16  693.16  693.16  693.16
      .49 CFS      1.14    1.14    1.14    1.14    1.14    1.15    1.15    1.15
      .49 ELEV   693.16  693.16  693.16  693.16  693.16  693.16  693.16  693.16
      .55 CFS      1.15    1.15    1.15    1.15    1.15    1.15    1.16    1.16
      .55 ELEV   693.16  693.16  693.16  693.16  693.16  693.16  693.16  693.16
      .62 CFS      1.16    1.16    1.16    1.16    1.16    1.16    1.16    1.16
      .62 ELEV   693.16  693.16  693.16  693.16  693.16  693.16  693.16  693.16
      .68 CFS      1.16    1.16    1.16    1.16    1.16    1.16    1.16    1.16
      .68 ELEV   693.16  693.16  693.16  693.16  693.16  693.16  693.16  693.16
      .74 CFS      1.16    1.16    1.16    1.16    1.16    1.16    1.16    1.16
      .74 ELEV   693.16  693.16  693.16  693.16  693.16  693.16  693.16  693.16
      .81 CFS      1.16    1.16    1.16    1.17    1.17    1.17    1.17    1.17
      .81 ELEV   693.16  693.16  693.16  693.17  693.17  693.17  693.17  693.17
      .87 CFS      1.17    1.17    1.17    1.17    1.17    1.17    1.17    1.17
      .87 ELEV   693.17  693.17  693.17  693.17  693.17  693.17  693.17  693.17
      .94 CFS      1.17    1.17    1.17    1.17    1.17    1.17    1.17    1.17
      .94 ELEV   693.17  693.17  693.17  693.17  693.17  693.17  693.17  693.17
     1.00 CFS      1.17    1.17    1.17    1.17    1.17    1.17    1.17    1.17
     1.00 ELEV   693.17  693.17  693.17  693.17  693.17  693.17  693.17  693.17
     1.06 CFS      1.17    1.17    1.17    1.17    1.17    1.17    1.17    1.17
     1.06 ELEV   693.17  693.17  693.17  693.17  693.17  693.17  693.17  693.17
     1.13 CFS      1.17    1.17    1.17    1.17    1.17    1.17    1.17    1.17
     1.13 ELEV   693.17  693.17  693.17  693.17  693.17  693.17  693.17  693.17
     1.19 CFS      1.17    1.17    1.17    1.17    1.17    1.17    1.17    1.17
     1.19 ELEV   693.17  693.17  693.17  693.17  693.17  693.17  693.17  693.17
     1.26 CFS      1.17    1.17    1.17    1.17    1.17    1.17    1.17    1.17
     1.26 ELEV   693.17  693.17  693.17  693.17  693.17  693.17  693.17  693.17
     1.32 CFS      1.17    1.17    1.17    1.17    1.17    1.17    1.17    1.17
     1.32 ELEV   693.17  693.17  693.17  693.17  693.17  693.17  693.17  693.17
     1.38 CFS      1.17    1.17    1.17    1.17    1.17    1.17    1.17    1.17
     1.38 ELEV   693.17  693.17  693.17  693.17  693.17  693.17  693.17  693.17
     1.45 CFS      1.17    1.18    1.18    1.18    1.18    1.18    1.18    1.18
     1.45 ELEV   693.17  693.17  693.17  693.17  693.17  693.17  693.17  693.17
     1.51 CFS      1.18    1.18    1.18    1.18    1.18    1.18    1.18    1.18
     1.51 ELEV   693.17  693.17  693.17  693.17  693.17  693.17  693.17  693.17
     1.58 CFS      1.18    1.18    1.18    1.18    1.18    1.18    1.18    1.18
     1.58 ELEV   693.17  693.17  693.17  693.17  693.17  693.17  693.17  693.17
     1.64 CFS      1.18    1.18    1.18    1.18    1.18    1.18    1.18    1.18
     1.64 ELEV   693.17  693.17  693.17  693.17  693.17  693.17  693.17  693.17
     1.70 CFS      1.18    1.18    1.18    1.18    1.18    1.18    1.18    1.18
     1.70 ELEV   693.17  693.17  693.17  693.17  693.17  693.17  693.17  693.17
     1.77 CFS      1.18    1.18    1.18    1.18    1.18    1.18    1.18    1.18
     1.77 ELEV   693.17  693.17  693.17  693.17  693.17  693.17  693.17  693.17
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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
12:29:10                    PASS   1   JOB NO.   1                      PAGE   9

     1.83 CFS      1.18    1.18    1.18    1.18    1.18    1.18    1.18    1.18
     1.83 ELEV   693.17  693.17  693.17  693.17  693.17  693.17  693.17  693.17
     1.90 CFS      1.18    1.18    1.18    1.18    1.18    1.18    1.19    1.19
     1.90 ELEV   693.17  693.17  693.17  693.17  693.17  693.17  693.17  693.17
     1.96 CFS      1.19    1.19    1.19    1.19    1.19    1.19    1.19    1.19
     1.96 ELEV   693.17  693.17  693.17  693.17  693.17  693.17  693.17  693.17
     2.02 CFS      1.19    1.19    1.19    1.19    1.19    1.19    1.19    1.19
     2.02 ELEV   693.17  693.17  693.17  693.17  693.17  693.17  693.17  693.17
     2.09 CFS      1.19    1.19    1.19    1.19    1.19    1.19    1.19    1.19
     2.09 ELEV   693.17  693.17  693.17  693.17  693.17  693.17  693.17  693.17
     2.15 CFS      1.19    1.19    1.19    1.19    1.19    1.19    1.19    1.19
     2.15 ELEV   693.17  693.17  693.17  693.17  693.17  693.17  693.17  693.17
     2.22 CFS      1.19    1.19    1.19    1.19    1.19    1.19    1.19    1.19
     2.22 ELEV   693.17  693.17  693.17  693.17  693.17  693.17  693.17  693.17
     2.28 CFS      1.19    1.19    1.19    1.19    1.19    1.19    1.19    1.19
     2.28 ELEV   693.17  693.17  693.17  693.17  693.17  693.17  693.17  693.17
     2.34 CFS      1.19    1.19    1.19    1.19    1.19    1.19    1.20    1.20
     2.34 ELEV   693.17  693.17  693.17  693.17  693.17  693.17  693.17  693.17
     2.41 CFS      1.20    1.20    1.20    1.20    1.20    1.20    1.20    1.20
     2.41 ELEV   693.17  693.17  693.17  693.17  693.17  693.17  693.17  693.17
     2.47 CFS      1.20    1.20    1.20    1.20    1.20    1.20    1.20    1.20
     2.47 ELEV   693.17  693.17  693.17  693.17  693.17  693.17  693.17  693.17
     2.54 CFS      1.20    1.20    1.20    1.20    1.20    1.20    1.20    1.20
     2.54 ELEV   693.17  693.17  693.17  693.17  693.17  693.17  693.17  693.17
     2.60 CFS      1.20    1.20    1.20    1.20    1.20    1.20    1.20    1.20
     2.60 ELEV   693.17  693.17  693.17  693.17  693.17  693.17  693.17  693.17
     2.66 CFS      1.20    1.20    1.20    1.20    1.20    1.20    1.20    1.20
     2.66 ELEV   693.17  693.17  693.17  693.17  693.17  693.17  693.17  693.17
     2.73 CFS      1.20    1.20    1.20    1.20    1.20    1.20    1.20    1.20
     2.73 ELEV   693.17  693.17  693.17  693.17  693.17  693.17  693.17  693.17
     2.79 CFS      1.20    1.20    1.20    1.20    1.21    1.21    1.21    1.21
     2.79 ELEV   693.17  693.17  693.17  693.17  693.17  693.17  693.17  693.17
     2.86 CFS      1.21    1.21    1.21    1.21    1.21    1.21    1.21    1.21
     2.86 ELEV   693.17  693.17  693.17  693.17  693.17  693.17  693.17  693.17
     2.92 CFS      1.21    1.21    1.21    1.21    1.21    1.21    1.21    1.21
     2.92 ELEV   693.17  693.17  693.17  693.17  693.17  693.17  693.17  693.17
     2.98 CFS      1.21    1.21    1.21    1.21    1.21    1.21    1.21    1.21
     2.98 ELEV   693.17  693.17  693.17  693.17  693.17  693.17  693.17  693.17
     3.05 CFS      1.21    1.21    1.21    1.21    1.21    1.21    1.21    1.21
     3.05 ELEV   693.17  693.17  693.17  693.17  693.17  693.17  693.17  693.17
     3.11 CFS      1.21    1.21    1.21    1.21    1.21    1.21    1.21    1.21
     3.11 ELEV   693.17  693.17  693.17  693.17  693.17  693.17  693.17  693.17
     3.18 CFS      1.21    1.21    1.21
     3.18 ELEV   693.17  693.17  693.17

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                    .01 WATERSHED INCHES;       4 CFS-HRS;        .3 ACRE-FEET.

 --- STRUCTURE 39, ALTERNATE  0, STORM  1, HYDROGRAPH ADDED TO READHD FILE ---
```



```
TR20 ------------------------------------------------------------------------ SCS -
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EXECUTIVE CONTROL  ENDCMP    COMPUTATIONS COMPLETED FOR PASS   1


EXECUTIVE CONTROL  COMPUT    FROM XSECTION  91  TO STRUCTURE 39           10-MIN
    STARTING TIME =   .00       RAIN DEPTH =  1.67       RAIN DURATION =   .17
    ANT. RUNOFF COND. = 2       MAIN TIME INCREMENT =   .008 HOURS
    ALTERNATE NO. = 0           STORM NO. = 2            RAIN TABLE NO. = 1


OPERATION RUNOFF    XSECTION  91

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .60                          20.2                       (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                    .23 WATERSHED INCHES;      14 CFS-HRS;       1.1 ACRE-FEET.


OPERATION RUNOFF    XSECTION  92

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .69                          38.3                       (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                    .37 WATERSHED INCHES;      31 CFS-HRS;       2.6 ACRE-FEET.


OPERATION ADDHYD    XSECTION  93

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .64                          57.8                       (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                    .31 WATERSHED INCHES;      45 CFS-HRS;       3.7 ACRE-FEET.


OPERATION RUNOFF    XSECTION  94

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .66                          1.0 *                      (RUNOFF)
                                        * FIRST POINT OF FLAT PEAK

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                    .06 WATERSHED INCHES;       1 CFS-HRS;        .1 ACRE-FEET.
```

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TR20 ------------------------------------------------------------------------ SCS -
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OPERATION RESVOR    STRUCTURE 11

                    HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM = 2
     HRS      MAIN TIME INCREMENT =  .008 hr,      DRAINAGE AREA =    .02 SQ.MI.
      .14 CFS       .00     .01     .01     .01     .01     .02     .02     .02
      .14 ELEV   737.50  737.51  737.51  737.51  737.51  737.52  737.52  737.52
      .21 CFS       .03     .03     .04     .04     .05     .05     .06     .07
      .21 ELEV   737.53  737.53  737.54  737.54  737.55  737.55  737.56  737.57
      .27 CFS       .08     .09     .09     .10     .11     .13     .14     .15
      .27 ELEV   737.58  737.59  737.59  737.60  737.61  737.63  737.64  737.65
      .34 CFS       .16     .17     .19     .20     .22     .23     .25     .27
      .34 ELEV   737.66  737.67  737.69  737.70  737.72  737.73  737.75  737.77
      .40 CFS       .28     .30     .32     .34     .36     .38     .40     .42
      .40 ELEV   737.78  737.80  737.82  737.84  737.86  737.88  737.90  737.92
      .46 CFS       .44     .46     .48     .50     .50     .51     .51     .51
      .46 ELEV   737.94  737.96  737.98  738.00  738.01  738.01  738.02  738.03
      .53 CFS       .52     .52     .53     .53     .53     .54     .54     .55
      .53 ELEV   738.04  738.04  738.05  738.06  738.07  738.08  738.09  738.09
      .59 CFS       .55     .56     .56     .56     .57     .57     .58     .58
      .59 ELEV   738.10  738.11  738.12  738.13  738.14  738.15  738.16  738.16
      .66 CFS       .59     .59     .60     .60     .60     .61     .61     .62
      .66 ELEV   738.17  738.18  738.19  738.20  738.21  738.22  738.22  738.23
      .72 CFS       .62     .62     .63     .63     .63     .64     .64     .64
      .72 ELEV   738.24  738.25  738.25  738.26  738.27  738.27  738.28  738.29
      .78 CFS       .65     .65     .65     .65     .66     .66     .66     .66
      .78 ELEV   738.29  738.30  738.30  738.31  738.31  738.32  738.32  738.33
      .85 CFS       .67     .67     .67     .67     .67     .67     .67     .68
      .85 ELEV   738.33  738.34  738.34  738.34  738.34  738.35  738.35  738.35
      .91 CFS       .68     .68     .68     .68     .68     .68     .68     .68
      .91 ELEV   738.35  738.35  738.35  738.36  738.36  738.36  738.36  738.36
      .98 CFS       .68     .68     .68     .67     .67     .67     .67     .67
      .98 ELEV   738.35  738.35  738.35  738.35  738.35  738.35  738.34  738.34
     1.04 CFS       .67     .67     .67     .66     .66     .66     .66     .65
     1.04 ELEV   738.34  738.33  738.33  738.33  738.32  738.32  738.31  738.31
     1.10 CFS       .65     .65     .65     .65     .64     .64     .64     .63
     1.10 ELEV   738.31  738.30  738.30  738.29  738.29  738.28  738.28  738.27
     1.17 CFS       .63     .63     .63     .62     .62     .62     .61     .61
     1.17 ELEV   738.26  738.26  738.25  738.25  738.24  738.23  738.23  738.22
     1.23 CFS       .61     .61     .60     .60     .60     .59     .59     .59
     1.23 ELEV   738.22  738.21  738.20  738.20  738.19  738.18  738.18  738.17
     1.30 CFS       .58     .58     .58     .57     .57     .57     .56     .56
     1.30 ELEV   738.17  738.16  738.15  738.15  738.14  738.13  738.12  738.12
     1.36 CFS       .56     .55     .55     .55     .54     .54     .53     .53
     1.36 ELEV   738.11  738.10  738.10  738.09  738.08  738.08  738.07  738.06
     1.42 CFS       .53     .52     .52     .52     .51     .51     .51     .50
     1.42 ELEV   738.06  738.05  738.04  738.03  738.03  738.02  738.01  738.01
     1.49 CFS       .50     .48     .45     .43     .41     .39     .38     .36
     1.49 ELEV   738.00  737.98  737.95  737.93  737.91  737.89  737.88  737.86
     1.55 CFS       .34     .33     .31     .30     .29     .28     .26     .25
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TR20 ------------------------------------------------------------------------ SCS -
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     1.55 ELEV   737.84  737.83  737.81  737.80  737.79  737.78  737.76  737.75
     1.62 CFS       .24     .23     .22     .21     .21     .20     .19     .18
     1.62 ELEV   737.74  737.73  737.72  737.71  737.71  737.70  737.69  737.68
     1.68 CFS       .18     .17     .16     .16     .15     .15     .14     .14
     1.68 ELEV   737.68  737.67  737.66  737.66  737.65  737.65  737.64  737.64
     1.74 CFS       .13     .13     .12     .12     .11     .11     .11     .10
     1.74 ELEV   737.63  737.63  737.62  737.62  737.61  737.61  737.61  737.60
     1.81 CFS       .10     .10     .09     .09     .09     .09     .08     .08
     1.81 ELEV   737.60  737.60  737.59  737.59  737.59  737.59  737.58  737.58
     1.87 CFS       .08     .08     .07     .07     .07     .07     .07     .06
     1.87 ELEV   737.58  737.58  737.57  737.57  737.57  737.57  737.57  737.56
     1.94 CFS       .06     .06     .06     .06     .05     .05     .05     .05
     1.94 ELEV   737.56  737.56  737.56  737.56  737.55  737.55  737.55  737.55
     2.00 CFS       .05     .05     .05     .05     .04     .04     .04     .04
     2.00 ELEV   737.55  737.55  737.55  737.55  737.54  737.54  737.54  737.54
     2.06 CFS       .04     .04     .04     .04     .04     .03     .03     .03
     2.06 ELEV   737.54  737.54  737.54  737.54  737.54  737.53  737.53  737.53
     2.13 CFS       .03     .03     .03     .03     .03     .03     .03     .03
     2.13 ELEV   737.53  737.53  737.53  737.53  737.53  737.53  737.53  737.53
     2.19 CFS       .03     .03     .03     .02     .02     .02     .02     .02
     2.19 ELEV   737.53  737.53  737.53  737.52  737.52  737.52  737.52  737.52
     2.26 CFS       .02     .02     .02     .02     .02     .02     .02     .02
     2.26 ELEV   737.52  737.52  737.52  737.52  737.52  737.52  737.52  737.52
     2.32 CFS       .02     .02     .02     .02     .02     .02     .02     .01
     2.32 ELEV   737.52  737.52  737.52  737.52  737.52  737.52  737.52  737.52
     2.38 CFS       .01     .01     .01     .01     .01     .01     .01     .01
     2.38 ELEV   737.51  737.51  737.51  737.51  737.51  737.51  737.51  737.51
     2.45 CFS       .01     .01     .01     .01     .01     .01     .01     .01
     2.45 ELEV   737.51  737.51  737.51  737.51  737.51  737.51  737.51  737.51
     2.51 CFS       .01     .01     .01     .01     .01     .01     .01     .01
     2.51 ELEV   737.51  737.51  737.51  737.51  737.51  737.51  737.51  737.51
     2.58 CFS       .01     .01     .01     .01     .01     .01     .01     .01
     2.58 ELEV   737.51  737.51  737.51  737.51  737.51  737.51  737.51  737.51
     2.64 CFS       .01     .01     .00
     2.64 ELEV   737.51  737.51  737.50

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                    .06 WATERSHED INCHES;       1 CFS-HRS;        .1 ACRE-FEET.

    DURATION(HRS)   2      1
    FLOW(CFS)       3      0

 --- STRUCTURE 11, ALTERNATE  0, STORM  2, HYDROGRAPH ADDED TO READHD FILE ---


OPERATION RUNOFF    XSECTION  96

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .14                          44.1                        (RUNOFF)
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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
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    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                1.45 WATERSHED INCHES;       8 CFS-HRS;        .6 ACRE-FEET.


OPERATION ADDHYD    XSECTION  97

    PEAK TIME(HRS)            PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .15                        47.1                        (NULL)
         .64                        58.4                        (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                 .33 WATERSHED INCHES;      54 CFS-HRS;       4.4 ACRE-FEET.


OPERATION RESVOR    STRUCTURE  6

                   HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM = 2
     HRS      MAIN TIME INCREMENT =  .008 hr,      DRAINAGE AREA =    .28 SQ.MI.
      .02 CFS       .00     .01     .02     .05     .11     .19     .31     .47
      .02 ELEV   707.00  707.00  707.00  707.01  707.01  707.02  707.04  707.06
      .08 CFS       .69     .96    1.29    1.66    2.09    2.55    3.03    3.54
      .08 ELEV   707.08  707.11  707.15  707.20  707.25  707.30  707.36  707.42
      .14 CFS      4.06    4.59    5.11    5.62    6.12    6.60    7.06    7.50
      .14 ELEV   707.48  707.55  707.61  707.67  707.73  707.79  707.84  707.89
      .21 CFS      7.92    8.32    8.76    9.20    9.61    9.99   10.34   10.66
      .21 ELEV   707.94  707.99  708.03  708.07  708.10  708.14  708.17  708.19
      .27 CFS     10.95   11.21   11.45   11.68   11.88   12.07   12.25   12.42
      .27 ELEV   708.22  708.24  708.26  708.28  708.30  708.32  708.33  708.35
      .34 CFS     12.58   12.74   12.89   13.04   13.20   13.35   13.51   13.67
      .34 ELEV   708.36  708.37  708.39  708.40  708.41  708.43  708.44  708.45
      .40 CFS     13.83   14.00   14.17   14.34   14.52   14.71   14.90   15.09
      .40 ELEV   708.47  708.48  708.50  708.51  708.53  708.54  708.56  708.58
      .46 CFS     15.29   15.50   15.71   15.92   16.14   16.36   16.58   16.81
      .46 ELEV   708.59  708.61  708.63  708.65  708.67  708.69  708.71  708.72
      .53 CFS     17.04   17.27   17.51   17.75   17.99   18.23   18.47   18.71
      .53 ELEV   708.74  708.77  708.79  708.81  708.83  708.85  708.87  708.89
      .59 CFS     18.96   19.20   19.45   19.69   19.93   20.25   20.60   20.94
      .59 ELEV   708.91  708.93  708.95  708.97  708.99  709.01  709.03  709.05
      .66 CFS     21.28   21.61   21.94   22.27   22.59   22.91   23.23   23.53
      .66 ELEV   709.07  709.09  709.11  709.13  709.14  709.16  709.18  709.20
      .72 CFS     23.84   24.13   24.42   24.71   24.99   25.26   25.52   25.78
      .72 ELEV   709.21  709.23  709.25  709.26  709.28  709.29  709.31  709.32
      .78 CFS     26.03   26.27   26.51   26.74   26.96   27.17   27.37   27.57
      .78 ELEV   709.33  709.35  709.36  709.37  709.39  709.40  709.41  709.42
      .85 CFS     27.76   27.94   28.11   28.27   28.43   28.58   28.72   28.85
      .85 ELEV   709.43  709.44  709.45  709.46  709.47  709.48  709.48  709.49
      .91 CFS     28.97   29.09   29.19   29.29   29.38   29.47   29.54   29.61
      .91 ELEV   709.50  709.50  709.51  709.52  709.52  709.53  709.53  709.53
      .98 CFS     29.67   29.72   29.77   29.81   29.83   29.86   29.87   29.88
      .98 ELEV   709.54  709.54  709.54  709.54  709.55  709.55  709.55  709.55
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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
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     1.04 CFS     29.88   29.88   29.87   29.85   29.83   29.80   29.76   29.73
     1.04 ELEV   709.55  709.55  709.55  709.55  709.55  709.54  709.54  709.54
     1.10 CFS     29.68   29.63   29.58   29.52   29.46   29.39   29.32   29.24
     1.10 ELEV   709.54  709.54  709.53  709.53  709.53  709.52  709.52  709.51
     1.17 CFS     29.16   29.08   29.00   28.91   28.82   28.73   28.63   28.53
     1.17 ELEV   709.51  709.50  709.50  709.50  709.49  709.48  709.48  709.47
     1.23 CFS     28.43   28.32   28.22   28.11   28.00   27.88   27.77   27.65
     1.23 ELEV   709.47  709.46  709.46  709.45  709.44  709.44  709.43  709.42
     1.30 CFS     27.53   27.41   27.29   27.16   27.04   26.91   26.78   26.65
     1.30 ELEV   709.42  709.41  709.40  709.40  709.39  709.38  709.38  709.37
     1.36 CFS     26.52   26.39   26.26   26.13   25.99   25.86   25.72   25.58
     1.36 ELEV   709.36  709.36  709.35  709.34  709.33  709.33  709.32  709.31
     1.42 CFS     25.45   25.31   25.17   25.03   24.89   24.75   24.60   24.46
     1.42 ELEV   709.30  709.29  709.29  709.28  709.27  709.26  709.26  709.25
     1.49 CFS     24.32   24.18   24.03   23.89   23.74   23.60   23.45   23.31
     1.49 ELEV   709.24  709.23  709.22  709.22  709.21  709.20  709.19  709.18
     1.55 CFS     23.16   23.01   22.87   22.72   22.58   22.43   22.28   22.14
     1.55 ELEV   709.18  709.17  709.16  709.15  709.14  709.13  709.13  709.12
     1.62 CFS     21.99   21.84   21.70   21.55   21.41   21.26   21.11   20.97
     1.62 ELEV   709.11  709.10  709.09  709.09  709.08  709.07  709.06  709.05
     1.68 CFS     20.82   20.68   20.54   20.39   20.25   20.11   19.97   19.87
     1.68 ELEV   709.05  709.04  709.03  709.02  709.01  709.01  709.00  708.99
     1.74 CFS     19.77   19.68   19.58   19.48   19.38   19.28   19.18   19.08
     1.74 ELEV   708.98  708.97  708.96  708.95  708.95  708.94  708.93  708.92
     1.81 CFS     18.98   18.88   18.78   18.69   18.59   18.49   18.39   18.29
     1.81 ELEV   708.91  708.90  708.90  708.89  708.88  708.87  708.86  708.85
     1.87 CFS     18.20   18.10   18.00   17.91   17.81   17.71   17.62   17.52
     1.87 ELEV   708.84  708.84  708.83  708.82  708.81  708.80  708.79  708.79
     1.94 CFS     17.43   17.33   17.23   17.14   17.05   16.95   16.86   16.76
     1.94 ELEV   708.78  708.77  708.76  708.75  708.75  708.74  708.73  708.72
     2.00 CFS     16.67   16.58   16.48   16.39   16.30   16.21   16.12   16.03
     2.00 ELEV   708.71  708.70  708.70  708.69  708.68  708.67  708.67  708.66
     2.06 CFS     15.94   15.85   15.76   15.67   15.58   15.49   15.40   15.31
     2.06 ELEV   708.65  708.64  708.63  708.63  708.62  708.61  708.60  708.60
     2.13 CFS     15.22   15.13   15.05   14.96   14.87   14.79   14.70   14.62
     2.13 ELEV   708.59  708.58  708.57  708.57  708.56  708.55  708.54  708.54
     2.19 CFS     14.53   14.45   14.36   14.28   14.20   14.11   14.03   13.95
     2.19 ELEV   708.53  708.52  708.51  708.51  708.50  708.49  708.49  708.48
     2.26 CFS     13.87   13.79   13.70   13.62   13.54   13.46   13.38   13.30
     2.26 ELEV   708.47  708.46  708.46  708.45  708.44  708.44  708.43  708.42
     2.32 CFS     13.23   13.15   13.07   12.99   12.91   12.84   12.76   12.68
     2.32 ELEV   708.42  708.41  708.40  708.40  708.39  708.38  708.38  708.37
     2.38 CFS     12.61   12.53   12.46   12.38   12.31   12.24   12.16   12.09
     2.38 ELEV   708.36  708.36  708.35  708.34  708.34  708.33  708.32  708.32
     2.45 CFS     12.02   11.94   11.87   11.80   11.73   11.66   11.59   11.52
     2.45 ELEV   708.31  708.31  708.30  708.29  708.29  708.28  708.27  708.27
     2.51 CFS     11.45   11.38   11.31   11.24   11.17   11.10   11.04   10.97
     2.51 ELEV   708.26  708.26  708.25  708.24  708.24  708.23  708.23  708.22
     2.58 CFS     10.90   10.84   10.77   10.70   10.64   10.57   10.51   10.44
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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
12:29:10                    PASS   2   JOB NO.   1                      PAGE  15

     2.58 ELEV   708.22  708.21  708.20  708.20  708.19  708.19  708.18  708.18
     2.64 CFS     10.38   10.32   10.25   10.19   10.13   10.06   10.00    9.94
     2.64 ELEV   708.17  708.17  708.16  708.15  708.15  708.14  708.14  708.13
     2.70 CFS      9.88    9.82    9.76    9.70    9.64    9.58    9.52    9.46
     2.70 ELEV   708.13  708.12  708.12  708.11  708.11  708.10  708.10  708.09
     2.77 CFS      9.40    9.34    9.29    9.23    9.17    9.12    9.06    9.00
     2.77 ELEV   708.09  708.08  708.08  708.07  708.07  708.06  708.06  708.05
     2.83 CFS      8.95    8.89    8.84    8.78    8.73    8.67    8.62    8.57
     2.83 ELEV   708.05  708.04  708.04  708.03  708.03  708.02  708.02  708.01
     2.90 CFS      8.51    8.46    8.41    8.36    8.32    8.28    8.24    8.20
     2.90 ELEV   708.01  708.01  708.00  708.00  707.99  707.99  707.98  707.98
     2.96 CFS      8.16    8.12    8.08    8.04    8.00    7.96    7.92    7.88
     2.96 ELEV   707.97  707.97  707.96  707.96  707.95  707.95  707.94  707.94
     3.02 CFS      7.84    7.80    7.76    7.73    7.69    7.65    7.61    7.57
     3.02 ELEV   707.93  707.93  707.92  707.92  707.92  707.91  707.91  707.90
     3.09 CFS      7.54    7.50    7.46    7.42    7.39    7.35    7.31    7.28
     3.09 ELEV   707.90  707.89  707.89  707.88  707.88  707.87  707.87  707.87
     3.15 CFS      7.24    7.20    7.17    7.13    7.10    7.06
     3.15 ELEV   707.86  707.86  707.85  707.85  707.84  707.84

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .30 WATERSHED INCHES;      53 CFS-HRS;       4.4 ACRE-FEET.

    DURATION(HRS)   2      3
    FLOW(CFS)      13      7 TRUNCATED

 --- STRUCTURE  6, ALTERNATE  0, STORM  2, HYDROGRAPH ADDED TO READHD FILE ---


OPERATION RUNOFF    XSECTION  99

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .15                         361.8                       (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .66 WATERSHED INCHES;      65 CFS-HRS;       5.3 ACRE-FEET.


OPERATION ADDHYD    XSECTION  90

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .16                         366.6                       (NULL)
        1.04                          29.9                       (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .43 WATERSHED INCHES;     118 CFS-HRS;       9.8 ACRE-FEET.


OPERATION RESVOR    STRUCTURE  7
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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
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                HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM = 2
    HRS      MAIN TIME INCREMENT =  .008 hr,      DRAINAGE AREA =    .54 SQ.MI.
     .03 CFS      .00     .01     .02     .03     .05     .08     .13     .18
     .03 ELEV   700.00  700.00  700.00  700.01  700.01  700.02  700.03  700.05
     .10 CFS      .25     .34     .43     .54     .66     .79     .92    1.06
     .10 ELEV   700.06  700.08  700.11  700.13  700.16  700.20  700.23  700.27
     .16 CFS     1.21    1.36    1.51    1.65    1.80    1.95    2.10    2.24
     .16 ELEV   700.30  700.34  700.38  700.41  700.45  700.49  700.52  700.56
     .22 CFS     2.38    2.51    2.64    2.77    2.88    3.00    3.10    3.21
     .22 ELEV   700.59  700.63  700.66  700.69  700.72  700.75  700.78  700.80
     .29 CFS     3.30    3.39    3.47    3.55    3.62    3.69    3.75    3.81
     .29 ELEV   700.83  700.85  700.87  700.89  700.91  700.92  700.94  700.95
     .35 CFS     3.87    3.92    3.97    4.01    4.06    4.11    4.16    4.20
     .35 ELEV   700.97  700.98  700.99  701.00  701.01  701.01  701.02  701.03
     .42 CFS     4.24    4.28    4.31    4.34    4.37    4.40    4.43    4.45
     .42 ELEV   701.03  701.03  701.04  701.04  701.05  701.05  701.05  701.06
     .48 CFS     4.48    4.50    4.52    4.54    4.56    4.57    4.59    4.61
     .48 ELEV   701.06  701.06  701.06  701.07  701.07  701.07  701.07  701.08
     .54 CFS     4.62    4.63    4.65    4.66    4.67    4.69    4.70    4.71
     .54 ELEV   701.08  701.08  701.08  701.08  701.08  701.09  701.09  701.09
     .61 CFS     4.72    4.73    4.74    4.75    4.76    4.77    4.78    4.79
     .61 ELEV   701.09  701.09  701.09  701.09  701.10  701.10  701.10  701.10
     .67 CFS     4.80    4.81    4.82    4.83    4.84    4.85    4.86    4.87
     .67 ELEV   701.10  701.10  701.10  701.10  701.11  701.11  701.11  701.11
     .74 CFS     4.88    4.89    4.90    4.91    4.92    4.93    4.94    4.95
     .74 ELEV   701.11  701.11  701.11  701.11  701.11  701.12  701.12  701.12
     .80 CFS     4.96    4.97    4.97    4.98    4.99    5.00    5.01    5.02
     .80 ELEV   701.12  701.12  701.12  701.12  701.12  701.13  701.13  701.13
     .86 CFS     5.03    5.04    5.05    5.06    5.07    5.08    5.09    5.10
     .86 ELEV   701.13  701.13  701.13  701.13  701.13  701.14  701.14  701.14
     .93 CFS     5.11    5.12    5.13    5.14    5.15    5.16    5.17    5.18
     .93 ELEV   701.14  701.14  701.14  701.14  701.14  701.14  701.15  701.15
     .99 CFS     5.19    5.20    5.21    5.22    5.23    5.24    5.25    5.25
     .99 ELEV   701.15  701.15  701.15  701.15  701.15  701.15  701.16  701.16
    1.06 CFS     5.26    5.27    5.28    5.29    5.30    5.31    5.32    5.33
    1.06 ELEV   701.16  701.16  701.16  701.16  701.16  701.16  701.17  701.17
    1.12 CFS     5.34    5.35    5.36    5.37    5.38    5.39    5.40    5.41
    1.12 ELEV   701.17  701.17  701.17  701.17  701.17  701.17  701.17  701.18
    1.18 CFS     5.42    5.43    5.43    5.44    5.45    5.46    5.47    5.48
    1.18 ELEV   701.18  701.18  701.18  701.18  701.18  701.18  701.18  701.18
    1.25 CFS     5.49    5.50    5.51    5.52    5.52    5.53    5.54    5.55
    1.25 ELEV   701.19  701.19  701.19  701.19  701.19  701.19  701.19  701.19
    1.31 CFS     5.56    5.57    5.58    5.58    5.59    5.60    5.61    5.62
    1.31 ELEV   701.19  701.20  701.20  701.20  701.20  701.20  701.20  701.20
    1.38 CFS     5.63    5.63    5.64    5.65    5.66    5.66    5.67    5.68
    1.38 ELEV   701.20  701.20  701.21  701.21  701.21  701.21  701.21  701.21
    1.44 CFS     5.69    5.70    5.70    5.71    5.72    5.73    5.73    5.74
    1.44 ELEV   701.21  701.21  701.21  701.21  701.21  701.22  701.22  701.22
    1.50 CFS     5.75    5.75    5.76    5.77    5.78    5.78    5.79    5.80
    1.50 ELEV   701.22  701.22  701.22  701.22  701.22  701.22  701.22  701.22
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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
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     1.57 CFS      5.80    5.81    5.82    5.82    5.83    5.84    5.84    5.85
     1.57 ELEV   701.23  701.23  701.23  701.23  701.23  701.23  701.23  701.23
     1.63 CFS      5.85    5.86    5.87    5.87    5.88    5.88    5.89    5.90
     1.63 ELEV   701.23  701.23  701.23  701.23  701.23  701.24  701.24  701.24
     1.70 CFS      5.90    5.91    5.91    5.92    5.92    5.93    5.94    5.94
     1.70 ELEV   701.24  701.24  701.24  701.24  701.24  701.24  701.24  701.24
     1.76 CFS      5.95    5.95    5.96    5.96    5.97    5.97    5.98    5.98
     1.76 ELEV   701.24  701.24  701.24  701.25  701.25  701.25  701.25  701.25
     1.82 CFS      5.99    5.99    6.00    6.00    6.01    6.01    6.02    6.02
     1.82 ELEV   701.25  701.25  701.25  701.25  701.25  701.25  701.25  701.25
     1.89 CFS      6.03    6.03    6.04    6.04    6.04    6.05    6.05    6.06
     1.89 ELEV   701.25  701.25  701.25  701.26  701.26  701.26  701.26  701.26
     1.95 CFS      6.06    6.07    6.07    6.08    6.08    6.08    6.09    6.09
     1.95 ELEV   701.26  701.26  701.26  701.26  701.26  701.26  701.26  701.26
     2.02 CFS      6.10    6.10    6.10    6.11    6.11    6.12    6.12    6.12
     2.02 ELEV   701.26  701.26  701.26  701.26  701.26  701.26  701.27  701.27
     2.08 CFS      6.13    6.13    6.14    6.14    6.14    6.15    6.15    6.15
     2.08 ELEV   701.27  701.27  701.27  701.27  701.27  701.27  701.27  701.27
     2.14 CFS      6.16    6.16    6.16    6.17    6.17    6.17    6.18    6.18
     2.14 ELEV   701.27  701.27  701.27  701.27  701.27  701.27  701.27  701.27
     2.21 CFS      6.18    6.19    6.19    6.19    6.20    6.20    6.20    6.21
     2.21 ELEV   701.27  701.27  701.27  701.27  701.27  701.27  701.28  701.28
     2.27 CFS      6.21    6.21    6.21    6.22    6.22    6.22    6.23    6.23
     2.27 ELEV   701.28  701.28  701.28  701.28  701.28  701.28  701.28  701.28
     2.34 CFS      6.23    6.23    6.24    6.24    6.24    6.24    6.25    6.25
     2.34 ELEV   701.28  701.28  701.28  701.28  701.28  701.28  701.28  701.28
     2.40 CFS      6.25    6.25    6.26    6.26    6.26    6.26    6.27    6.27
     2.40 ELEV   701.28  701.28  701.28  701.28  701.28  701.28  701.28  701.28
     2.46 CFS      6.27    6.27    6.27    6.28    6.28    6.28    6.28    6.28
     2.46 ELEV   701.28  701.28  701.28  701.28  701.28  701.29  701.29  701.29
     2.53 CFS      6.29    6.29    6.29    6.29    6.29    6.30    6.30    6.30
     2.53 ELEV   701.29  701.29  701.29  701.29  701.29  701.29  701.29  701.29
     2.59 CFS      6.30    6.30    6.30    6.31    6.31    6.31    6.31    6.31
     2.59 ELEV   701.29  701.29  701.29  701.29  701.29  701.29  701.29  701.29
     2.66 CFS      6.31    6.32    6.32    6.32    6.32    6.32    6.32    6.32
     2.66 ELEV   701.29  701.29  701.29  701.29  701.29  701.29  701.29  701.29
     2.72 CFS      6.33    6.33    6.33    6.33    6.33    6.33    6.33    6.33
     2.72 ELEV   701.29  701.29  701.29  701.29  701.29  701.29  701.29  701.29
     2.78 CFS      6.34    6.34    6.34    6.34    6.34    6.34    6.34    6.34
     2.78 ELEV   701.29  701.29  701.29  701.29  701.29  701.29  701.29  701.29
     2.85 CFS      6.34    6.35    6.35    6.35    6.35    6.35    6.35    6.35
     2.85 ELEV   701.29  701.29  701.29  701.29  701.29  701.29  701.29  701.29
     2.91 CFS      6.35    6.35    6.35    6.35    6.35    6.36    6.36    6.36
     2.91 ELEV   701.29  701.29  701.29  701.29  701.29  701.29  701.29  701.29
     2.98 CFS      6.36    6.36    6.36    6.36    6.36    6.36    6.36    6.36
     2.98 ELEV   701.29  701.29  701.29  701.29  701.30  701.30  701.30  701.30
     3.04 CFS      6.36    6.36    6.36    6.36    6.36    6.37    6.37    6.37
     3.04 ELEV   701.30  701.30  701.30  701.30  701.30  701.30  701.30  701.30
     3.10 CFS      6.37    6.37    6.37    6.37    6.37    6.37    6.37    6.37
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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
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     3.10 ELEV   701.30  701.30  701.30  701.30  701.30  701.30  701.30  701.30
     3.17 CFS      6.37    6.37    6.37    6.37
     3.17 ELEV   701.30  701.30  701.30  701.30

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                    .05 WATERSHED INCHES;      17 CFS-HRS;       1.4 ACRE-FEET.

 --- STRUCTURE  7, ALTERNATE  0, STORM  2, HYDROGRAPH ADDED TO READHD FILE ---


OPERATION RUNOFF    XSECTION  49

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .15                          6.4                        (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                    .76 WATERSHED INCHES;       1 CFS-HRS;        .1 ACRE-FEET.


OPERATION ADDHYD    XSECTION  50

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .17                          7.5                        (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                    .05 WATERSHED INCHES;      18 CFS-HRS;       1.5 ACRE-FEET.


OPERATION RESVOR    STRUCTURE 39

                    HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM = 2
     HRS      MAIN TIME INCREMENT =  .008 hr,       DRAINAGE AREA =    .62 SQ.MI.
      .03 CFS       .00     .01     .01     .02     .03     .05     .08     .12
      .03 ELEV   693.00  693.00  693.00  693.00  693.00  693.01  693.01  693.02
      .10 CFS       .16     .21     .27     .34     .42     .51     .61     .71
      .10 ELEV   693.02  693.03  693.04  693.05  693.06  693.07  693.09  693.10
      .16 CFS       .81     .93    1.04    1.16    1.28    1.40    1.52    1.64
      .16 ELEV   693.12  693.13  693.15  693.16  693.18  693.20  693.22  693.23
      .22 CFS      1.76    1.88    1.99    2.10    2.21    2.31    2.41    2.50
      .22 ELEV   693.25  693.27  693.28  693.30  693.31  693.33  693.34  693.35
      .29 CFS      2.59    2.67    2.74    2.82    2.88    2.94    3.00    3.05
      .29 ELEV   693.37  693.38  693.39  693.40  693.41  693.42  693.42  693.43
      .35 CFS      3.10    3.14    3.19    3.22    3.26    3.29    3.32    3.35
      .35 ELEV   693.44  693.45  693.45  693.46  693.46  693.47  693.47  693.47
      .42 CFS      3.37    3.39    3.41    3.43    3.45    3.46    3.48    3.49
      .42 ELEV   693.48  693.48  693.48  693.49  693.49  693.49  693.49  693.49
      .48 CFS      3.51    3.52    3.53    3.54    3.55    3.56    3.56    3.57
      .48 ELEV   693.50  693.50  693.50  693.50  693.50  693.50  693.50  693.51
      .54 CFS      3.58    3.58    3.59    3.59    3.60    3.60    3.61    3.61
      .54 ELEV   693.51  693.51  693.51  693.51  693.51  693.51  693.51  693.51
      .61 CFS      3.62    3.62    3.62    3.63    3.63    3.63    3.63    3.64
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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
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      .61 ELEV   693.51  693.51  693.51  693.51  693.51  693.51  693.51  693.52
      .67 CFS      3.64    3.64    3.64    3.64    3.65    3.65    3.65    3.65
      .67 ELEV   693.52  693.52  693.52  693.52  693.52  693.52  693.52  693.52
      .74 CFS      3.65    3.65    3.66    3.66    3.66    3.66    3.66    3.66
      .74 ELEV   693.52  693.52  693.52  693.52  693.52  693.52  693.52  693.52
      .80 CFS      3.66    3.67    3.67    3.67    3.67    3.67    3.67    3.67
      .80 ELEV   693.52  693.52  693.52  693.52  693.52  693.52  693.52  693.52
      .86 CFS      3.67    3.67    3.67    3.68    3.68    3.68    3.68    3.68
      .86 ELEV   693.52  693.52  693.52  693.52  693.52  693.52  693.52  693.52
      .93 CFS      3.68    3.68    3.68    3.68    3.68    3.69    3.69    3.69
      .93 ELEV   693.52  693.52  693.52  693.52  693.52  693.52  693.52  693.52
      .99 CFS      3.69    3.69    3.69    3.69    3.69    3.69    3.70    3.70
      .99 ELEV   693.52  693.52  693.52  693.52  693.52  693.52  693.52  693.52
     1.06 CFS      3.70    3.70    3.70    3.70    3.70    3.70    3.70    3.70
     1.06 ELEV   693.52  693.52  693.52  693.52  693.52  693.52  693.52  693.52
     1.12 CFS      3.71    3.71    3.71    3.71    3.71    3.71    3.71    3.71
     1.12 ELEV   693.52  693.53  693.53  693.53  693.53  693.53  693.53  693.53
     1.18 CFS      3.72    3.72    3.72    3.72    3.72    3.72    3.72    3.72
     1.18 ELEV   693.53  693.53  693.53  693.53  693.53  693.53  693.53  693.53
     1.25 CFS      3.72    3.73    3.73    3.73    3.73    3.73    3.73    3.73
     1.25 ELEV   693.53  693.53  693.53  693.53  693.53  693.53  693.53  693.53
     1.31 CFS      3.73    3.74    3.74    3.74    3.74    3.74    3.74    3.74
     1.31 ELEV   693.53  693.53  693.53  693.53  693.53  693.53  693.53  693.53
     1.38 CFS      3.75    3.75    3.75    3.75    3.75    3.75    3.75    3.75
     1.38 ELEV   693.53  693.53  693.53  693.53  693.53  693.53  693.53  693.53
     1.44 CFS      3.76    3.76    3.76    3.76    3.76    3.76    3.76    3.77
     1.44 ELEV   693.53  693.53  693.53  693.53  693.53  693.53  693.53  693.53
     1.50 CFS      3.77    3.77    3.77    3.77    3.77    3.77    3.77    3.78
     1.50 ELEV   693.53  693.53  693.53  693.53  693.53  693.53  693.53  693.53
     1.57 CFS      3.78    3.78    3.78    3.78    3.78    3.78    3.79    3.79
     1.57 ELEV   693.54  693.54  693.54  693.54  693.54  693.54  693.54  693.54
     1.63 CFS      3.79    3.79    3.79    3.79    3.79    3.80    3.80    3.80
     1.63 ELEV   693.54  693.54  693.54  693.54  693.54  693.54  693.54  693.54
     1.70 CFS      3.80    3.80    3.80    3.81    3.81    3.81    3.81    3.81
     1.70 ELEV   693.54  693.54  693.54  693.54  693.54  693.54  693.54  693.54
     1.76 CFS      3.81    3.81    3.82    3.82    3.82    3.82    3.82    3.82
     1.76 ELEV   693.54  693.54  693.54  693.54  693.54  693.54  693.54  693.54
     1.82 CFS      3.82    3.83    3.83    3.83    3.83    3.83    3.83    3.83
     1.82 ELEV   693.54  693.54  693.54  693.54  693.54  693.54  693.54  693.54
     1.89 CFS      3.84    3.84    3.84    3.84    3.84    3.84    3.85    3.85
     1.89 ELEV   693.54  693.54  693.54  693.54  693.54  693.54  693.54  693.54
     1.95 CFS      3.85    3.85    3.85    3.85    3.85    3.86    3.86    3.86
     1.95 ELEV   693.55  693.55  693.55  693.55  693.55  693.55  693.55  693.55
     2.02 CFS      3.86    3.86    3.86    3.87    3.87    3.87    3.87    3.87
     2.02 ELEV   693.55  693.55  693.55  693.55  693.55  693.55  693.55  693.55
     2.08 CFS      3.87    3.87    3.88    3.88    3.88    3.88    3.88    3.88
     2.08 ELEV   693.55  693.55  693.55  693.55  693.55  693.55  693.55  693.55
     2.14 CFS      3.89    3.89    3.89    3.89    3.89    3.89    3.90    3.90
     2.14 ELEV   693.55  693.55  693.55  693.55  693.55  693.55  693.55  693.55
```



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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
12:29:10                    PASS   2   JOB NO.   1                     PAGE  20

     2.21 CFS      3.90    3.90    3.90    3.90    3.90    3.91    3.91    3.91
     2.21 ELEV   693.55  693.55  693.55  693.55  693.55  693.55  693.55  693.55
     2.27 CFS      3.91    3.91    3.91    3.92    3.92    3.92    3.92    3.92
     2.27 ELEV   693.55  693.55  693.55  693.55  693.55  693.56  693.56  693.56
     2.34 CFS      3.92    3.93    3.93    3.93    3.93    3.93    3.93    3.94
     2.34 ELEV   693.56  693.56  693.56  693.56  693.56  693.56  693.56  693.56
     2.40 CFS      3.94    3.94    3.94    3.94    3.94    3.94    3.95    3.95
     2.40 ELEV   693.56  693.56  693.56  693.56  693.56  693.56  693.56  693.56
     2.46 CFS      3.95    3.95    3.95    3.95    3.96    3.96    3.96    3.96
     2.46 ELEV   693.56  693.56  693.56  693.56  693.56  693.56  693.56  693.56
     2.53 CFS      3.96    3.96    3.97    3.97    3.97    3.97    3.97    3.97
     2.53 ELEV   693.56  693.56  693.56  693.56  693.56  693.56  693.56  693.56
     2.59 CFS      3.98    3.98    3.98    3.98    3.98    3.98    3.99    3.99
     2.59 ELEV   693.56  693.56  693.56  693.56  693.56  693.56  693.56  693.56
     2.66 CFS      3.99    3.99    3.99    3.99    3.99    4.00    4.00    4.00
     2.66 ELEV   693.56  693.57  693.57  693.57  693.57  693.57  693.57  693.57
     2.72 CFS      4.00    4.00    4.00    4.01    4.01    4.01    4.01    4.01
     2.72 ELEV   693.57  693.57  693.57  693.57  693.57  693.57  693.57  693.57
     2.78 CFS      4.01    4.02    4.02    4.02    4.02    4.02    4.02    4.03
     2.78 ELEV   693.57  693.57  693.57  693.57  693.57  693.57  693.57  693.57
     2.85 CFS      4.03    4.03    4.03    4.03    4.03    4.04    4.04    4.04
     2.85 ELEV   693.57  693.57  693.57  693.57  693.57  693.57  693.57  693.57
     2.91 CFS      4.04    4.04    4.04    4.04    4.05    4.05    4.05    4.05
     2.91 ELEV   693.57  693.57  693.57  693.57  693.57  693.57  693.57  693.57
     2.98 CFS      4.05    4.05    4.06    4.06    4.06    4.06    4.06    4.06
     2.98 ELEV   693.57  693.57  693.57  693.57  693.57  693.58  693.58  693.58
     3.04 CFS      4.07    4.07    4.07    4.07    4.07    4.07    4.08    4.08
     3.04 ELEV   693.58  693.58  693.58  693.58  693.58  693.58  693.58  693.58
     3.10 CFS      4.08    4.08    4.08    4.08    4.08    4.09    4.09    4.09
     3.10 ELEV   693.58  693.58  693.58  693.58  693.58  693.58  693.58  693.58
     3.17 CFS      4.09    4.09    4.09    4.10
     3.17 ELEV   693.58  693.58  693.58  693.58

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                    .03 WATERSHED INCHES;      11 CFS-HRS;        .9 ACRE-FEET.

 --- STRUCTURE 39, ALTERNATE  0, STORM  2, HYDROGRAPH ADDED TO READHD FILE ---


EXECUTIVE CONTROL  ENDCMP    COMPUTATIONS COMPLETED FOR PASS   2


EXECUTIVE CONTROL  COMPUT    FROM XSECTION  91  TO STRUCTURE 39           15-MIN
    STARTING TIME =   .00       RAIN DEPTH =  2.05       RAIN DURATION =   .25
    ANT. RUNOFF COND. = 2       MAIN TIME INCREMENT =   .008 HOURS
    ALTERNATE NO. = 0           STORM NO. = 3            RAIN TABLE NO. = 1
```

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TR20 ------------------------------------------------------------------------ SCS -
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OPERATION RUNOFF    XSECTION  91

    PEAK TIME(HRS)              PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .63                          34.7                        (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                    .41 WATERSHED INCHES;      24 CFS-HRS;       2.0 ACRE-FEET.


OPERATION RUNOFF    XSECTION  92

    PEAK TIME(HRS)              PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .71                          60.2                        (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                    .59 WATERSHED INCHES;      49 CFS-HRS;       4.1 ACRE-FEET.


OPERATION ADDHYD    XSECTION  93

    PEAK TIME(HRS)              PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .68                          93.9                        (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                    .52 WATERSHED INCHES;      74 CFS-HRS;       6.1 ACRE-FEET.


OPERATION RUNOFF    XSECTION  94

    PEAK TIME(HRS)              PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .69                           2.6                        (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                    .15 WATERSHED INCHES;       2 CFS-HRS;        .2 ACRE-FEET.


OPERATION RESVOR    STRUCTURE 11

                    HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM = 3
     HRS      MAIN TIME INCREMENT =  .008 hr,      DRAINAGE AREA =    .02 SQ.MI.
      .13 CFS       .00     .01     .01     .01     .01     .02     .02     .03
      .13 ELEV   737.50  737.51  737.51  737.51  737.51  737.52  737.52  737.53
      .19 CFS       .03     .04     .04     .05     .06     .07     .08     .09
      .19 ELEV   737.53  737.54  737.54  737.55  737.56  737.57  737.58  737.59
      .26 CFS       .11     .12     .14     .15     .17     .19     .21     .23
      .26 ELEV   737.61  737.62  737.64  737.65  737.67  737.69  737.71  737.73
      .32 CFS       .25     .28     .30     .33     .36     .39     .42     .45
      .32 ELEV   737.75  737.78  737.80  737.83  737.86  737.89  737.92  737.95
      .38 CFS       .49     .50     .51     .52     .52     .53     .54     .55
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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
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      .38 ELEV   737.99  738.01  738.02  738.03  738.04  738.06  738.07  738.09
      .45 CFS       .55     .56     .57     .58     .59     .61     .62     .63
      .45 ELEV   738.11  738.13  738.15  738.17  738.19  738.21  738.23  738.26
      .51 CFS       .64     .65     .67     .68     .70     .71     .72     .74
      .51 ELEV   738.28  738.31  738.34  738.36  738.39  738.42  738.45  738.48
      .58 CFS       .75     .77     .79     .80     .82     .83     .85     .86
      .58 ELEV   738.51  738.54  738.57  738.60  738.63  738.66  738.70  738.73
      .64 CFS       .88     .90     .91     .93     .94     .96     .97     .99
      .64 ELEV   738.76  738.79  738.82  738.85  738.89  738.92  738.95  738.98
      .70 CFS      1.01    1.05    1.08    1.12    1.15    1.18    1.21    1.24
      .70 ELEV   739.01  739.02  739.04  739.06  739.07  739.09  739.11  739.12
      .77 CFS      1.27    1.30    1.33    1.35    1.38    1.40    1.43    1.45
      .77 ELEV   739.14  739.15  739.16  739.18  739.19  739.20  739.21  739.22
      .83 CFS      1.47    1.49    1.51    1.53    1.54    1.56    1.57    1.59
      .83 ELEV   739.23  739.24  739.25  739.26  739.27  739.28  739.29  739.29
      .90 CFS      1.60    1.61    1.62    1.63    1.64    1.65    1.65    1.66
      .90 ELEV   739.30  739.30  739.31  739.31  739.32  739.32  739.33  739.33
      .96 CFS      1.66    1.66    1.67    1.67    1.67    1.67    1.67    1.67
      .96 ELEV   739.33  739.33  739.33  739.33  739.33  739.33  739.33  739.33
     1.02 CFS      1.66    1.66    1.65    1.65    1.64    1.64    1.63    1.62
     1.02 ELEV   739.33  739.33  739.33  739.32  739.32  739.32  739.31  739.31
     1.09 CFS      1.61    1.60    1.59    1.58    1.57    1.56    1.55    1.54
     1.09 ELEV   739.31  739.30  739.30  739.29  739.29  739.28  739.28  739.27
     1.15 CFS      1.53    1.52    1.50    1.49    1.48    1.46    1.45    1.44
     1.15 ELEV   739.26  739.26  739.25  739.25  739.24  739.23  739.23  739.22
     1.22 CFS      1.42    1.41    1.40    1.38    1.37    1.35    1.34    1.33
     1.22 ELEV   739.21  739.21  739.20  739.19  739.18  739.18  739.17  739.16
     1.28 CFS      1.31    1.30    1.28    1.27    1.25    1.24    1.23    1.21
     1.28 ELEV   739.16  739.15  739.14  739.13  739.13  739.12  739.11  739.11
     1.34 CFS      1.20    1.18    1.17    1.15    1.14    1.13    1.11    1.10
     1.34 ELEV   739.10  739.09  739.08  739.08  739.07  739.06  739.06  739.05
     1.41 CFS      1.08    1.07    1.06    1.04    1.03    1.02    1.00    1.00
     1.41 ELEV   739.04  739.04  739.03  739.02  739.01  739.01  739.00  738.99
     1.47 CFS       .99     .98     .98     .97     .97     .96     .96     .95
     1.47 ELEV   738.98  738.97  738.96  738.94  738.93  738.92  738.91  738.90
     1.54 CFS       .94     .94     .93     .93     .92     .91     .91     .90
     1.54 ELEV   738.89  738.88  738.86  738.85  738.84  738.83  738.82  738.80
     1.60 CFS       .90     .89     .88     .88     .87     .87     .86     .85
     1.60 ELEV   738.79  738.78  738.77  738.76  738.74  738.73  738.72  738.71
     1.66 CFS       .85     .84     .84     .83     .83     .82     .81     .81
     1.66 ELEV   738.70  738.69  738.67  738.66  738.65  738.64  738.63  738.61
     1.73 CFS       .80     .80     .79     .78     .78     .77     .77     .76
     1.73 ELEV   738.60  738.59  738.58  738.57  738.56  738.55  738.53  738.52
     1.79 CFS       .76     .75     .74     .74     .73     .73     .72     .72
     1.79 ELEV   738.51  738.50  738.49  738.48  738.47  738.45  738.44  738.43
     1.86 CFS       .71     .70     .70     .69     .69     .68     .68     .67
     1.86 ELEV   738.42  738.41  738.40  738.39  738.38  738.37  738.36  738.34
     1.92 CFS       .67     .66     .66     .65     .65     .64     .64     .63
     1.92 ELEV   738.33  738.32  738.31  738.30  738.29  738.28  738.27  738.26
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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
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     1.98 CFS       .63     .62     .62     .61     .61     .60     .60     .59
     1.98 ELEV   738.25  738.24  738.23  738.22  738.21  738.20  738.19  738.18
     2.05 CFS       .59     .58     .58     .57     .57     .56     .56     .55
     2.05 ELEV   738.17  738.16  738.15  738.14  738.13  738.12  738.11  738.10
     2.11 CFS       .55     .54     .54     .53     .53     .52     .52     .52
     2.11 ELEV   738.09  738.09  738.08  738.07  738.06  738.05  738.04  738.03
     2.18 CFS       .51     .51     .50     .49     .46     .43     .41     .39
     2.18 ELEV   738.02  738.01  738.01  737.99  737.96  737.93  737.91  737.89
     2.24 CFS       .36     .34     .32     .31     .29     .27     .26     .24
     2.24 ELEV   737.86  737.84  737.82  737.81  737.79  737.77  737.76  737.74
     2.30 CFS       .23     .22     .21     .19     .18     .17     .16     .16
     2.30 ELEV   737.73  737.72  737.71  737.69  737.68  737.67  737.66  737.66
     2.37 CFS       .15     .14     .13     .13     .12     .11     .11     .10
     2.37 ELEV   737.65  737.64  737.63  737.63  737.62  737.61  737.61  737.60
     2.43 CFS       .10     .09     .09     .08     .08     .08     .07     .07
     2.43 ELEV   737.60  737.59  737.59  737.58  737.58  737.58  737.57  737.57
     2.50 CFS       .07     .06     .06     .06     .05     .05     .05     .05
     2.50 ELEV   737.57  737.56  737.56  737.56  737.55  737.55  737.55  737.55
     2.56 CFS       .05     .04     .04     .04     .04     .04     .04     .03
     2.56 ELEV   737.55  737.54  737.54  737.54  737.54  737.54  737.54  737.53
     2.62 CFS       .03     .03     .03     .03     .03     .03     .03     .03
     2.62 ELEV   737.53  737.53  737.53  737.53  737.53  737.53  737.53  737.53
     2.69 CFS       .02     .02     .02     .02     .02     .02     .02     .02
     2.69 ELEV   737.52  737.52  737.52  737.52  737.52  737.52  737.52  737.52
     2.75 CFS       .02     .02     .02     .02     .01     .01     .01     .01
     2.75 ELEV   737.52  737.52  737.52  737.52  737.51  737.51  737.51  737.51
     2.82 CFS       .01     .01     .01     .01     .01     .01     .01     .01
     2.82 ELEV   737.51  737.51  737.51  737.51  737.51  737.51  737.51  737.51
     2.88 CFS       .01     .01     .01     .01     .01     .00
     2.88 ELEV   737.51  737.51  737.51  737.51  737.51  737.50

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                    .15 WATERSHED INCHES;       2 CFS-HRS;        .2 ACRE-FEET.

    DURATION(HRS)   2      2
    FLOW(CFS)      13      0

 --- STRUCTURE 11, ALTERNATE  0, STORM  3, HYDROGRAPH ADDED TO READHD FILE ---


OPERATION RUNOFF    XSECTION  96

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .15                         48.5                       (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                   1.82 WATERSHED INCHES;      10 CFS-HRS;        .8 ACRE-FEET.
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TR20 ------------------------------------------------------------------------ SCS -
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OPERATION ADDHYD    XSECTION  97

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .16                         52.6                       (NULL)
         .68                         94.8                       (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                   .53 WATERSHED INCHES;      85 CFS-HRS;       7.1 ACRE-FEET.


OPERATION RESVOR    STRUCTURE  6

                    HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM = 3
     HRS      MAIN TIME INCREMENT =  .008 hr,       DRAINAGE AREA =    .28 SQ.MI.
      .02 CFS      .00     .01     .02     .05     .09     .17     .28     .43
      .02 ELEV   707.00  707.00  707.00  707.01  707.01  707.02  707.03  707.05
      .08 CFS      .64     .90    1.23    1.61    2.05    2.53    3.06    3.63
      .08 ELEV   707.08  707.11  707.15  707.19  707.24  707.30  707.36  707.43
      .14 CFS     4.21    4.82    5.43    6.05    6.65    7.24    7.82    8.37
      .14 ELEV   707.50  707.57  707.65  707.72  707.79  707.86  707.93  708.00
      .21 CFS     9.03    9.68   10.30   10.90   11.47   12.02   12.56   13.07
      .21 ELEV   708.05  708.11  708.16  708.22  708.26  708.31  708.36  708.40
      .27 CFS    13.57   14.06   14.52   14.97   15.41   15.83   16.23   16.61
      .27 ELEV   708.45  708.49  708.53  708.57  708.60  708.64  708.67  708.71
      .34 CFS    16.97   17.32   17.65   17.97   18.28   18.58   18.87   19.16
      .34 ELEV   708.74  708.77  708.80  708.83  708.85  708.88  708.90  708.93
      .40 CFS    19.45   19.73   20.02   20.43   20.84   21.26   21.69   22.12
      .40 ELEV   708.95  708.98  709.00  709.02  709.05  709.07  709.09  709.12
      .46 CFS    22.56   23.01   23.47   23.93   24.41   24.89   25.38   25.87
      .46 ELEV   709.14  709.17  709.19  709.22  709.24  709.27  709.30  709.33
      .53 CFS    26.38   26.89   27.41   27.93   28.46   29.00   29.54   30.08
      .53 ELEV   709.35  709.38  709.41  709.44  709.47  709.50  709.53  709.56
      .59 CFS    30.62   31.17   31.72   32.27   32.82   33.37   33.91   34.46
      .59 ELEV   709.59  709.62  709.65  709.68  709.71  709.74  709.77  709.80
      .66 CFS    35.00   35.54   36.08   36.61   37.14   37.66   38.15   38.61
      .66 ELEV   709.83  709.86  709.89  709.92  709.95  709.98  710.01  710.04
      .72 CFS    39.06   39.50   39.94   40.36   40.79   41.20   41.61   42.01
      .72 ELEV   710.06  710.09  710.11  710.14  710.16  710.19  710.21  710.24
      .78 CFS    42.40   42.78   43.15   43.51   43.86   44.20   44.53   44.86
      .78 ELEV   710.26  710.28  710.30  710.32  710.34  710.36  710.38  710.40
      .85 CFS    45.17   45.47   45.76   46.03   46.30   46.56   46.80   47.03
      .85 ELEV   710.42  710.44  710.46  710.47  710.49  710.50  710.52  710.53
      .91 CFS    47.26   47.47   47.67   47.85   48.03   48.19   48.35   48.49
      .91 ELEV   710.54  710.56  710.57  710.58  710.59  710.60  710.61  710.62
      .98 CFS    48.62   48.74   48.85   48.94   49.03   49.10   49.17   49.22
      .98 ELEV   710.62  710.63  710.64  710.64  710.65  710.65  710.66  710.66
     1.04 CFS    49.26   49.30   49.32   49.33   49.33   49.33   49.31   49.29
     1.04 ELEV   710.66  710.66  710.67  710.67  710.67  710.67  710.67  710.66
     1.10 CFS    49.26   49.22   49.17   49.12   49.05   48.98   48.91   48.82
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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
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     1.10 ELEV   710.66  710.66  710.66  710.65  710.65  710.65  710.64  710.64
     1.17 CFS     48.73   48.64   48.53   48.43   48.31   48.19   48.07   47.94
     1.17 ELEV   710.63  710.63  710.62  710.61  710.61  710.60  710.59  710.58
     1.23 CFS     47.81   47.67   47.53   47.38   47.23   47.07   46.91   46.75
     1.23 ELEV   710.58  710.57  710.56  710.55  710.54  710.53  710.52  710.51
     1.30 CFS     46.59   46.42   46.25   46.07   45.90   45.72   45.53   45.35
     1.30 ELEV   710.51  710.50  710.49  710.47  710.46  710.45  710.44  710.43
     1.36 CFS     45.16   44.97   44.78   44.59   44.39   44.19   43.99   43.79
     1.36 ELEV   710.42  710.41  710.40  710.39  710.38  710.36  710.35  710.34
     1.42 CFS     43.59   43.38   43.18   42.97   42.76   42.55   42.34   42.13
     1.42 ELEV   710.33  710.32  710.30  710.29  710.28  710.27  710.26  710.24
     1.49 CFS     41.91   41.70   41.48   41.27   41.05   40.83   40.61   40.39
     1.49 ELEV   710.23  710.22  710.20  710.19  710.18  710.17  710.15  710.14
     1.55 CFS     40.17   39.95   39.73   39.51   39.29   39.07   38.85   38.63
     1.55 ELEV   710.13  710.11  710.10  710.09  710.08  710.06  710.05  710.04
     1.62 CFS     38.41   38.18   37.96   37.71   37.46   37.21   36.96   36.72
     1.62 ELEV   710.02  710.01  710.00  709.98  709.97  709.96  709.94  709.93
     1.68 CFS     36.47   36.22   35.97   35.73   35.48   35.24   34.99   34.75
     1.68 ELEV   709.91  709.90  709.89  709.87  709.86  709.85  709.83  709.82
     1.74 CFS     34.51   34.27   34.03   33.79   33.55   33.31   33.07   32.83
     1.74 ELEV   709.81  709.79  709.78  709.77  709.75  709.74  709.73  709.71
     1.81 CFS     32.60   32.36   32.13   31.89   31.66   31.43   31.20   30.97
     1.81 ELEV   709.70  709.69  709.67  709.66  709.65  709.63  709.62  709.61
     1.87 CFS     30.74   30.51   30.28   30.06   29.83   29.61   29.39   29.17
     1.87 ELEV   709.60  709.58  709.57  709.56  709.55  709.53  709.52  709.51
     1.94 CFS     28.95   28.73   28.51   28.29   28.08   27.86   27.65   27.44
     1.94 ELEV   709.50  709.48  709.47  709.46  709.45  709.44  709.42  709.41
     2.00 CFS     27.22   27.01   26.81   26.60   26.39   26.19   25.98   25.78
     2.00 ELEV   709.40  709.39  709.38  709.37  709.36  709.34  709.33  709.32
     2.06 CFS     25.58   25.38   25.18   24.98   24.78   24.59   24.39   24.20
     2.06 ELEV   709.31  709.30  709.29  709.28  709.27  709.25  709.24  709.23
     2.13 CFS     24.01   23.82   23.63   23.44   23.25   23.07   22.88   22.70
     2.13 ELEV   709.22  709.21  709.20  709.19  709.18  709.17  709.16  709.15
     2.19 CFS     22.52   22.34   22.16   21.98   21.80   21.62   21.45   21.27
     2.19 ELEV   709.14  709.13  709.12  709.11  709.10  709.09  709.08  709.07
     2.26 CFS     21.10   20.92   20.75   20.58   20.41   20.24   20.08   19.94
     2.26 ELEV   709.06  709.05  709.04  709.03  709.02  709.01  709.00  708.99
     2.32 CFS     19.82   19.71   19.59   19.48   19.36   19.25   19.14   19.03
     2.32 ELEV   708.98  708.97  708.96  708.96  708.95  708.94  708.93  708.92
     2.38 CFS     18.91   18.80   18.69   18.58   18.47   18.36   18.25   18.15
     2.38 ELEV   708.91  708.90  708.89  708.88  708.87  708.86  708.85  708.84
     2.45 CFS     18.04   17.93   17.82   17.72   17.61   17.51   17.40   17.30
     2.45 ELEV   708.83  708.82  708.81  708.80  708.79  708.79  708.78  708.77
     2.51 CFS     17.19   17.09   16.99   16.89   16.78   16.68   16.58   16.48
     2.51 ELEV   708.76  708.75  708.74  708.73  708.72  708.71  708.71  708.70
     2.58 CFS     16.38   16.28   16.18   16.09   15.99   15.89   15.79   15.70
     2.58 ELEV   708.69  708.68  708.67  708.66  708.65  708.65  708.64  708.63
     2.64 CFS     15.60   15.51   15.41   15.32   15.23   15.13   15.04   14.95
     2.64 ELEV   708.62  708.61  708.60  708.60  708.59  708.58  708.57  708.56
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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
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     2.70 CFS     14.86   14.77   14.68   14.59   14.50   14.41   14.32   14.23
     2.70 ELEV   708.56  708.55  708.54  708.53  708.53  708.52  708.51  708.50
     2.77 CFS     14.14   14.06   13.97   13.88   13.80   13.71   13.63   13.54
     2.77 ELEV   708.50  708.49  708.48  708.47  708.47  708.46  708.45  708.44
     2.83 CFS     13.46   13.38   13.29   13.21   13.13   13.05   12.97   12.89
     2.83 ELEV   708.44  708.43  708.42  708.41  708.41  708.40  708.39  708.39
     2.90 CFS     12.81   12.73   12.65   12.57   12.49   12.42   12.34   12.26
     2.90 ELEV   708.38  708.37  708.37  708.36  708.35  708.35  708.34  708.33
     2.96 CFS     12.19   12.11   12.03   11.96   11.88   11.81   11.74   11.66
     2.96 ELEV   708.33  708.32  708.31  708.31  708.30  708.29  708.29  708.28
     3.02 CFS     11.59   11.52   11.45   11.37   11.30   11.23   11.16   11.09
     3.02 ELEV   708.27  708.27  708.26  708.26  708.25  708.24  708.24  708.23
     3.09 CFS     11.02   10.95   10.88   10.81   10.75   10.68   10.61   10.54
     3.09 ELEV   708.23  708.22  708.21  708.21  708.20  708.20  708.19  708.18
     3.15 CFS     10.48   10.41   10.35   10.28   10.22   10.15
     3.15 ELEV   708.18  708.17  708.17  708.16  708.16  708.15

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .48 WATERSHED INCHES;      86 CFS-HRS;       7.1 ACRE-FEET.

    DURATION(HRS)   2      3
    FLOW(CFS)      19     10 TRUNCATED

 --- STRUCTURE  6, ALTERNATE  0, STORM  3, HYDROGRAPH ADDED TO READHD FILE ---


OPERATION RUNOFF    XSECTION  99

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .16                          438.1                       (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .94 WATERSHED INCHES;      93 CFS-HRS;       7.7 ACRE-FEET.


OPERATION ADDHYD    XSECTION  90

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .17                          444.0                       (NULL)
        1.07                           49.3                       (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .65 WATERSHED INCHES;     179 CFS-HRS;      14.8 ACRE-FEET.


OPERATION RESVOR    STRUCTURE  7

                    HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM = 3
     HRS      MAIN TIME INCREMENT =  .008 hr,      DRAINAGE AREA =    .54 SQ.MI.
      .03 CFS       .00     .01     .01     .03     .05     .08     .12     .17
      .03 ELEV   700.00  700.00  700.00  700.01  700.01  700.02  700.03  700.04
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TR20 ---------- SCS -
001 CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE VERSION
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.10	CFS	.24	.33	.43	.54	.67	.81	.97	1.13
.10	ELEV	700.06	700.08	700.11	700.14	700.17	700.20	700.24	700.28
.16	CFS	1.30	1.48	1.66	1.84	2.02	2.20	2.38	2.56
.16	ELEV	700.33	700.37	700.41	700.46	700.50	700.55	700.60	700.64
.22	CFS	2.74	2.91	3.09	3.26	3.43	3.59	3.76	3.91
.22	ELEV	700.68	700.73	700.77	700.81	700.86	700.90	700.94	700.98
.29	CFS	4.09	4.28	4.47	4.65	4.82	4.98	5.13	5.28
.29	ELEV	701.01	701.04	701.06	701.08	701.10	701.12	701.14	701.16
.35	CFS	5.41	5.54	5.66	5.77	5.88	5.97	6.06	6.15
.35	ELEV	701.18	701.19	701.21	701.22	701.23	701.25	701.26	701.27
.42	CFS	6.23	6.30	6.37	6.44	6.50	6.55	6.61	6.66
.42	ELEV	701.28	701.29	701.30	701.30	701.31	701.32	701.33	701.33
.48	CFS	6.71	6.75	6.79	6.83	6.87	6.90	6.93	6.96
.48	ELEV	701.34	701.34	701.35	701.35	701.36	701.36	701.37	701.37
.54	CFS	6.99	7.02	7.05	7.07	7.10	7.12	7.14	7.16
.54	ELEV	701.37	701.38	701.38	701.38	701.39	701.39	701.39	701.40
.61	CFS	7.19	7.21	7.23	7.25	7.26	7.28	7.30	7.32
.61	ELEV	701.40	701.40	701.40	701.41	701.41	701.41	701.41	701.41
.67	CFS	7.34	7.35	7.37	7.39	7.40	7.42	7.44	7.45
.67	ELEV	701.42	701.42	701.42	701.42	701.43	701.43	701.43	701.43
.74	CFS	7.47	7.49	7.50	7.52	7.53	7.55	7.57	7.58
.74	ELEV	701.43	701.44	701.44	701.44	701.44	701.44	701.45	701.45
.80	CFS	7.60	7.61	7.63	7.65	7.66	7.68	7.69	7.71
.80	ELEV	701.45	701.45	701.45	701.46	701.46	701.46	701.46	701.46
.86	CFS	7.73	7.74	7.76	7.77	7.79	7.81	7.82	7.84
.86	ELEV	701.47	701.47	701.47	701.47	701.47	701.48	701.48	701.48
.93	CFS	7.85	7.87	7.89	7.90	7.92	7.94	7.95	7.97
.93	ELEV	701.48	701.48	701.49	701.49	701.49	701.49	701.49	701.50
.99	CFS	7.98	8.00	8.02	8.03	8.05	8.07	8.08	8.10
.99	ELEV	701.50	701.50	701.50	701.50	701.51	701.51	701.51	701.51
1.06	CFS	8.11	8.13	8.15	8.16	8.18	8.20	8.21	8.23
1.06	ELEV	701.51	701.52	701.52	701.52	701.52	701.52	701.53	701.53
1.12	CFS	8.24	8.26	8.28	8.29	8.31	8.32	8.34	8.36
1.12	ELEV	701.53	701.53	701.53	701.54	701.54	701.54	701.54	701.54
1.18	CFS	8.37	8.39	8.40	8.42	8.43	8.45	8.46	8.48
1.18	ELEV	701.55	701.55	701.55	701.55	701.55	701.56	701.56	701.56
1.25	CFS	8.50	8.51	8.53	8.54	8.56	8.57	8.59	8.60
1.25	ELEV	701.56	701.56	701.57	701.57	701.57	701.57	701.57	701.58
1.31	CFS	8.62	8.63	8.64	8.66	8.67	8.69	8.70	8.72
1.31	ELEV	701.58	701.58	701.58	701.58	701.58	701.59	701.59	701.59
1.38	CFS	8.73	8.75	8.76	8.77	8.79	8.80	8.81	8.83
1.38	ELEV	701.59	701.59	701.59	701.60	701.60	701.60	701.60	701.60
1.44	CFS	8.84	8.86	8.87	8.88	8.89	8.91	8.92	8.93
1.44	ELEV	701.61	701.61	701.61	701.61	701.61	701.61	701.62	701.62
1.50	CFS	8.95	8.96	8.97	8.98	9.00	9.01	9.02	9.03
1.50	ELEV	701.62	701.62	701.62	701.62	701.62	701.63	701.63	701.63
1.57	CFS	9.05	9.06	9.07	9.08	9.09	9.10	9.12	9.13
1.57	ELEV	701.63	701.63	701.63	701.64	701.64	701.64	701.64	701.64
1.63	CFS	9.14	9.15	9.16	9.17	9.18	9.19	9.20	9.22

TR20 ---------- SCS -
001 CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE VERSION
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1.63	ELEV	701.64	701.64	701.65	701.65	701.65	701.65	701.65	701.65
1.70	CFS	9.23	9.24	9.25	9.26	9.27	9.28	9.29	9.30
1.70	ELEV	701.65	701.65	701.66	701.66	701.66	701.66	701.66	701.66
1.76	CFS	9.31	9.32	9.33	9.34	9.34	9.35	9.36	9.37
1.76	ELEV	701.66	701.66	701.67	701.67	701.67	701.67	701.67	701.67
1.82	CFS	9.38	9.39	9.40	9.41	9.42	9.42	9.43	9.44
1.82	ELEV	701.67	701.67	701.67	701.68	701.68	701.68	701.68	701.68
1.89	CFS	9.45	9.46	9.47	9.47	9.48	9.49	9.50	9.50
1.89	ELEV	701.68	701.68	701.68	701.68	701.69	701.69	701.69	701.69
1.95	CFS	9.51	9.52	9.53	9.53	9.54	9.55	9.56	9.56
1.95	ELEV	701.69	701.69	701.69	701.69	701.69	701.69	701.69	701.70
2.02	CFS	9.57	9.58	9.58	9.59	9.60	9.60	9.61	9.61
2.02	ELEV	701.70	701.70	701.70	701.70	701.70	701.70	701.70	701.70
2.08	CFS	9.62	9.63	9.63	9.64	9.64	9.65	9.66	9.66
2.08	ELEV	701.70	701.70	701.70	701.70	701.71	701.71	701.71	701.71
2.14	CFS	9.67	9.67	9.68	9.68	9.69	9.69	9.70	9.70
2.14	ELEV	701.71	701.71	701.71	701.71	701.71	701.71	701.71	701.71
2.21	CFS	9.71	9.71	9.72	9.72	9.73	9.73	9.74	9.74
2.21	ELEV	701.71	701.71	701.71	701.72	701.72	701.72	701.72	701.72
2.27	CFS	9.74	9.75	9.75	9.76	9.76	9.77	9.77	9.77
2.27	ELEV	701.72	701.72	701.72	701.72	701.72	701.72	701.72	701.72
2.34	CFS	9.78	9.78	9.78	9.79	9.79	9.80	9.80	9.80
2.34	ELEV	701.72	701.72	701.72	701.72	701.72	701.72	701.72	701.73
2.40	CFS	9.81	9.81	9.81	9.82	9.82	9.82	9.83	9.83
2.40	ELEV	701.73	701.73	701.73	701.73	701.73	701.73	701.73	701.73
2.46	CFS	9.83	9.84	9.84	9.84	9.85	9.85	9.85	9.85
2.46	ELEV	701.73	701.73	701.73	701.73	701.73	701.73	701.73	701.73
2.53	CFS	9.86	9.86	9.86	9.86	9.87	9.87	9.87	9.88
2.53	ELEV	701.73	701.73	701.73	701.73	701.73	701.73	701.73	701.73
2.59	CFS	9.88	9.88	9.88	9.88	9.89	9.89	9.89	9.89
2.59	ELEV	701.73	701.74	701.74	701.74	701.74	701.74	701.74	701.74
2.66	CFS	9.90	9.90	9.90	9.90	9.90	9.91	9.91	9.91
2.66	ELEV	701.74	701.74	701.74	701.74	701.74	701.74	701.74	701.74
2.72	CFS	9.91	9.91	9.92	9.92	9.92	9.92	9.92	9.92
2.72	ELEV	701.74	701.74	701.74	701.74	701.74	701.74	701.74	701.74
2.78	CFS	9.93	9.93	9.93	9.93	9.93	9.93	9.94	9.94
2.78	ELEV	701.74	701.74	701.74	701.74	701.74	701.74	701.74	701.74
2.85	CFS	9.94	9.94	9.94	9.94	9.94	9.94	9.95	9.95
2.85	ELEV	701.74	701.74	701.74	701.74	701.74	701.74	701.74	701.74
2.91	CFS	9.95	9.95	9.95	9.95	9.95	9.95	9.95	9.95
2.91	ELEV	701.74	701.74	701.74	701.74	701.74	701.74	701.74	701.74
2.98	CFS	9.95	9.96	9.96	9.96	9.96	9.96	9.96	9.96
2.98	ELEV	701.74	701.74	701.74	701.74	701.74	701.74	701.74	701.74
3.04	CFS	9.96	9.96	9.96	9.96	9.96	9.96	9.96	9.96
3.04	ELEV	701.75	701.75	701.75	701.75	701.75	701.75	701.75	701.75
3.10	CFS	9.96	9.96	9.96	9.97	9.97	9.97	9.97	9.97
3.10	ELEV	701.75	701.75	701.75	701.75	701.75	701.75	701.75	701.75
3.17	CFS	9.97	9.97	9.97	9.97				
3.17	ELEV	701.75	701.75	701.75	701.75				

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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
12:29:10                    PASS   3   JOB NO.   1                       PAGE  29


    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .07 WATERSHED INCHES;      26 CFS-HRS;       2.1 ACRE-FEET.

    DURATION(HRS)   2      1
    FLOW(CFS)      19     10 TRUNCATED

 --- STRUCTURE  7, ALTERNATE  0, STORM  3, HYDROGRAPH ADDED TO READHD FILE ---


OPERATION RUNOFF    XSECTION  49

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        .16                           7.6                       (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                 1.07 WATERSHED INCHES;       2 CFS-HRS;        .1 ACRE-FEET.


OPERATION ADDHYD    XSECTION  50

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        .18                           9.1                       (NULL)
       3.19                          10.0                       (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .08 WATERSHED INCHES;      28 CFS-HRS;       2.3 ACRE-FEET.


OPERATION RESVOR    STRUCTURE 39

                  HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM = 3
     HRS      MAIN TIME INCREMENT =  .008 hr,      DRAINAGE AREA =    .62 SQ.MI.
      .04 CFS       .00     .01     .02     .03     .05     .08     .11     .15
      .04 ELEV   693.00  693.00  693.00  693.00  693.01  693.01  693.02  693.02
      .10 CFS       .20     .27     .34     .42     .52     .62     .73     .85
      .10 ELEV   693.03  693.04  693.05  693.06  693.07  693.09  693.10  693.12
      .17 CFS       .98    1.11    1.25    1.39    1.53    1.68    1.82    1.97
      .17 ELEV   693.14  693.16  693.18  693.20  693.22  693.24  693.26  693.28
      .23 CFS      2.11    2.26    2.40    2.54    2.68    2.81    2.95    3.07
      .23 ELEV   693.30  693.32  693.34  693.36  693.38  693.40  693.42  693.44
      .30 CFS      3.20    3.32    3.43    3.54    3.65    3.75    3.84    3.93
      .30 ELEV   693.45  693.47  693.49  693.50  693.52  693.53  693.54  693.56
      .36 CFS      4.01    4.09    4.17    4.24    4.30    4.36    4.42    4.47
      .36 ELEV   693.57  693.58  693.59  693.60  693.61  693.62  693.63  693.63
      .42 CFS      4.52    4.57    4.61    4.65    4.68    4.71    4.74    4.77
      .42 ELEV   693.64  693.65  693.65  693.66  693.66  693.67  693.67  693.68
      .49 CFS      4.80    4.82    4.84    4.86    4.88    4.89    4.91    4.92
      .49 ELEV   693.68  693.68  693.69  693.69  693.69  693.69  693.70  693.70
      .55 CFS      4.94    4.95    4.96    4.97    4.98    4.99    5.00    5.01
      .55 ELEV   693.70  693.70  693.70  693.70  693.71  693.71  693.71  693.71
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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
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      .62 CFS      5.01    5.02    5.03    5.03    5.04    5.04    5.05    5.05
      .62 ELEV   693.71  693.71  693.71  693.71  693.71  693.71  693.72  693.72
      .68 CFS      5.06    5.06    5.07    5.07    5.08    5.08    5.08    5.09
      .68 ELEV   693.72  693.72  693.72  693.72  693.72  693.72  693.72  693.72
      .74 CFS      5.09    5.09    5.09    5.10    5.10    5.10    5.11    5.11
      .74 ELEV   693.72  693.72  693.72  693.72  693.72  693.72  693.72  693.72
      .81 CFS      5.11    5.11    5.11    5.12    5.12    5.12    5.12    5.13
      .81 ELEV   693.72  693.72  693.72  693.72  693.73  693.73  693.73  693.73
      .87 CFS      5.13    5.13    5.13    5.13    5.14    5.14    5.14    5.14
      .87 ELEV   693.73  693.73  693.73  693.73  693.73  693.73  693.73  693.73
      .94 CFS      5.14    5.15    5.15    5.15    5.15    5.15    5.15    5.16
      .94 ELEV   693.73  693.73  693.73  693.73  693.73  693.73  693.73  693.73
     1.00 CFS      5.16    5.16    5.16    5.16    5.17    5.17    5.17    5.17
     1.00 ELEV   693.73  693.73  693.73  693.73  693.73  693.73  693.73  693.73
     1.06 CFS      5.17    5.18    5.18    5.18    5.18    5.19    5.19    5.19
     1.06 ELEV   693.73  693.73  693.73  693.73  693.73  693.73  693.73  693.74
     1.13 CFS      5.19    5.19    5.20    5.20    5.20    5.20    5.20    5.21
     1.13 ELEV   693.74  693.74  693.74  693.74  693.74  693.74  693.74  693.74
     1.19 CFS      5.21    5.21    5.21    5.22    5.22    5.22    5.22    5.22
     1.19 ELEV   693.74  693.74  693.74  693.74  693.74  693.74  693.74  693.74
     1.26 CFS      5.23    5.23    5.23    5.23    5.24    5.24    5.24    5.24
     1.26 ELEV   693.74  693.74  693.74  693.74  693.74  693.74  693.74  693.74
     1.32 CFS      5.25    5.25    5.25    5.25    5.25    5.26    5.26    5.26
     1.32 ELEV   693.74  693.74  693.74  693.74  693.74  693.74  693.74  693.75
     1.38 CFS      5.26    5.27    5.27    5.27    5.27    5.28    5.28    5.28
     1.38 ELEV   693.75  693.75  693.75  693.75  693.75  693.75  693.75  693.75
     1.45 CFS      5.28    5.29    5.29    5.29    5.29    5.30    5.30    5.30
     1.45 ELEV   693.75  693.75  693.75  693.75  693.75  693.75  693.75  693.75
     1.51 CFS      5.30    5.31    5.31    5.31    5.31    5.32    5.32    5.32
     1.51 ELEV   693.75  693.75  693.75  693.75  693.75  693.75  693.75  693.75
     1.58 CFS      5.32    5.33    5.33    5.33    5.34    5.34    5.34    5.34
     1.58 ELEV   693.75  693.75  693.75  693.76  693.76  693.76  693.76  693.76
     1.64 CFS      5.35    5.35    5.35    5.35    5.36    5.36    5.36    5.36
     1.64 ELEV   693.76  693.76  693.76  693.76  693.76  693.76  693.76  693.76
     1.70 CFS      5.37    5.37    5.37    5.37    5.38    5.38    5.38    5.39
     1.70 ELEV   693.76  693.76  693.76  693.76  693.76  693.76  693.76  693.76
     1.77 CFS      5.39    5.39    5.39    5.40    5.40    5.40    5.40    5.41
     1.77 ELEV   693.76  693.76  693.76  693.76  693.76  693.77  693.77  693.77
     1.83 CFS      5.41    5.41    5.42    5.42    5.42    5.42    5.43    5.43
     1.83 ELEV   693.77  693.77  693.77  693.77  693.77  693.77  693.77  693.77
     1.90 CFS      5.43    5.44    5.44    5.44    5.44    5.45    5.45    5.45
     1.90 ELEV   693.77  693.77  693.77  693.77  693.77  693.77  693.77  693.77
     1.96 CFS      5.46    5.46    5.46    5.46    5.47    5.47    5.47    5.47
     1.96 ELEV   693.77  693.77  693.77  693.77  693.77  693.77  693.78  693.78
     2.02 CFS      5.48    5.48    5.48    5.49    5.49    5.49    5.49    5.50
     2.02 ELEV   693.78  693.78  693.78  693.78  693.78  693.78  693.78  693.78
     2.09 CFS      5.50    5.50    5.51    5.51    5.51    5.51    5.52    5.52
     2.09 ELEV   693.78  693.78  693.78  693.78  693.78  693.78  693.78  693.78
     2.15 CFS      5.52    5.53    5.53    5.53    5.53    5.54    5.54    5.54
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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
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     2.15 ELEV   693.78  693.78  693.78  693.78  693.78  693.78  693.78  693.79
     2.22 CFS      5.55    5.55    5.55    5.56    5.56    5.56    5.56    5.57
     2.22 ELEV   693.79  693.79  693.79  693.79  693.79  693.79  693.79  693.79
     2.28 CFS      5.57    5.57    5.58    5.58    5.58    5.58    5.59    5.59
     2.28 ELEV   693.79  693.79  693.79  693.79  693.79  693.79  693.79  693.79
     2.34 CFS      5.59    5.60    5.60    5.60    5.60    5.61    5.61    5.61
     2.34 ELEV   693.79  693.79  693.79  693.79  693.79  693.79  693.79  693.80
     2.41 CFS      5.62    5.62    5.62    5.62    5.63    5.63    5.63    5.64
     2.41 ELEV   693.80  693.80  693.80  693.80  693.80  693.80  693.80  693.80
     2.47 CFS      5.64    5.64    5.65    5.65    5.65    5.65    5.66    5.66
     2.47 ELEV   693.80  693.80  693.80  693.80  693.80  693.80  693.80  693.80
     2.54 CFS      5.66    5.67    5.67    5.67    5.67    5.68    5.68    5.68
     2.54 ELEV   693.80  693.80  693.80  693.80  693.80  693.80  693.80  693.80
     2.60 CFS      5.69    5.69    5.69    5.69    5.70    5.70    5.70    5.71
     2.60 ELEV   693.81  693.81  693.81  693.81  693.81  693.81  693.81  693.81
     2.66 CFS      5.71    5.71    5.72    5.72    5.72    5.72    5.73    5.73
     2.66 ELEV   693.81  693.81  693.81  693.81  693.81  693.81  693.81  693.81
     2.73 CFS      5.73    5.74    5.74    5.74    5.74    5.75    5.75    5.75
     2.73 ELEV   693.81  693.81  693.81  693.81  693.81  693.81  693.81  693.81
     2.79 CFS      5.76    5.76    5.76    5.76    5.77    5.77    5.77    5.78
     2.79 ELEV   693.82  693.82  693.82  693.82  693.82  693.82  693.82  693.82
     2.86 CFS      5.78    5.78    5.78    5.79    5.79    5.79    5.80    5.80
     2.86 ELEV   693.82  693.82  693.82  693.82  693.82  693.82  693.82  693.82
     2.92 CFS      5.80    5.80    5.81    5.81    5.81    5.82    5.82    5.82
     2.92 ELEV   693.82  693.82  693.82  693.82  693.82  693.82  693.82  693.82
     2.98 CFS      5.82    5.83    5.83    5.83    5.84    5.84    5.84    5.84
     2.98 ELEV   693.83  693.83  693.83  693.83  693.83  693.83  693.83  693.83
     3.05 CFS      5.85    5.85    5.85    5.86    5.86    5.86    5.86    5.87
     3.05 ELEV   693.83  693.83  693.83  693.83  693.83  693.83  693.83  693.83
     3.11 CFS      5.87    5.87    5.88    5.88    5.88    5.88    5.89    5.89
     3.11 ELEV   693.83  693.83  693.83  693.83  693.83  693.83  693.83  693.83
     3.18 CFS      5.89    5.90    5.90
     3.18 ELEV   693.83  693.84  693.84

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                    .04 WATERSHED INCHES;      16 CFS-HRS;       1.3 ACRE-FEET.

    DURATION(HRS)   2      1
    FLOW(CFS)      19      6 TRUNCATED

 --- STRUCTURE 39, ALTERNATE  0, STORM  3, HYDROGRAPH ADDED TO READHD FILE ---


EXECUTIVE CONTROL  ENDCMP    COMPUTATIONS COMPLETED FOR PASS   3
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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
12:29:10                    PASS   4   JOB NO.   1                      PAGE  32


EXECUTIVE CONTROL  COMPUT    FROM XSECTION  91  TO STRUCTURE 39           30-MIN
    STARTING TIME =   .00       RAIN DEPTH =  2.80       RAIN DURATION =   .50
    ANT. RUNOFF COND. = 2       MAIN TIME INCREMENT =   .008 HOURS
    ALTERNATE NO. = 0           STORM NO. = 4            RAIN TABLE NO. = 1


OPERATION RUNOFF    XSECTION  91

    PEAK TIME(HRS)              PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .75                         64.8                        (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                    .83 WATERSHED INCHES;      50 CFS-HRS;       4.1 ACRE-FEET.


OPERATION RUNOFF    XSECTION  92

    PEAK TIME(HRS)              PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .82                         104.4                       (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                   1.10 WATERSHED INCHES;      92 CFS-HRS;       7.6 ACRE-FEET.


OPERATION ADDHYD    XSECTION  93

    PEAK TIME(HRS)              PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .79                         167.9                       (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                    .99 WATERSHED INCHES;     141 CFS-HRS;      11.7 ACRE-FEET.


OPERATION RUNOFF    XSECTION  94

    PEAK TIME(HRS)              PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .82                          6.8                        (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                    .42 WATERSHED INCHES;       5 CFS-HRS;        .5 ACRE-FEET.


OPERATION RESVOR    STRUCTURE 11

                    HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM = 4
     HRS      MAIN TIME INCREMENT =  .008 hr,      DRAINAGE AREA =    .02 SQ.MI.
      .14 CFS       .00     .01     .01     .01     .01     .02     .02     .03
      .14 ELEV   737.50  737.51  737.51  737.51  737.51  737.52  737.52  737.53
      .20 CFS       .04     .04     .05     .06     .08     .09     .10     .12
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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
12:29:10                    PASS   4   JOB NO.   1                     PAGE  33

      .20 ELEV   737.54  737.54  737.55  737.56  737.58  737.59  737.60  737.62
      .26 CFS       .14     .16     .18     .20     .23     .26     .29     .32
      .26 ELEV   737.64  737.66  737.68  737.70  737.73  737.76  737.79  737.82
      .33 CFS       .35     .39     .43     .47     .50     .51     .52     .53
      .33 ELEV   737.85  737.89  737.93  737.97  738.00  738.02  738.03  738.05
      .39 CFS       .54     .55     .56     .57     .58     .60     .61     .63
      .39 ELEV   738.07  738.09  738.11  738.14  738.17  738.19  738.22  738.26
      .46 CFS       .65     .66     .68     .70     .73     .75     .77     .80
      .46 ELEV   738.29  738.33  738.37  738.41  738.45  738.50  738.55  738.60
      .52 CFS       .82     .85     .88     .91     .94     .97    1.00    1.08
      .52 ELEV   738.65  738.70  738.76  738.82  738.88  738.94  739.00  739.04
      .58 CFS      1.16    1.24    1.32    1.41    1.49    1.57    1.66    1.74
      .58 ELEV   739.08  739.12  739.16  739.20  739.24  739.29  739.33  739.37
      .65 CFS      1.83    1.92    2.00    2.09    2.18    2.26    2.35    2.44
      .65 ELEV   739.42  739.46  739.50  739.54  739.59  739.63  739.68  739.72
      .71 CFS      2.52    2.61    2.69    2.78    2.86    2.95    3.02    3.08
      .71 ELEV   739.76  739.80  739.85  739.89  739.93  739.97  740.01  740.04
      .78 CFS      3.14    3.20    3.26    3.32    3.38    3.44    3.49    3.55
      .78 ELEV   740.07  740.10  740.13  740.16  740.19  740.22  740.25  740.28
      .84 CFS      3.61    3.66    3.71    3.76    3.81    3.86    3.91    3.95
      .84 ELEV   740.30  740.33  740.36  740.38  740.41  740.43  740.45  740.48
      .90 CFS      4.00    4.04    4.08    4.12    4.16    4.20    4.23    4.27
      .90 ELEV   740.50  740.52  740.54  740.56  740.58  740.60  740.62  740.63
      .97 CFS      4.30    4.33    4.36    4.38    4.41    4.43    4.45    4.47
      .97 ELEV   740.65  740.66  740.68  740.69  740.70  740.71  740.73  740.73
     1.03 CFS      4.49    4.50    4.52    4.53    4.54    4.55    4.55    4.56
     1.03 ELEV   740.74  740.75  740.76  740.76  740.77  740.77  740.78  740.78
     1.10 CFS      4.56    4.56    4.56    4.56    4.56    4.56    4.55    4.55
     1.10 ELEV   740.78  740.78  740.78  740.78  740.78  740.78  740.78  740.77
     1.16 CFS      4.54    4.53    4.52    4.51    4.49    4.48    4.46    4.45
     1.16 ELEV   740.77  740.76  740.76  740.75  740.75  740.74  740.73  740.72
     1.22 CFS      4.43    4.41    4.39    4.37    4.35    4.33    4.30    4.28
     1.22 ELEV   740.71  740.71  740.70  740.69  740.67  740.66  740.65  740.64
     1.29 CFS      4.26    4.23    4.21    4.18    4.15    4.12    4.09    4.07
     1.29 ELEV   740.63  740.62  740.60  740.59  740.58  740.56  740.55  740.53
     1.35 CFS      4.04    4.01    3.98    3.95    3.91    3.88    3.85    3.82
     1.35 ELEV   740.52  740.50  740.49  740.47  740.46  740.44  740.43  740.41
     1.42 CFS      3.79    3.75    3.72    3.69    3.66    3.62    3.59    3.56
     1.42 ELEV   740.39  740.38  740.36  740.34  740.33  740.31  740.30  740.28
     1.48 CFS      3.52    3.49    3.46    3.42    3.39    3.36    3.32    3.29
     1.48 ELEV   740.26  740.25  740.23  740.21  740.19  740.18  740.16  740.14
     1.54 CFS      3.26    3.22    3.19    3.16    3.12    3.09    3.06    3.02
     1.54 ELEV   740.13  740.11  740.09  740.08  740.06  740.05  740.03  740.01
     1.61 CFS      2.99    2.95    2.90    2.86    2.82    2.78    2.73    2.69
     1.61 ELEV   739.99  739.97  739.95  739.93  739.91  739.89  739.87  739.85
     1.67 CFS      2.65    2.61    2.57    2.53    2.50    2.46    2.42    2.38
     1.67 ELEV   739.83  739.81  739.79  739.77  739.75  739.73  739.71  739.69
     1.74 CFS      2.34    2.31    2.27    2.24    2.20    2.17    2.13    2.10
     1.74 ELEV   739.67  739.65  739.64  739.62  739.60  739.58  739.57  739.55
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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
12:29:10                    PASS   4   JOB NO.   1                     PAGE  34

     1.80 CFS      2.06    2.03    2.00    1.97    1.93    1.90    1.87    1.84
     1.80 ELEV   739.53  739.52  739.50  739.48  739.47  739.45  739.44  739.42
     1.86 CFS      1.81    1.78    1.75    1.72    1.70    1.67    1.64    1.61
     1.86 ELEV   739.41  739.39  739.38  739.36  739.35  739.33  739.32  739.31
     1.93 CFS      1.59    1.56    1.53    1.51    1.48    1.46    1.43    1.41
     1.93 ELEV   739.29  739.28  739.27  739.25  739.24  739.23  739.22  739.20
     1.99 CFS      1.38    1.36    1.34    1.31    1.29    1.27    1.25    1.23
     1.99 ELEV   739.19  739.18  739.17  739.16  739.15  739.13  739.12  739.11
     2.06 CFS      1.21    1.18    1.16    1.14    1.12    1.10    1.08    1.07
     2.06 ELEV   739.10  739.09  739.08  739.07  739.06  739.05  739.04  739.03
     2.12 CFS      1.05    1.03    1.01    1.00     .99     .98     .98     .97
     2.12 ELEV   739.02  739.01  739.01  738.99  738.98  738.96  738.95  738.94
     2.18 CFS       .96     .95     .95     .94     .93     .92     .92     .91
     2.18 ELEV   738.92  738.91  738.89  738.88  738.86  738.85  738.84  738.82
     2.25 CFS       .90     .90     .89     .88     .88     .87     .86     .86
     2.25 ELEV   738.81  738.79  738.78  738.77  738.75  738.74  738.72  738.71
     2.31 CFS       .85     .84     .83     .83     .82     .82     .81     .80
     2.31 ELEV   738.70  738.68  738.67  738.66  738.64  738.63  738.62  738.60
     2.38 CFS       .80     .79     .78     .78     .77     .76     .76     .75
     2.38 ELEV   738.59  738.58  738.57  738.55  738.54  738.53  738.51  738.50
     2.44 CFS       .74     .74     .73     .73     .72     .71     .71     .70
     2.44 ELEV   738.49  738.48  738.47  738.45  738.44  738.43  738.42  738.41
     2.50 CFS       .70     .69     .69     .68     .67     .67     .66     .66
     2.50 ELEV   738.39  738.38  738.37  738.36  738.35  738.34  738.32  738.31
     2.57 CFS       .65     .65     .64     .63     .63     .62     .62     .61
     2.57 ELEV   738.30  738.29  738.28  738.27  738.26  738.25  738.24  738.23
     2.63 CFS       .61     .60     .60     .59     .59     .58     .58     .57
     2.63 ELEV   738.22  738.21  738.19  738.18  738.17  738.16  738.15  738.14
     2.70 CFS       .57     .56     .56     .55     .55     .54     .54     .53
     2.70 ELEV   738.13  738.12  738.11  738.10  738.10  738.09  738.08  738.07
     2.76 CFS       .53     .52     .52     .51     .51     .51     .50     .48
     2.76 ELEV   738.06  738.05  738.04  738.03  738.02  738.01  738.00  737.98
     2.82 CFS       .45     .42     .40     .37     .35     .33     .31     .29
     2.82 ELEV   737.95  737.92  737.90  737.87  737.85  737.83  737.81  737.79
     2.89 CFS       .27     .26     .24     .23     .21     .20     .19     .18
     2.89 ELEV   737.77  737.76  737.74  737.73  737.71  737.70  737.69  737.68
     2.95 CFS       .17     .16     .15     .14     .13     .12     .11     .11
     2.95 ELEV   737.67  737.66  737.65  737.64  737.63  737.62  737.61  737.61
     3.02 CFS       .10     .09     .09     .08     .08     .07     .07     .06
     3.02 ELEV   737.60  737.59  737.59  737.58  737.58  737.57  737.57  737.56
     3.08 CFS       .06     .06     .05     .05     .05     .04     .04     .04
     3.08 ELEV   737.56  737.56  737.55  737.55  737.55  737.54  737.54  737.54
     3.14 CFS       .04     .03     .03     .03     .03     .03     .02     .02
     3.14 ELEV   737.54  737.53  737.53  737.53  737.53  737.53  737.52  737.52
     3.21 CFS       .02     .02     .02     .02     .02
     3.21 ELEV   737.52  737.52  737.52  737.52  737.52

   RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                .42 WATERSHED INCHES;       5 CFS-HRS;        .5 ACRE-FEET.
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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
12:29:10                    PASS   4   JOB NO.   1                       PAGE  35


    DURATION(HRS)   2      2
    FLOW(CFS)       1      0

 --- STRUCTURE 11, ALTERNATE  0, STORM  4, HYDROGRAPH ADDED TO READHD FILE ---


OPERATION RUNOFF    XSECTION  96

    PEAK TIME(HRS)              PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .17                          49.1                        (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  2.57 WATERSHED INCHES;      14 CFS-HRS;       1.2 ACRE-FEET.


OPERATION ADDHYD    XSECTION  97

    PEAK TIME(HRS)              PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .19                          54.9                        (NULL)
         .79                         171.4                        (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  1.00 WATERSHED INCHES;     161 CFS-HRS;      13.3 ACRE-FEET.


OPERATION RESVOR    STRUCTURE  6

                  HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM = 4
     HRS      MAIN TIME INCREMENT =  .008 hr,      DRAINAGE AREA =    .28 SQ.MI.
      .02 CFS      .00     .01     .01     .03     .06     .10     .18     .28
      .02 ELEV   707.00  707.00  707.00  707.00  707.01  707.01  707.02  707.03
      .08 CFS      .43     .62     .87    1.17    1.52    1.93    2.39    2.89
      .08 ELEV   707.05  707.07  707.10  707.14  707.18  707.23  707.28  707.34
      .14 CFS     3.43    4.02    4.63    5.26    5.92    6.58    7.25    7.91
      .14 ELEV   707.41  707.48  707.55  707.63  707.70  707.78  707.86  707.94
      .21 CFS     8.63    9.46   10.28   11.08   11.87   12.65   13.40   14.14
      .21 ELEV   708.02  708.09  708.16  708.23  708.30  708.37  708.43  708.49
      .27 CFS    14.86   15.56   16.24   16.91   17.56   18.20   18.81   19.42
      .27 ELEV   708.56  708.62  708.68  708.73  708.79  708.84  708.90  708.95
      .34 CFS    20.02   20.85   21.66   22.47   23.27   24.06   24.85   25.64
      .34 ELEV   709.00  709.05  709.09  709.14  709.18  709.23  709.27  709.31
      .40 CFS    26.44   27.24   28.06   28.88   29.72   30.57   31.44   32.33
      .40 ELEV   709.36  709.40  709.45  709.49  709.54  709.59  709.64  709.68
      .46 CFS    33.22   34.14   35.06   35.99   36.94   37.89   38.76   39.63
      .46 ELEV   709.73  709.79  709.84  709.89  709.94  709.99  710.04  710.10
      .53 CFS    40.50   41.38   42.28   43.17   44.07   44.97   45.88   46.77
      .53 ELEV   710.15  710.20  710.25  710.30  710.36  710.41  710.46  710.52
      .59 CFS    47.67   48.57   49.46   50.34   51.22   52.10   52.98   53.85
      .59 ELEV   710.57  710.62  710.67  710.73  710.78  710.83  710.88  710.93
      .66 CFS    54.72   55.35   55.88   56.40   56.93   57.46   57.99   58.52
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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
12:29:10                    PASS   4   JOB NO.   1                       PAGE  36

      .66 ELEV   710.98  711.03  711.08  711.13  711.18  711.22  711.27  711.32
      .72 CFS     59.05   59.58   60.11   60.65   61.18   61.71   62.25   62.78
      .72 ELEV   711.37  711.42  711.46  711.51  711.56  711.61  711.66  711.71
      .78 CFS     63.30   63.83   64.35   64.87   65.39   65.90   69.25   73.17
      .78 ELEV   711.75  711.80  711.85  711.90  711.94  711.99  712.03  712.07
      .85 CFS     76.91   80.48   83.88   87.11   90.17   93.08   95.82   98.41
      .85 ELEV   712.11  712.15  712.19  712.22  712.25  712.28  712.31  712.34
      .91 CFS       101     103     105     107     109     111     112     114
      .91 ELEV   712.36  712.39  712.41  712.43  712.45  712.47  712.48  712.50
      .98 CFS       115     116     118     118     119     120     121     121
      .98 ELEV   712.51  712.53  712.54  712.55  712.56  712.56  712.57  712.58
     1.04 CFS       122     122     122     122     122     122     122     122
     1.04 ELEV   712.58  712.58  712.59  712.59  712.59  712.59  712.59  712.58
     1.10 CFS       122     122     121     121     120     120     119     118
     1.10 ELEV   712.58  712.58  712.57  712.57  712.56  712.56  712.55  712.54
     1.17 CFS       118     117     116     115     114     113     112     111
     1.17 ELEV   712.54  712.53  712.52  712.51  712.50  712.49  712.48  712.47
     1.23 CFS       110     109     108     107     106     104     103     102
     1.23 ELEV   712.46  712.45  712.44  712.42  712.41  712.40  712.39  712.38
     1.30 CFS       101     100      98      97      96      95      93      92
     1.30 ELEV   712.36  712.35  712.34  712.32  712.31  712.30  712.29  712.27
     1.36 CFS     90.90   89.63   88.37   87.10   85.84   84.57   83.32   82.06
     1.36 ELEV   712.26  712.25  712.23  712.22  712.21  712.19  712.18  712.17
     1.42 CFS     80.82   79.58   78.34   77.11   75.90   74.69   73.48   72.29
     1.42 ELEV   712.15  712.14  712.13  712.12  712.10  712.09  712.08  712.07
     1.49 CFS     71.11   69.94   68.79   67.64   66.50   65.92   65.78   65.64
     1.49 ELEV   712.05  712.04  712.03  712.02  712.01  711.99  711.98  711.97
     1.55 CFS     65.49   65.34   65.19   65.03   64.88   64.72   64.55   64.39
     1.55 ELEV   711.95  711.94  711.93  711.91  711.90  711.88  711.87  711.85
     1.62 CFS     64.22   64.05   63.88   63.70   63.53   63.35   63.17   62.99
     1.62 ELEV   711.84  711.82  711.81  711.79  711.78  711.76  711.74  711.73
     1.68 CFS     62.80   62.62   62.43   62.24   62.05   61.86   61.67   61.47
     1.68 ELEV   711.71  711.69  711.68  711.66  711.64  711.62  711.61  711.59
     1.74 CFS     61.28   61.08   60.88   60.68   60.48   60.28   60.08   59.88
     1.74 ELEV   711.57  711.55  711.53  711.52  711.50  711.48  711.46  711.44
     1.81 CFS     59.67   59.47   59.26   59.05   58.85   58.64   58.43   58.22
     1.81 ELEV   711.42  711.41  711.39  711.37  711.35  711.33  711.31  711.29
     1.87 CFS     58.01   57.80   57.59   57.38   57.17   56.95   56.74   56.53
     1.87 ELEV   711.27  711.25  711.24  711.22  711.20  711.18  711.16  711.14
     1.94 CFS     56.32   56.10   55.89   55.67   55.46   55.25   55.03   54.70
     1.94 ELEV   711.12  711.10  711.08  711.06  711.04  711.02  711.00  710.98
     2.00 CFS     54.34   53.98   53.63   53.28   52.92   52.57   52.22   51.88
     2.00 ELEV   710.96  710.94  710.92  710.90  710.88  710.86  710.84  710.82
     2.06 CFS     51.53   51.18   50.84   50.50   50.15   49.81   49.47   49.14
     2.06 ELEV   710.80  710.78  710.76  710.74  710.71  710.69  710.67  710.66
     2.13 CFS     48.80   48.47   48.13   47.80   47.47   47.14   46.81   46.49
     2.13 ELEV   710.64  710.62  710.60  710.58  710.56  710.54  710.52  710.50
     2.19 CFS     46.16   45.84   45.52   45.20   44.89   44.57   44.26   43.94
     2.19 ELEV   710.48  710.46  710.44  710.42  710.41  710.39  710.37  710.35
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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
12:29:10                    PASS   4   JOB NO.   1                      PAGE  37

     2.26 CFS     43.63   43.32   43.02   42.71   42.41   42.10   41.80   41.50
     2.26 ELEV   710.33  710.31  710.29  710.28  710.26  710.24  710.22  710.21
     2.32 CFS     41.21   40.91   40.62   40.32   40.03   39.74   39.46   39.17
     2.32 ELEV   710.19  710.17  710.15  710.14  710.12  710.10  710.09  710.07
     2.38 CFS     38.89   38.60   38.32   38.04   37.74   37.43   37.12   36.82
     2.38 ELEV   710.05  710.04  710.02  710.00  709.99  709.97  709.95  709.93
     2.45 CFS     36.51   36.21   35.92   35.62   35.33   35.03   34.74   34.46
     2.45 ELEV   709.92  709.90  709.88  709.87  709.85  709.84  709.82  709.80
     2.51 CFS     34.17   33.89   33.60   33.32   33.05   32.77   32.50   32.23
     2.51 ELEV   709.79  709.77  709.76  709.74  709.72  709.71  709.69  709.68
     2.58 CFS     31.96   31.69   31.42   31.16   30.90   30.64   30.38   30.13
     2.58 ELEV   709.66  709.65  709.63  709.62  709.61  709.59  709.58  709.56
     2.64 CFS     29.87   29.62   29.37   29.12   28.88   28.63   28.39   28.15
     2.64 ELEV   709.55  709.53  709.52  709.51  709.49  709.48  709.47  709.45
     2.70 CFS     27.91   27.67   27.44   27.21   26.97   26.75   26.52   26.29
     2.70 ELEV   709.44  709.43  709.41  709.40  709.39  709.37  709.36  709.35
     2.77 CFS     26.07   25.85   25.62   25.41   25.19   24.97   24.76   24.55
     2.77 ELEV   709.34  709.32  709.31  709.30  709.29  709.28  709.26  709.25
     2.83 CFS     24.34   24.13   23.92   23.71   23.51   23.31   23.10   22.90
     2.83 ELEV   709.24  709.23  709.22  709.21  709.19  709.18  709.17  709.16
     2.90 CFS     22.70   22.51   22.31   22.12   21.92   21.73   21.54   21.35
     2.90 ELEV   709.15  709.14  709.13  709.12  709.11  709.10  709.09  709.08
     2.96 CFS     21.17   20.98   20.80   20.61   20.43   20.25   20.07   19.93
     2.96 ELEV   709.06  709.05  709.04  709.03  709.02  709.01  709.00  708.99
     3.02 CFS     19.81   19.68   19.56   19.44   19.32   19.20   19.08   18.96
     3.02 ELEV   708.98  708.97  708.96  708.95  708.94  708.93  708.92  708.91
     3.09 CFS     18.85   18.73   18.61   18.50   18.38   18.27   18.15   18.04
     3.09 ELEV   708.90  708.89  708.88  708.87  708.86  708.85  708.84  708.83
     3.15 CFS     17.93   17.81   17.70   17.59   17.48   17.37
     3.15 ELEV   708.82  708.81  708.80  708.79  708.78  708.77

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .91 WATERSHED INCHES;     163 CFS-HRS;      13.5 ACRE-FEET.

    DURATION(HRS)   2      3
    FLOW(CFS)      35     17 TRUNCATED

 --- STRUCTURE  6, ALTERNATE  0, STORM  4, HYDROGRAPH ADDED TO READHD FILE ---


OPERATION RUNOFF    XSECTION  99

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .20                        497.5                       (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                 1.57 WATERSHED INCHES;     154 CFS-HRS;      12.7 ACRE-FEET.
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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
12:29:10                    PASS   4   JOB NO.   1                      PAGE  38


OPERATION ADDHYD    XSECTION  90

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .20                        505.6                       (NULL)
        1.07                        122.5                       (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                 1.14 WATERSHED INCHES;     317 CFS-HRS;      26.2 ACRE-FEET.


OPERATION RESVOR    STRUCTURE  7

                    HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM = 4
     HRS      MAIN TIME INCREMENT =  .008 hr,       DRAINAGE AREA =    .54 SQ.MI.
      .04 CFS      .00     .01     .01     .03     .04     .07     .11     .16
      .04 ELEV   700.00  700.00  700.00  700.01  700.01  700.02  700.03  700.04
      .10 CFS      .22     .30     .39     .50     .62     .76     .91    1.07
      .10 ELEV   700.06  700.07  700.10  700.12  700.16  700.19  700.23  700.27
      .17 CFS     1.25    1.43    1.63    1.83    2.04    2.25    2.47    2.68
      .17 ELEV   700.31  700.36  700.41  700.46  700.51  700.56  700.62  700.67
      .23 CFS     2.90    3.13    3.35    3.57    3.79    4.01    4.28    4.55
      .23 ELEV   700.73  700.78  700.84  700.89  700.95  701.00  701.03  701.07
      .30 CFS     4.82    5.08    5.34    5.59    5.84    6.08    6.31    6.54
      .30 ELEV   701.10  701.14  701.17  701.20  701.23  701.26  701.29  701.32
      .36 CFS     6.76    6.97    7.18    7.39    7.59    7.78    7.97    8.16
      .36 ELEV   701.34  701.37  701.40  701.42  701.45  701.47  701.50  701.52
      .42 CFS     8.34    8.52    8.70    8.87    9.05    9.21    9.38    9.54
      .42 ELEV   701.54  701.57  701.59  701.61  701.63  701.65  701.67  701.69
      .49 CFS     9.70    9.85   10.00   10.15   10.29   10.43   10.57   10.71
      .49 ELEV   701.71  701.73  701.75  701.77  701.79  701.80  701.82  701.84
      .55 CFS    10.84   10.96   11.08   11.20   11.31   11.42   11.52   11.62
      .55 ELEV   701.85  701.87  701.89  701.90  701.91  701.93  701.94  701.95
      .62 CFS    11.71   11.80   11.88   11.96   12.02   12.07   12.12   12.17
      .62 ELEV   701.96  701.97  701.99  701.99  702.00  702.01  702.02  702.03
      .68 CFS    12.21   12.25   12.29   12.33   12.37   12.40   12.43   12.46
      .68 ELEV   702.04  702.04  702.05  702.05  702.06  702.07  702.07  702.08
      .74 CFS    12.50   12.52   12.55   12.58   12.61   12.63   12.66   12.68
      .74 ELEV   702.08  702.09  702.09  702.10  702.10  702.11  702.11  702.11
      .81 CFS    12.70   12.73   12.75   12.77   12.80   12.82   12.84   12.87
      .81 ELEV   702.12  702.12  702.13  702.13  702.13  702.14  702.14  702.14
      .87 CFS    12.89   12.92   12.95   12.97   13.00   13.03   13.06   13.09
      .87 ELEV   702.15  702.15  702.16  702.16  702.17  702.17  702.18  702.18
      .94 CFS    13.11   13.14   13.17   13.20   13.23   13.26   13.29   13.32
      .94 ELEV   702.19  702.19  702.20  702.20  702.21  702.21  702.22  702.22
     1.00 CFS    13.35   13.39   13.42   13.45   13.48   13.51   13.54   13.57
     1.00 ELEV   702.23  702.23  702.24  702.24  702.25  702.25  702.26  702.26
     1.06 CFS    13.60   13.64   13.67   13.70   13.73   13.76   13.79   13.82
     1.06 ELEV   702.27  702.27  702.28  702.28  702.29  702.29  702.30  702.30
     1.13 CFS    13.85   13.88   13.91   13.94   13.97   14.00   14.03   14.06
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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
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     1.13 ELEV   702.31  702.31  702.32  702.32  702.33  702.33  702.34  702.34
     1.19 CFS     14.09   14.12   14.14   14.17   14.20   14.23   14.25   14.28
     1.19 ELEV   702.35  702.35  702.36  702.36  702.37  702.37  702.38  702.38
     1.26 CFS     14.31   14.33   14.36   14.38   14.41   14.43   14.46   14.48
     1.26 ELEV   702.38  702.39  702.39  702.40  702.40  702.41  702.41  702.41
     1.32 CFS     14.50   14.53   14.55   14.57   14.59   14.61   14.64   14.66
     1.32 ELEV   702.42  702.42  702.42  702.43  702.43  702.44  702.44  702.44
     1.38 CFS     14.68   14.70   14.72   14.74   14.76   14.77   14.79   14.81
     1.38 ELEV   702.45  702.45  702.45  702.46  702.46  702.46  702.47  702.47
     1.45 CFS     14.83   14.85   14.86   14.88   14.90   14.91   14.93   14.94
     1.45 ELEV   702.47  702.47  702.48  702.48  702.48  702.49  702.49  702.49
     1.51 CFS     14.96   14.97   14.99   15.00   15.01   15.03   15.04   15.06
     1.51 ELEV   702.49  702.50  702.50  702.50  702.50  702.50  702.51  702.51
     1.58 CFS     15.07   15.08   15.10   15.11   15.13   15.14   15.15   15.17
     1.58 ELEV   702.51  702.51  702.52  702.52  702.52  702.52  702.53  702.53
     1.64 CFS     15.18   15.20   15.21   15.22   15.24   15.25   15.26   15.28
     1.64 ELEV   702.53  702.53  702.53  702.54  702.54  702.54  702.54  702.55
     1.70 CFS     15.29   15.30   15.31   15.33   15.34   15.35   15.37   15.38
     1.70 ELEV   702.55  702.55  702.55  702.55  702.56  702.56  702.56  702.56
     1.77 CFS     15.39   15.40   15.42   15.43   15.44   15.46   15.47   15.48
     1.77 ELEV   702.57  702.57  702.57  702.57  702.57  702.58  702.58  702.58
     1.83 CFS     15.49   15.50   15.52   15.53   15.54   15.55   15.56   15.58
     1.83 ELEV   702.58  702.58  702.59  702.59  702.59  702.59  702.59  702.60
     1.90 CFS     15.59   15.60   15.61   15.62   15.63   15.65   15.66   15.67
     1.90 ELEV   702.60  702.60  702.60  702.60  702.61  702.61  702.61  702.61
     1.96 CFS     15.68   15.69   15.70   15.71   15.72   15.73   15.75   15.76
     1.96 ELEV   702.61  702.62  702.62  702.62  702.62  702.62  702.62  702.63
     2.02 CFS     15.77   15.78   15.79   15.80   15.81   15.82   15.83   15.84
     2.02 ELEV   702.63  702.63  702.63  702.63  702.63  702.64  702.64  702.64
     2.09 CFS     15.85   15.86   15.87   15.88   15.89   15.90   15.90   15.91
     2.09 ELEV   702.64  702.64  702.64  702.65  702.65  702.65  702.65  702.65
     2.15 CFS     15.92   15.93   15.94   15.95   15.96   15.97   15.97   15.98
     2.15 ELEV   702.65  702.66  702.66  702.66  702.66  702.66  702.66  702.66
     2.22 CFS     15.99   16.00   16.01   16.02   16.02   16.03   16.04   16.05
     2.22 ELEV   702.67  702.67  702.67  702.67  702.67  702.67  702.67  702.67
     2.28 CFS     16.05   16.06   16.07   16.08   16.08   16.09   16.10   16.10
     2.28 ELEV   702.68  702.68  702.68  702.68  702.68  702.68  702.68  702.68
     2.34 CFS     16.11   16.12   16.12   16.13   16.14   16.14   16.15   16.16
     2.34 ELEV   702.69  702.69  702.69  702.69  702.69  702.69  702.69  702.69
     2.41 CFS     16.16   16.17   16.17   16.18   16.19   16.19   16.20   16.20
     2.41 ELEV   702.69  702.69  702.70  702.70  702.70  702.70  702.70  702.70
     2.47 CFS     16.21   16.21   16.22   16.22   16.23   16.23   16.24   16.24
     2.47 ELEV   702.70  702.70  702.70  702.70  702.70  702.71  702.71  702.71
     2.54 CFS     16.25   16.25   16.26   16.26   16.27   16.27   16.28   16.28
     2.54 ELEV   702.71  702.71  702.71  702.71  702.71  702.71  702.71  702.71
     2.60 CFS     16.29   16.29   16.29   16.30   16.30   16.31   16.31   16.31
     2.60 ELEV   702.71  702.71  702.72  702.72  702.72  702.72  702.72  702.72
     2.66 CFS     16.32   16.32   16.32   16.33   16.33   16.33   16.34   16.34
     2.66 ELEV   702.72  702.72  702.72  702.72  702.72  702.72  702.72  702.72
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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
12:29:10                    PASS   4   JOB NO.   1                      PAGE  40

     2.73 CFS     16.34   16.35   16.35   16.35   16.35   16.36   16.36   16.36
     2.73 ELEV   702.72  702.72  702.72  702.73  702.73  702.73  702.73  702.73
     2.79 CFS     16.37   16.37   16.37   16.37   16.37   16.38   16.38   16.38
     2.79 ELEV   702.73  702.73  702.73  702.73  702.73  702.73  702.73  702.73
     2.86 CFS     16.38   16.39   16.39   16.39   16.39   16.39   16.39   16.40
     2.86 ELEV   702.73  702.73  702.73  702.73  702.73  702.73  702.73  702.73
     2.92 CFS     16.40   16.40   16.40   16.40   16.40   16.41   16.41   16.41
     2.92 ELEV   702.73  702.73  702.73  702.73  702.73  702.73  702.73  702.73
     2.98 CFS     16.41   16.41   16.41   16.41   16.41   16.41   16.42   16.42
     2.98 ELEV   702.73  702.74  702.74  702.74  702.74  702.74  702.74  702.74
     3.05 CFS     16.42   16.42   16.42   16.42   16.42   16.42   16.42   16.42
     3.05 ELEV   702.74  702.74  702.74  702.74  702.74  702.74  702.74  702.74
     3.11 CFS     16.42   16.42   16.42   16.42   16.43   16.43   16.43   16.43
     3.11 ELEV   702.74  702.74  702.74  702.74  702.74  702.74  702.74  702.74
     3.18 CFS     16.43   16.43   16.43
     3.18 ELEV   702.74  702.74  702.74

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                    .12 WATERSHED INCHES;      42 CFS-HRS;       3.5 ACRE-FEET.

 --- STRUCTURE  7, ALTERNATE  0, STORM  4, HYDROGRAPH ADDED TO READHD FILE ---


OPERATION RUNOFF    XSECTION  49

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .19                          8.4                        (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                   1.72 WATERSHED INCHES;       3 CFS-HRS;        .2 ACRE-FEET.


OPERATION ADDHYD    XSECTION  50

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        3.19                         16.4                       (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                    .13 WATERSHED INCHES;      45 CFS-HRS;       3.7 ACRE-FEET.


OPERATION RESVOR    STRUCTURE 39

                    HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM = 4
     HRS      MAIN TIME INCREMENT =  .008 hr,       DRAINAGE AREA =    .62 SQ.MI.
      .04 CFS      .00     .01     .01     .02     .03     .05     .07     .10
      .04 ELEV   693.00  693.00  693.00  693.00  693.00  693.01  693.01  693.01
      .10 CFS      .14     .19     .25     .32     .40     .49     .59     .70
      .10 ELEV   693.02  693.03  693.04  693.05  693.06  693.07  693.08  693.10
      .17 CFS      .82     .95    1.08    1.23    1.38    1.54    1.70    1.86
      .17 ELEV   693.12  693.13  693.15  693.17  693.20  693.22  693.24  693.26
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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
12:29:10                    PASS   4   JOB NO.   1                     PAGE  41

      .23 CFS     2.03    2.20    2.38    2.55    2.72    2.90    3.07    3.24
      .23 ELEV   693.29  693.31  693.34  693.36  693.39  693.41  693.43  693.46
      .30 CFS     3.40    3.57    3.73    3.88    4.04    4.18    4.33    4.47
      .30 ELEV   693.48  693.51  693.53  693.55  693.57  693.59  693.61  693.63
      .36 CFS     4.61    4.74    4.87    4.99    5.11    5.23    5.34    5.45
      .36 ELEV   693.65  693.67  693.69  693.71  693.72  693.74  693.76  693.77
      .42 CFS     5.56    5.67    5.77    5.87    5.97    6.06    6.16    6.25
      .42 ELEV   693.79  693.80  693.82  693.83  693.85  693.86  693.87  693.88
      .49 CFS     6.34    6.42    6.51    6.59    6.67    6.75    6.82    6.90
      .49 ELEV   693.90  693.91  693.92  693.93  693.94  693.96  693.97  693.98
      .55 CFS     6.97    7.04    7.09    7.14    7.19    7.23    7.27    7.31
      .55 ELEV   693.99  694.00  694.01  694.01  694.02  694.03  694.04  694.05
      .62 CFS     7.35    7.38    7.42    7.45    7.48    7.50    7.53    7.55
      .62 ELEV   694.05  694.06  694.06  694.07  694.08  694.08  694.09  694.09
      .68 CFS     7.58    7.60    7.62    7.63    7.65    7.67    7.68    7.70
      .68 ELEV   694.09  694.10  694.10  694.10  694.11  694.11  694.11  694.12
      .74 CFS     7.71    7.72    7.73    7.74    7.75    7.76    7.77    7.78
      .74 ELEV   694.12  694.12  694.12  694.12  694.13  694.13  694.13  694.13
      .81 CFS     7.78    7.79    7.80    7.80    7.81    7.81    7.82    7.82
      .81 ELEV   694.13  694.13  694.13  694.13  694.14  694.14  694.14  694.14
      .87 CFS     7.83    7.83    7.84    7.84    7.85    7.85    7.86    7.86
      .87 ELEV   694.14  694.14  694.14  694.14  694.14  694.14  694.14  694.15
      .94 CFS     7.86    7.87    7.87    7.87    7.88    7.88    7.88    7.89
      .94 ELEV   694.15  694.15  694.15  694.15  694.15  694.15  694.15  694.15
     1.00 CFS     7.89    7.89    7.90    7.90    7.90    7.91    7.91    7.91
     1.00 ELEV   694.15  694.15  694.15  694.15  694.15  694.15  694.15  694.15
     1.06 CFS     7.92    7.92    7.92    7.93    7.93    7.93    7.94    7.94
     1.06 ELEV   694.16  694.16  694.16  694.16  694.16  694.16  694.16  694.16
     1.13 CFS     7.94    7.94    7.95    7.95    7.95    7.96    7.96    7.96
     1.13 ELEV   694.16  694.16  694.16  694.16  694.16  694.16  694.16  694.16
     1.19 CFS     7.97    7.97    7.97    7.98    7.98    7.98    7.99    7.99
     1.19 ELEV   694.16  694.17  694.17  694.17  694.17  694.17  694.17  694.17
     1.26 CFS     7.99    7.99    8.00    8.00    8.00    8.01    8.01    8.01
     1.26 ELEV   694.17  694.17  694.17  694.17  694.17  694.17  694.17  694.17
     1.32 CFS     8.02    8.02    8.02    8.03    8.03    8.03    8.04    8.04
     1.32 ELEV   694.17  694.17  694.17  694.18  694.18  694.18  694.18  694.18
     1.38 CFS     8.04    8.05    8.05    8.05    8.06    8.06    8.06    8.07
     1.38 ELEV   694.18  694.18  694.18  694.18  694.18  694.18  694.18  694.18
     1.45 CFS     8.07    8.07    8.08    8.08    8.08    8.09    8.09    8.09
     1.45 ELEV   694.18  694.18  694.18  694.19  694.19  694.19  694.19  694.19
     1.51 CFS     8.10    8.10    8.11    8.11    8.11    8.12    8.12    8.12
     1.51 ELEV   694.19  694.19  694.19  694.19  694.19  694.19  694.19  694.19
     1.58 CFS     8.13    8.13    8.13    8.14    8.14    8.14    8.15    8.15
     1.58 ELEV   694.19  694.19  694.19  694.20  694.20  694.20  694.20  694.20
     1.64 CFS     8.15    8.16    8.16    8.16    8.17    8.17    8.18    8.18
     1.64 ELEV   694.20  694.20  694.20  694.20  694.20  694.20  694.20  694.20
     1.70 CFS     8.18    8.19    8.19    8.19    8.20    8.20    8.20    8.21
     1.70 ELEV   694.20  694.20  694.21  694.21  694.21  694.21  694.21  694.21
     1.77 CFS     8.21    8.22    8.22    8.22    8.23    8.23    8.23    8.24
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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
12:29:10                    PASS   4   JOB NO.   1                     PAGE  42

     1.77 ELEV   694.21  694.21  694.21  694.21  694.21  694.21  694.21  694.21
     1.83 CFS     8.24    8.24    8.25    8.25    8.26    8.26    8.26    8.27
     1.83 ELEV   694.21  694.21  694.22  694.22  694.22  694.22  694.22  694.22
     1.90 CFS     8.27    8.27    8.28    8.28    8.29    8.29    8.29    8.30
     1.90 ELEV   694.22  694.22  694.22  694.22  694.22  694.22  694.22  694.22
     1.96 CFS     8.30    8.30    8.31    8.31    8.31    8.32    8.32    8.33
     1.96 ELEV   694.23  694.23  694.23  694.23  694.23  694.23  694.23  694.23
     2.02 CFS     8.33    8.33    8.34    8.34    8.34    8.35    8.35    8.36
     2.02 ELEV   694.23  694.23  694.23  694.23  694.23  694.23  694.23  694.24
     2.09 CFS     8.36    8.36    8.37    8.37    8.38    8.38    8.38    8.39
     2.09 ELEV   694.24  694.24  694.24  694.24  694.24  694.24  694.24  694.24
     2.15 CFS     8.39    8.39    8.40    8.40    8.41    8.41    8.41    8.42
     2.15 ELEV   694.24  694.24  694.24  694.24  694.24  694.24  694.25  694.25
     2.22 CFS     8.42    8.42    8.43    8.43    8.44    8.44    8.44    8.45
     2.22 ELEV   694.25  694.25  694.25  694.25  694.25  694.25  694.25  694.25
     2.28 CFS     8.45    8.46    8.46    8.46    8.47    8.47    8.47    8.48
     2.28 ELEV   694.25  694.25  694.25  694.25  694.26  694.26  694.26  694.26
     2.34 CFS     8.48    8.49    8.49    8.49    8.50    8.50    8.51    8.51
     2.34 ELEV   694.26  694.26  694.26  694.26  694.26  694.26  694.26  694.26
     2.41 CFS     8.51    8.52    8.52    8.52    8.53    8.53    8.54    8.54
     2.41 ELEV   694.26  694.26  694.27  694.27  694.27  694.27  694.27  694.27
     2.47 CFS     8.54    8.55    8.55    8.56    8.56    8.56    8.57    8.57
     2.47 ELEV   694.27  694.27  694.27  694.27  694.27  694.27  694.27  694.27
     2.54 CFS     8.57    8.58    8.58    8.59    8.59    8.59    8.60    8.60
     2.54 ELEV   694.27  694.28  694.28  694.28  694.28  694.28  694.28  694.28
     2.60 CFS     8.61    8.61    8.61    8.62    8.62    8.63    8.63    8.63
     2.60 ELEV   694.28  694.28  694.28  694.28  694.28  694.28  694.28  694.29
     2.66 CFS     8.64    8.64    8.64    8.65    8.65    8.66    8.66    8.66
     2.66 ELEV   694.29  694.29  694.29  694.29  694.29  694.29  694.29  694.29
     2.73 CFS     8.67    8.67    8.68    8.68    8.68    8.69    8.69    8.69
     2.73 ELEV   694.29  694.29  694.29  694.29  694.29  694.30  694.30  694.30
     2.79 CFS     8.70    8.70    8.71    8.71    8.71    8.72    8.72    8.73
     2.79 ELEV   694.30  694.30  694.30  694.30  694.30  694.30  694.30  694.30
     2.86 CFS     8.73    8.73    8.74    8.74    8.75    8.75    8.75    8.76
     2.86 ELEV   694.30  694.30  694.30  694.31  694.31  694.31  694.31  694.31
     2.92 CFS     8.76    8.76    8.77    8.77    8.78    8.78    8.78    8.79
     2.92 ELEV   694.31  694.31  694.31  694.31  694.31  694.31  694.31  694.31
     2.98 CFS     8.79    8.80    8.80    8.80    8.81    8.81    8.81    8.82
     2.98 ELEV   694.31  694.31  694.32  694.32  694.32  694.32  694.32  694.32
     3.05 CFS     8.82    8.83    8.83    8.83    8.84    8.84    8.84    8.85
     3.05 ELEV   694.32  694.32  694.32  694.32  694.32  694.32  694.32  694.32
     3.11 CFS     8.85    8.86    8.86    8.86    8.87    8.87    8.88    8.88
     3.11 ELEV   694.33  694.33  694.33  694.33  694.33  694.33  694.33  694.33
     3.18 CFS     8.88    8.89    8.89
     3.18 ELEV   694.33  694.33  694.33

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .06 WATERSHED INCHES;      23 CFS-HRS;       1.9 ACRE-FEET.
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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
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    DURATION(HRS)   2      1
    FLOW(CFS)      35      9 TRUNCATED

 --- STRUCTURE 39, ALTERNATE  0, STORM  4, HYDROGRAPH ADDED TO READHD FILE ---


EXECUTIVE CONTROL  ENDCMP    COMPUTATIONS COMPLETED FOR PASS   4


EXECUTIVE CONTROL  COMPUT    FROM XSECTION  91  TO STRUCTURE 39           1-HR
    STARTING TIME =   .00       RAIN DEPTH =  3.56       RAIN DURATION =  1.00
    ANT. RUNOFF COND. = 2       MAIN TIME INCREMENT =   .008 HOURS
    ALTERNATE NO. = 0           STORM NO. = 5            RAIN TABLE NO. = 1


OPERATION RUNOFF    XSECTION  91

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .87                         79.6                        (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  1.34 WATERSHED INCHES;      80 CFS-HRS;       6.6 ACRE-FEET.


OPERATION RUNOFF    XSECTION  92

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .97                        128.1                        (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  1.68 WATERSHED INCHES;     140 CFS-HRS;      11.6 ACRE-FEET.


OPERATION ADDHYD    XSECTION  93

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .93                         206.3                       (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  1.54 WATERSHED INCHES;     220 CFS-HRS;      18.2 ACRE-FEET.


OPERATION RUNOFF    XSECTION  94

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        1.02                         9.8                         (RUNOFF)
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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
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    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .78 WATERSHED INCHES;      10 CFS-HRS;       .8 ACRE-FEET.


OPERATION RESVOR    STRUCTURE 11

                  HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM = 5
     HRS      MAIN TIME INCREMENT =  .008 hr,      DRAINAGE AREA =    .02 SQ.MI.
      .18 CFS       .00     .01     .01     .01     .02     .02     .02     .03
      .18 ELEV   737.50  737.51  737.51  737.51  737.52  737.52  737.52  737.53
      .24 CFS       .04     .04     .05     .06     .07     .09     .10     .12
      .24 ELEV   737.54  737.54  737.55  737.56  737.57  737.59  737.60  737.62
      .30 CFS       .13     .15     .17     .20     .22     .25     .28     .31
      .30 ELEV   737.63  737.65  737.67  737.70  737.72  737.75  737.78  737.81
      .37 CFS       .35     .39     .43     .47     .50     .51     .52     .53
      .37 ELEV   737.85  737.89  737.93  737.97  738.00  738.02  738.04  738.05
      .43 CFS       .54     .55     .56     .57     .59     .60     .62     .64
      .43 ELEV   738.07  738.10  738.12  738.15  738.17  738.21  738.24  738.27
      .50 CFS       .66     .68     .70     .72     .74     .77     .79     .82
      .50 ELEV   738.31  738.35  738.39  738.44  738.48  738.53  738.59  738.64
      .56 CFS       .85     .88     .91     .94     .98    1.03    1.12    1.21
      .56 ELEV   738.70  738.76  738.82  738.89  738.96  739.02  739.06  739.10
      .62 CFS      1.30    1.39    1.48    1.58    1.68    1.77    1.87    1.97
      .62 ELEV   739.15  739.19  739.24  739.29  739.34  739.39  739.44  739.49
      .69 CFS      2.08    2.18    2.28    2.39    2.49    2.60    2.71    2.82
      .69 ELEV   739.54  739.59  739.64  739.69  739.75  739.80  739.85  739.91
      .75 CFS      2.92    3.02    3.11    3.19    3.27    3.35    3.44    3.52
      .75 ELEV   739.96  740.01  740.05  740.09  740.14  740.18  740.22  740.26
      .82 CFS      3.61    3.69    3.77    3.86    3.94    4.03    4.11    4.20
      .82 ELEV   740.30  740.34  740.39  740.43  740.47  740.51  740.56  740.60
      .88 CFS      4.28    4.36    4.45    4.53    4.61    4.69    4.77    4.85
      .88 ELEV   740.64  740.68  740.72  740.76  740.81  740.85  740.89  740.93
      .94 CFS      4.93    5.01    5.06    5.12    5.17    5.22    5.28    5.33
      .94 ELEV   740.97  741.00  741.03  741.06  741.09  741.11  741.14  741.16
     1.01 CFS      5.38    5.43    5.48    5.53    5.58    5.63    5.68    5.73
     1.01 ELEV   741.19  741.22  741.24  741.27  741.29  741.32  741.34  741.36
     1.07 CFS      5.78    5.82    5.87    5.91    5.96    6.00    6.04    6.08
     1.07 ELEV   741.39  741.41  741.43  741.46  741.48  741.50  741.52  741.54
     1.14 CFS      6.12    6.16    6.20    6.24    6.27    6.31    6.34    6.38
     1.14 ELEV   741.56  741.58  741.60  741.62  741.64  741.65  741.67  741.69
     1.20 CFS      6.41    6.44    6.47    6.50    6.53    6.56    6.58    6.61
     1.20 ELEV   741.71  741.72  741.74  741.75  741.76  741.78  741.79  741.80
     1.26 CFS      6.63    6.66    6.68    6.70    6.72    6.74    6.75    6.77
     1.26 ELEV   741.82  741.83  741.84  741.85  741.86  741.87  741.88  741.89
     1.33 CFS      6.79    6.80    6.81    6.82    6.83    6.84    6.85    6.86
     1.33 ELEV   741.89  741.90  741.91  741.91  741.92  741.92  741.93  741.93
     1.39 CFS      6.87    6.87    6.87    6.88    6.88    6.88    6.88    6.87
     1.39 ELEV   741.93  741.94  741.94  741.94  741.94  741.94  741.94  741.94
     1.46 CFS      6.87    6.87    6.86    6.85    6.85    6.84    6.83    6.82
     1.46 ELEV   741.94  741.93  741.93  741.93  741.92  741.92  741.91  741.91
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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
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     1.52 CFS      6.81    6.79    6.78    6.76    6.75    6.73    6.71    6.69
     1.52 ELEV   741.90  741.90  741.89  741.88  741.87  741.87  741.86  741.85
     1.58 CFS      6.67    6.65    6.63    6.61    6.59    6.56    6.54    6.51
     1.58 ELEV   741.84  741.83  741.82  741.80  741.79  741.78  741.77  741.76
     1.65 CFS      6.48    6.46    6.43    6.40    6.37    6.34    6.31    6.28
     1.65 ELEV   741.74  741.73  741.71  741.70  741.69  741.67  741.66  741.64
     1.71 CFS      6.25    6.21    6.18    6.15    6.11    6.08    6.04    6.01
     1.71 ELEV   741.62  741.61  741.59  741.57  741.56  741.54  741.52  741.50
     1.78 CFS      5.97    5.94    5.90    5.86    5.83    5.79    5.75    5.71
     1.78 ELEV   741.49  741.47  741.45  741.43  741.41  741.39  741.38  741.36
     1.84 CFS      5.67    5.64    5.60    5.56    5.52    5.48    5.44    5.40
     1.84 ELEV   741.34  741.32  741.30  741.28  741.26  741.24  741.22  741.20
     1.90 CFS      5.36    5.32    5.28    5.24    5.20    5.16    5.12    5.08
     1.90 ELEV   741.18  741.16  741.14  741.12  741.10  741.08  741.06  741.04
     1.97 CFS      5.04    5.00    4.94    4.88    4.83    4.77    4.71    4.66
     1.97 ELEV   741.02  741.00  740.97  740.94  740.91  740.89  740.86  740.83
     2.03 CFS      4.60    4.55    4.49    4.44    4.39    4.33    4.28    4.23
     2.03 ELEV   740.80  740.77  740.75  740.72  740.69  740.67  740.64  740.61
     2.10 CFS      4.18    4.12    4.07    4.02    3.97    3.92    3.87    3.82
     2.10 ELEV   740.59  740.56  740.54  740.51  740.49  740.46  740.44  740.41
     2.16 CFS      3.78    3.73    3.68    3.63    3.59    3.54    3.49    3.45
     2.16 ELEV   740.39  740.36  740.34  740.32  740.29  740.27  740.25  740.22
     2.22 CFS      3.40    3.36    3.32    3.27    3.23    3.19    3.14    3.10
     2.22 ELEV   740.20  740.18  740.16  740.14  740.11  740.09  740.07  740.05
     2.29 CFS      3.06    3.02    2.97    2.92    2.87    2.81    2.76    2.71
     2.29 ELEV   740.03  740.01  739.99  739.96  739.93  739.91  739.88  739.86
     2.35 CFS      2.66    2.62    2.57    2.52    2.48    2.43    2.39    2.34
     2.35 ELEV   739.83  739.81  739.78  739.76  739.74  739.72  739.69  739.67
     2.42 CFS      2.30    2.26    2.22    2.18    2.14    2.10    2.06    2.02
     2.42 ELEV   739.65  739.63  739.61  739.59  739.57  739.55  739.53  739.51
     2.48 CFS      1.98    1.95    1.91    1.87    1.84    1.81    1.77    1.74
     2.48 ELEV   739.49  739.47  739.45  739.44  739.42  739.40  739.39  739.37
     2.54 CFS      1.71    1.67    1.64    1.61    1.58    1.55    1.52    1.50
     2.54 ELEV   739.35  739.34  739.32  739.31  739.29  739.28  739.26  739.25
     2.61 CFS      1.47    1.44    1.41    1.39    1.36    1.33    1.31    1.28
     2.61 ELEV   739.23  739.22  739.21  739.19  739.18  739.17  739.15  739.14
     2.67 CFS      1.26    1.24    1.21    1.19    1.17    1.15    1.12    1.10
     2.67 ELEV   739.13  739.12  739.11  739.09  739.08  739.07  739.06  739.05
     2.74 CFS      1.08    1.06    1.04    1.02    1.00     .99     .98     .98
     2.74 ELEV   739.04  739.03  739.02  739.01  739.00  738.98  738.97  738.95
     2.80 CFS       .97     .96     .95     .95     .94     .93     .92     .91
     2.80 ELEV   738.94  738.92  738.91  738.89  738.88  738.86  738.84  738.83
     2.86 CFS       .91     .90     .89     .88     .88     .87     .86     .86
     2.86 ELEV   738.81  738.80  738.78  738.77  738.75  738.74  738.73  738.71
     2.93 CFS       .85     .84     .83     .83     .82     .81     .81     .80
     2.93 ELEV   738.70  738.68  738.67  738.65  738.64  738.63  738.61  738.60
     2.99 CFS       .79     .79     .78     .77     .77     .76     .75     .75
     2.99 ELEV   738.58  738.57  738.56  738.54  738.53  738.52  738.50  738.49
     3.06 CFS       .74     .73     .73     .72     .71     .71     .70     .69
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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
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     3.06 ELEV   738.48  738.47  738.45  738.44  738.43  738.41  738.40  738.39
     3.12 CFS       .69     .68     .68     .67     .66     .66     .65     .65
     3.12 ELEV   738.38  738.37  738.35  738.34  738.33  738.32  738.31  738.29
     3.18 CFS       .64     .64     .63     .62     .62     .61     .61     .60
     3.18 ELEV   738.28  738.27  738.26  738.25  738.24  738.23  738.22  738.20

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .77 WATERSHED INCHES;      10 CFS-HRS;        .8 ACRE-FEET.

    DURATION(HRS)   2      3
    FLOW(CFS)       1      1 TRUNCATED

 --- STRUCTURE 11, ALTERNATE  0, STORM  5, HYDROGRAPH ADDED TO READHD FILE ---


OPERATION RUNOFF    XSECTION  96

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .20                          41.5                       (RUNOFF)
        1.04                           5.3                       (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                 3.33 WATERSHED INCHES;      18 CFS-HRS;       1.5 ACRE-FEET.


OPERATION ADDHYD    XSECTION  97

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .92                          217.9                      (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                 1.54 WATERSHED INCHES;     248 CFS-HRS;      20.5 ACRE-FEET.


OPERATION RESVOR    STRUCTURE  6

                   HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM = 5
     HRS      MAIN TIME INCREMENT =  .008 hr,      DRAINAGE AREA =    .28 SQ.MI.
      .02 CFS       .00     .01     .02     .04     .06     .10     .16     .24
      .02 ELEV   707.00  707.00  707.00  707.00  707.01  707.01  707.02  707.03
      .09 CFS       .34     .47     .63     .83    1.07    1.36    1.68    2.05
      .09 ELEV   707.04  707.06  707.08  707.10  707.13  707.16  707.20  707.24
      .15 CFS      2.45    2.89    3.35    3.84    4.35    4.88    5.42    5.96
      .15 ELEV   707.29  707.34  707.40  707.46  707.52  707.58  707.64  707.71
      .22 CFS      6.52    7.08    7.64    8.21    8.88    9.60   10.32   11.05
      .22 ELEV   707.78  707.84  707.91  707.98  708.04  708.10  708.17  708.23
      .28 CFS     11.77   12.49   13.21   13.93   14.65   15.36   16.06   16.76
      .28 ELEV   708.29  708.35  708.41  708.48  708.54  708.60  708.66  708.72
      .34 CFS     17.46   18.15   18.84   19.52   20.29   21.26   22.23   23.19
      .34 ELEV   708.78  708.84  708.90  708.96  709.02  709.07  709.12  709.18
      .41 CFS     24.14   25.10   26.05   27.01   27.97   28.93   29.90   30.88
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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
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      .41 ELEV   709.23  709.28  709.34  709.39  709.44  709.50  709.55  709.60
      .47 CFS     31.87   32.86   33.87   34.89   35.92   36.97   38.02   38.97
      .47 ELEV   709.66  709.71  709.77  709.83  709.88  709.94  710.00  710.06
      .54 CFS     39.93   40.89   41.87   42.85   43.85   44.84   45.85   46.86
      .54 ELEV   710.11  710.17  710.23  710.29  710.34  710.40  710.46  710.52
      .60 CFS     47.88   48.91   49.94   50.99   52.05   53.11   54.19   55.16
      .60 ELEV   710.58  710.64  710.70  710.76  710.83  710.89  710.95  711.01
      .66 CFS     55.82   56.49   57.17   57.85   58.55   59.25   59.96   60.68
      .66 ELEV   711.07  711.14  711.20  711.26  711.32  711.39  711.45  711.52
      .73 CFS     61.40   62.14   62.88   63.62   64.37   65.13   65.89   71.30
      .73 ELEV   711.58  711.65  711.72  711.78  711.85  711.92  711.99  712.06
      .79 CFS        77      83      89      94     100     105     110     115
      .79 ELEV   712.12  712.18  712.24  712.30  712.35  712.40  712.46  712.51
      .86 CFS       119     124     128     133     137     141     145     148
      .86 ELEV   712.56  712.60  712.65  712.69  712.74  712.78  712.82  712.86
      .92 CFS       152     155     158     161     164     167     169     172
      .92 ELEV   712.89  712.93  712.96  712.99  713.02  713.05  713.08  713.10
      .98 CFS       174     176     178     180     182     184     185     187
      .98 ELEV   713.12  713.15  713.17  713.19  713.21  713.23  713.24  713.26
     1.05 CFS       189     190     191     192     194     194     195     196
     1.05 ELEV   713.28  713.29  713.31  713.32  713.33  713.34  713.35  713.35
     1.11 CFS       196     197     197     197     198     198     198     197
     1.11 ELEV   713.36  713.36  713.37  713.37  713.37  713.37  713.37  713.37
     1.18 CFS       197     197     197     196     196     195     195     194
     1.18 ELEV   713.37  713.36  713.36  713.36  713.35  713.35  713.34  713.34
     1.24 CFS       194     193     192     191     191     190     189     188
     1.24 ELEV   713.33  713.32  713.31  713.31  713.30  713.29  713.28  713.27
     1.30 CFS       187     186     185     184     183     182     181     180
     1.30 ELEV   713.26  713.25  713.24  713.23  713.22  713.21  713.20  713.19
     1.37 CFS       179     178     176     175     174     173     171     170
     1.37 ELEV   713.17  713.16  713.15  713.14  713.12  713.11  713.10  713.08
     1.43 CFS       169     167     166     164     163     162     160     159
     1.43 ELEV   713.07  713.05  713.04  713.03  713.01  713.00  712.98  712.97
     1.50 CFS       157     156     154     153     151     150     148     146
     1.50 ELEV   712.95  712.93  712.92  712.90  712.89  712.87  712.85  712.84
     1.56 CFS       145     143     142     140     138     137     135     133
     1.56 ELEV   712.82  712.80  712.79  712.77  712.75  712.74  712.72  712.70
     1.62 CFS       132     130     129     127     125     124     122     120
     1.62 ELEV   712.69  712.67  712.65  712.64  712.62  712.60  712.58  712.57
     1.69 CFS       119     117     116     114     112     111     109     108
     1.69 ELEV   712.55  712.53  712.52  712.50  712.48  712.47  712.45  712.43
     1.75 CFS       106     104     103     101     100      98      97      95
     1.75 ELEV   712.42  712.40  712.38  712.37  712.35  712.34  712.32  712.30
     1.82 CFS     93.63   92.14   90.66   89.20   87.75   86.32   84.90   83.49
     1.82 ELEV   712.29  712.27  712.26  712.24  712.23  712.21  712.20  712.18
     1.88 CFS     82.10   80.73   79.37   78.02   76.69   75.38   74.08   72.80
     1.88 ELEV   712.17  712.15  712.14  712.13  712.11  712.10  712.08  712.07
     1.94 CFS     71.54   70.29   69.06   67.84   66.64   65.93   65.79   65.64
     1.94 ELEV   712.06  712.04  712.03  712.02  712.01  711.99  711.98  711.97
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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
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     2.01 CFS     65.48   65.33   65.17   65.01   64.84   64.68   64.51   64.34
     2.01 ELEV   711.95  711.94  711.92  711.91  711.89  711.88  711.86  711.85
     2.07 CFS     64.17   63.99   63.82   63.64   63.46   63.28   63.09   62.91
     2.07 ELEV   711.83  711.82  711.80  711.79  711.77  711.75  711.74  711.72
     2.14 CFS     62.72   62.53   62.34   62.15   61.96   61.77   61.57   61.38
     2.14 ELEV   711.70  711.68  711.67  711.65  711.63  711.62  711.60  711.58
     2.20 CFS     61.18   60.98   60.78   60.58   60.38   60.18   59.97   59.77
     2.20 ELEV   711.56  711.54  711.53  711.51  711.49  711.47  711.45  711.43
     2.26 CFS     59.56   59.36   59.15   58.95   58.74   58.53   58.32   58.11
     2.26 ELEV   711.41  711.40  711.38  711.36  711.34  711.32  711.30  711.28
     2.33 CFS     57.90   57.69   57.48   57.27   57.06   56.85   56.63   56.42
     2.33 ELEV   711.26  711.24  711.23  711.21  711.19  711.17  711.15  711.13
     2.39 CFS     56.21   55.99   55.78   55.57   55.35   55.14   54.87   54.52
     2.39 ELEV   711.11  711.09  711.07  711.05  711.03  711.01  710.99  710.97
     2.46 CFS     54.16   53.81   53.45   53.10   52.75   52.40   52.05   51.71
     2.46 ELEV   710.95  710.93  710.91  710.89  710.87  710.85  710.83  710.81
     2.52 CFS     51.36   51.02   50.67   50.33   49.99   49.65   49.31   48.97
     2.52 ELEV   710.79  710.77  710.75  710.73  710.71  710.69  710.67  710.65
     2.58 CFS     48.64   48.30   47.97   47.64   47.31   46.98   46.66   46.33
     2.58 ELEV   710.63  710.61  710.59  710.57  710.55  710.53  710.51  710.49
     2.65 CFS     46.01   45.68   45.36   45.04   44.73   44.41   44.10   43.78
     2.65 ELEV   710.47  710.45  710.43  710.41  710.40  710.38  710.36  710.34
     2.71 CFS     43.47   43.16   42.85   42.55   42.24   41.94   41.64   41.34
     2.71 ELEV   710.32  710.30  710.29  710.27  710.25  710.23  710.21  710.20
     2.78 CFS     41.04   40.74   40.45   40.15   39.86   39.57   39.29   39.00
     2.78 ELEV   710.18  710.16  710.14  710.13  710.11  710.09  710.08  710.06
     2.84 CFS     38.71   38.43   38.15   37.86   37.54   37.23   36.93   36.62
     2.84 ELEV   710.04  710.03  710.01  709.99  709.97  709.96  709.94  709.92
     2.90 CFS     36.32   36.02   35.72   35.42   35.13   34.84   34.55   34.26
     2.90 ELEV   709.91  709.89  709.87  709.86  709.84  709.82  709.81  709.79
     2.97 CFS     33.97   33.69   33.41   33.13   32.85   32.58   32.30   32.03
     2.97 ELEV   709.78  709.76  709.74  709.73  709.71  709.70  709.68  709.67
     3.03 CFS     31.76   31.50   31.23   30.97   30.71   30.45   30.19   29.93
     3.03 ELEV   709.65  709.64  709.62  709.61  709.59  709.58  709.57  709.55
     3.10 CFS     29.68   29.43   29.18   28.93   28.69   28.44   28.20   27.96
     3.10 ELEV   709.54  709.52  709.51  709.50  709.48  709.47  709.46  709.44
     3.16 CFS     27.72   27.49   27.25   27.02   26.79
     3.16 ELEV   709.43  709.42  709.40  709.39  709.38

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  1.41 WATERSHED INCHES;     253 CFS-HRS;      20.9 ACRE-FEET.

    DURATION(HRS)   2      3
    FLOW(CFS)      48     27 TRUNCATED

 --- STRUCTURE  6, ALTERNATE  0, STORM  5, HYDROGRAPH ADDED TO READHD FILE ---


OPERATION RUNOFF    XSECTION  99
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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
12:29:10                    PASS   5   JOB NO.   1                      PAGE  49


    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .27                         435.2                       (RUNOFF)
        1.04                          87.0                       (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  2.24 WATERSHED INCHES;     220 CFS-HRS;      18.2 ACRE-FEET.


OPERATION ADDHYD    XSECTION  90

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .28                         446.7                       (NULL)
         .92                         262.9                       (NULL)
        1.05                         274.6                       (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  1.71 WATERSHED INCHES;     473 CFS-HRS;      39.1 ACRE-FEET.


OPERATION RESVOR    STRUCTURE  7

                  HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM = 5
     HRS      MAIN TIME INCREMENT =  .008 hr,      DRAINAGE AREA =    .54 SQ.MI.
      .05 CFS       .00     .01     .01     .02     .03     .05     .07     .10
      .05 ELEV   700.00  700.00  700.00  700.01  700.01  700.01  700.02  700.02
      .11 CFS       .14     .19     .25     .32     .40     .50     .61     .73
      .11 ELEV   700.03  700.05  700.06  700.08  700.10  700.13  700.15  700.18
      .18 CFS       .85     .99    1.14    1.30    1.46    1.63    1.80    1.98
      .18 ELEV   700.21  700.25  700.29  700.32  700.36  700.41  700.45  700.50
      .24 CFS      2.17    2.36    2.55    2.75    2.95    3.16    3.37    3.58
      .24 ELEV   700.54  700.59  700.64  700.69  700.74  700.79  700.84  700.89
      .30 CFS      3.79    4.00    4.28    4.55    4.82    5.09    5.35    5.62
      .30 ELEV   700.95  701.00  701.03  701.07  701.10  701.14  701.17  701.20
      .37 CFS      5.88    6.14    6.40    6.65    6.90    7.14    7.39    7.63
      .37 ELEV   701.24  701.27  701.30  701.33  701.36  701.39  701.42  701.45
      .43 CFS      7.86    8.09    8.32    8.55    8.77    8.99    9.20    9.41
      .43 ELEV   701.48  701.51  701.54  701.57  701.60  701.62  701.65  701.68
      .50 CFS      9.62    9.83   10.03   10.23   10.42   10.62   10.80   10.99
      .50 ELEV   701.70  701.73  701.75  701.78  701.80  701.83  701.85  701.87
      .56 CFS     11.17   11.34   11.51   11.68   11.84   12.00   12.11   12.22
      .56 ELEV   701.90  701.92  701.94  701.96  701.98  702.00  702.02  702.04
      .62 CFS     12.33   12.43   12.53   12.63   12.73   12.83   12.92   13.02
      .62 ELEV   702.05  702.07  702.09  702.11  702.12  702.14  702.15  702.17
      .69 CFS     13.11   13.20   13.29   13.38   13.47   13.56   13.64   13.73
      .69 ELEV   702.19  702.20  702.22  702.23  702.24  702.26  702.27  702.29
      .75 CFS     13.81   13.90   13.98   14.06   14.15   14.23   14.32   14.40
      .75 ELEV   702.30  702.32  702.33  702.34  702.36  702.37  702.39  702.40
      .82 CFS     14.49   14.58   14.67   14.76   14.86   14.95   15.04   15.14
      .82 ELEV   702.42  702.43  702.45  702.46  702.48  702.49  702.51  702.52
      .88 CFS     15.23   15.33   15.43   15.53   15.62   15.72   15.82   15.91
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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
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      .88 ELEV   702.54  702.56  702.57  702.59  702.60  702.62  702.64  702.65
      .94 CFS     16.01   16.10   16.20   16.29   16.38   16.48   16.57   16.66
      .94 ELEV   702.67  702.68  702.70  702.72  702.73  702.75  702.76  702.78
     1.01 CFS     16.76   16.85   16.94   17.04   17.13   17.22   17.32   17.41
     1.01 ELEV   702.79  702.81  702.82  702.84  702.86  702.87  702.89  702.90
     1.07 CFS     17.50   17.59   17.68   17.77   17.85   17.94   18.01   18.06
     1.07 ELEV   702.92  702.93  702.95  702.96  702.98  702.99  703.00  703.02
     1.14 CFS     18.11   18.16   18.20   18.25   18.29   18.34   18.38   18.42
     1.14 ELEV   703.03  703.04  703.05  703.06  703.07  703.08  703.09  703.11
     1.20 CFS     18.46   18.50   18.54   18.58   18.62   18.66   18.69   18.73
     1.20 ELEV   703.12  703.13  703.14  703.15  703.16  703.16  703.17  703.18
     1.26 CFS     18.77   18.80   18.84   18.87   18.91   18.94   18.97   19.00
     1.26 ELEV   703.19  703.20  703.21  703.22  703.23  703.23  703.24  703.25
     1.33 CFS     19.04   19.07   19.10   19.13   19.16   19.19   19.22   19.25
     1.33 ELEV   703.26  703.27  703.28  703.28  703.29  703.30  703.31  703.31
     1.39 CFS     19.28   19.31   19.34   19.37   19.39   19.42   19.45   19.48
     1.39 ELEV   703.32  703.33  703.33  703.34  703.35  703.36  703.36  703.37
     1.46 CFS     19.50   19.53   19.56   19.58   19.61   19.63   19.66   19.68
     1.46 ELEV   703.38  703.38  703.39  703.40  703.40  703.41  703.41  703.42
     1.52 CFS     19.71   19.73   19.75   19.78   19.80   19.82   19.85   19.87
     1.52 ELEV   703.43  703.43  703.44  703.44  703.45  703.46  703.46  703.47
     1.58 CFS     19.89   19.91   19.93   19.95   19.97   19.99   20.01   20.03
     1.58 ELEV   703.47  703.48  703.48  703.49  703.49  703.50  703.50  703.51
     1.65 CFS     20.05   20.07   20.09   20.11   20.13   20.14   20.16   20.18
     1.65 ELEV   703.51  703.52  703.52  703.53  703.53  703.54  703.54  703.54
     1.71 CFS     20.20   20.21   20.23   20.24   20.26   20.28   20.29   20.31
     1.71 ELEV   703.55  703.55  703.56  703.56  703.57  703.57  703.57  703.58
     1.78 CFS     20.32   20.33   20.35   20.36   20.38   20.39   20.40   20.41
     1.78 ELEV   703.58  703.58  703.59  703.59  703.59  703.60  703.60  703.60
     1.84 CFS     20.43   20.44   20.45   20.46   20.47   20.48   20.50   20.51
     1.84 ELEV   703.61  703.61  703.61  703.62  703.62  703.62  703.62  703.63
     1.90 CFS     20.52   20.53   20.54   20.55   20.56   20.56   20.57   20.58
     1.90 ELEV   703.63  703.63  703.63  703.64  703.64  703.64  703.64  703.65
     1.97 CFS     20.59   20.60   20.61   20.62   20.62   20.63   20.64   20.65
     1.97 ELEV   703.65  703.65  703.65  703.65  703.66  703.66  703.66  703.66
     2.03 CFS     20.66   20.66   20.67   20.68   20.69   20.69   20.70   20.71
     2.03 ELEV   703.66  703.67  703.67  703.67  703.67  703.67  703.68  703.68
     2.10 CFS     20.72   20.73   20.73   20.74   20.75   20.76   20.76   20.77
     2.10 ELEV   703.68  703.68  703.68  703.69  703.69  703.69  703.69  703.69
     2.16 CFS     20.78   20.78   20.79   20.80   20.81   20.81   20.82   20.83
     2.16 ELEV   703.69  703.70  703.70  703.70  703.70  703.70  703.71  703.71
     2.22 CFS     20.84   20.84   20.85   20.86   20.86   20.87   20.88   20.88
     2.22 ELEV   703.71  703.71  703.71  703.71  703.72  703.72  703.72  703.72
     2.29 CFS     20.89   20.90   20.90   20.91   20.92   20.92   20.93   20.94
     2.29 ELEV   703.72  703.72  703.73  703.73  703.73  703.73  703.73  703.73
     2.35 CFS     20.94   20.95   20.96   20.96   20.97   20.98   20.98   20.99
     2.35 ELEV   703.74  703.74  703.74  703.74  703.74  703.74  703.75  703.75
     2.42 CFS     20.99   21.00   21.01   21.01   21.02   21.02   21.03   21.04
     2.42 ELEV   703.75  703.75  703.75  703.75  703.75  703.76  703.76  703.76
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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
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     2.48 CFS     21.04   21.05   21.05   21.06   21.06   21.07   21.07   21.08
     2.48 ELEV   703.76  703.76  703.76  703.76  703.77  703.77  703.77  703.77
     2.54 CFS     21.09   21.09   21.10   21.10   21.11   21.11   21.12   21.12
     2.54 ELEV   703.77  703.77  703.77  703.78  703.78  703.78  703.78  703.78
     2.61 CFS     21.13   21.13   21.13   21.14   21.14   21.15   21.15   21.16
     2.61 ELEV   703.78  703.78  703.78  703.78  703.79  703.79  703.79  703.79
     2.67 CFS     21.16   21.17   21.17   21.17   21.18   21.18   21.19   21.19
     2.67 ELEV   703.79  703.79  703.79  703.79  703.79  703.80  703.80  703.80
     2.74 CFS     21.19   21.20   21.20   21.20   21.21   21.21   21.21   21.22
     2.74 ELEV   703.80  703.80  703.80  703.80  703.80  703.80  703.80  703.80
     2.80 CFS     21.22   21.23   21.23   21.23   21.23   21.24   21.24   21.24
     2.80 ELEV   703.81  703.81  703.81  703.81  703.81  703.81  703.81  703.81
     2.86 CFS     21.25   21.25   21.25   21.26   21.26   21.26   21.26   21.27
     2.86 ELEV   703.81  703.81  703.81  703.81  703.81  703.82  703.82  703.82
     2.93 CFS     21.27   21.27   21.27   21.28   21.28   21.28   21.28   21.29
     2.93 ELEV   703.82  703.82  703.82  703.82  703.82  703.82  703.82  703.82
     2.99 CFS     21.29   21.29   21.29   21.29   21.30   21.30   21.30   21.30
     2.99 ELEV   703.82  703.82  703.82  703.82  703.82  703.82  703.82  703.83
     3.06 CFS     21.30   21.30   21.31   21.31   21.31   21.31   21.31   21.31
     3.06 ELEV   703.83  703.83  703.83  703.83  703.83  703.83  703.83  703.83
     3.12 CFS     21.31   21.32   21.32   21.32   21.32   21.32   21.32   21.32
     3.12 ELEV   703.83  703.83  703.83  703.83  703.83  703.83  703.83  703.83
     3.18 CFS     21.32   21.33
     3.18 ELEV   703.83  703.83

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                    .15 WATERSHED INCHES;      53 CFS-HRS;       4.4 ACRE-FEET.

 --- STRUCTURE  7, ALTERNATE  0, STORM  5, HYDROGRAPH ADDED TO READHD FILE ---


OPERATION RUNOFF    XSECTION  49

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .26                          7.2                        (RUNOFF)
        1.04                          1.3                        (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                   2.41 WATERSHED INCHES;       4 CFS-HRS;        .3 ACRE-FEET.


OPERATION ADDHYD    XSECTION  50

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        3.19                         21.3                        (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                    .16 WATERSHED INCHES;      57 CFS-HRS;       4.7 ACRE-FEET.
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File: I:\080-020 Cantera Lot 2 Sub Area C\ENGINEERING\CALCULATIONS\TR-20\REVISED CRITICAL DURATION 04-19-19\PRA.OUT 4/19/2019, 12:29:12 PM

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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
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OPERATION RESVOR    STRUCTURE 39

                    HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM = 5
     HRS      MAIN TIME INCREMENT =  .008 hr,       DRAINAGE AREA =    .62 SQ.MI.
      .05 CFS       .00     .01     .01     .02     .02     .04     .05     .07
      .05 ELEV   693.00  693.00  693.00  693.00  693.00  693.01  693.01  693.01
      .11 CFS       .10     .13     .17     .22     .27     .34     .41     .49
      .11 ELEV   693.01  693.02  693.02  693.03  693.04  693.05  693.06  693.07
      .18 CFS       .58     .67     .78     .89    1.01    1.13    1.26    1.39
      .18 ELEV   693.08  693.10  693.11  693.13  693.14  693.16  693.18  693.20
      .24 CFS      1.53    1.68    1.83    1.98    2.13    2.29    2.45    2.61
      .24 ELEV   693.22  693.24  693.26  693.28  693.30  693.32  693.35  693.37
      .30 CFS      2.77    2.93    3.09    3.25    3.41    3.57    3.73    3.89
      .30 ELEV   693.39  693.41  693.44  693.46  693.48  693.51  693.53  693.55
      .37 CFS      4.05    4.20    4.35    4.50    4.65    4.80    4.94    5.08
      .37 ELEV   693.57  693.60  693.62  693.64  693.66  693.68  693.70  693.72
      .43 CFS      5.22    5.36    5.49    5.62    5.75    5.88    6.00    6.12
      .43 ELEV   693.74  693.76  693.78  693.80  693.81  693.83  693.85  693.87
      .50 CFS      6.24    6.36    6.47    6.59    6.70    6.81    6.91    7.01
      .50 ELEV   693.88  693.90  693.92  693.93  693.95  693.96  693.98  693.99
      .56 CFS      7.10    7.17    7.24    7.31    7.38    7.44    7.50    7.56
      .56 ELEV   694.01  694.02  694.03  694.05  694.06  694.07  694.08  694.09
      .62 CFS      7.62    7.68    7.74    7.79    7.85    7.90    7.95    8.00
      .62 ELEV   694.10  694.11  694.12  694.13  694.14  694.15  694.16  694.17
      .69 CFS      8.05    8.10    8.14    8.19    8.23    8.28    8.32    8.37
      .69 ELEV   694.18  694.19  694.20  694.20  694.21  694.22  694.23  694.24
      .75 CFS      8.41    8.45    8.49    8.53    8.58    8.62    8.66    8.70
      .75 ELEV   694.24  694.25  694.26  694.27  694.28  694.28  694.29  694.30
      .82 CFS      8.74    8.78    8.82    8.85    8.89    8.93    8.97    9.01
      .82 ELEV   694.30  694.31  694.32  694.33  694.33  694.34  694.35  694.35
      .88 CFS      9.05    9.09    9.12    9.16    9.20    9.24    9.27    9.31
      .88 ELEV   694.36  694.37  694.37  694.38  694.39  694.39  694.40  694.41
      .94 CFS      9.34    9.38    9.41    9.44    9.48    9.51    9.54    9.57
      .94 ELEV   694.41  694.42  694.43  694.43  694.44  694.44  694.45  694.46
     1.01 CFS      9.60    9.63    9.66    9.69    9.72    9.75    9.78    9.81
     1.01 ELEV   694.46  694.47  694.47  694.48  694.48  694.49  694.49  694.50
     1.07 CFS      9.84    9.86    9.89    9.92    9.94    9.97    9.99   10.01
     1.07 ELEV   694.50  694.51  694.51  694.52  694.52  694.53  694.53  694.54
     1.14 CFS     10.03   10.05   10.07   10.09   10.11   10.12   10.14   10.15
     1.14 ELEV   694.54  694.54  694.55  694.55  694.55  694.56  694.56  694.56
     1.20 CFS     10.17   10.18   10.19   10.20   10.21   10.22   10.23   10.24
     1.20 ELEV   694.56  694.57  694.57  694.57  694.57  694.57  694.58  694.58
     1.26 CFS     10.25   10.26   10.27   10.28   10.28   10.29   10.30   10.31
     1.26 ELEV   694.58  694.58  694.58  694.58  694.59  694.59  694.59  694.59
     1.33 CFS     10.31   10.32   10.33   10.33   10.34   10.34   10.35   10.36
     1.33 ELEV   694.59  694.59  694.59  694.59  694.59  694.60  694.60  694.60
     1.39 CFS     10.36   10.37   10.37   10.38   10.38   10.39   10.39   10.40
     1.39 ELEV   694.60  694.60  694.60  694.60  694.60  694.60  694.60  694.61
     1.46 CFS     10.40   10.41   10.41   10.42   10.42   10.43   10.43   10.44
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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
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     1.46 ELEV   694.61  694.61  694.61  694.61  694.61  694.61  694.61  694.61
     1.52 CFS     10.44   10.45   10.45   10.46   10.46   10.47   10.47   10.48
     1.52 ELEV   694.61  694.62  694.62  694.62  694.62  694.62  694.62  694.62
     1.58 CFS     10.48   10.49   10.49   10.50   10.50   10.51   10.51   10.52
     1.58 ELEV   694.62  694.62  694.62  694.62  694.62  694.63  694.63  694.63
     1.65 CFS     10.52   10.53   10.53   10.54   10.54   10.55   10.55   10.56
     1.65 ELEV   694.63  694.63  694.63  694.63  694.63  694.63  694.63  694.63
     1.71 CFS     10.56   10.57   10.57   10.58   10.58   10.59   10.59   10.60
     1.71 ELEV   694.64  694.64  694.64  694.64  694.64  694.64  694.64  694.64
     1.78 CFS     10.60   10.60   10.61   10.61   10.62   10.62   10.63   10.63
     1.78 ELEV   694.64  694.64  694.64  694.65  694.65  694.65  694.65  694.65
     1.84 CFS     10.64   10.64   10.65   10.65   10.66   10.66   10.67   10.67
     1.84 ELEV   694.65  694.65  694.65  694.65  694.65  694.65  694.65  694.66
     1.90 CFS     10.68   10.68   10.69   10.69   10.70   10.70   10.71   10.71
     1.90 ELEV   694.66  694.66  694.66  694.66  694.66  694.66  694.66  694.66
     1.97 CFS     10.72   10.72   10.73   10.73   10.74   10.74   10.75   10.75
     1.97 ELEV   694.66  694.66  694.67  694.67  694.67  694.67  694.67  694.67
     2.03 CFS     10.76   10.76   10.77   10.77   10.78   10.78   10.79   10.79
     2.03 ELEV   694.67  694.67  694.67  694.67  694.67  694.68  694.68  694.68
     2.10 CFS     10.80   10.80   10.81   10.81   10.82   10.82   10.83   10.83
     2.10 ELEV   694.68  694.68  694.68  694.68  694.68  694.68  694.68  694.68
     2.16 CFS     10.84   10.84   10.85   10.85   10.86   10.86   10.87   10.87
     2.16 ELEV   694.69  694.69  694.69  694.69  694.69  694.69  694.69  694.69
     2.22 CFS     10.88   10.88   10.89   10.89   10.90   10.90   10.91   10.91
     2.22 ELEV   694.69  694.69  694.69  694.70  694.70  694.70  694.70  694.70
     2.29 CFS     10.92   10.92   10.93   10.93   10.94   10.94   10.95   10.95
     2.29 ELEV   694.70  694.70  694.70  694.70  694.70  694.70  694.71  694.71
     2.35 CFS     10.96   10.96   10.97   10.97   10.98   10.98   10.99   10.99
     2.35 ELEV   694.71  694.71  694.71  694.71  694.71  694.71  694.71  694.71
     2.42 CFS     11.00   11.00   11.01   11.01   11.02   11.02   11.03   11.03
     2.42 ELEV   694.72  694.72  694.72  694.72  694.72  694.72  694.72  694.72
     2.48 CFS     11.04   11.05   11.05   11.06   11.06   11.07   11.07   11.08
     2.48 ELEV   694.72  694.72  694.72  694.73  694.73  694.73  694.73  694.73
     2.54 CFS     11.08   11.09   11.09   11.10   11.10   11.11   11.11   11.12
     2.54 ELEV   694.73  694.73  694.73  694.73  694.73  694.73  694.74  694.74
     2.61 CFS     11.12   11.13   11.13   11.14   11.14   11.15   11.15   11.16
     2.61 ELEV   694.74  694.74  694.74  694.74  694.74  694.74  694.74  694.74
     2.67 CFS     11.16   11.17   11.17   11.18   11.18   11.19   11.19   11.20
     2.67 ELEV   694.74  694.75  694.75  694.75  694.75  694.75  694.75  694.75
     2.74 CFS     11.20   11.21   11.21   11.22   11.22   11.23   11.23   11.24
     2.74 ELEV   694.75  694.75  694.75  694.75  694.76  694.76  694.76  694.76
     2.80 CFS     11.24   11.25   11.25   11.26   11.26   11.27   11.27   11.28
     2.80 ELEV   694.76  694.76  694.76  694.76  694.76  694.76  694.76  694.77
     2.86 CFS     11.28   11.29   11.29   11.30   11.30   11.31   11.31   11.32
     2.86 ELEV   694.77  694.77  694.77  694.77  694.77  694.77  694.77  694.77
     2.93 CFS     11.32   11.33   11.33   11.34   11.34   11.35   11.35   11.36
     2.93 ELEV   694.77  694.77  694.78  694.78  694.78  694.78  694.78  694.78
     2.99 CFS     11.36   11.37   11.37   11.38   11.38   11.39   11.39   11.40
     2.99 ELEV   694.78  694.78  694.78  694.78  694.78  694.79  694.79  694.79
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TR20 ------------------------------------------------------------------------ SCS -
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     3.06 CFS     11.40   11.41   11.41   11.42   11.42   11.43   11.43   11.44
     3.06 ELEV   694.79  694.79  694.79  694.79  694.79  694.79  694.79  694.79
     3.12 CFS     11.44   11.45   11.45   11.46   11.46   11.47   11.47   11.48
     3.12 ELEV   694.80  694.80  694.80  694.80  694.80  694.80  694.80  694.80
     3.18 CFS     11.48   11.49
     3.18 ELEV   694.80  694.80

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .07 WATERSHED INCHES;      29 CFS-HRS;       2.4 ACRE-FEET.

 --- STRUCTURE 39, ALTERNATE  0, STORM  5, HYDROGRAPH ADDED TO READHD FILE ---


EXECUTIVE CONTROL  ENDCMP    COMPUTATIONS COMPLETED FOR PASS   5


EXECUTIVE CONTROL  INCREM    MAIN TIME INCREMENT =   .100 HOURS


EXECUTIVE CONTROL  COMPUT    FROM XSECTION  91  TO STRUCTURE 39           2-HR
    STARTING TIME =   .00       RAIN DEPTH =  4.47       RAIN DURATION =  2.00
    ANT. RUNOFF COND. = 2       MAIN TIME INCREMENT =   .100 HOURS
    ALTERNATE NO. = 0           STORM NO. = 6            RAIN TABLE NO. = 1


OPERATION RUNOFF    XSECTION  91

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        1.06                        81.9                       (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  2.03 WATERSHED INCHES;     121 CFS-HRS;      10.0 ACRE-FEET.


OPERATION RUNOFF    XSECTION  92

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        1.14                       131.1                       (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  2.44 WATERSHED INCHES;     203 CFS-HRS;      16.8 ACRE-FEET.


OPERATION ADDHYD    XSECTION  93

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        1.11                       212.5                       (NULL)
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TR20 ------------------------------------------------------------------------ SCS -
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    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  2.27 WATERSHED INCHES;     324 CFS-HRS;      26.8 ACRE-FEET.


OPERATION RUNOFF    XSECTION  94

    PEAK TIME(HRS)            PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        1.21                        10.9                        (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  1.31 WATERSHED INCHES;      17 CFS-HRS;       1.4 ACRE-FEET.


OPERATION RESVOR    STRUCTURE 11

                   HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM = 6
     HRS      MAIN TIME INCREMENT =  .100 hr,      DRAINAGE AREA =    .02 SQ.MI.
      .10 CFS       .00     .01     .08     .30     .56     .77    1.30    2.45
      .10 ELEV   737.50  737.51  737.58  737.80  738.12  738.53  739.15  739.73
      .90 CFS      3.58    4.65    5.51    6.23    6.86    7.26    7.53    7.71
      .90 ELEV   740.29  740.83  741.26  741.62  741.93  742.13  742.26  742.36
     1.70 CFS      7.82    7.88    7.88    7.84    7.77    7.65    7.49    7.28
     1.70 ELEV   742.41  742.44  742.44  742.42  742.38  742.33  742.25  742.14
     2.50 CFS      7.02    6.59    6.10    5.60    5.08    4.40    3.76    3.19
     2.50 ELEV   742.01  741.79  741.55  741.30  741.04  740.70  740.38  740.10
     3.30 CFS      2.61    2.07    1.64    1.29    1.02     .91     .82     .74
     3.30 ELEV   739.80  739.53  739.32  739.15  739.01  738.82  738.64  738.48
     4.10 CFS       .66     .59     .53     .36     .16     .07     .03     .01
     4.10 ELEV   738.32  738.19  738.06  737.86  737.66  737.57  737.53  737.51

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  1.31 WATERSHED INCHES;      17 CFS-HRS;       1.4 ACRE-FEET.

    DURATION(HRS)   2      4
    FLOW(CFS)       4      0

 --- STRUCTURE 11, ALTERNATE  0, STORM  6, HYDROGRAPH ADDED TO READHD FILE ---


OPERATION RUNOFF    XSECTION  96

    PEAK TIME(HRS)            PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        .27                         31.4                        (RUNOFF)
       1.55                          4.8                        (RUNOFF)
       1.99                          3.4                        (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  4.23 WATERSHED INCHES;      23 CFS-HRS;       1.9 ACRE-FEET.
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TR20 ------------------------------------------------------------------------ SCS -
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OPERATION ADDHYD    XSECTION  97

    PEAK TIME(HRS)            PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        1.10                        224.6                       (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  2.25 WATERSHED INCHES;     364 CFS-HRS;      30.1 ACRE-FEET.


OPERATION RESVOR    STRUCTURE  6

                   HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM = 6
     HRS      MAIN TIME INCREMENT =  .100 hr,      DRAINAGE AREA =    .28 SQ.MI.
      .00 CFS       .00     .56    3.28    8.38   15.92   25.81   38.82   51.78
      .00 ELEV   707.00  707.07  707.39  708.00  708.65  709.32  710.05  710.81
      .80 CFS        62     101     156     191     210     218     218     213
      .80 ELEV   711.61  712.36  712.94  713.30  713.50  713.58  713.58  713.53
     1.60 CFS       204     194     182     170     159     148     136     123
     1.60 ELEV   713.44  713.33  713.21  713.08  712.96  712.86  712.73  712.59
     2.40 CFS       111      98      86      73      65      64      61      59
     2.40 ELEV   712.46  712.33  712.21  712.08  711.94  711.78  711.59  711.37
     3.20 CFS     56.61   53.44   49.26   45.26   41.47   37.90   34.20   30.82
     3.20 ELEV   711.15  710.91  710.66  710.43  710.20  709.99  709.79  709.60
     4.00 CFS     27.74   24.95   22.42   20.13   18.62   17.25   15.95   14.75
     4.00 ELEV   709.43  709.27  709.13  709.01  708.88  708.76  708.65  708.55
     4.80 CFS     13.64   12.60   11.64   10.76    9.94    9.18    8.48    7.95
     4.80 ELEV   708.45  708.36  708.28  708.20  708.13  708.07  708.01  707.95
     5.60 CFS      7.47    7.01    6.59    6.19    5.81    5.46    5.13    4.82
     5.60 ELEV   707.89  707.84  707.78  707.74  707.69  707.65  707.61  707.57
     6.40 CFS      4.53    4.25    3.99    3.75    3.52    3.31    3.11    2.92
     6.40 ELEV   707.54  707.51  707.48  707.45  707.42  707.39  707.37  707.35
     7.20 CFS      2.74    2.58    2.42    2.27    2.14    2.01    1.89    1.77
     7.20 ELEV   707.33  707.31  707.29  707.27  707.25  707.24  707.22  707.21
     8.00 CFS      1.66    1.56    1.47    1.38    1.30    1.22    1.14    1.07
     8.00 ELEV   707.20  707.19  707.17  707.16  707.15  707.14  707.14  707.13
     8.80 CFS      1.01     .95     .89     .84     .79     .74     .69     .65
     8.80 ELEV   707.12  707.11  707.11  707.10  707.09  707.09  707.08  707.08
     9.60 CFS       .61     .57     .54     .51     .48     .45     .42     .39
     9.60 ELEV   707.07  707.07  707.06  707.06  707.06  707.05  707.05  707.05
    10.40 CFS       .37     .35     .33     .31     .29     .27     .25     .24
    10.40 ELEV   707.04  707.04  707.04  707.04  707.03  707.03  707.03  707.03
    11.20 CFS       .22     .21     .20     .19     .17     .16     .15     .15
    11.20 ELEV   707.03  707.03  707.02  707.02  707.02  707.02  707.02  707.02
    12.00 CFS       .14     .13     .12     .11     .11     .10     .09     .09
    12.00 ELEV   707.02  707.02  707.01  707.01  707.01  707.01  707.01  707.01
    12.80 CFS       .08     .08     .07     .07     .06     .06     .06     .05
    12.80 ELEV   707.01  707.01  707.01  707.01  707.01  707.01  707.01  707.01
    13.60 CFS       .05     .05     .04     .04     .04     .04     .03     .03
    13.60 ELEV   707.01  707.01  707.01  707.00  707.00  707.00  707.00  707.00
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TR20 ------------------------------------------------------------------- SCS -
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    14.40 CFS       .03     .03     .03     .03     .02     .02     .02     .02
    14.40 ELEV   707.00  707.00  707.00  707.00  707.00  707.00  707.00  707.00
    15.20 CFS       .02     .02     .02     .02     .01     .01     .01     .01
    15.20 ELEV   707.00  707.00  707.00  707.00  707.00  707.00  707.00  707.00
    16.00 CFS       .01     .01
    16.00 ELEV   707.00  707.00

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                 2.33 WATERSHED INCHES;     416 CFS-HRS;      34.4 ACRE-FEET.

    DURATION(HRS)   2      4      6      8     10
    FLOW(CFS)      64     17      5      1      0

 --- STRUCTURE  6, ALTERNATE  0, STORM  6, HYDROGRAPH ADDED TO READHD FILE ---


OPERATION RUNOFF    XSECTION  99

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .34                         347.0                       (RUNOFF)
        1.65                          83.4                       (RUNOFF)
        1.99                          60.1                       (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                 3.06 WATERSHED INCHES;     302 CFS-HRS;      24.9 ACRE-FEET.


OPERATION ADDHYD    XSECTION  90

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .34                         358.1                       (NULL)
        1.05                         301.0                       (NULL)
        1.34                         299.4                       (NULL)
        1.96                         221.2                       (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                 2.59 WATERSHED INCHES;     719 CFS-HRS;      59.4 ACRE-FEET.


OPERATION RESVOR    STRUCTURE  7

                   HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM = 6
     HRS      MAIN TIME INCREMENT =  .100 hr,      DRAINAGE AREA =    .54 SQ.MI.
      .00 CFS      .00     .10     .76    2.30    4.43    7.14    9.77   12.12
      .00 ELEV   700.00  700.02  700.19  700.57  701.05  701.39  701.72  702.02
      .80 CFS    13.62   15.01   16.41   17.80   18.70   19.49   20.26   21.02
      .80 ELEV   702.27  702.50  702.73  702.97  703.18  703.37  703.57  703.75
     1.60 CFS    21.75   22.44   23.07   23.62   24.12   24.59   24.96   25.23
     1.60 ELEV   703.94  704.11  704.27  704.40  704.53  704.65  704.74  704.81
     2.40 CFS    25.45   25.62   25.77   25.88   25.98   26.56   27.28   27.94
     2.40 ELEV   704.86  704.91  704.94  704.97  704.99  705.01  705.03  705.05
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TR20 ------------------------------------------------------------------- SCS -
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     3.20 CFS    28.54   29.07   29.52   29.88   30.15   30.34   30.45   30.49
     3.20 ELEV  705.06  705.08  705.09  705.10  705.10  705.11  705.11  705.11
     4.00 CFS    30.47   30.39   30.25   30.07   29.86   29.62   29.36   29.08
     4.00 ELEV  705.11  705.11  705.11  705.10  705.10  705.09  705.08  705.08
     4.80 CFS    28.78   28.47   28.14   27.80   27.45   27.09   26.72   26.35
     4.80 ELEV  705.07  705.06  705.05  705.04  705.04  705.03  705.02  705.01
     5.60 CFS    26.00   25.96   25.92   25.88   25.83   25.79   25.75   25.70
     5.60 ELEV  705.00  704.99  704.98  704.97  704.96  704.95  704.94  704.93
     6.40 CFS    25.66   25.61   25.57   25.52   25.48   25.43   25.38   25.33
     6.40 ELEV  704.91  704.90  704.89  704.88  704.87  704.86  704.85  704.83
     7.20 CFS    25.29   25.24   25.19   25.14   25.09   25.04   25.00   24.95
     7.20 ELEV  704.82  704.81  704.80  704.79  704.77  704.76  704.75  704.74
     8.00 CFS    24.90   24.85   24.80   24.75   24.70   24.65   24.60   24.55
     8.00 ELEV  704.72  704.71  704.70  704.69  704.67  704.66  704.65  704.64
     8.80 CFS    24.50   24.45   24.40   24.35   24.30   24.25   24.20   24.15
     8.80 ELEV  704.62  704.61  704.60  704.59  704.58  704.56  704.55  704.54
     9.60 CFS    24.10   24.05   24.00   23.95   23.90   23.85   23.80   23.75
     9.60 ELEV  704.53  704.51  704.50  704.49  704.48  704.46  704.45  704.44
    10.40 CFS    23.70   23.65   23.60   23.55   23.50   23.46   23.41   23.36
    10.40 ELEV  704.43  704.41  704.40  704.39  704.38  704.36  704.35  704.34
    11.20 CFS    23.31   23.26   23.21   23.16   23.11   23.06   23.02   22.97
    11.20 ELEV  704.33  704.31  704.30  704.29  704.28  704.27  704.25  704.24
    12.00 CFS    22.92   22.87   22.82   22.77   22.73   22.68   22.63   22.58
    12.00 ELEV  704.23  704.22  704.21  704.19  704.18  704.17  704.16  704.15
    12.80 CFS    22.53   22.49   22.44   22.39   22.34   22.30   22.25   22.20
    12.80 ELEV  704.13  704.12  704.11  704.10  704.09  704.07  704.06  704.05
    13.60 CFS    22.16   22.11   22.06   22.02   21.97   21.92   21.87   21.82
    13.60 ELEV  704.04  704.03  704.02  704.00  703.99  703.98  703.97  703.96
    14.40 CFS    21.77   21.73   21.68   21.63   21.58   21.53   21.49   21.44
    14.40 ELEV  703.94  703.93  703.92  703.91  703.90  703.88  703.87  703.86
    15.20 CFS    21.39   21.34   21.29   21.25   21.20   21.15   21.11   21.06
    15.20 ELEV  703.85  703.84  703.82  703.81  703.80  703.79  703.78  703.76
    16.00 CFS    21.01   20.97
    16.00 ELEV  703.75  703.74

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                 1.08 WATERSHED INCHES;     376 CFS-HRS;      31.1 ACRE-FEET.

    DURATION(HRS)   2      4      6      8     10     12     14     15
    FLOW(CFS)      28     26     25     24     23     22     21     21 TRUNCATED

 --- STRUCTURE  7, ALTERNATE  0, STORM  6, HYDROGRAPH ADDED TO READHD FILE ---


OPERATION RUNOFF    XSECTION  49

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .33                         5.8                         (RUNOFF)
        1.65                         1.3                         (RUNOFF)
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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
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    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                 3.26 WATERSHED INCHES;       5 CFS-HRS;        .4 ACRE-FEET.


OPERATION ADDHYD    XSECTION  50

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        3.91                         30.5                       (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                 1.08 WATERSHED INCHES;     381 CFS-HRS;      31.5 ACRE-FEET.


OPERATION RESVOR    STRUCTURE 39

                  HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM = 6
     HRS      MAIN TIME INCREMENT =  .100 hr,      DRAINAGE AREA =    .62 SQ.MI.
      .00 CFS       .00     .07     .55    1.69    3.23    4.80    6.29    7.45
      .00 ELEV   693.00  693.01  693.08  693.24  693.46  693.68  693.89  694.07
      .80 CFS      8.27    8.96    9.57   10.10   10.53   10.90   11.24   11.58
      .80 ELEV   694.22  694.35  694.46  694.55  694.63  694.70  694.76  694.82
     1.60 CFS     11.91   12.25   12.57   12.74   12.88   13.03   13.15   13.23
     1.60 ELEV   694.88  694.94  695.00  695.05  695.09  695.13  695.17  695.19
     2.40 CFS     13.28   13.33   13.38   13.42   13.47   13.52   13.57   13.62
     2.40 ELEV   695.21  695.22  695.23  695.25  695.26  695.27  695.29  695.30
     3.20 CFS     13.67   13.73   13.79   13.85   13.91   13.97   14.03   14.09
     3.20 ELEV   695.32  695.34  695.35  695.37  695.39  695.40  695.42  695.44
     4.00 CFS     14.15   14.21   14.27   14.33   14.39   14.44   14.50   14.55
     4.00 ELEV   695.46  695.47  695.49  695.51  695.52  695.54  695.56  695.57
     4.80 CFS     14.61   14.66   14.71   14.76   14.81   14.85   14.90   14.94
     4.80 ELEV   695.59  695.60  695.62  695.63  695.65  695.66  695.67  695.68
     5.60 CFS     14.98   15.02   15.06   15.10   15.14   15.18   15.22   15.26
     5.60 ELEV   695.70  695.71  695.72  695.73  695.74  695.75  695.77  695.78
     6.40 CFS     15.30   15.34   15.37   15.41   15.45   15.49   15.52   15.56
     6.40 ELEV   695.79  695.80  695.81  695.82  695.83  695.84  695.85  695.86
     7.20 CFS     15.60   15.63   15.67   15.70   15.74   15.77   15.81   15.84
     7.20 ELEV   695.87  695.88  695.90  695.91  695.92  695.93  695.94  695.95
     8.00 CFS     15.87   15.91   15.94   15.97   16.00   16.04   16.06   16.08
     8.00 ELEV   695.95  695.96  695.97  695.98  695.99  696.00  696.01  696.02
     8.80 CFS     16.11   16.13   16.15   16.18   16.20   16.22   16.25   16.27
     8.80 ELEV   696.03  696.04  696.04  696.05  696.06  696.07  696.08  696.08
     9.60 CFS     16.29   16.31   16.34   16.36   16.38   16.40   16.42   16.44
     9.60 ELEV   696.09  696.10  696.11  696.12  696.12  696.13  696.14  696.15
    10.40 CFS     16.46   16.48   16.50   16.52   16.54   16.56   16.58   16.60
    10.40 ELEV   696.15  696.16  696.17  696.17  696.18  696.19  696.20  696.20
    11.20 CFS     16.62   16.64   16.66   16.68   16.70   16.71   16.73   16.75
    11.20 ELEV   696.21  696.22  696.22  696.23  696.24  696.24  696.25  696.25
    12.00 CFS     16.77   16.78   16.80   16.82   16.84   16.85   16.87   16.88
    12.00 ELEV   696.26  696.27  696.27  696.28  696.29  696.29  696.30  696.30
    12.80 CFS     16.90   16.92   16.93   16.95   16.96   16.98   16.99   17.01
```



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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
12:29:10                    PASS   6   JOB NO.   1                       PAGE  60

    12.80 ELEV   696.31  696.31  696.32  696.33  696.33  696.34  696.34  696.35
    13.60 CFS     17.02   17.04   17.05   17.07   17.08   17.09   17.11   17.12
    13.60 ELEV   696.35  696.36  696.36  696.37  696.37  696.38  696.38  696.39
    14.40 CFS     17.13   17.15   17.16   17.17   17.19   17.20   17.21   17.22
    14.40 ELEV   696.39  696.40  696.40  696.40  696.41  696.41  696.42  696.42
    15.20 CFS     17.23   17.25   17.26   17.27   17.28   17.29   17.30   17.31
    15.20 ELEV   696.43  696.43  696.43  696.44  696.44  696.45  696.45  696.45
    16.00 CFS     17.32   17.33
    16.00 ELEV   696.46  696.46

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .60 WATERSHED INCHES;     239 CFS-HRS;      19.8 ACRE-FEET.

 --- STRUCTURE 39, ALTERNATE  0, STORM  6, HYDROGRAPH ADDED TO READHD FILE ---


EXECUTIVE CONTROL  ENDCMP    COMPUTATIONS COMPLETED FOR PASS   6


EXECUTIVE CONTROL  COMPUT    FROM XSECTION  91  TO STRUCTURE 39           3-HR
    STARTING TIME =   .00       RAIN DEPTH =  4.85       RAIN DURATION =  3.00
    ANT. RUNOFF COND. = 2       MAIN TIME INCREMENT =   .100 HOURS
    ALTERNATE NO. = 0           STORM NO. = 7            RAIN TABLE NO. = 1


OPERATION RUNOFF    XSECTION  91

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        1.23                         73.3                       (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                 2.33 WATERSHED INCHES;     139 CFS-HRS;      11.5 ACRE-FEET.


OPERATION RUNOFF    XSECTION  92

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        1.29                         118.0                      (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                 2.76 WATERSHED INCHES;     230 CFS-HRS;      19.0 ACRE-FEET.


OPERATION ADDHYD    XSECTION  93

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        1.26                         191.0                      (NULL)
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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
12:29:10                    PASS   7   JOB NO.   1                       PAGE  61


    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                 2.58 WATERSHED INCHES;     369 CFS-HRS;      30.5 ACRE-FEET.


OPERATION RUNOFF    XSECTION  94

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        1.44                         10.0                        (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                 1.55 WATERSHED INCHES;      20 CFS-HRS;       1.7 ACRE-FEET.


OPERATION RESVOR    STRUCTURE 11

                   HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM = 7
     HRS      MAIN TIME INCREMENT =  .100 hr,      DRAINAGE AREA =    .02 SQ.MI.
      .10 CFS       .00     .01     .04     .16     .43     .58     .78    1.22
      .10 ELEV   737.50  737.51  737.54  737.66  737.93  738.17  738.56  739.11
      .90 CFS      2.19    3.21    4.11    5.01    5.63    6.21    6.73    7.11
      .90 ELEV   739.59  740.11  740.55  741.01  741.32  741.61  741.86  742.06
     1.70 CFS      7.35    7.53    7.64    7.68    7.66    7.59    7.49    7.36
     1.70 ELEV   742.18  742.27  742.32  742.34  742.33  742.30  742.24  742.18
     2.50 CFS      7.22    7.08    6.91    6.71    6.50    6.29    6.08    5.85
     2.50 ELEV   742.11  742.04  741.95  741.85  741.75  741.65  741.54  741.42
     3.30 CFS      5.61    5.34    5.05    4.63    4.16    3.70    3.24    2.76
     3.30 ELEV   741.30  741.17  741.03  740.81  740.58  740.35  740.12  739.88
     4.10 CFS      2.26    1.83    1.48    1.20     .98     .89     .81     .73
     4.10 ELEV   739.63  739.42  739.24  739.10  738.96  738.79  738.62  738.46
     4.90 CFS       .66     .59     .53     .36     .16     .08     .04     .02
     4.90 ELEV   738.32  738.18  738.06  737.86  737.66  737.58  737.54  737.52
     5.70 CFS       .01     .00
     5.70 ELEV   737.51  737.50

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                 1.55 WATERSHED INCHES;      20 CFS-HRS;       1.7 ACRE-FEET.

    DURATION(HRS)   2      4      5
    FLOW(CFS)       6      1      0

 --- STRUCTURE 11, ALTERNATE  0, STORM  7, HYDROGRAPH ADDED TO READHD FILE ---


OPERATION RUNOFF    XSECTION  96

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .33                         26.3                        (RUNOFF)
        2.45                          3.5                        (RUNOFF)
        3.00                          3.0                        (RUNOFF)
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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
12:29:10                    PASS   7   JOB NO.   1                       PAGE  62


    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                 4.61 WATERSHED INCHES;      25 CFS-HRS;       2.1 ACRE-FEET.


OPERATION ADDHYD    XSECTION  97

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        1.27                        203.7                        (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                 2.57 WATERSHED INCHES;     414 CFS-HRS;      34.2 ACRE-FEET.


OPERATION RESVOR    STRUCTURE  6

                   HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM = 7
     HRS      MAIN TIME INCREMENT =  .100 hr,      DRAINAGE AREA =    .28 SQ.MI.
      .00 CFS       .00     .44    1.97    5.33   10.51   16.89   25.61   37.27
      .00 ELEV   707.00  707.05  707.23  707.63  708.18  708.73  709.31  709.96
      .80 CFS        49      59      78     133     168     190     203     207
      .80 ELEV   710.66  711.40  712.12  712.69  713.07  713.30  713.42  713.47
     1.60 CFS       206     200     191     181     171     160     149     140
     1.60 ELEV   713.45  713.39  713.30  713.20  713.09  712.98  712.87  712.77
     2.40 CFS       131     124     118     112     106     100      96      92
     2.40 ELEV   712.68  712.61  712.54  712.48  712.41  712.36  712.31  712.27
     3.20 CFS     85.13   77.73   70.59   65.62   64.39   62.79   60.85   58.66
     3.20 ELEV   712.20  712.12  712.05  711.97  711.85  711.71  711.53  711.33
     4.00 CFS     56.29   53.05   49.00   45.10   41.39   37.88   34.24   30.89
     4.00 ELEV   711.12  710.89  710.65  710.42  710.20  709.99  709.79  709.61
     4.80 CFS     27.84   25.07   22.55   20.27   18.72   17.34   16.05   14.85
     4.80 ELEV   709.44  709.28  709.14  709.01  708.89  708.77  708.66  708.56
     5.60 CFS     13.73   12.69   11.73   10.84   10.02    9.25    8.55    8.00
     5.60 ELEV   708.46  708.37  708.29  708.21  708.14  708.07  708.01  707.95
     6.40 CFS      7.51    7.06    6.63    6.23    5.85    5.50    5.16    4.85
     6.40 ELEV   707.89  707.84  707.79  707.74  707.70  707.65  707.61  707.58
     7.20 CFS      4.56    4.28    4.02    3.78    3.55    3.33    3.13    2.94
     7.20 ELEV   707.54  707.51  707.48  707.45  707.42  707.40  707.37  707.35
     8.00 CFS      2.76    2.59    2.44    2.29    2.15    2.02    1.90    1.78
     8.00 ELEV   707.33  707.31  707.29  707.27  707.26  707.24  707.23  707.21
     8.80 CFS      1.67    1.57    1.48    1.39    1.30    1.22    1.15    1.08
     8.80 ELEV   707.20  707.19  707.18  707.17  707.16  707.15  707.14  707.13
     9.60 CFS      1.01     .95     .90     .84     .79     .74     .70     .66
     9.60 ELEV   707.12  707.11  707.11  707.10  707.09  707.09  707.08  707.08
    10.40 CFS       .62     .58     .54     .51     .48     .45     .42     .40
    10.40 ELEV   707.07  707.07  707.06  707.06  707.06  707.05  707.05  707.05
    11.20 CFS       .37     .35     .33     .31     .29     .27     .26     .24
    11.20 ELEV   707.04  707.04  707.04  707.04  707.03  707.03  707.03  707.03
    12.00 CFS       .23     .21     .20     .19     .18     .17     .16     .15
    12.00 ELEV   707.03  707.03  707.02  707.02  707.02  707.02  707.02  707.02
    12.80 CFS       .14     .13     .12     .11     .11     .10     .09     .09
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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
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    12.80 ELEV   707.02  707.02  707.01  707.01  707.01  707.01  707.01  707.01
    13.60 CFS       .08     .08     .07     .07     .06     .06     .06     .05
    13.60 ELEV   707.01  707.01  707.01  707.01  707.01  707.01  707.01  707.01
    14.40 CFS       .05     .05     .04     .04     .04     .04     .03     .03
    14.40 ELEV   707.01  707.01  707.01  707.00  707.00  707.00  707.00  707.00
    15.20 CFS       .03     .03     .03     .03     .02     .02     .02     .02
    15.20 ELEV   707.00  707.00  707.00  707.00  707.00  707.00  707.00  707.00
    16.00 CFS       .02     .02     .02     .02     .01     .01     .01     .01
    16.00 ELEV   707.00  707.00  707.00  707.00  707.00  707.00  707.00  707.00
    16.80 CFS       .01     .01
    16.80 ELEV   707.00  707.00

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  2.65 WATERSHED INCHES;     473 CFS-HRS;      39.1 ACRE-FEET.

    DURATION(HRS)   2      4      6      8     10     11
    FLOW(CFS)      92     31      8      2      1      0

 --- STRUCTURE  6, ALTERNATE  0, STORM  7, HYDROGRAPH ADDED TO READHD FILE ---


OPERATION RUNOFF    XSECTION  99

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .39                         273.6                       (RUNOFF)
        2.45                          59.7                       (RUNOFF)
        3.00                          52.2                       (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  3.42 WATERSHED INCHES;     337 CFS-HRS;      27.8 ACRE-FEET.


OPERATION ADDHYD    XSECTION  90

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .40                         283.7                       (NULL)
         .70                         264.3                       (NULL)
        1.39                         315.5                       (NULL)
        2.99                         148.7                       (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  2.92 WATERSHED INCHES;     810 CFS-HRS;      66.9 ACRE-FEET.


OPERATION RESVOR    STRUCTURE  7

                   HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM = 7
     HRS      MAIN TIME INCREMENT =  .100 hr,      DRAINAGE AREA =    .54 SQ.MI.
      .00 CFS       .00     .08     .41    1.36    2.91    4.79    6.95    9.09
      .00 ELEV   700.00  700.02  700.10  700.34  700.73  701.10  701.37  701.64
      .80 CFS     11.19   12.83   14.14   15.44   16.78   18.08   18.94   19.77
```



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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
12:29:10                    PASS   7   JOB NO.   1                      PAGE  64

      .80 ELEV   701.90  702.14  702.36  702.57  702.80  703.02  703.23  703.44
     1.60 CFS     20.55   21.25   21.89   22.47   23.02   23.54   24.04   24.51
     1.60 ELEV   703.64  703.81  703.97  704.12  704.25  704.39  704.51  704.63
     2.40 CFS     24.97   25.40   25.82   27.84   30.84   33.50   36.22   38.83
     2.40 ELEV   704.74  704.85  704.95  705.05  705.12  705.19  705.26  705.32
     3.20 CFS     40.72   41.92   42.72   43.29   43.75   44.16   44.52   44.83
     3.20 ELEV   705.37  705.40  705.42  705.43  705.44  705.45  705.46  705.47
     4.00 CFS     45.08   45.27   45.39   45.42   45.38   45.26   45.08   44.83
     4.00 ELEV   705.48  705.48  705.48  705.49  705.48  705.48  705.48  705.47
     4.80 CFS     44.52   44.16   43.75   43.30   42.82   42.33   41.81   41.28
     4.80 ELEV   705.46  705.45  705.44  705.43  705.42  705.41  705.40  705.38
     5.60 CFS     40.74   40.19   39.63   39.06   38.49   37.91   37.33   36.74
     5.60 ELEV   705.37  705.35  705.34  705.33  705.31  705.30  705.28  705.27
     6.40 CFS     36.16   35.58   35.01   34.43   33.86   33.30   32.74   32.18
     6.40 ELEV   705.25  705.24  705.23  705.21  705.20  705.18  705.17  705.15
     7.20 CFS     31.63   31.09   30.55   30.01   29.48   28.96   28.44   27.94
     7.20 ELEV   705.14  705.13  705.11  705.10  705.09  705.07  705.06  705.05
     8.00 CFS     27.43   26.94   26.45   26.00   25.95   25.90   25.84   25.79
     8.00 ELEV   705.04  705.02  705.01  705.00  704.99  704.97  704.96  704.95
     8.80 CFS     25.74   25.69   25.64   25.59   25.54   25.49   25.43   25.38
     8.80 ELEV   704.94  704.92  704.91  704.90  704.88  704.87  704.86  704.85
     9.60 CFS     25.33   25.28   25.23   25.18   25.12   25.07   25.02   24.97
     9.60 ELEV   704.83  704.82  704.81  704.79  704.78  704.77  704.76  704.74
    10.40 CFS     24.92   24.87   24.81   24.76   24.71   24.66   24.61   24.56
    10.40 ELEV   704.73  704.72  704.70  704.69  704.68  704.67  704.65  704.64
    11.20 CFS     24.51   24.46   24.40   24.35   24.30   24.25   24.20   24.15
    11.20 ELEV   704.63  704.61  704.60  704.59  704.58  704.56  704.55  704.54
    12.00 CFS     24.10   24.05   24.00   23.95   23.90   23.85   23.80   23.75
    12.00 ELEV   704.52  704.51  704.50  704.49  704.47  704.46  704.45  704.44
    12.80 CFS     23.70   23.65   23.60   23.55   23.50   23.45   23.40   23.35
    12.80 ELEV   704.42  704.41  704.40  704.39  704.37  704.36  704.35  704.34
    13.60 CFS     23.30   23.25   23.20   23.15   23.10   23.05   23.00   22.96
    13.60 ELEV   704.32  704.31  704.30  704.29  704.28  704.26  704.25  704.24
    14.40 CFS     22.91   22.86   22.81   22.76   22.71   22.67   22.62   22.57
    14.40 ELEV   704.23  704.21  704.20  704.19  704.18  704.17  704.15  704.14
    15.20 CFS     22.52   22.47   22.43   22.38   22.33   22.28   22.24   22.19
    15.20 ELEV   704.13  704.12  704.11  704.09  704.08  704.07  704.06  704.05
    16.00 CFS     22.14   22.10   22.05   22.00   21.95   21.91   21.86   21.81
    16.00 ELEV   704.04  704.02  704.01  704.00  703.99  703.98  703.96  703.95
    16.80 CFS     21.76   21.71
    16.80 ELEV   703.94  703.93

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  1.31 WATERSHED INCHES;     459 CFS-HRS;      38.0 ACRE-FEET.

    DURATION(HRS)   2      4      6      8     10     12     14     15
    FLOW(CFS)      42     33     26     25     24     23     22     22 TRUNCATED

 --- STRUCTURE  7, ALTERNATE  0, STORM  7, HYDROGRAPH ADDED TO READHD FILE ---
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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
12:29:10                    PASS   7   JOB NO.   1                       PAGE  65


OPERATION RUNOFF    XSECTION  49

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .37                          4.6                        (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  3.62 WATERSHED INCHES;       5 CFS-HRS;        .4 ACRE-FEET.


OPERATION ADDHYD    XSECTION  50

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        4.29                         45.4                       (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  1.32 WATERSHED INCHES;     465 CFS-HRS;      38.4 ACRE-FEET.


OPERATION RESVOR    STRUCTURE 39

                  HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM = 7
     HRS      MAIN TIME INCREMENT =  .100 hr,      DRAINAGE AREA =    .62 SQ.MI.
      .00 CFS       .00     .06     .33    1.04    2.21    3.51    4.75    5.94
      .00 ELEV   693.00  693.01  693.05  693.15  693.31  693.50  693.67  693.84
      .80 CFS      7.06    7.82    8.49    9.09    9.62   10.10   10.56   10.99
      .80 ELEV   694.00  694.14  694.26  694.37  694.46  694.55  694.64  694.71
     1.60 CFS     11.37   11.69   11.98   12.25   12.52   12.69   12.85   13.01
     1.60 ELEV   694.78  694.84  694.89  694.94  694.99  695.04  695.08  695.13
     2.40 CFS     13.17   13.33   13.49   13.64   13.78   13.92   14.07   14.24
     2.40 ELEV   695.17  695.22  695.27  695.31  695.35  695.39  695.43  695.48
     3.20 CFS     14.40   14.52   14.63   14.74   14.85   14.96   15.06   15.17
     3.20 ELEV   695.53  695.56  695.60  695.63  695.66  695.69  695.72  695.75
     4.00 CFS     15.28   15.39   15.51   15.62   15.73   15.84   15.94   16.05
     4.00 ELEV   695.78  695.82  695.85  695.88  695.91  695.94  695.98  696.01
     4.80 CFS     16.13   16.21   16.29   16.36   16.44   16.51   16.59   16.66
     4.80 ELEV   696.03  696.06  696.09  696.12  696.15  696.17  696.20  696.22
     5.60 CFS     16.73   16.79   16.86   16.92   16.99   17.05   17.10   17.16
     5.60 ELEV   696.25  696.27  696.29  696.32  696.34  696.36  696.38  696.40
     6.40 CFS     17.21   17.27   17.32   17.37   17.42   17.46   17.51   17.55
     6.40 ELEV   696.42  696.44  696.46  696.47  696.49  696.51  696.52  696.54
     7.20 CFS     17.59   17.63   17.67   17.70   17.74   17.77   17.80   17.83
     7.20 ELEV   696.55  696.57  696.58  696.59  696.60  696.62  696.63  696.64
     8.00 CFS     17.86   17.88   17.91   17.93   17.95   17.98   18.00   18.02
     8.00 ELEV   696.65  696.66  696.66  696.67  696.68  696.69  696.70  696.71
     8.80 CFS     18.04   18.07   18.09   18.11   18.21   18.40   18.58   18.76
     8.80 ELEV   696.71  696.72  696.73  696.74  696.74  696.75  696.76  696.76
     9.60 CFS     18.94   19.11   19.27   19.42   19.57   19.72   19.86   20.00
     9.60 ELEV   696.77  696.78  696.78  696.79  696.79  696.80  696.81  696.81
    10.40 CFS     20.13   20.25   20.37   20.49   20.60   20.71   20.81   20.91
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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
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    10.40 ELEV   696.82  696.82  696.82  696.83  696.83  696.84  696.84  696.85
    11.20 CFS     21.01   21.10   21.19   21.27   21.35   21.43   21.50   21.57
    11.20 ELEV   696.85  696.85  696.86  696.86  696.86  696.86  696.87  696.87
    12.00 CFS     21.64   21.70   21.76   21.82   21.88   21.93   21.98   22.03
    12.00 ELEV   696.87  696.87  696.88  696.88  696.88  696.88  696.89  696.89
    12.80 CFS     22.07   22.11   22.15   22.19   22.23   22.26   22.29   22.32
    12.80 ELEV   696.89  696.89  696.89  696.89  696.89  696.90  696.90  696.90
    13.60 CFS     22.34   22.37   22.39   22.41   22.43   22.45   22.46   22.48
    13.60 ELEV   696.90  696.90  696.90  696.90  696.90  696.90  696.90  696.90
    14.40 CFS     22.49   22.50   22.51   22.51   22.52   22.53   22.53   22.53
    14.40 ELEV   696.90  696.90  696.91  696.91  696.91  696.91  696.91  696.91
    15.20 CFS     22.53   22.53   22.53   22.52   22.52   22.51   22.51   22.50
    15.20 ELEV   696.91  696.91  696.91  696.91  696.91  696.91  696.91  696.90
    16.00 CFS     22.49   22.48   22.47   22.46   22.45   22.43   22.42   22.40
    16.00 ELEV   696.90  696.90  696.90  696.90  696.90  696.90  696.90  696.90
    16.80 CFS     22.39   22.37
    16.80 ELEV   696.90  696.90

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                   .74 WATERSHED INCHES;     298 CFS-HRS;      24.6 ACRE-FEET.

    DURATION(HRS)   2      4      6      8     10     12     14      1
    FLOW(CFS)      42     33     26     25     24     23     22     22 TRUNCATED

 --- STRUCTURE 39, ALTERNATE  0, STORM  7, HYDROGRAPH ADDED TO READHD FILE ---


EXECUTIVE CONTROL  ENDCMP    COMPUTATIONS COMPLETED FOR PASS   7


EXECUTIVE CONTROL  COMPUT    FROM XSECTION  91  TO STRUCTURE 39           6-HR
    STARTING TIME =   .00       RAIN DEPTH =  5.68       RAIN DURATION =  6.00
    ANT. RUNOFF COND. = 2       MAIN TIME INCREMENT =   .100 HOURS
    ALTERNATE NO. = 0           STORM NO. = 8            RAIN TABLE NO. = 1


OPERATION RUNOFF    XSECTION  91

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        1.72                         57.5                       (RUNOFF)
        5.00                         18.5                       (RUNOFF)
        6.18                         13.0                       (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  3.01 WATERSHED INCHES;     179 CFS-HRS;      14.8 ACRE-FEET.
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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
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OPERATION RUNOFF    XSECTION  92

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        1.74                         93.1                       (RUNOFF)
        6.16                         19.5                       (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  3.49 WATERSHED INCHES;     291 CFS-HRS;      24.1 ACRE-FEET.


OPERATION ADDHYD    XSECTION  93

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        1.73                        150.6                       (NULL)
        6.17                         32.4                       (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  3.29 WATERSHED INCHES;     470 CFS-HRS;      38.9 ACRE-FEET.


OPERATION RUNOFF    XSECTION  94

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        1.95                         8.3                        (RUNOFF)
        5.07                         3.4                        (RUNOFF)
        6.17                         2.4                        (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  2.12 WATERSHED INCHES;      28 CFS-HRS;       2.3 ACRE-FEET.


OPERATION RESVOR    STRUCTURE 11

                   HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM = 8
     HRS      MAIN TIME INCREMENT =  .100 hr,      DRAINAGE AREA =    .02 SQ.MI.
      .30 CFS       .00     .01     .07     .21     .48     .58     .73     .95
      .30 ELEV   737.50  737.51  737.57  737.71  737.98  738.16  738.46  738.90
     1.10 CFS      1.54    2.27    3.01    3.59    4.19    4.78    5.25    5.64
     1.10 ELEV   739.27  739.63  740.01  740.29  740.59  740.89  741.12  741.32
     1.90 CFS      6.00    6.32    6.58    6.80    6.96    7.05    7.09    7.10
     1.90 ELEV   741.50  741.66  741.79  741.90  741.98  742.02  742.05  742.05
     2.70 CFS      7.09    7.06    7.01    6.93    6.82    6.70    6.55    6.38
     2.70 ELEV   742.05  742.03  742.01  741.96  741.91  741.85  741.77  741.69
     3.50 CFS      6.18    5.97    5.74    5.51    5.28    5.07    4.82    4.57
     3.50 ELEV   741.59  741.48  741.37  741.26  741.14  741.03  740.91  740.78
     4.30 CFS      4.36    4.18    4.03    3.91    3.80    3.72    3.65    3.60
     4.30 ELEV   740.68  740.59  740.51  740.45  740.40  740.36  740.33  740.30
     5.10 CFS      3.55    3.52    3.48    3.44    3.38    3.30    3.20    3.08
     5.10 ELEV   740.28  740.26  740.24  740.22  740.19  740.15  740.10  740.04
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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
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     5.90 CFS      2.95    2.80    2.69    2.61    2.54    2.47    2.36    2.20
     5.90 ELEV   739.97  739.90  739.84  739.80  739.77  739.73  739.68  739.60
     6.70 CFS      2.01    1.79    1.56    1.33    1.12     .97     .89     .82
     6.70 ELEV   739.51  739.39  739.28  739.16  739.06  738.94  738.79  738.63
     7.50 CFS       .74     .67     .61     .55     .47     .22     .11     .06
     7.50 ELEV   738.49  738.35  738.22  738.10  737.97  737.72  737.61  737.56
     8.30 CFS       .03     .02     .01     .01     .00
     8.30 ELEV   737.53  737.52  737.51  737.51  737.50

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  2.12 WATERSHED INCHES;      28 CFS-HRS;       2.3 ACRE-FEET.

    DURATION(HRS)   2      4      6      7
    FLOW(CFS)       6      3      1      0

 --- STRUCTURE 11, ALTERNATE  0, STORM  8, HYDROGRAPH ADDED TO READHD FILE ---


OPERATION RUNOFF    XSECTION  96

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .56                        17.2                       (RUNOFF)
        4.95                         2.0                       (RUNOFF)
        5.96                         2.1                       (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  5.44 WATERSHED INCHES;      29 CFS-HRS;       2.4 ACRE-FEET.


OPERATION ADDHYD    XSECTION  97

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        1.74                        162.2                       (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  3.27 WATERSHED INCHES;     528 CFS-HRS;      43.6 ACRE-FEET.


OPERATION RESVOR    STRUCTURE  6

                   HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM = 8
     HRS      MAIN TIME INCREMENT =  .100 hr,      DRAINAGE AREA =    .28 SQ.MI.
      .00 CFS       .00     .30    1.20    2.48    4.32    7.18   11.57   16.87
      .00 ELEV   707.00  707.04  707.14  707.30  707.51  707.85  708.27  708.73
      .80 CFS        24      33      42      52      59      65     104     134
      .80 ELEV   709.20  709.70  710.24  710.80  711.37  711.94  712.40  712.71
     1.60 CFS       153     164     170     173     173     172     168     164
     1.60 ELEV   712.90  713.02  713.09  713.12  713.12  713.10  713.07  713.02
     2.40 CFS       158     152     147     141     136     130     124     119
     2.40 ELEV   712.96  712.90  712.84  712.78  712.73  712.67  712.61  712.55
     3.20 CFS       113     107     102      96      90      85      80      76
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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
12:29:10                    PASS   8   JOB NO.   1                      PAGE  69

     3.20 ELEV   712.49  712.43  712.37  712.31  712.25  712.20  712.15  712.10
     4.00 CFS     72.41   69.36   66.86   65.83   65.53   65.21   64.87   64.53
     4.00 ELEV   712.07  712.03  712.01  711.98  711.96  711.93  711.90  711.87
     4.80 CFS     64.19   63.86   63.53   63.22   62.87   62.40   61.83   61.17
     4.80 ELEV   711.84  711.81  711.78  711.75  711.72  711.67  711.62  711.56
     5.60 CFS     60.41   59.53   58.60   57.69   56.84   55.91   54.74   52.86
     5.60 ELEV   711.49  711.41  711.33  711.24  711.17  711.08  710.98  710.87
     6.40 CFS     50.96   48.96   46.77   44.37   41.79   39.10   36.17   33.17
     6.40 ELEV   710.76  710.64  710.52  710.37  710.22  710.06  709.90  709.73
     7.20 CFS     30.29   27.58   25.04   22.70   20.53   18.97   17.65   16.40
     7.20 ELEV   709.57  709.42  709.28  709.15  709.03  708.91  708.80  708.69
     8.00 CFS     15.22   14.11   13.07   12.09   11.19   10.35    9.57    8.84
     8.00 ELEV   708.59  708.49  708.40  708.32  708.24  708.17  708.10  708.04
     8.80 CFS      8.22    7.72    7.26    6.82    6.40    6.01    5.65    5.31
     8.80 ELEV   707.98  707.92  707.86  707.81  707.76  707.72  707.67  707.63
     9.60 CFS      4.98    4.68    4.40    4.13    3.88    3.65    3.42    3.22
     9.60 ELEV   707.59  707.56  707.52  707.49  707.46  707.43  707.41  707.38
    10.40 CFS      3.02    2.84    2.67    2.50    2.35    2.21    2.08    1.95
    10.40 ELEV   707.36  707.34  707.32  707.30  707.28  707.26  707.25  707.23
    11.20 CFS      1.83    1.72    1.62    1.52    1.43    1.34    1.26    1.18
    11.20 ELEV   707.22  707.20  707.19  707.18  707.17  707.16  707.15  707.14
    12.00 CFS      1.11    1.04     .98     .92     .86     .81     .76     .72
    12.00 ELEV   707.13  707.12  707.12  707.11  707.10  707.10  707.09  707.09
    12.80 CFS       .67     .63     .59     .56     .52     .49     .46     .43
    12.80 ELEV   707.08  707.08  707.07  707.07  707.06  707.06  707.06  707.05
    13.60 CFS       .41     .38     .36     .34     .32     .30     .28     .26
    13.60 ELEV   707.05  707.05  707.04  707.04  707.04  707.04  707.03  707.03
    14.40 CFS       .25     .23     .22     .21     .19     .18     .17     .16
    14.40 ELEV   707.03  707.03  707.03  707.02  707.02  707.02  707.02  707.02
    15.20 CFS       .15     .14     .13     .12     .12     .11     .10     .10
    15.20 ELEV   707.02  707.02  707.02  707.01  707.01  707.01  707.01  707.01
    16.00 CFS       .09     .09     .08     .08     .07     .07     .06     .06
    16.00 ELEV   707.01  707.01  707.01  707.01  707.01  707.01  707.01  707.01
    16.80 CFS       .06     .05     .05     .05     .04     .04     .04     .04
    16.80 ELEV   707.01  707.01  707.01  707.01  707.01  707.00  707.00  707.00
    17.60 CFS       .03     .03     .03     .03     .03     .02     .02     .02
    17.60 ELEV   707.00  707.00  707.00  707.00  707.00  707.00  707.00  707.00
    18.40 CFS       .02     .02     .02     .02     .02     .01     .01     .01
    18.40 ELEV   707.00  707.00  707.00  707.00  707.00  707.00  707.00  707.00
    19.20 CFS       .01     .01     .01     .01
    19.20 ELEV   707.00  707.00  707.00  707.00

   RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                3.36 WATERSHED INCHES;     600 CFS-HRS;      49.6 ACRE-FEET.

   DURATION(HRS)   2      4      6      8     10     12     13
   FLOW(CFS)     102     62     36     10      3      1      0

 --- STRUCTURE  6, ALTERNATE  0, STORM  8, HYDROGRAPH ADDED TO READHD FILE ---
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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
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OPERATION RUNOFF    XSECTION  99

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .59                         204.6                       (RUNOFF)
        2.65                          70.1                       (RUNOFF)
        5.05                          36.3                       (RUNOFF)
        5.96                          36.5                       (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  4.21 WATERSHED INCHES;     414 CFS-HRS;      34.2 ACRE-FEET.


OPERATION ADDHYD    XSECTION  90

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .60                         215.8                       (NULL)
        1.62                         270.7                       (NULL)
        1.79                         271.8                       (NULL)
        5.95                          93.8                       (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  3.66 WATERSHED INCHES;    1014 CFS-HRS;      83.8 ACRE-FEET.


OPERATION RESVOR    STRUCTURE  7

                    HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM = 8
     HRS      MAIN TIME INCREMENT =  .100 hr,       DRAINAGE AREA =    .54 SQ.MI.
      .00 CFS      .00     .06     .27     .59    1.13    2.05    3.27    4.73
      .00 ELEV   700.00  700.02  700.07  700.15  700.28  700.51  700.82  701.09
      .80 CFS     6.30    7.77    9.22   10.67   12.10   13.14   14.24   15.42
      .80 ELEV   701.29  701.47  701.65  701.83  702.02  702.19  702.37  702.57
     1.60 CFS    16.65   17.86   18.66   19.39   20.10   20.78   21.44   22.06
     1.60 ELEV   702.78  702.98  703.17  703.35  703.52  703.70  703.86  704.01
     2.40 CFS    22.62   23.16   23.69   24.20   24.68   25.14   25.56   25.95
     2.40 ELEV   704.15  704.29  704.42  704.55  704.67  704.78  704.89  704.99
     3.20 CFS    28.89   31.87   34.60   37.13   39.49   41.68   43.73   45.64
     3.20 ELEV   705.07  705.15  705.22  705.28  705.34  705.39  705.44  705.49
     4.00 CFS    48.57   51.56   54.34   56.96   59.46   61.86   64.17   66.39
     4.00 ELEV   705.54  705.58  705.62  705.65  705.69  705.72  705.75  705.78
     4.80 CFS    68.51   70.55   72.50   74.37   76.00   77.17   77.96   78.57
     4.80 ELEV   705.81  705.84  705.87  705.89  705.92  705.93  705.94  705.95
     5.60 CFS    79.07   79.51   80.05   80.93   82.07   82.96   83.03   82.40
     5.60 ELEV   705.96  705.97  705.97  705.99  706.00  706.01  706.01  706.00
     6.40 CFS    81.47   80.42   79.28   78.09   76.84   75.54   74.18   72.77
     6.40 ELEV   705.99  705.98  705.96  705.95  705.93  705.91  705.89  705.87
     7.20 CFS    71.30   69.78   68.22   66.64   65.02   63.40   61.79   60.18
     7.20 ELEV   705.85  705.83  705.81  705.79  705.76  705.74  705.72  705.70
     8.00 CFS    58.60   57.02   55.47   53.93   52.42   50.93   49.46   48.02
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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
12:29:10                    PASS   8   JOB NO.   1                      PAGE  71

     8.00 ELEV   705.67  705.65  705.63  705.61  705.59  705.57  705.55  705.53
     8.80 CFS     46.60   45.56   44.80   44.04   43.29   42.55   41.81   41.08
     8.80 ELEV   705.51  705.49  705.47  705.45  705.43  705.41  705.40  705.38
     9.60 CFS     40.36   39.65   38.95   38.25   37.56   36.89   36.22   35.56
     9.60 ELEV   705.36  705.34  705.32  705.31  705.29  705.27  705.26  705.24
    10.40 CFS     34.91   34.27   33.63   33.01   32.40   31.79   31.20   30.61
    10.40 ELEV   705.22  705.21  705.19  705.18  705.16  705.14  705.13  705.12
    11.20 CFS     30.04   29.47   28.91   28.37   27.83   27.30   26.77   26.26
    11.20 ELEV   705.10  705.09  705.07  705.06  705.05  705.03  705.02  705.01
    12.00 CFS     25.97   25.92   25.87   25.82   25.76   25.71   25.66   25.60
    12.00 ELEV   704.99  704.98  704.97  704.95  704.94  704.93  704.91  704.90
    12.80 CFS     25.55   25.50   25.45   25.39   25.34   25.29   25.24   25.18
    12.80 ELEV   704.89  704.87  704.86  704.85  704.84  704.82  704.81  704.80
    13.60 CFS     25.13   25.08   25.03   24.97   24.92   24.87   24.82   24.76
    13.60 ELEV   704.78  704.77  704.76  704.74  704.73  704.72  704.70  704.69
    14.40 CFS     24.71   24.66   24.61   24.56   24.51   24.45   24.40   24.35
    14.40 ELEV   704.68  704.67  704.65  704.64  704.63  704.61  704.60  704.59
    15.20 CFS     24.30   24.25   24.20   24.15   24.10   24.04   23.99   23.94
    15.20 ELEV   704.57  704.56  704.55  704.54  704.52  704.51  704.50  704.49
    16.00 CFS     23.89   23.84   23.79   23.74   23.69   23.64   23.59   23.54
    16.00 ELEV   704.47  704.46  704.45  704.44  704.42  704.41  704.40  704.39
    16.80 CFS     23.49   23.44   23.39   23.34   23.29   23.24   23.19   23.15
    16.80 ELEV   704.37  704.36  704.35  704.34  704.32  704.31  704.30  704.29
    17.60 CFS     23.10   23.05   23.00   22.95   22.90   22.85   22.80   22.76
    17.60 ELEV   704.27  704.26  704.25  704.24  704.23  704.21  704.20  704.19
    18.40 CFS     22.71   22.66   22.61   22.56   22.52   22.47   22.42   22.37
    18.40 ELEV   704.18  704.16  704.15  704.14  704.13  704.12  704.11  704.09
    19.20 CFS     22.33   22.28   22.23   22.18
    19.20 ELEV   704.08  704.07  704.06  704.05

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  2.00 WATERSHED INCHES;     699 CFS-HRS;      57.8 ACRE-FEET.

    DURATION(HRS)   2      4      6      8     10     12     14     16
    FLOW(CFS)      73     54     40     29     25     25     24     23

    DURATION(HRS)  17
    FLOW(CFS)      22 TRUNCATED

 --- STRUCTURE  7, ALTERNATE  0, STORM  8, HYDROGRAPH ADDED TO READHD FILE ---


OPERATION RUNOFF    XSECTION  49

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        .58                           3.4                       (RUNOFF)
       2.65                           1.1                       (RUNOFF)
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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
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    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  4.42 WATERSHED INCHES;       7 CFS-HRS;        .5 ACRE-FEET.


OPERATION ADDHYD    XSECTION  50

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        6.13                          83.3                       (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  2.01 WATERSHED INCHES;     706 CFS-HRS;      58.3 ACRE-FEET.


OPERATION RESVOR    STRUCTURE 39

                    HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM = 8
     HRS      MAIN TIME INCREMENT =  .100 hr,      DRAINAGE AREA =    .62 SQ.MI.
      .00 CFS      .00     .04     .21     .51     .94    1.61    2.52    3.50
      .00 ELEV   693.00  693.01  693.03  693.07  693.13  693.23  693.36  693.50
      .80 CFS     4.41    5.22    5.99    6.74    7.36    7.88    8.39    8.89
      .80 ELEV   693.62  693.74  693.85  693.95  694.05  694.15  694.24  694.33
     1.60 CFS     9.38    9.83   10.25   10.65   11.03   11.39   11.73   12.06
     1.60 ELEV   694.42  694.50  694.58  694.65  694.72  694.79  694.85  694.91
     2.40 CFS    12.37   12.63   12.81   12.99   13.16   13.33   13.48   13.63
     2.40 ELEV   694.96  695.02  695.07  695.12  695.17  695.22  695.26  695.31
     3.20 CFS    13.77   13.91   14.05   14.20   14.36   14.52   14.70   14.88
     3.20 ELEV   695.35  695.39  695.43  695.47  695.52  695.56  695.61  695.67
     4.00 CFS    15.06   15.26   15.47   15.69   15.92   16.12   16.31   16.50
     4.00 ELEV   695.72  695.78  695.84  695.90  695.97  696.03  696.10  696.17
     4.80 CFS    16.70   16.90   17.11   17.32   17.53   17.74   17.95   18.36
     4.80 ELEV   696.24  696.31  696.38  696.46  696.53  696.61  696.68  696.75
     5.60 CFS    20.21   22.01   23.81   26.40   30.53   34.44   37.83   40.66
     5.60 ELEV   696.82  696.89  696.95  697.02  697.09  697.15  697.20  697.25
     6.40 CFS    43.13   45.34   47.34   49.15   50.79   52.25   53.56   54.70
     6.40 ELEV   697.29  697.32  697.36  697.38  697.41  697.43  697.45  697.47
     7.20 CFS    55.70   56.56   57.28   57.86   58.32   58.66   58.89   59.01
     7.20 ELEV   697.49  697.50  697.51  697.52  697.53  697.54  697.54  697.54
     8.00 CFS    59.03   58.96   58.80   58.57   58.26   57.88   57.43   56.93
     8.00 ELEV   697.54  697.54  697.54  697.53  697.53  697.52  697.52  697.51
     8.80 CFS    56.38   55.78   55.17   54.55   53.92   53.29   52.65   52.00
     8.80 ELEV   697.50  697.49  697.48  697.47  697.46  697.45  697.44  697.43
     9.60 CFS    51.35   50.70   50.04   49.38   48.72   48.06   47.39   46.73
     9.60 ELEV   697.42  697.41  697.40  697.39  697.38  697.37  697.36  697.35
    10.40 CFS    46.07   45.41   44.75   44.09   43.43   42.78   42.13   41.48
    10.40 ELEV   697.34  697.32  697.31  697.30  697.29  697.28  697.27  697.26
    11.20 CFS    40.84   40.20   39.56   38.93   38.31   37.69   37.08   36.47
    11.20 ELEV   697.25  697.24  697.23  697.22  697.21  697.20  697.19  697.18
    12.00 CFS    35.87   35.30   34.76   34.24   33.75   33.29   32.85   32.44
    12.00 ELEV   697.17  697.16  697.16  697.15  697.14  697.13  697.12  697.12
    12.80 CFS    32.04   31.67   31.31   30.97   30.65   30.34   30.05   29.77
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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
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    12.80 ELEV   697.11  697.11  697.10  697.09  697.09  697.08  697.08  697.08
    13.60 CFS     29.50   29.25   29.01   28.78   28.55   28.34   28.14   27.95
    13.60 ELEV   697.07  697.07  697.06  697.06  697.06  697.05  697.05  697.05
    14.40 CFS     27.76   27.59   27.42   27.25   27.10   26.94   26.80   26.66
    14.40 ELEV   697.04  697.04  697.04  697.04  697.03  697.03  697.03  697.03
    15.20 CFS     26.53   26.40   26.27   26.15   26.03   25.92   25.81   25.70
    15.20 ELEV   697.02  697.02  697.02  697.02  697.02  697.01  697.01  697.01
    16.00 CFS     25.60   25.50   25.40   25.31   25.22   25.13   25.04   25.00
    16.00 ELEV   697.01  697.01  697.01  697.00  697.00  697.00  697.00  697.00
    16.80 CFS     24.96   24.92   24.88   24.84   24.80   24.76   24.72   24.68
    16.80 ELEV   697.00  697.00  696.99  696.99  696.99  696.99  696.99  696.99
    17.60 CFS     24.64   24.59   24.55   24.51   24.47   24.43   24.39   24.34
    17.60 ELEV   696.99  696.98  696.98  696.98  696.98  696.98  696.98  696.97
    18.40 CFS     24.30   24.26   24.22   24.17   24.13   24.09   24.04   24.00
    18.40 ELEV   696.97  696.97  696.97  696.97  696.97  696.96  696.96  696.96
    19.20 CFS     23.96   23.91   23.87   23.83
    19.20 ELEV   696.96  696.96  696.96  696.95

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  1.43 WATERSHED INCHES;     573 CFS-HRS;      47.3 ACRE-FEET.

    DURATION(HRS)   2      4      6      8     10     12     14
    FLOW(CFS)      55     45     35     29     26     25     24 TRUNCATED

 --- STRUCTURE 39, ALTERNATE  0, STORM  8, HYDROGRAPH ADDED TO READHD FILE ---


EXECUTIVE CONTROL  ENDCMP    COMPUTATIONS COMPLETED FOR PASS   8


EXECUTIVE CONTROL  INCREM    MAIN TIME INCREMENT =   .500 HOURS


EXECUTIVE CONTROL  COMPUT    FROM XSECTION  91  TO STRUCTURE 39           12-HR
    STARTING TIME =   .00       RAIN DEPTH =  6.59       RAIN DURATION = 12.00
    ANT. RUNOFF COND. = 2       MAIN TIME INCREMENT =   .500 HOURS
    ALTERNATE NO. = 0           STORM NO. = 9            RAIN TABLE NO. = 2


OPERATION RUNOFF    XSECTION  91

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        5.51                         50.3                       (RUNOFF)
       11.91                          9.0                       (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  3.79 WATERSHED INCHES;     226 CFS-HRS;      18.6 ACRE-FEET.
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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
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OPERATION RUNOFF    XSECTION  92

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        5.56                         78.0                       (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  4.31 WATERSHED INCHES;     360 CFS-HRS;      29.7 ACRE-FEET.


OPERATION ADDHYD    XSECTION  93

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        5.54                        128.3                       (NULL)
       11.85                         21.9                       (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  4.09 WATERSHED INCHES;     585 CFS-HRS;      48.4 ACRE-FEET.


OPERATION RUNOFF    XSECTION  94

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        5.70                          8.1                       (RUNOFF)
       11.88                          1.7                       (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  2.79 WATERSHED INCHES;      36 CFS-HRS;       3.0 ACRE-FEET.


OPERATION RESVOR    STRUCTURE 11

                    HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM = 9
     HRS      MAIN TIME INCREMENT =  .500 hr,      DRAINAGE AREA =    .02 SQ.MI.
     2.50 CFS       .00     .16     .57    1.01    2.82    4.61    6.11    7.04
     2.50 ELEV   737.50  737.66  738.14  739.01  739.91  740.81  741.56  742.02
     6.50 CFS      7.14    6.73    6.03    5.31    4.46    3.72    3.23    2.72
     6.50 ELEV   742.07  741.87  741.51  741.15  740.73  740.36  740.12  739.86
    10.50 CFS      2.32    2.16    1.88    1.66    1.53     .99     .65     .15
    10.50 ELEV   739.66  739.58  739.44  739.33  739.27  738.98  738.30  737.65
    14.50 CFS      -.04
    14.50 ELEV   737.46

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  2.79 WATERSHED INCHES;      37 CFS-HRS;       3.0 ACRE-FEET.

    DURATION(HRS)   2      4      6      8     10     11
    FLOW(CFS)       6      4      2      2      1      0

 --- STRUCTURE 11, ALTERNATE  0, STORM  9, HYDROGRAPH ADDED TO READHD FILE ---
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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
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OPERATION RUNOFF    XSECTION  96

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        4.61                          7.1                        (RUNOFF)
       10.25                          1.3                        (RUNOFF)
       11.86                          1.2                        (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  6.34 WATERSHED INCHES;      34 CFS-HRS;       2.8 ACRE-FEET.


OPERATION ADDHYD    XSECTION  97

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        5.55                        140.2                        (NULL)
       11.84                         24.9                        (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  4.06 WATERSHED INCHES;     656 CFS-HRS;      54.2 ACRE-FEET.


OPERATION RESVOR    STRUCTURE  6

                   HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM = 9
     HRS      MAIN TIME INCREMENT =  .500 hr,      DRAINAGE AREA =    .28 SQ.MI.
      .00 CFS       .00     .08     .59    1.60    3.11    5.80   11.26   21.21
      .00 ELEV   707.00  707.01  707.07  707.19  707.37  707.69  708.25  709.07
     4.00 CFS     39.94   60.06  118.70  154.63  150.35  131.23  109.36   92.29
     4.00 ELEV   710.11  711.46  712.55  712.92  712.88  712.68  712.45  712.27
     8.00 CFS     77.95   65.80   63.54   59.95   55.22   47.99   42.34   36.92
     8.00 ELEV   712.12  711.98  711.78  711.45  711.02  710.59  710.26  709.94
    12.00 CFS     32.56   28.61   21.63   15.50   10.82    7.54    5.51    4.02
    12.00 ELEV   709.70  709.48  709.09  708.61  708.21  707.90  707.66  707.48
    16.00 CFS      2.93    2.14    1.56    1.14     .83     .61     .44     .32
    16.00 ELEV   707.35  707.25  707.19  707.14  707.10  707.07  707.05  707.04
    20.00 CFS       .24     .17     .13     .09     .07     .05     .04     .03
    20.00 ELEV   707.03  707.02  707.01  707.01  707.01  707.01  707.00  707.00
    24.00 CFS       .02     .01     .01
    24.00 ELEV   707.00  707.00  707.00

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  4.15 WATERSHED INCHES;     742 CFS-HRS;      61.3 ACRE-FEET.

    DURATION(HRS)   2      4      6      8     10     12     14     16
    FLOW(CFS)     109     64     48     33     15      6      3      1

    DURATION(HRS)  18
    FLOW(CFS)       0
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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
12:29:10                    PASS   9   JOB NO.   1                       PAGE  76


 --- STRUCTURE  6, ALTERNATE  0, STORM  9, HYDROGRAPH ADDED TO READHD FILE ---


OPERATION RUNOFF    XSECTION  99

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        4.68                        114.2                        (RUNOFF)
        8.75                         32.3                        (RUNOFF)
       10.25                         21.9                        (RUNOFF)
       11.86                         21.9                        (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  5.13 WATERSHED INCHES;     505 CFS-HRS;      41.8 ACRE-FEET.


OPERATION ADDHYD    XSECTION  90

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        5.52                        250.1                        (NULL)
       11.78                         56.0                        (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  4.49 WATERSHED INCHES;    1243 CFS-HRS;     102.7 ACRE-FEET.


OPERATION RESVOR    STRUCTURE  7

                   HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM = 9
     HRS      MAIN TIME INCREMENT =  .500 hr,      DRAINAGE AREA =    .54 SQ.MI.
      .50 CFS       .00     .10     .44    1.06    1.92    3.20    5.33    8.93
      .50 ELEV   700.00  700.02  700.11  700.26  700.48  700.80  701.17  701.62
     4.50 CFS     13.49   18.09   21.41   24.48   35.20   57.89   78.70   91.16
     4.50 ELEV   702.25  703.02  703.85  704.62  705.23  705.67  705.95  706.10
     8.50 CFS     97.60  101.22  102.20  100.74   98.48   94.39   88.98   84.75
     8.50 ELEV   706.17  706.21  706.22  706.20  706.18  706.13  706.08  706.03
    12.50 CFS     78.67   69.79   61.23   53.20   45.91   42.11   38.51   35.14
    12.50 ELEV   705.95  705.83  705.71  705.60  705.50  705.40  705.31  705.23
    16.50 CFS     31.99   29.09   26.41   25.78   25.51   25.25   24.99   24.72
    16.50 ELEV   705.15  705.08  705.01  704.94  704.88  704.81  704.75  704.68
    20.50 CFS     24.47   24.21   23.95   23.70   23.45   23.21   22.96   22.72
    20.50 ELEV   704.62  704.55  704.49  704.43  704.36  704.30  704.24  704.18
    24.50 CFS     22.48   22.24
    24.50 ELEV   704.12  704.06

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  2.85 WATERSHED INCHES;     995 CFS-HRS;      82.2 ACRE-FEET.
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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
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    DURATION(HRS)   2      4      6      8     10     12     14     16
    FLOW(CFS)      98     85     61     42     32     26     24     24

    DURATION(HRS)  18     19
    FLOW(CFS)      23     22 TRUNCATED

 --- STRUCTURE  7, ALTERNATE  0, STORM  9, HYDROGRAPH ADDED TO READHD FILE ---


OPERATION RUNOFF    XSECTION  49

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        4.66                          1.8                       (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  5.36 WATERSHED INCHES;       8 CFS-HRS;        .7 ACRE-FEET.


OPERATION ADDHYD    XSECTION  50

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        9.43                        102.5                       (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  2.86 WATERSHED INCHES;    1003 CFS-HRS;      82.9 ACRE-FEET.


OPERATION RESVOR    STRUCTURE 39

                    HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM = 9
     HRS      MAIN TIME INCREMENT =  .500 hr,      DRAINAGE AREA =     .62 SQ.MI.
      .50 CFS       .00     .11     .45     .95    1.58    2.49    3.75    5.58
      .50 ELEV   693.00  693.02  693.06  693.13  693.22  693.35  693.53  693.79
     4.50 CFS      7.83    9.93   12.00   13.33   14.32   15.46   16.69   17.94
     4.50 ELEV   694.14  694.52  694.90  695.22  695.51  695.84  696.23  696.67
     8.50 CFS     31.60   53.35   69.38   80.50   88.15   91.64   93.06   93.59
     8.50 ELEV   697.10  697.45  697.71  697.88  698.01  698.08  698.11  698.12
    12.50 CFS     92.31   88.70   82.98   76.32   69.40   62.84   57.02   51.80
    12.50 ELEV   698.09  698.02  697.92  697.82  697.71  697.60  697.51  697.43
    16.50 CFS     47.09   42.81   38.92   35.60   33.03   31.05   29.52   28.31
    16.50 ELEV   697.35  697.28  697.22  697.17  697.13  697.10  697.07  697.05
    20.50 CFS     27.35   26.57   25.93   25.39   24.98   24.77   24.56   24.34
    20.50 ELEV   697.04  697.02  697.01  697.01  697.00  696.99  696.98  696.97
    24.50 CFS     24.13   23.90
    24.50 ELEV   696.97  696.96

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  2.29 WATERSHED INCHES;     916 CFS-HRS;      75.7 ACRE-FEET.
```



```
TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
12:29:10                    PASS   9   JOB NO.   1                      PAGE  78


    DURATION(HRS)   2      4      6      8     10     12     14     16
    FLOW(CFS)      89     76     57     43     32     27     25     24

    DURATION(HRS)  17
    FLOW(CFS)      24 TRUNCATED

 --- STRUCTURE 39, ALTERNATE  0, STORM  9, HYDROGRAPH ADDED TO READHD FILE ---


EXECUTIVE CONTROL  ENDCMP    COMPUTATIONS COMPLETED FOR PASS   9


EXECUTIVE CONTROL  COMPUT    FROM XSECTION  91  TO STRUCTURE 39          18-HR
    STARTING TIME =   .00       RAIN DEPTH =  6.97       RAIN DURATION = 18.00
    ANT. RUNOFF COND. = 2       MAIN TIME INCREMENT =   .500 HOURS
    ALTERNATE NO. = 0           STORM NO. =10            RAIN TABLE NO. = 2


OPERATION RUNOFF    XSECTION  91

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        7.96                         37.3                       (RUNOFF)
       17.98                          7.3                       (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  4.12 WATERSHED INCHES;     246 CFS-HRS;      20.3 ACRE-FEET.


OPERATION RUNOFF    XSECTION  92

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        7.98                         57.8                       (RUNOFF)
       18.03                         10.1                       (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  4.66 WATERSHED INCHES;     389 CFS-HRS;      32.1 ACRE-FEET.


OPERATION ADDHYD    XSECTION  93

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        7.97                         95.1                       (NULL)
       18.01                         17.4                       (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  4.44 WATERSHED INCHES;     634 CFS-HRS;      52.4 ACRE-FEET.
```

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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
12:29:10                    PASS  10   JOB NO.   1                       PAGE  79


OPERATION RUNOFF    XSECTION  94

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        8.21                          6.2                       (RUNOFF)
       18.00                          1.4                       (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  3.08 WATERSHED INCHES;      40 CFS-HRS;       3.3 ACRE-FEET.


OPERATION RESVOR    STRUCTURE 11

                   HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM =10
     HRS      MAIN TIME INCREMENT =  .500 hr,      DRAINAGE AREA =     .02 SQ.MI.
     3.50 CFS      .00     .07     .31     .57     .80    1.51    2.62    3.65
     3.50 ELEV   737.50  737.57  737.81  738.13  738.60  739.26  739.81  740.32
     7.50 CFS     4.67    5.37    5.76    5.76    5.44    4.98    4.37    3.94
     7.50 ELEV   740.84  741.19  741.38  741.38  741.22  740.99  740.69  740.47
    11.50 CFS     3.57    3.21    2.82    2.45    2.30    2.16    1.89    1.66
    11.50 ELEV   740.28  740.11  739.91  739.73  739.65  739.58  739.45  739.33
    15.50 CFS     1.57    1.54    1.50    1.29    1.06    1.17    1.19     .86
    15.50 ELEV   739.28  739.27  739.25  739.14  739.03  739.08  739.09  738.72
    19.50 CFS      .55    -.02     .02    -.01
    19.50 ELEV   738.10  737.48  737.52  737.49

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  3.07 WATERSHED INCHES;      40 CFS-HRS;       3.3 ACRE-FEET.

    DURATION(HRS)   2      4      6      8     10     12     14     15
    FLOW(CFS)       5      4      3      2      2      1      1      0

 --- STRUCTURE 11, ALTERNATE  0, STORM 10, HYDROGRAPH ADDED TO READHD FILE ---


OPERATION RUNOFF    XSECTION  96

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        6.86                          5.0                       (RUNOFF)
       12.79                          1.3                       (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  6.73 WATERSHED INCHES;      37 CFS-HRS;       3.0 ACRE-FEET.


OPERATION ADDHYD    XSECTION  97

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        7.97                        105.1                       (NULL)
       17.99                         19.4                       (NULL)
```



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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
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    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  4.40 WATERSHED INCHES;     711 CFS-HRS;      58.7 ACRE-FEET.


OPERATION RESVOR    STRUCTURE  6

                   HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM =10
     HRS      MAIN TIME INCREMENT =  .500 hr,      DRAINAGE AREA =     .28 SQ.MI.
      .00 CFS      .00     .06     .28     .73    1.38    2.28    3.59    5.46
      .00 ELEV   707.00  707.01  707.03  707.09  707.16  707.27  707.43  707.65
     4.00 CFS        8      14      20      31      43      56      68     114
     4.00 ELEV   708.00  708.46  709.02  709.60  710.27  711.09  712.02  712.50
     8.00 CFS      117     114     104      91      79      70      65      63
     8.00 ELEV   712.53  712.50  712.39  712.26  712.13  712.04  711.93  711.73
    12.00 CFS     59.71   55.60   49.37   44.55   40.51   35.92   31.64   28.77
    12.00 ELEV   711.43  711.05  710.67  710.39  710.15  709.88  709.65  709.49
    16.00 CFS     27.04   25.45   22.74   20.19   19.97   19.36   16.15   11.91
    16.00 ELEV   709.39  709.30  709.15  709.01  709.00  708.94  708.67  708.30
    20.00 CFS      8.31    6.11    4.47    3.26    2.38    1.74    1.27     .92
    20.00 ELEV   707.99  707.73  707.53  707.39  707.28  707.21  707.15  707.11
    24.00 CFS       .67     .49     .36     .26     .19     .14     .10     .07
    24.00 ELEV   707.08  707.06  707.04  707.03  707.02  707.02  707.01  707.01
    28.00 CFS       .05     .04     .03     .02     .02     .01
    28.00 ELEV   707.01  707.00  707.00  707.00  707.00  707.00

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  4.51 WATERSHED INCHES;     805 CFS-HRS;      66.5 ACRE-FEET.

    DURATION(HRS)   2      4      6      8     10     12     14     16
    FLOW(CFS)      91     65     56     41     29     20     16      8

    DURATION(HRS)  18     20     22     23
    FLOW(CFS)       4      2      1      0

 --- STRUCTURE  6, ALTERNATE  0, STORM 10, HYDROGRAPH ADDED TO READHD FILE ---


OPERATION RUNOFF    XSECTION  99

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        6.92                         80.5                       (RUNOFF)
       13.25                         21.9                       (RUNOFF)
       15.75                         15.6                       (RUNOFF)
       17.75                         16.6                       (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  5.54 WATERSHED INCHES;     545 CFS-HRS;      45.1 ACRE-FEET.


OPERATION ADDHYD    XSECTION  90
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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
12:29:10                    PASS  10   JOB NO.   1                       PAGE  81


    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        7.80                         195.5                       (NULL)
       17.73                          35.4                       (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  4.86 WATERSHED INCHES;    1346 CFS-HRS;     111.2 ACRE-FEET.


OPERATION RESVOR    STRUCTURE  7

                    HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM =10
     HRS      MAIN TIME INCREMENT =  .500 hr,       DRAINAGE AREA =     .54 SQ.MI.
      .50 CFS      .00     .03     .13     .39     .77    1.28    1.87    2.73
      .50 ELEV   700.00  700.01  700.03  700.10  700.19  700.32  700.47  700.68
     4.50 CFS     3.87    5.64    7.96   10.97   14.02   17.22   19.84   22.36
     4.50 ELEV  700.97  701.20  701.49  701.87  702.34  702.87  703.46  704.09
     8.50 CFS    24.58   30.83   45.64   64.18   77.10   85.42   90.81   93.52
     8.50 ELEV  704.65  705.12  705.49  705.75  705.93  706.04  706.10  706.13
    12.50 CFS    94.02   93.43   91.98   88.95   84.59   80.27   76.17   72.37
    12.50 ELEV  706.13  706.12  706.11  706.08  706.03  705.98  705.92  705.87
    16.50 CFS    67.99   62.92   59.15   56.84   52.80   46.99   43.40   40.19
    16.50 ELEV  705.81  705.73  705.68  705.65  705.59  705.51  705.43  705.35
    20.50 CFS    37.01   33.95   31.05   28.33   25.98   25.72   25.46   25.20
    20.50 ELEV  705.28  705.20  705.13  705.06  704.99  704.93  704.86  704.80
    24.50 CFS    24.94   24.68   24.42   24.17   23.91   23.66   23.41   23.17
    24.50 ELEV  704.73  704.67  704.61  704.54  704.48  704.42  704.35  704.29
    28.50 CFS    22.92   22.68   22.44   22.21   21.97
    28.50 ELEV  704.23  704.17  704.11  704.05  703.99

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  3.23 WATERSHED INCHES;    1130 CFS-HRS;      93.4 ACRE-FEET.

    DURATION(HRS)   2      4      6      8     10     12     14     16
    FLOW(CFS)      91     80     68     57     43     31     26     25

    DURATION(HRS)  18     20     22     23
    FLOW(CFS)      24     23     22     22 TRUNCATED

 --- STRUCTURE  7, ALTERNATE  0, STORM 10, HYDROGRAPH ADDED TO READHD FILE ---


OPERATION RUNOFF    XSECTION  49

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        6.90                           1.3                       (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  5.77 WATERSHED INCHES;       9 CFS-HRS;        .7 ACRE-FEET.
```



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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
12:29:10                    PASS  10   JOB NO.   1                       PAGE  82


OPERATION ADDHYD    XSECTION  50

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
       12.48                          94.4                       (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  3.24 WATERSHED INCHES;    1138 CFS-HRS;      94.1 ACRE-FEET.


OPERATION RESVOR    STRUCTURE 39

                    HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM =10
     HRS      MAIN TIME INCREMENT =  .500 hr,       DRAINAGE AREA =     .62 SQ.MI.
      .50 CFS      .00     .02     .14     .38     .70    1.09    1.53    2.15
      .50 ELEV   693.00  693.00  693.02  693.05  693.10  693.15  693.22  693.30
     4.50 CFS     2.94    3.87    5.01    6.48    7.99    9.54   11.14   12.66
     4.50 ELEV  693.42  693.55  693.71  693.92  694.17  694.45  694.74  695.03
     8.50 CFS    13.52   14.34   15.27   16.32   17.38   21.77   39.58   56.71
     8.50 ELEV  695.27  695.51  695.78  696.10  696.48  696.88  697.23  697.51
    12.50 CFS    69.33   78.61   85.24   88.79   89.93   89.98   89.17   87.72
    12.50 ELEV  697.71  697.85  697.96  698.02  698.04  698.04  698.03  698.00
    16.50 CFS    84.74   80.82   77.18   74.20   70.20   64.97   59.86   55.19
    16.50 ELEV  697.95  697.89  697.83  697.78  697.72  697.64  697.56  697.48
    20.50 CFS    50.90   46.91   43.19   39.70   36.46   33.72   31.62   29.99
    20.50 ELEV  697.41  697.35  697.29  697.23  697.18  697.14  697.10  697.08
    24.50 CFS    28.72   27.71   26.89   26.22   25.66   25.17   24.90   24.69
    24.50 ELEV  697.06  697.04  697.03  697.02  697.01  697.00  696.99  696.99
    28.50 CFS    24.49   24.28   24.06   23.85   23.63
    28.50 ELEV  696.98  696.97  696.96  696.96  696.95

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  2.67 WATERSHED INCHES;    1069 CFS-HRS;      88.3 ACRE-FEET.

    DURATION(HRS)   2      4      6      8     10     12     14     16
    FLOW(CFS)      88     79     69     55     40     32     27     25

    DURATION(HRS)  18     20
    FLOW(CFS)      24     24 TRUNCATED

 --- STRUCTURE 39, ALTERNATE  0, STORM 10, HYDROGRAPH ADDED TO READHD FILE ---


EXECUTIVE CONTROL  ENDCMP    COMPUTATIONS COMPLETED FOR PASS  10
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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
12:29:10                    SUMMARY, JOB NO.   1                        PAGE  83
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SUMMARY TABLE 1

SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.
A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:
F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED HYDROGRAPH

XSECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RUNOFF AMOUNT (IN)	PEAK DISCHARGE ELEVATION (FT)	PEAK DISCHARGE TIME (HR)	PEAK DISCHARGE RATE (CFS)	PEAK DISCHARGE RATE (CSM)
RAINFALL OF .91 inches AND .10 hr DURATION, BEGINS AT .0 hrs.							
RAINTABLE NUMBER 1, ARC 2							
MAIN TIME INCREMENT .008 HOURS							
ALTERNATE 0 STORM 1							
XSECTION 91	RUNOFF	.09	.02	---	.57F	1F	11.1
XSECTION 92	RUNOFF	.13	.06	---	.66F	6F	46.2
XSECTION 93	ADDHYD	.22	.04	---	.63	7	31.8
XSECTION 94	RUNOFF	.02	.00	---	.00	0	.0
STRUCTURE 11	RESVOR	.02	.00	---	.00	0	.0
XSECTION 95	ADDHYD	.24	.04	---	.63	7	29.2
XSECTION 96	RUNOFF	.01	.70	---	.13	26	2600.0
XSECTION 97	ADDHYD	.25	.06	---	.13	26	104.0
XSECTION 10	RUNOFF	.03	.18	---	.14	22	733.3
XSECTION 98	ADDHYD	.28	.07	---	.13	48	171.4
STRUCTURE 6	RESVOR	.28	.06	707.56	.95F	5F	17.9
XSECTION 99	RUNOFF	.15	.18	---	.14	127	846.7
XSECTION 90	ADDHYD	.43	.10	---	.14	129	300.0
XSECTION 17	RUNOFF	.11	.20	---	.22	59	536.4
XSECTION 13	ADDHYD	.54	.12	---	.15	165	305.6
STRUCTURE 7	RESVOR	.54	.01	700.37	3.19R	1R	1.9
XSECTION 49	RUNOFF	.00	.23	---	.14T	2T********	
XSECTION 50	ADDHYD	.54	.01	---	.14T	3T	5.6
XSECTION 24	RUNOFF	.01	.26	---	.13	18	1800.0
XSECTION 17	ADDHYD	.56	.02	---	.14	21	37.5
XSECTION 19	RUNOFF	.06	.26	---	.19	50	833.3
XSECTION 15	ADDHYD	.62	.04	---	.17	64	103.2
STRUCTURE 39	RESVOR	.62	.01	693.17	3.19R	1R	1.6
RAINFALL OF 1.67 inches AND .20 hr DURATION, BEGINS AT .0 hrs.							
ALTERNATE 0 STORM 2							


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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
12:29:10                    SUMMARY, JOB NO.   1                        PAGE  84
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SUMMARY TABLE 1

SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.
A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:
F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED HYDROGRAPH

XSECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RUNOFF AMOUNT (IN)	PEAK DISCHARGE ELEVATION (FT)	PEAK DISCHARGE TIME (HR)	PEAK DISCHARGE RATE (CFS)	PEAK DISCHARGE RATE (CSM)
ALTERNATE 0 STORM 2							
XSECTION 91	RUNOFF	.09	.23	---	.60	20	222.2
XSECTION 92	RUNOFF	.13	.37	---	.69	38	292.3
XSECTION 93	ADDHYD	.22	.31	---	.64	58	263.6
XSECTION 94	RUNOFF	.02	.06	---	.66F	1F	50.0
STRUCTURE 11	RESVOR	.02	.06	738.36	.95R	1R	50.0
XSECTION 95	ADDHYD	.24	.29	---	.64	58	241.7
XSECTION 96	RUNOFF	.01	1.45	---	.14	44	4400.0
XSECTION 97	ADDHYD	.25	.33	---	.64	58	232.0
XSECTION 10	RUNOFF	.03	.66	---	.15	63	2100.0
XSECTION 98	ADDHYD	.28	.36	---	.15	110	392.9
STRUCTURE 6	RESVOR	.28	.30	709.55	1.04T	30T	107.1
XSECTION 99	RUNOFF	.15	.66	---	.15	362	2413.3
XSECTION 90	ADDHYD	.43	.43	---	.16	367	853.5
XSECTION 17	RUNOFF	.11	.71	---	.26	186	1690.9
XSECTION 13	ADDHYD	.54	.48	---	.18	488	903.7
STRUCTURE 7	RESVOR	.54	.05	701.30	3.19R	6R	11.1
XSECTION 49	RUNOFF	.00	.76	---	.15	6 ********	
XSECTION 50	ADDHYD	.54	.05	---	.17T	8T	14.8
XSECTION 24	RUNOFF	.01	.82	---	.15	44	4400.0
XSECTION 17	ADDHYD	.56	.07	---	.15T	52T	92.9
XSECTION 19	RUNOFF	.06	.82	---	.22	136	2266.7
XSECTION 15	ADDHYD	.62	.15	---	.20	176	283.9
STRUCTURE 39	RESVOR	.62	.03	693.58	3.19R	4R	6.5

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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
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SUMMARY TABLE 1

SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.
A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:
F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED HYDROGRAPH

RAINFALL OF 2.05 inches AND .30 hr DURATION, BEGINS AT .0 hrs.

ALTERNATE 0 STORM 3

XSECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RUNOFF AMOUNT (IN)	PEAK DISCHARGE ELEVATION (FT)	PEAK DISCHARGE TIME (HR)	PEAK DISCHARGE RATE (CFS)	PEAK DISCHARGE RATE (CSM)
XSECTION 91	RUNOFF	.09	.41	---	.63	35	388.9
XSECTION 92	RUNOFF	.13	.59	---	.71	60	461.5
XSECTION 93	ADDHYD	.22	.52	---	.68	94	427.3
XSECTION 94	RUNOFF	.02	.15	---	.69T	3T	150.0
STRUCTURE 11	RESVOR	.02	.15	739.33	.99F	2F	100.0
XSECTION 95	ADDHYD	.24	.48	---	.68	95	395.8
XSECTION 96	RUNOFF	.01	1.82	---	.15	49	4900.0
XSECTION 97	ADDHYD	.25	.53	---	.68	95	380.0
XSECTION 10	RUNOFF	.03	.94	---	.16	76	2533.3
XSECTION 98	ADDHYD	.28	.57	---	.16	128	457.1
STRUCTURE 6	RESVOR	.28	.48	710.67	1.07T	49T	175.0
XSECTION 99	RUNOFF	.15	.94	---	.16	438	2920.0
XSECTION 90	ADDHYD	.43	.65	---	.17	444	1032.6
XSECTION 17	RUNOFF	.11	1.01	---	.28	236	2145.5
XSECTION 13	ADDHYD	.54	.72	---	.19	594	1100.0
STRUCTURE 7	RESVOR	.54	.07	701.75	3.19R	10R	18.5
XSECTION 49	RUNOFF	.00	1.07	---	.16	8	********
XSECTION 50	ADDHYD	.54	.08	---	3.19R	10R	18.5
XSECTION 24	RUNOFF	.01	1.14	---	.16	52	5200.0
XSECTION 17	ADDHYD	.56	.11	---	.16T	61T	108.9
XSECTION 19	RUNOFF	.06	1.14	---	.24	164	2733.3
XSECTION 15	ADDHYD	.62	.21	---	.22	212	341.9
STRUCTURE 39	RESVOR	.62	.04	693.84	3.19R	6R	9.7


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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
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SUMMARY TABLE 1

SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.
A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:
F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED HYDROGRAPH

RAINFALL OF 2.80 inches AND .50 hr DURATION, BEGINS AT .0 hrs.

ALTERNATE 0 STORM 4

XSECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RUNOFF AMOUNT (IN)	PEAK DISCHARGE ELEVATION (FT)	PEAK DISCHARGE TIME (HR)	PEAK DISCHARGE RATE (CFS)	PEAK DISCHARGE RATE (CSM)
XSECTION 91	RUNOFF	.09	.83	---	.75	65	722.2
XSECTION 92	RUNOFF	.13	1.10	---	.82	104	800.0
XSECTION 93	ADDHYD	.22	.99	---	.79	168	763.6
XSECTION 94	RUNOFF	.02	.42	---	.82	7	350.0
STRUCTURE 11	RESVOR	.02	.42	740.78	1.11F	5F	250.0
XSECTION 95	ADDHYD	.24	.94	---	.79	171	712.5
XSECTION 96	RUNOFF	.01	2.57	---	.17	49	4900.0
XSECTION 97	ADDHYD	.25	1.00	---	.79	171	684.0
XSECTION 10	RUNOFF	.03	1.57	---	.20	86	2866.7
XSECTION 98	ADDHYD	.28	1.05	---	.79	172	614.3
STRUCTURE 6	RESVOR	.28	.91	712.59	1.07T	122T	435.7
XSECTION 99	RUNOFF	.15	1.57	---	.20	498	3320.0
XSECTION 90	ADDHYD	.43	1.14	---	.20	506	1176.7
XSECTION 17	RUNOFF	.11	1.64	---	.31	290	2636.4
XSECTION 13	ADDHYD	.54	1.25	---	.24	721	1335.2
STRUCTURE 7	RESVOR	.54	.12	702.74	3.19R	16R	29.6
XSECTION 49	RUNOFF	.00	1.72	---	.19	8	********
XSECTION 50	ADDHYD	.54	.13	---	3.19R	16R	29.6
XSECTION 24	RUNOFF	.01	1.80	---	.19	57	5700.0
XSECTION 17	ADDHYD	.56	.17	---	.20T	68T	121.4
XSECTION 19	RUNOFF	.06	1.80	---	.27	194	3233.3
XSECTION 15	ADDHYD	.62	.33	---	.26	253	408.1
STRUCTURE 39	RESVOR	.62	.06	694.33	3.19R	9R	14.5

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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
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SUMMARY TABLE 1

SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.
A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:
F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED HYDROGRAPH

XSECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RUNOFF AMOUNT (IN)	PEAK DISCHARGE ELEVATION (FT)	PEAK DISCHARGE TIME (HR)	PEAK DISCHARGE RATE (CFS)	PEAK DISCHARGE RATE (CSM)
RAINFALL OF 3.56 inches AND 1.00 hr DURATION, BEGINS AT .0 hrs.							
ALTERNATE 0 STORM 5							
XSECTION 91	RUNOFF	.09	1.34	---	.87	80	888.9
XSECTION 92	RUNOFF	.13	1.68	---	.97	128	984.6
XSECTION 93	ADDHYD	.22	1.54	---	.93	206	936.4
XSECTION 94	RUNOFF	.02	.78	---	1.02	10	500.0
STRUCTURE 11	RESVOR	.02	.77	741.94	1.43F	7F	350.0
XSECTION 95	ADDHYD	.24	1.48	---	.94	211	879.2
XSECTION 96	RUNOFF	.01	3.33	---	.20	42	4200.0
XSECTION 97	ADDHYD	.25	1.54	---	.92	218	872.0
XSECTION 10	RUNOFF	.03	2.24	---	.27	76	2533.3
XSECTION 98	ADDHYD	.28	1.61	---	.89	238	850.0
STRUCTURE 6	RESVOR	.28	1.41	713.37	1.15T	198T	707.1
XSECTION 99	RUNOFF	.15	2.24	---	.27	435	2900.0
XSECTION 90	ADDHYD	.43	1.71	---	.28	447	1039.5
XSECTION 17	RUNOFF	.11	2.32	---	.38	281	2554.5
XSECTION 13	ADDHYD	.54	1.83	---	.32	696	1288.9
STRUCTURE 7	RESVOR	.54	.15	703.83	3.19R	21R	38.9
XSECTION 49	RUNOFF	.00	2.41	---	.26	7	********
XSECTION 50	ADDHYD	.54	.16	---	3.19R	21R	38.9
XSECTION 24	RUNOFF	.01	2.50	---	.25	49	4900.0
XSECTION 17	ADDHYD	.56	.22	---	.27T	59T	105.4
XSECTION 19	RUNOFF	.06	2.50	---	.33	180	3000.0
XSECTION 15	ADDHYD	.62	.45	---	.32	236	380.6
STRUCTURE 39	RESVOR	.62	.07	694.80	3.19R	11R	17.7


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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
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SUMMARY TABLE 1

SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.
A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:
F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED HYDROGRAPH

XSECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RUNOFF AMOUNT (IN)	PEAK DISCHARGE ELEVATION (FT)	PEAK DISCHARGE TIME (HR)	PEAK DISCHARGE RATE (CFS)	PEAK DISCHARGE RATE (CSM)
RAINFALL OF 4.47 inches AND 2.00 hr DURATION, BEGINS AT .0 hrs.							
MAIN TIME INCREMENT .100 HOURS							
ALTERNATE 0 STORM 6							
XSECTION 91	RUNOFF	.09	2.03	---	1.06	82	911.1
XSECTION 92	RUNOFF	.13	2.44	---	1.14	131	1007.7
XSECTION 93	ADDHYD	.22	2.27	---	1.11	212	963.6
XSECTION 94	RUNOFF	.02	1.31	---	1.21	11	550.0
STRUCTURE 11	RESVOR	.02	1.31	742.44	1.86	8	400.0
XSECTION 95	ADDHYD	.24	2.19	---	1.12	218	908.3
XSECTION 96	RUNOFF	.01	4.23	---	.27	31	3100.0
XSECTION 97	ADDHYD	.25	2.25	---	1.10	225	900.0
XSECTION 10	RUNOFF	.03	3.06	---	.34	60	2000.0
XSECTION 98	ADDHYD	.28	2.33	---	1.03	246	878.6
STRUCTURE 6	RESVOR	.28	2.33	713.59	1.35	219	782.1
XSECTION 99	RUNOFF	.15	3.06	---	.34	347	2313.3
XSECTION 90	ADDHYD	.43	2.59	---	.34	358	832.6
XSECTION 17	RUNOFF	.11	3.16	---	.51	229	2081.8
XSECTION 13	ADDHYD	.54	2.71	---	.46	565	1046.3
STRUCTURE 7	RESVOR	.54	1.08	705.11	3.91T	30T	55.6
XSECTION 49	RUNOFF	.00	3.26	---	.33	6	********
XSECTION 50	ADDHYD	.54	1.08	---	3.91T	30T	55.6
XSECTION 24	RUNOFF	.01	3.36	---	.32	39	3900.0
XSECTION 17	ADDHYD	.56	1.15	---	.34T	48T	85.7
XSECTION 19	RUNOFF	.06	3.36	---	.43	144	2400.0
XSECTION 15	ADDHYD	.62	1.37	---	.43T	189T	304.8

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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
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SUMMARY TABLE 1

SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.
A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:
F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED HYDROGRAPH

XSECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RUNOFF AMOUNT (IN)	PEAK DISCHARGE ELEVATION (FT)	TIME (HR)	RATE (CFS)	RATE (CSM)
ALTERNATE 0 STORM 6							
STRUCTURE 39	RESVOR	.62	.60	696.46	16.10R	17R	27.4
RAINFALL OF 4.85 inches AND 3.00 hr DURATION, BEGINS AT .0 hrs.							
ALTERNATE 0 STORM 7							
XSECTION 91	RUNOFF	.09	2.33	---	1.23	73	811.1
XSECTION 92	RUNOFF	.13	2.76	---	1.29	118	907.7
XSECTION 93	ADDHYD	.22	2.58	---	1.26	191	868.2
XSECTION 94	RUNOFF	.02	1.55	---	1.44	10	500.0
STRUCTURE 11	RESVOR	.02	1.55	742.34	2.02	8	400.0
XSECTION 95	ADDHYD	.24	2.49	---	1.28	196	816.7
XSECTION 96	RUNOFF	.01	4.61	---	.33	26	2600.0
XSECTION 97	ADDHYD	.25	2.57	---	1.27	204	816.0
XSECTION 10	RUNOFF	.03	3.42	---	.39	48	1600.0
XSECTION 98	ADDHYD	.28	2.65	---	1.24	224	800.0
STRUCTURE 6	RESVOR	.28	2.65	713.47	1.52	208	742.9
XSECTION 99	RUNOFF	.15	3.42	---	.39	274	1826.7
XSECTION 90	ADDHYD	.43	2.92	---	1.39	315	732.6
XSECTION 17	RUNOFF	.11	3.52	---	.54	187	1700.0
XSECTION 13	ADDHYD	.54	3.05	---	.46	449	831.5
STRUCTURE 7	RESVOR	.54	1.31	705.49	4.29T	45T	83.3
XSECTION 49	RUNOFF	.00	3.62	---	.37T	5T	********
XSECTION 50	ADDHYD	.54	1.32	---	4.29T	45T	83.3
XSECTION 24	RUNOFF	.01	3.73	---	.36	31	3100.0
XSECTION 17	ADDHYD	.56	1.39	---	4.29T	45T	80.4
XSECTION 19	RUNOFF	.06	3.73	---	.45	121	2016.7
XSECTION 15	ADDHYD	.62	1.62	---	.44T	159T	256.5
STRUCTURE 39	RESVOR	.62	.74	696.91	15.20T	23T	37.1


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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
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SUMMARY TABLE 1

SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.
A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:
F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED HYDROGRAPH

XSECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RUNOFF AMOUNT (IN)	PEAK DISCHARGE ELEVATION (FT)	TIME (HR)	RATE (CFS)	RATE (CSM)
RAINFALL OF 5.68 inches AND 6.00 hr DURATION, BEGINS AT .0 hrs.							
ALTERNATE 0 STORM 8							
XSECTION 91	RUNOFF	.09	3.01	---	1.72	58	644.4
XSECTION 92	RUNOFF	.13	3.49	---	1.74	93	715.4
XSECTION 93	ADDHYD	.22	3.29	---	1.73	151	686.4
XSECTION 94	RUNOFF	.02	2.12	---	1.95	8	400.0
STRUCTURE 11	RESVOR	.02	2.12	742.05	2.60	7	350.0
XSECTION 95	ADDHYD	.24	3.19	---	1.76	156	650.0
XSECTION 96	RUNOFF	.01	5.44	---	.56	17	1700.0
XSECTION 97	ADDHYD	.25	3.27	---	1.74	162	648.0
XSECTION 10	RUNOFF	.03	4.21	---	.59	36	1200.0
XSECTION 98	ADDHYD	.28	3.36	---	1.57	182	650.0
STRUCTURE 6	RESVOR	.28	3.36	713.12	1.96	174	621.4
XSECTION 99	RUNOFF	.15	4.21	---	.59	205	1366.7
XSECTION 90	ADDHYD	.43	3.66	---	1.79	272	632.6
XSECTION 17	RUNOFF	.11	4.31	---	.71	142	1290.9
XSECTION 13	ADDHYD	.54	3.80	---	1.56	368	681.5
STRUCTURE 7	RESVOR	.54	2.00	706.01	6.16T	83T	153.7
XSECTION 49	RUNOFF	.00	4.42	---	.58	3	********
XSECTION 50	ADDHYD	.54	2.01	---	6.13T	83T	153.7
XSECTION 24	RUNOFF	.01	4.53	---	.58	23	2300.0
XSECTION 17	ADDHYD	.56	2.08	---	6.01T	86T	153.6
XSECTION 19	RUNOFF	.06	4.53	---	.66	89	1483.3
XSECTION 15	ADDHYD	.62	2.32	---	.64T	118T	190.3
STRUCTURE 39	RESVOR	.62	1.43	697.54	7.97T	59T	95.2

TR20 ---------- SCS -
001 CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE VERSION
04/19/** PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
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SUMMARY TABLE 1

SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.
A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:
F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED HYDROGRAPH

XSECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RUNOFF AMOUNT (IN)	PEAK DISCHARGE ELEVATION (FT)	TIME (HR)	RATE (CFS)	RATE (CSM)
RAINFALL OF 6.59 inches AND 12.00 hr DURATION, BEGINS AT .0 hrs.							
RAINTABLE NUMBER 2, ARC 2							
MAIN TIME INCREMENT .500 HOURS							
ALTERNATE 0 STORM 9							
XSECTION 91	RUNOFF	.09	3.79	---	5.51	50	555.6
XSECTION 92	RUNOFF	.13	4.31	---	5.56	78	600.0
XSECTION 93	ADDHYD	.22	4.09	---	5.54	128	581.8
XSECTION 94	RUNOFF	.02	2.79	---	5.70	8	400.0
STRUCTURE 11	RESVOR	.02	2.79	742.08	6.35	7	350.0
XSECTION 95	ADDHYD	.24	3.98	---	5.57	135	562.5
XSECTION 96	RUNOFF	.01	6.34	---	4.61	7	700.0
XSECTION 97	ADDHYD	.25	4.06	---	5.55	140	560.0
XSECTION 10	RUNOFF	.03	5.13	---	4.68	20	666.7
XSECTION 98	ADDHYD	.28	4.16	---	5.49	157	560.7
STRUCTURE 6	RESVOR	.28	4.15	712.96	5.70	158	564.3
XSECTION 99	RUNOFF	.15	5.13	---	4.68	114	760.0
XSECTION 90	ADDHYD	.43	4.49	---	5.52	250	581.4
XSECTION 17	RUNOFF	.11	5.27	---	4.94	82	745.5
XSECTION 13	ADDHYD	.54	4.63	---	5.41	329	609.3
STRUCTURE 7	RESVOR	.54	2.85	706.22	9.45T	102T	188.9
XSECTION 49	RUNOFF	.00	5.36	---	4.66T	2T	********
XSECTION 50	ADDHYD	.54	2.86	---	9.43T	103T	190.7
XSECTION 24	RUNOFF	.01	5.47	---	4.66	12	1200.0
XSECTION 17	ADDHYD	.56	2.93	---	9.22T	105T	187.5

TR20 ---------- SCS -
001 CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE VERSION
04/19/** PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
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SUMMARY TABLE 1

SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.
A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:
F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED HYDROGRAPH

XSECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RUNOFF AMOUNT (IN)	PEAK DISCHARGE ELEVATION (FT)	TIME (HR)	RATE (CFS)	RATE (CSM)
ALTERNATE 0 STORM 9							
XSECTION 19	RUNOFF	.06	5.49	---	4.74	48	800.0
XSECTION 15	ADDHYD	.62	3.17	---	8.98T	118T	190.3
STRUCTURE 39	RESVOR	.62	2.29	698.12	11.90T	94T	151.6
RAINFALL OF 6.97 inches AND 18.00 hr DURATION, BEGINS AT .0 hrs.							
ALTERNATE 0 STORM 10							
XSECTION 91	RUNOFF	.09	4.12	---	7.96	37	411.1
XSECTION 92	RUNOFF	.13	4.66	---	7.98	58	446.2
XSECTION 93	ADDHYD	.22	4.44	---	7.97	95	431.8
XSECTION 94	RUNOFF	.02	3.08	---	8.21	6	300.0
STRUCTURE 11	RESVOR	.02	3.07	741.40	8.75	6	300.0
XSECTION 95	ADDHYD	.24	4.32	---	8.01	100	416.7
XSECTION 96	RUNOFF	.01	6.73	---	6.86	5	500.0
XSECTION 97	ADDHYD	.25	4.40	---	7.97	105	420.0
XSECTION 10	RUNOFF	.03	5.54	---	6.92	14	466.7
XSECTION 98	ADDHYD	.28	4.50	---	7.91	119	425.0
STRUCTURE 6	RESVOR	.28	4.51	712.53	7.99	117	417.9
XSECTION 99	RUNOFF	.15	5.54	---	6.92	81	540.0
XSECTION 90	ADDHYD	.43	4.86	---	7.80	196	455.8
XSECTION 17	RUNOFF	.11	5.55	---	7.13	60	545.5
XSECTION 13	ADDHYD	.54	5.00	---	7.77	254	470.4
STRUCTURE 7	RESVOR	.54	3.23	706.13	12.48T	94T	174.1
XSECTION 49	RUNOFF	.00	5.77	---	6.90T	1T	********
XSECTION 50	ADDHYD	.54	3.24	---	12.48T	94T	174.1
XSECTION 24	RUNOFF	.01	5.88	---	6.89	8	800.0
XSECTION 17	ADDHYD	.56	3.31	---	12.48T	97T	173.2
XSECTION 19	RUNOFF	.06	5.78	---	7.06	34	566.7
XSECTION 15	ADDHYD	.62	3.56	---	11.68T	106T	171.0
STRUCTURE 39	RESVOR	.62	2.67	698.05	14.77T	90T	145.2

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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
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SUMMARY TABLE 3

STORM DISCHARGES (CFS) AT XSECTIONS AND STRUCTURES FOR ALL ALTERNATES
QUESTION MARK (?) AFTER: OUTFLOW PEAK - RISING TRUNCATED HYDROGRAPH.

XSECTION/ STRUCTURE ID		DRAINAGE AREA (SQ MI)	STORM NUMBERS..... 1	2	3	4	5
STRUCTURE	39	.62					
ALTERNATE	0		1?	4?	6?	9?	11?
STRUCTURE	11	.02					
ALTERNATE	0		0	1?	2	5	7
STRUCTURE	7	.54					
ALTERNATE	0		1?	6?	10?	16?	21?
STRUCTURE	6	.28					
ALTERNATE	0		5	30	49	122	198
XSECTION	10	.03					
ALTERNATE	0		22	63	76	86	76
XSECTION	13	.54					
ALTERNATE	0		165	488	594	721	696
XSECTION	15	.62					
ALTERNATE	0		64	176	212	253	236
XSECTION	17	.56					
ALTERNATE	0		21	52	61	68	59
XSECTION	19	.06					
ALTERNATE	0		50	136	164	194	180
XSECTION	24	.01					
ALTERNATE	0		18	44	52	57	49
XSECTION	49	.00					
ALTERNATE	0		2	6	8	8	7
XSECTION	50	.54					
ALTERNATE	0		3	8	10?	16?	21?
XSECTION	90	.43					

ALTERNATE	0		129	367	444	506	447
XSECTION	91	.09					

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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
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SUMMARY TABLE 3

STORM DISCHARGES (CFS) AT XSECTIONS AND STRUCTURES FOR ALL ALTERNATES
QUESTION MARK (?) AFTER: OUTFLOW PEAK - RISING TRUNCATED HYDROGRAPH.

XSECTION/ STRUCTURE ID		DRAINAGE AREA (SQ MI)	STORM NUMBERS..... 1	2	3	4	5
XSECTION 91		.09					
	ALTERNATE 0		1	20	35	65	80
XSECTION 92		.13					
	ALTERNATE 0		6	38	60	104	128
XSECTION 93		.22					
	ALTERNATE 0		7	58	94	168	206
XSECTION 94		.02					
	ALTERNATE 0		0	1	3	7	10
XSECTION 95		.24					
	ALTERNATE 0		7	58	95	171	211
XSECTION 96		.01					
	ALTERNATE 0		26	44	49	49	42
XSECTION 97		.25					
	ALTERNATE 0		26	58	95	171	218
XSECTION 98		.28					
	ALTERNATE 0		48	110	128	172	238
XSECTION 99		.15					
	ALTERNATE 0		127	362	438	498	435

SUMMARY TABLE 3

STORM DISCHARGES (CFS) AT XSECTIONS AND STRUCTURES FOR ALL ALTERNATES
QUESTION MARK (?) AFTER: OUTFLOW PEAK - RISING TRUNCATED HYDROGRAPH.

XSECTION/ STRUCTURE ID		DRAINAGE AREA (SQ MI)	STORM NUMBERS..... 6	7	8	9	10
STRUCTURE 39		.62					
	ALTERNATE 0		17?	23	59	94	90

STRUCTURE 11		.02					
	ALTERNATE 0		8	8	7	7	6
STRUCTURE 7		.54					
	ALTERNATE 0		30	45	83	102	94
STRUCTURE 6		.28					
	ALTERNATE 0		219	208	174	158	117
XSECTION 10		.03					
	ALTERNATE 0		60	48	36	20	14

TR20 ---------- SCS -
001 CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE VERSION
04/19/** PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
12:29:10 SUMMARY, JOB NO. 1 PAGE 95

SUMMARY TABLE 3

STORM DISCHARGES (CFS) AT XSECTIONS AND STRUCTURES FOR ALL ALTERNATES
QUESTION MARK (?) AFTER: OUTFLOW PEAK - RISING TRUNCATED HYDROGRAPH.

XSECTION/ STRUCTURE ID		DRAINAGE AREA (SQ MI)	STORM NUMBERS..... 6	7	8	9	10
XSECTION 13		.54					
ALTERNATE	0		565	449	368	329	254
XSECTION 15		.62					
ALTERNATE	0		189	159	118	118	106
XSECTION 17		.56					
ALTERNATE	0		48	45	86	105	97
XSECTION 19		.06					
ALTERNATE	0		144	121	89	48	34
XSECTION 24		.01					
ALTERNATE	0		39	31	23	12	8
XSECTION 49		.00					
ALTERNATE	0		6	5	3	2	1
XSECTION 50		.54					
ALTERNATE	0		30	45	83	103	94
XSECTION 90		.43					
ALTERNATE	0		358	315	272	250	196
XSECTION 91		.09					
ALTERNATE	0		82	73	58	50	37
XSECTION 92		.13					
ALTERNATE	0		131	118	93	78	58
XSECTION 93		.22					
ALTERNATE	0		212	191	151	128	95
XSECTION 94		.02					
ALTERNATE	0		11	10	8	8	6
XSECTION 95		.24					

ALTERNATE	0	218	196	156	135	100	

```
TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
12:29:10                    SUMMARY, JOB NO.   1                       PAGE  96
```

SUMMARY TABLE 3

STORM DISCHARGES (CFS) AT XSECTIONS AND STRUCTURES FOR ALL ALTERNATES
QUESTION MARK (?) AFTER: OUTFLOW PEAK - RISING TRUNCATED HYDROGRAPH.

XSECTION/ STRUCTURE ID		DRAINAGE AREA (SQ MI)	STORM NUMBERS..... 6	7	8	9	10
XSECTION 96		.01					
ALTERNATE	0		31	26	17	7	5
XSECTION 97		.25					
ALTERNATE	0		225	204	162	140	105
XSECTION 98		.28					
ALTERNATE	0		246	224	182	157	119
XSECTION 99		.15					
ALTERNATE	0		347	274	205	114	81


```
TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST


END OF  1 JOBS IN THIS RUN




                    SCS  TR-20,  VERSION 2.04TEST
                           001       FILES

     INPUT  = C:\TR20\PRA.DAT                          , GIVEN DATA FILE
     OUTPUT = C:\TR20\PRA.OUT                          , DATED 04/19/**,12:29:10

              FILES GENERATED - DATED 04/19/**,12:29:10

    FILE C:\TR20\PRA.TRD CONTAINS READHD INFORMATION

    FILE C:\TR20\PRA.TMG CONTAINS MESSAGE + WARNING INFORMATION


          TOTAL NUMBER OF WARNINGS = 131,  MESSAGES =  78

                       JOB ENDED AT 12:29:11
                   *** TR-20 RUN COMPLETED ***
```

Cantera Subarea C. Lot 2
PROPOSED Conditions
100-yr Event
Revised Based on OUTLET A DISCHARGE


```
******************80-80 LIST OF INPUT DATA FOR TR-20 HYDROLOGY******************

JOB TR-20 001                          PASS=     SUMMARY
TITLE     CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE
TITLE     PROPERTY NORTH OF THE EAST-WEST TOLLWAY (JRB 11/1/95 FILE: 8935-i1X.DA
 5 RAINFL 1              0.05
 8          0.00         0.16         0.33         0.43         0.52
 8          0.60         0.66         0.71         0.75         0.79
 8          0.82         0.84         0.86         0.88         0.90
 8          0.92         0.94         0.96         0.97         0.98
 8          1.00         1.00         1.00         1.00         1.00
 9 ENDTBL
 5 RAINFL 2              0.05
 8          0.00         0.03         0.08         0.12         0.16
 8          0.22         0.29         0.39         0.51         0.62
 8          0.70         0.76         0.81         0.85         0.88
 8          0.91         0.93         0.95         0.97         0.98
 8          1.00         1.00         1.00         1.00         1.00
 9 ENDTBL
 5 RAINFL 3              0.05
 8          0.00         0.03         0.06         0.09         0.12
 8          0.15         0.19         0.23         0.27         0.32
 8          0.38         0.45         0.57         0.70         0.79
 8          0.85         0.89         0.92         0.95         0.97
 8          1.00         1.00         1.00         1.00         1.00
 9 ENDTBL
 5 RAINFL 4              0.05
 8          0.00         0.02         0.05         0.08         0.10
 8          0.13         0.16         0.19         0.22         0.25
 8          0.28         0.32         0.35         0.39         0.45
 8          0.51         0.59         0.72         0.84         0.92
 8          1.00         1.00         1.00         1.00         1.00
 9 ENDTBL
 3 STRUCT      06
 8                       707.0        0.00         0.00           POND-B6 - AEAST
 8                       708.0        8.40         1.11           36" DIA. RCP
 8                       709.0        20.0         2.32           INLET CONTROL
 8                       710.0        38.0         3.63
 8                       711.0        55.0         5.02
 8                       712.0        66.0         6.52           12' WEIR; C=3.0
 8                       712.5       114.0         7.32
 9 ENDTBL
 3 STRUCT      11
 8                       737.5         0.0          0.0
 8                       738.          0.5         .005           DRYBASIN
 8                       739.          1.0         .040
 8                       740.          3.0         .098
 8                       741.          5.0         .176
 8                       742.          7.0         .288
 8                       743.          9.0         .446
 8                       744.         33.9         .566
 9 ENDTBL
 3 STRUCT      07
 8                       700.          0.0          0.0           POND-D7
 8                       701.          4.0         8.59           REINDEER LAKE
 8                       702.          12.        22.08           INCLUDES PONDS F
 8                       703.          18.        36.22           21" DIA RCP
 8                       704.          22.        51.08           INLET CONTROL
```

**********80-80 LIST OF INPUT DATA (CONTINUED)**********

```
 8                     705.         26.        66.65
 8                     705.5        46.        74.81          20' WEIR; C=2.6
 8                     706.         82.        82.97
 8                     706.5       128.        92.99
 9 ENDTBL
 3 STRUCT      39
 8                     693.         0.0         0.0            POND-C2
 8                     694.        7.06        6.73            REVISED STAGE-D
 8                     695.        12.57       13.95            FOR PHASE 1 IM
 8                     696.        16.03       21.66
 8                     696.74      18.12       27.74
 8                     697.        25.03       29.88
 8                     698.        87.74       38.61
 8                     699.        138.39      47.99
 8                     700.        163.48      58.17
 8                     700.25      187.22      60.82
 8                     701.        329.76      68.76
 8                     701.5       460.91      74.05
 9 ENDTBL
 6 RUNOFF 1 091       1 0.0923      75.00       0.84       1         1
 6 RUNOFF 1 092       2 0.1292      80.00       1.00       1         1
 6 ADDHYD 4 093   1 2 3                                    1
 6 RUNOFF 1 094       4 0.0203      65.00       0.91       1         1
 6 RESVOR 2    11 4   5                                      1 1 1 1 1
 6 ADDHYD 4 095   3 5 6
 6 RUNOFF 1 096       1 0.0084      98.00       0.16       1         1
 6 ADDHYD 4 097   6 1 7                                    1
 6 RUNOFF 1 010       4 0.0265      87.00       0.15
 6 ADDHYD 4 098   7 4 1
 6 RESVOR 2     6 1   5                                      1 1 1 1 1
 6 RUNOFF 1 099       7 0.1526      87.00       0.15       1         1
 6 ADDHYD 4 090   5 7 2                                    1
 6 RUNOFF 1 017       7 0.1120      88.00       0.30
 6 ADDHYD 4 013   2 7 1
 6 RESVOR 2     7 1   2                                      1 1 1 1 1
 6 RUNOFF 1 049       7 0.0023      89.00       0.15       1         1
 6 ADDHYD 4 050   2 7 1                                    1
 6 RUNOFF 1 024       7 0.0149      90.00       0.15
 6 ADDHYD 4 017   1 7 2
 6 RUNOFF 1 019       6 0.0618      90.00       0.25
 6 ADDHYD 4 015   2 6 7
 6 RESVOR 2    39 7   1                                      1 1 1 1 1
   ENDATA
 7 INCREM 6            1.00
 7 COMPUT 7 091      39 0.00        7.58        24.0       3 2      11   24-HR
   ENDCMP 1
 7 COMPUT 7 091      39 0.00        8.16        48.0       4 2      12   48-HR
   ENDCMP 1
 7 INCREM 6            1.00
 7 COMPUT 7 091      39 0.00        8.78        72.0       4 2      13   72-HR
   ENDCMP 1
 7 COMPUT 7 091      39 0.00        9.96        120.0      4 2      14   120-HR
   ENDCMP 1
 7 COMPUT 7 091      39 0.00        11.14       240.0      4 2      15   240-HR
   ENDCMP 1
   ENDJOB 2
```


**********80-80 LIST OF INPUT DATA (CONTINUED)**********

**********END OF 80-80 LIST**********

```
TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROPERTY NORTH OF THE EAST-WEST TOLLWAY (JRB 11/1/95 FILE: 8932.04TEST
12:29:30                    PASS   1   JOB NO.   1                      PAGE   1


EXECUTIVE CONTROL  INCREM    MAIN TIME INCREMENT =  1.000 HOURS


EXECUTIVE CONTROL  COMPUT    FROM XSECTION  91  TO STRUCTURE 39          24-HR
    STARTING TIME =   .00       RAIN DEPTH =  7.58       RAIN DURATION = 24.00
    ANT. RUNOFF COND. = 2       MAIN TIME INCREMENT =  1.000 HOURS
    ALTERNATE NO. = 0           STORM NO. =11            RAIN TABLE NO. = 3


OPERATION RUNOFF    XSECTION  91

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
       15.55                          37.2                       (RUNOFF)
       23.75                          10.1                       (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  4.64 WATERSHED INCHES;     276 CFS-HRS;      22.8 ACRE-FEET.


OPERATION RUNOFF    XSECTION  92

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
       15.66                          56.9                       (RUNOFF)
       23.76                          14.4                       (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  5.25 WATERSHED INCHES;     437 CFS-HRS;      36.1 ACRE-FEET.


OPERATION ADDHYD    XSECTION  93

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
       15.62                          94.1                       (NULL)
       23.75                          24.5                       (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  5.01 WATERSHED INCHES;     717 CFS-HRS;      59.2 ACRE-FEET.


OPERATION RUNOFF    XSECTION  94

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
       15.75                           6.6                       (RUNOFF)
       23.76                           1.9                       (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  3.54 WATERSHED INCHES;      46 CFS-HRS;       3.8 ACRE-FEET.
```



```
TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROPERTY NORTH OF THE EAST-WEST TOLLWAY (JRB 11/1/95 FILE: 8932.04TEST
12:29:30                    PASS   1   JOB NO.   1                      PAGE   2


OPERATION RESVOR    STRUCTURE 11

                    HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM =11
     HRS      MAIN TIME INCREMENT = 1.000 hr,      DRAINAGE AREA =    .02 SQ.MI.
     5.00 CFS       .00     .01     .16     .42     .56     .73    1.03    1.73
     5.00 ELEV   737.50  737.51  737.66  737.92  738.12  738.45  739.01  739.36
    13.00 CFS      2.35    3.73    5.36    6.22    5.98    4.74    3.25    2.32
    13.00 ELEV   739.68  740.36  741.18  741.61  741.49  740.87  740.13  739.66
    21.00 CFS      1.97    1.84    1.54    1.64    1.04     .29    -.16     .10
    21.00 ELEV   739.49  739.42  739.27  739.32  739.02  737.79  737.34  737.60
    29.00 CFS      -.06     .04    -.02
    29.00 ELEV   737.44  737.54  737.48

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  3.55 WATERSHED INCHES;      47 CFS-HRS;       3.8 ACRE-FEET.

    DURATION(HRS)   2      4      6      8     10     12     14     16
    FLOW(CFS)       5      4      2      2      2      2      1      1

    DURATION(HRS)  17
    FLOW(CFS)       0

 --- STRUCTURE 11, ALTERNATE  0, STORM 11, HYDROGRAPH ADDED TO READHD FILE ---


OPERATION RUNOFF    XSECTION  96

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
       14.70                          4.5                        (RUNOFF)
       20.50                          1.1                        (RUNOFF)
       23.55                          1.1                        (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  7.21 WATERSHED INCHES;      39 CFS-HRS;       3.2 ACRE-FEET.


OPERATION ADDHYD    XSECTION  97

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
       15.59                         103.6                       (NULL)
       23.74                          27.3                       (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  4.93 WATERSHED INCHES;     796 CFS-HRS;      65.8 ACRE-FEET.


OPERATION RESVOR    STRUCTURE  6

                    HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM =11
     HRS      MAIN TIME INCREMENT = 1.000 hr,      DRAINAGE AREA =    .28 SQ.MI.
      .00 CFS       .00     .10     .40     .98    1.92    3.47    5.62    9.14
```

```
TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROPERTY NORTH OF THE EAST-WEST TOLLWAY (JRB 11/1/95 FILE: 8932.04TEST
12:29:30                    PASS   1   JOB NO.   1                      PAGE   3

      .00 ELEV   707.00  707.01  707.05  707.12  707.23  707.41  707.67  708.06
     8.00 CFS       14      18      23      29      37      46      61     108
     8.00 ELEV   708.50  708.86  709.16  709.51  709.94  710.44  711.55  712.44
    16.00 CFS      113      93      68      60      49      38      32      27
    16.00 ELEV   712.49  712.28  712.02  711.48  710.62  709.98  709.64  709.39
    24.00 CFS     26.44   20.24   10.67    5.34    2.79    1.47     .76     .40
    24.00 ELEV   709.36  709.01  708.20  707.64  707.33  707.17  707.09  707.05
    32.00 CFS       .21
    32.00 ELEV   707.02

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  5.10 WATERSHED INCHES;     910 CFS-HRS;      75.2 ACRE-FEET.

    DURATION(HRS)   3      6      9     12     15     18     21     24
    FLOW(CFS)      68     49     37     27     20     11      5      2

    DURATION(HRS)  27     28
    FLOW(CFS)       1      0

 --- STRUCTURE  6, ALTERNATE  0, STORM 11, HYDROGRAPH ADDED TO READHD FILE ---


OPERATION RUNOFF    XSECTION  99

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
       14.76                         76.6                       (RUNOFF)
       20.51                         18.8                       (RUNOFF)
       23.53                         20.0                       (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  6.00 WATERSHED INCHES;     591 CFS-HRS;      48.8 ACRE-FEET.


OPERATION ADDHYD    XSECTION  90

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
       15.26                        186.4                       (NULL)
       23.50                         47.4                       (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  5.41 WATERSHED INCHES;    1498 CFS-HRS;     123.8 ACRE-FEET.


OPERATION RESVOR    STRUCTURE  7

                    HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM =11
     HRS      MAIN TIME INCREMENT = 1.000 hr,      DRAINAGE AREA =     .54 SQ.MI.
     1.00 CFS       .00     .06     .31     .80    1.47    2.25    3.32    4.95
     1.00 ELEV   700.00  700.01  700.08  700.20  700.37  700.56  700.83  701.12
     9.00 CFS      7.04    9.53   12.44   14.99   18.00   20.82   24.84   56.81
     9.00 ELEV   701.38  701.69  702.07  702.50  703.00  703.70  704.71  705.65
```



```
TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROPERTY NORTH OF THE EAST-WEST TOLLWAY (JRB 11/1/95 FILE: 8932.04TEST
12:29:30                    PASS   1   JOB NO.   1                      PAGE   4

    17.00 CFS     97.08  112.97  113.91  106.57   96.33   85.06   75.42   69.58
    17.00 ELEV   706.16  706.34  706.35  706.27  706.16  706.03  705.91  705.83
    25.00 CFS     60.15   46.36   39.16   32.71   27.08   25.58   25.05   24.53
    25.00 ELEV   705.70  705.51  705.33  705.17  705.03  704.89  704.76  704.63

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  3.44 WATERSHED INCHES;    1203 CFS-HRS;      99.4 ACRE-FEET.

    DURATION(HRS)  2      4      6      8     10     12     14     16
    FLOW(CFS)    107     96     75     60     46     33     26     25

    DURATION(HRS)  18
    FLOW(CFS)      25 TRUNCATED

 --- STRUCTURE  7, ALTERNATE  0, STORM 11, HYDROGRAPH ADDED TO READHD FILE ---


OPERATION RUNOFF    XSECTION  49

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
       14.74                         1.2                        (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  6.23 WATERSHED INCHES;       9 CFS-HRS;        .8 ACRE-FEET.


OPERATION ADDHYD    XSECTION  50

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
       18.59                        115.0                       (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  3.46 WATERSHED INCHES;    1212 CFS-HRS;     100.2 ACRE-FEET.


OPERATION RESVOR    STRUCTURE 39

                    HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM =11
     HRS      MAIN TIME INCREMENT = 1.000 hr,      DRAINAGE AREA =     .62 SQ.MI.
     1.00 CFS       .00     .07     .32     .73    1.23    1.80    2.54    3.49
     1.00 ELEV   693.00  693.01  693.05  693.10  693.17  693.26  693.36  693.50
     9.00 CFS      4.58    5.91    7.45    8.86   10.49   12.70   14.46   16.53
     9.00 ELEV   693.65  693.84  694.07  694.33  694.62  695.04  695.55  696.18
    17.00 CFS     24.93   70.86   95.55  104.93  107.11  104.03   98.05   91.99
    17.00 ELEV   697.00  697.73  698.15  698.34  698.38  698.32  698.20  698.08
    25.00 CFS     82.82   69.29   57.14   47.43   39.41   33.42   29.71   27.46
    25.00 ELEV   697.92  697.71  697.51  697.36  697.23  697.13  697.07  697.04

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  2.89 WATERSHED INCHES;    1158 CFS-HRS;      95.7 ACRE-FEET.
```

```
TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROPERTY NORTH OF THE EAST-WEST TOLLWAY (JRB 11/1/95 FILE: 8932.04TEST
12:29:30                    PASS   1   JOB NO.   1                       PAGE   5


    DURATION(HRS)   2      4      6      8     10     12     14
    FLOW(CFS)     104     96     83     69     47     33     27 TRUNCATED

 --- STRUCTURE 39, ALTERNATE  0, STORM 11, HYDROGRAPH ADDED TO READHD FILE ---


EXECUTIVE CONTROL  ENDCMP    COMPUTATIONS COMPLETED FOR PASS   1


EXECUTIVE CONTROL  COMPUT    FROM XSECTION  91  TO STRUCTURE 39           48-HR
    STARTING TIME =   .00       RAIN DEPTH =  8.16       RAIN DURATION = 48.00
    ANT. RUNOFF COND. = 2       MAIN TIME INCREMENT =  1.000 HOURS
    ALTERNATE NO. = 0           STORM NO. =12            RAIN TABLE NO. = 4


OPERATION RUNOFF    XSECTION  91

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
       25.83                          4.7                       (RUNOFF)
       40.73                         21.7                       (RUNOFF)
       47.32                         14.6                       (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  5.19 WATERSHED INCHES;     309 CFS-HRS;      25.6 ACRE-FEET.


OPERATION RUNOFF    XSECTION  92

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
       25.99                          7.7                       (RUNOFF)
       40.84                         32.4                       (RUNOFF)
       47.50                         23.2                       (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  5.75 WATERSHED INCHES;     479 CFS-HRS;      39.6 ACRE-FEET.


OPERATION ADDHYD    XSECTION  93

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
       25.93                         12.3                       (NULL)
       40.80                         54.2                       (NULL)
       47.45                         35.8                       (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  5.51 WATERSHED INCHES;     787 CFS-HRS;      65.1 ACRE-FEET.
```



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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROPERTY NORTH OF THE EAST-WEST TOLLWAY (JRB 11/1/95 FILE: 8932.04TEST
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OPERATION RUNOFF    XSECTION  94

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
       42.39                          4.0                       (RUNOFF)
       47.44                          2.9                       (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  4.00 WATERSHED INCHES;      52 CFS-HRS;       4.3 ACRE-FEET.


OPERATION RESVOR    STRUCTURE 11

                    HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM =12
     HRS      MAIN TIME INCREMENT = 1.000 hr,       DRAINAGE AREA =    .02 SQ.MI.
    12.00 CFS      .00     .03     .05     .09     .15     .16     .23     .26
    12.00 ELEV   737.50  737.53  737.55  737.59  737.65  737.66  737.73  737.76
    20.00 CFS      .29     .34     .35     .40     .41     .53     .60     .62
    20.00 ELEV   737.79  737.84  737.85  737.90  737.91  738.06  738.20  738.24
    28.00 CFS      .59     .57     .65     .76     .94    1.30    1.40    1.47
    28.00 ELEV   738.18  738.14  738.30  738.53  738.88  739.15  739.20  739.24
    36.00 CFS     1.53    1.86    2.20    2.68    3.52    3.96    3.98    3.98
    36.00 ELEV   739.26  739.43  739.60  739.84  740.26  740.48  740.49  740.49
    44.00 CFS     3.57    2.98    2.77    2.83    2.86    1.50     .33    -.18
    44.00 ELEV   740.29  739.99  739.88  739.92  739.93  739.25  737.83  737.32
    52.00 CFS      .11    -.07     .04    -.02
    52.00 ELEV   737.61  737.43  737.54  737.48

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  4.00 WATERSHED INCHES;      52 CFS-HRS;       4.3 ACRE-FEET.

    DURATION(HRS)   3      6      9     12     15     18     21     24
    FLOW(CFS)       4      3      3      2      1      1      1      1

    DURATION(HRS)  25
    FLOW(CFS)       0

 --- STRUCTURE 11, ALTERNATE  0, STORM 12, HYDROGRAPH ADDED TO READHD FILE ---


OPERATION RUNOFF    XSECTION  96

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
       39.50                          2.4                       (RUNOFF)
       47.39                          1.5                       (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  7.96 WATERSHED INCHES;      43 CFS-HRS;       3.6 ACRE-FEET.
```

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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROPERTY NORTH OF THE EAST-WEST TOLLWAY (JRB 11/1/95 FILE: 8932.04TEST
12:29:30                    PASS   2   JOB NO.   1                       PAGE   7


OPERATION ADDHYD    XSECTION  97

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
       25.92                          13.7                       (NULL)
       40.87                          60.3                       (NULL)
       47.50                          43.9                       (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  5.47 WATERSHED INCHES;     883 CFS-HRS;      73.0 ACRE-FEET.


OPERATION RESVOR    STRUCTURE  6

                    HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM =12
     HRS      MAIN TIME INCREMENT = 1.000 hr,      DRAINAGE AREA =    .28 SQ.MI.
      .00 CFS       .00     .02     .06     .17     .32     .49     .74     .97
      .00 ELEV   707.00  707.00  707.01  707.02  707.04  707.06  707.09  707.11
     8.00 CFS      1.18    1.44    1.89    2.74    3.59    4.42    5.27    5.97
     8.00 ELEV   707.14  707.17  707.22  707.33  707.43  707.53  707.63  707.71
    16.00 CFS      6.68    7.27    7.85    8.41    8.99    9.52    9.90   10.30
    16.00 ELEV   707.80  707.87  707.93  708.00  708.05  708.10  708.13  708.16
    24.00 CFS     10.65   11.90   13.76   14.34   13.75   13.29   14.26   15.82
    24.00 ELEV   708.19  708.30  708.46  708.51  708.46  708.42  708.51  708.64
    32.00 CFS     18.59   23.30   26.31   27.68   28.43   31.90   36.84   43.54
    32.00 ELEV   708.88  709.18  709.35  709.43  709.47  709.66  709.94  710.33
    40.00 CFS     54.56   60.32   62.98   63.88   61.05   54.79   47.82   45.47
    40.00 ELEV   710.97  711.48  711.73  711.81  711.55  710.99  710.58  710.44
    48.00 CFS     44.83   32.33   14.15    6.66    3.47    1.83     .95     .50
    48.00 ELEV   710.40  709.68  708.50  707.79  707.41  707.22  707.11  707.06
    56.00 CFS       .26
    56.00 ELEV   707.03

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  5.59 WATERSHED INCHES;     998 CFS-HRS;      82.5 ACRE-FEET.

    DURATION(HRS)   6     12     18     24     30     36     42     48
    FLOW(CFS)      48     32     16     13      9      6      2      1

    DURATION(HRS)  50
    FLOW(CFS)       0

 --- STRUCTURE  6, ALTERNATE  0, STORM 12, HYDROGRAPH ADDED TO READHD FILE ---


OPERATION RUNOFF    XSECTION  99
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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROPERTY NORTH OF THE EAST-WEST TOLLWAY (JRB 11/1/95 FILE: 8932.04TEST
12:29:30                    PASS   2   JOB NO.   1                       PAGE   8


    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
       25.50                          11.4                       (RUNOFF)
       39.50                          43.0                       (RUNOFF)
       42.50                          39.9                       (RUNOFF)
       46.55                          25.9                       (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  6.65 WATERSHED INCHES;     655 CFS-HRS;      54.1 ACRE-FEET.


OPERATION ADDHYD    XSECTION  90

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
       25.99                          24.8                       (NULL)
       42.55                         103.8                       (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  5.97 WATERSHED INCHES;    1654 CFS-HRS;     136.7 ACRE-FEET.


OPERATION RESVOR    STRUCTURE  7

                    HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM =12
     HRS      MAIN TIME INCREMENT = 1.000 hr,      DRAINAGE AREA =    .54 SQ.MI.
     2.00 CFS       .00     .02     .05     .14     .31     .50     .70     .90
     2.00 ELEV   700.00  700.00  700.01  700.04  700.08  700.13  700.17  700.23
    10.00 CFS      1.19    1.57    1.98    2.43    2.92    3.45    4.01    4.74
    10.00 ELEV   700.30  700.39  700.49  700.61  700.73  700.86  701.00  701.09
    18.00 CFS      5.48    6.22    6.97    7.73    8.48    9.23    9.96   10.83
    18.00 ELEV   701.19  701.28  701.37  701.47  701.56  701.65  701.75  701.85
    26.00 CFS     11.85   12.56   13.13   13.72   14.39   15.12   16.08   17.32
    26.00 ELEV   701.98  702.09  702.19  702.29  702.40  702.52  702.68  702.89
    34.00 CFS     18.43   19.32   20.21   21.26   22.47   24.05   26.60   45.12
    34.00 ELEV   703.11  703.33  703.55  703.81  704.12  704.51  705.01  705.48
    42.00 CFS     70.46   89.12   98.43   99.82   98.68   96.45   94.43   83.78
    42.00 ELEV   705.84  706.08  706.18  706.19  706.18  706.16  706.14  706.02
    50.00 CFS     65.05   48.20   39.38   32.62   26.88   25.55   25.02
    50.00 ELEV   705.76  705.53  705.33  705.17  705.02  704.89  704.76

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  3.96 WATERSHED INCHES;    1383 CFS-HRS;     114.3 ACRE-FEET.

    DURATION(HRS)   2      4      6      8     10     12     14     16
    FLOW(CFS)      98     94     84     65     45     33     27     25 TRUNCATED

 --- STRUCTURE  7, ALTERNATE  0, STORM 12, HYDROGRAPH ADDED TO READHD FILE ---


OPERATION RUNOFF    XSECTION  49
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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROPERTY NORTH OF THE EAST-WEST TOLLWAY (JRB 11/1/95 FILE: 8932.04TEST
12:29:30                    PASS   2   JOB NO.   1                      PAGE   9


    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
       40.00                          .6                       (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  6.89 WATERSHED INCHES;      10 CFS-HRS;        .8 ACRE-FEET.


OPERATION ADDHYD    XSECTION  50

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
       45.05                        100.2                    (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  3.97 WATERSHED INCHES;    1393 CFS-HRS;     115.1 ACRE-FEET.


OPERATION RESVOR    STRUCTURE 39

                    HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM =12
     HRS      MAIN TIME INCREMENT = 1.000 hr,      DRAINAGE AREA =    .62 SQ.MI.
     2.00 CFS       .00     .02     .07     .16     .31     .48     .65     .81
     2.00 ELEV   693.00  693.00  693.01  693.02  693.04  693.07  693.09  693.11
    10.00 CFS      1.04    1.33    1.64    1.98    2.34    2.73    3.14    3.58
    10.00 ELEV   693.15  693.19  693.23  693.28  693.33  693.39  693.45  693.51
    18.00 CFS      4.06    4.55    5.08    5.63    6.21    6.80    7.31    7.83
    18.00 ELEV   693.57  693.65  693.72  693.80  693.88  693.96  694.05  694.14
    26.00 CFS      8.42    8.98    9.50   10.06   10.68   11.32   12.07   12.79
    26.00 ELEV   694.25  694.35  694.44  694.55  694.66  694.77  694.91  695.06
    34.00 CFS     13.33   13.89   14.46   15.11   15.84   16.58   17.43   21.68
    34.00 ELEV   695.22  695.38  695.55  695.73  695.94  696.19  696.50  696.87
    42.00 CFS        44      70      88      97     103     106     107     103
    42.00 ELEV   697.31  697.72  698.01  698.19  698.30  698.36  698.38  698.30
    50.00 CFS     92.57   77.34   61.98   50.09   40.78   34.11   30.07
    50.00 ELEV   698.10  697.83  697.59  697.40  697.25  697.14  697.08

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  3.42 WATERSHED INCHES;    1370 CFS-HRS;     113.2 ACRE-FEET.

    DURATION(HRS)   2      4      6      8     10     12     14
    FLOW(CFS)     103     97     88     70     50     41     30 TRUNCATED

 --- STRUCTURE 39, ALTERNATE  0, STORM 12, HYDROGRAPH ADDED TO READHD FILE ---


EXECUTIVE CONTROL  ENDCMP    COMPUTATIONS COMPLETED FOR PASS   2


EXECUTIVE CONTROL  INCREM    MAIN TIME INCREMENT =  1.000 HOURS
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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROPERTY NORTH OF THE EAST-WEST TOLLWAY (JRB 11/1/95 FILE: 8932.04TEST
12:29:30                    PASS   3   JOB NO.   1                      PAGE  10


EXECUTIVE CONTROL  COMPUT    FROM XSECTION  91  TO STRUCTURE 39          72-HR
    STARTING TIME =   .00       RAIN DEPTH =  8.78       RAIN DURATION = 72.00
    ANT. RUNOFF COND. = 2       MAIN TIME INCREMENT =  1.000 HOURS
    ALTERNATE NO. = 0           STORM NO. =13            RAIN TABLE NO. = 4


OPERATION RUNOFF    XSECTION  91

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
       38.55                          3.5                      (RUNOFF)
       60.52                         15.9                      (RUNOFF)
       70.59                         10.6                      (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  5.75 WATERSHED INCHES;     342 CFS-HRS;      28.3 ACRE-FEET.


OPERATION RUNOFF    XSECTION  92

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
       38.65                          5.8                      (RUNOFF)
       60.58                         23.7                      (RUNOFF)
       71.50                         16.8                      (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  6.35 WATERSHED INCHES;     529 CFS-HRS;      43.7 ACRE-FEET.


OPERATION ADDHYD    XSECTION  93

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
       38.60                          9.3                      (NULL)
       60.56                         39.7                      (NULL)
       70.73                         25.9                      (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  6.10 WATERSHED INCHES;     872 CFS-HRS;      72.0 ACRE-FEET.


OPERATION RUNOFF    XSECTION  94

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
       70.75                          2.1                      (RUNOFF)
       61.00                          3.0                      (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  4.53 WATERSHED INCHES;      59 CFS-HRS;       4.9 ACRE-FEET.
```

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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROPERTY NORTH OF THE EAST-WEST TOLLWAY (JRB 11/1/95 FILE: 8932.04TEST
12:29:30                    PASS   3   JOB NO.   1                       PAGE  11


OPERATION RESVOR    STRUCTURE 11

                    HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM =13
     HRS      MAIN TIME INCREMENT = 1.000 hr,      DRAINAGE AREA =    .02 SQ.MI.
    18.00 CFS       .00     .04     .07     .06     .08     .13     .15     .14
    18.00 ELEV   737.50  737.54  737.57  737.56  737.58  737.63  737.65  737.64
    26.00 CFS       .18     .21     .21     .22     .26     .28     .27     .29
    26.00 ELEV   737.68  737.71  737.71  737.72  737.76  737.78  737.77  737.79
    34.00 CFS       .32     .33     .33     .44     .51     .51     .50     .44
    34.00 ELEV   737.82  737.83  737.83  737.94  738.02  738.01  738.00  737.94
    42.00 CFS       .43     .43     .52     .57     .61     .63     .77     .96
    42.00 ELEV   737.93  737.93  738.03  738.14  738.22  738.26  738.55  738.91
    50.00 CFS      1.03    1.07    1.13    1.15    1.15    1.39    1.65    1.66
    50.00 ELEV   739.02  739.04  739.06  739.08  739.08  739.20  739.32  739.33
    58.00 CFS      1.82    2.50    2.98    2.95    2.95    2.94    2.94    2.91
    58.00 ELEV   739.41  739.75  739.99  739.97  739.98  739.97  739.97  739.96
    66.00 CFS      2.45    2.03    2.05    2.06    2.09    2.10    2.09    1.10
    66.00 ELEV   739.73  739.52  739.52  739.53  739.54  739.55  739.55  739.05
    74.00 CFS       .30    -.16     .10    -.06     .04    -.02
    74.00 ELEV   737.80  737.34  737.60  737.44  737.54  737.48

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  4.51 WATERSHED INCHES;      59 CFS-HRS;       4.9 ACRE-FEET.

    DURATION(HRS)   3      6      9     12     15     18     21     24
    FLOW(CFS)       3      3      2      2      2      1      1      1

    DURATION(HRS)  27     30     33
    FLOW(CFS)       1      1      0

 --- STRUCTURE 11, ALTERNATE  0, STORM 13, HYDROGRAPH ADDED TO READHD FILE ---


OPERATION RUNOFF    XSECTION  96

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
       71.06                         1.1                        (RUNOFF)
       59.00                         1.7                        (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  8.54 WATERSHED INCHES;      46 CFS-HRS;       3.8 ACRE-FEET.


OPERATION ADDHYD    XSECTION  97

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
       38.58                        10.3                        (NULL)
       60.53                        44.3                        (NULL)
       70.86                        29.0                        (NULL)
```



```
TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROPERTY NORTH OF THE EAST-WEST TOLLWAY (JRB 11/1/95 FILE: 8932.04TEST
12:29:30                    PASS   3   JOB NO.   1                       PAGE  12


    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  6.05 WATERSHED INCHES;     977 CFS-HRS;      80.7 ACRE-FEET.


OPERATION RESVOR    STRUCTURE  6

                    HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM =13
     HRS      MAIN TIME INCREMENT = 1.000 hr,      DRAINAGE AREA =    .28 SQ.MI.
      .00 CFS       .00     .02     .05     .06     .14     .25     .31     .34
      .00 ELEV   707.00  707.00  707.01  707.01  707.02  707.03  707.04  707.04
     8.00 CFS       .48     .73     .89     .96    1.11    1.33    1.46    1.81
     8.00 ELEV   707.06  707.09  707.11  707.11  707.13  707.16  707.17  707.22
    16.00 CFS      2.47    3.04    3.36    3.78    4.30    4.64    4.88    5.24
    16.00 ELEV   707.29  707.36  707.40  707.45  707.51  707.55  707.58  707.62
    24.00 CFS      5.62    5.84    6.08    6.41    6.66    6.80    7.03    7.30
    24.00 ELEV   707.67  707.69  707.72  707.76  707.79  707.81  707.84  707.87
    32.00 CFS      7.46    7.61    7.82    8.01    8.11    8.93   10.31   11.10
    32.00 ELEV   707.89  707.91  707.93  707.95  707.97  708.05  708.16  708.23
    40.00 CFS     11.22   10.62    9.90    9.54   10.09   11.31   12.16   12.88
    40.00 ELEV   708.24  708.19  708.13  708.10  708.15  708.25  708.32  708.39
    48.00 CFS     15.00   17.65   19.09   19.86   20.55   20.96   21.10   23.47
    48.00 ELEV   708.57  708.80  708.92  708.99  709.03  709.05  709.06  709.19
    56.00 CFS     27.02   28.59   31.20   38.58   45.28   48.04   48.41   47.77
    56.00 ELEV   709.39  709.48  709.62  710.03  710.43  710.59  710.61  710.57
    64.00 CFS     47.33   46.42   41.69   35.67   33.02   32.31   32.23   32.28
    64.00 ELEV   710.55  710.50  710.22  709.87  709.72  709.68  709.68  709.68
    72.00 CFS     32.29   22.99   11.38    5.61    2.92    1.54     .80     .42
    72.00 ELEV   709.68  709.17  708.26  707.67  707.35  707.18  707.10  707.05
    80.00 CFS       .22
    80.00 ELEV   707.03

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  6.17 WATERSHED INCHES;    1102 CFS-HRS;      91.1 ACRE-FEET.

    DURATION(HRS)   6     12     18     24     30     36     42     48
    FLOW(CFS)      42     32     23     18     11     10      7      6

    DURATION(HRS)  54     60     66     70
    FLOW(CFS)       5      2      1      0

 --- STRUCTURE  6, ALTERNATE  0, STORM 13, HYDROGRAPH ADDED TO READHD FILE ---


OPERATION RUNOFF    XSECTION  99

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
       37.50                         8.5                        (RUNOFF)
       59.50                        30.1                        (RUNOFF)
       70.30                        18.9                        (RUNOFF)
```

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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROPERTY NORTH OF THE EAST-WEST TOLLWAY (JRB 11/1/95 FILE: 8932.04TEST
12:29:30                    PASS   3   JOB NO.   1                       PAGE  13


    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                 7.32 WATERSHED INCHES;     721 CFS-HRS;      59.6 ACRE-FEET.


OPERATION ADDHYD    XSECTION  90

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
       38.82                         19.3                        (NULL)
       61.13                         78.1                        (NULL)
       71.49                         51.2                        (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                 6.57 WATERSHED INCHES;    1819 CFS-HRS;     150.3 ACRE-FEET.


OPERATION RESVOR    STRUCTURE  7

                   HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM =13
     HRS      MAIN TIME INCREMENT = 1.000 hr,      DRAINAGE AREA =    .54 SQ.MI.
     3.00 CFS       .00     .02     .05     .09     .12     .22     .37     .53
     3.00 ELEV   700.00  700.00  700.01  700.02  700.03  700.05  700.09  700.13
    11.00 CFS       .68     .84    1.00    1.15    1.37    1.66    1.97    2.28
    11.00 ELEV   700.17  700.21  700.25  700.29  700.34  700.42  700.49  700.57
    19.00 CFS      2.61    2.97    3.33    3.71    4.12    4.61    5.09    5.58
    19.00 ELEV   700.65  700.74  700.83  700.93  701.02  701.08  701.14  701.20
    27.00 CFS      6.06    6.54    7.02    7.49    7.95    8.40    8.85    9.29
    27.00 ELEV   701.26  701.32  701.38  701.44  701.49  701.55  701.61  701.66
    35.00 CFS      9.72   10.14   10.65   11.29   11.94   12.37   12.70   13.00
    35.00 ELEV   701.72  701.77  701.83  701.91  701.99  702.06  702.12  702.17
    43.00 CFS     13.26   13.59   14.01   14.44   14.98   15.68   16.49   17.34
    43.00 ELEV   702.21  702.27  702.33  702.41  702.50  702.61  702.75  702.89
    51.00 CFS     18.13   18.69   19.25   19.80   20.46   21.25   22.09   23.11
    51.00 ELEV   703.03  703.17  703.31  703.45  703.61  703.81  704.02  704.28
    59.00 CFS     24.43   25.89   38.42   51.81   65.63   75.01   79.75   79.69
    59.00 ELEV   704.61  704.97  705.31  705.58  705.77  705.90  705.97  705.97
    67.00 CFS     77.08   73.94   71.27   69.32   67.96   67.04   59.92   46.74
    67.00 ELEV   705.93  705.89  705.85  705.82  705.81  705.79  705.69  705.51
    75.00 CFS     39.41   32.94   27.29   25.60   25.07   24.55
    75.00 ELEV   705.34  705.17  705.03  704.90  704.77  704.64

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                 4.63 WATERSHED INCHES;    1618 CFS-HRS;     133.7 ACRE-FEET.

    DURATION(HRS)   2      4      6      8     10     12     14     16
    FLOW(CFS)      77     74     69     67     60     47     38     27

    DURATION(HRS)  18     20     21
    FLOW(CFS)      26     25     25 TRUNCATED

 --- STRUCTURE  7, ALTERNATE  0, STORM 13, HYDROGRAPH ADDED TO READHD FILE ---
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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROPERTY NORTH OF THE EAST-WEST TOLLWAY (JRB 11/1/95 FILE: 8932.04TEST
12:29:30                    PASS   3   JOB NO.   1                       PAGE  14


OPERATION RUNOFF    XSECTION  49

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                 4.63 WATERSHED INCHES;      73 CFS-HRS;     133.7 ACRE-FEET.


OPERATION ADDHYD    XSECTION  50

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
       65.48                         80.6                        (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                 4.64 WATERSHED INCHES;    1629 CFS-HRS;     134.7 ACRE-FEET.


OPERATION RESVOR    STRUCTURE 39

                   HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM =13
     HRS      MAIN TIME INCREMENT = 1.000 hr,      DRAINAGE AREA =    .62 SQ.MI.
     3.00 CFS       .00     .02     .06     .10     .14     .23     .36     .50
     3.00 ELEV   693.00  693.00  693.01  693.01  693.02  693.03  693.05  693.07
    11.00 CFS       .63     .76     .89    1.02    1.20    1.43    1.66    1.90
    11.00 ELEV   693.09  693.11  693.13  693.14  693.17  693.20  693.24  693.27
    19.00 CFS      2.16    2.44    2.73    3.03    3.34    3.67    4.01    4.37
    19.00 ELEV   693.31  693.35  693.39  693.43  693.47  693.52  693.57  693.62
    27.00 CFS      4.75    5.13    5.53    5.94    6.35    6.76    7.15    7.47
    27.00 ELEV   693.67  693.73  693.78  693.84  693.90  693.96  694.02  694.07
    35.00 CFS      7.80    8.13    8.50    8.92    9.36    9.78   10.15   10.53
    35.00 ELEV   694.13  694.19  694.26  694.34  694.42  694.49  694.56  694.63
    43.00 CFS     10.90   11.29   11.73   12.16   12.61   12.95   13.32   13.70
    43.00 ELEV   694.70  694.77  694.85  694.93  695.01  695.11  695.22  695.33
    51.00 CFS     14.11   14.52   14.94   15.37   15.84   16.29   16.71   17.22
    51.00 ELEV   695.44  695.56  695.69  695.81  695.95  696.09  696.24  696.42
    59.00 CFS     17.84   21.15   29.69   43.67   57.22   69.88   79.32   84.41
    59.00 ELEV   696.64  696.85  697.07  697.30  697.51  697.72  697.87  697.95
    67.00 CFS     86.11   85.72   84.18   82.30   80.52   79.03   74.15   64.62
    67.00 ELEV   697.97  697.97  697.94  697.91  697.88  697.86  697.78  697.63
    75.00 CFS     54.76   46.25   38.87   33.18   29.59   27.40
    75.00 ELEV   697.47  697.34  697.22  697.13  697.07  697.04

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                 4.09 WATERSHED INCHES;    1639 CFS-HRS;     135.4 ACRE-FEET.

    DURATION(HRS)   2      4      6      8     10     12     14     16
    FLOW(CFS)      84     82     79     74     65     55     44     33

    DURATION(HRS)  18     19
    FLOW(CFS)      30     27 TRUNCATED
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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROPERTY NORTH OF THE EAST-WEST TOLLWAY (JRB 11/1/95 FILE: 8932.04TEST
12:29:30                    PASS   3   JOB NO.   1                       PAGE  15


 --- STRUCTURE 39, ALTERNATE  0, STORM 13, HYDROGRAPH ADDED TO READHD FILE ---


EXECUTIVE CONTROL  ENDCMP    COMPUTATIONS COMPLETED FOR PASS   3


EXECUTIVE CONTROL  COMPUT    FROM XSECTION  91  TO STRUCTURE 39           120-HR
    STARTING TIME =   .00       RAIN DEPTH =  9.96       RAIN DURATION =120.00
    ANT. RUNOFF COND. = 2       MAIN TIME INCREMENT =  1.000 HOURS
    ALTERNATE NO. = 0           STORM NO. =14            RAIN TABLE NO. = 4


OPERATION RUNOFF    XSECTION  91

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
      100.50                          11.1                       (RUNOFF)
      106.50                          10.6                       (RUNOFF)
      117.00                           7.3 *                     (RUNOFF)
                                          * FIRST POINT OF FLAT PEAK

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  6.83 WATERSHED INCHES;     407 CFS-HRS;      33.6 ACRE-FEET.


OPERATION RUNOFF    XSECTION  92

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
       64.38                          4.1                        (RUNOFF)
      101.50                         16.5                        (RUNOFF)
      107.50                         16.0                        (RUNOFF)
      119.50                         11.5                        (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  7.48 WATERSHED INCHES;     623 CFS-HRS;      51.5 ACRE-FEET.


OPERATION ADDHYD    XSECTION  93

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
       64.39                          6.7                        (NULL)
      100.50                         27.6                        (NULL)
      118.24                         17.9                        (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  7.21 WATERSHED INCHES;    1030 CFS-HRS;      85.2 ACRE-FEET.
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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROPERTY NORTH OF THE EAST-WEST TOLLWAY (JRB 11/1/95 FILE: 8932.04TEST
12:29:30                    PASS   4   JOB NO.   1                       PAGE  16


OPERATION RUNOFF    XSECTION  94

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
      106.50                          2.1                        (RUNOFF)
      117.00                          1.5 *                      (RUNOFF)
      100.00                          2.1                        (RUNOFF)
                                          * FIRST POINT OF FLAT PEAK

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  5.53 WATERSHED INCHES;      72 CFS-HRS;       6.0 ACRE-FEET.


OPERATION RESVOR    STRUCTURE 11

                    HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM =14
     HRS      MAIN TIME INCREMENT = 1.000 hr,      DRAINAGE AREA =    .02 SQ.MI.
   24.00 CFS      .00     .01     .02     .02     .02     .02     .02     .06
   24.00 ELEV   737.50  737.51  737.52  737.52  737.52  737.52  737.52  737.56
   32.00 CFS      .08     .08     .08     .08     .08     .12     .14     .13
   32.00 ELEV   737.58  737.58  737.58  737.58  737.58  737.62  737.64  737.63
   40.00 CFS      .14     .13     .14     .17     .19     .18     .18     .18
   40.00 ELEV   737.64  737.63  737.64  737.67  737.69  737.68  737.68  737.68
   48.00 CFS      .18     .21     .23     .22     .23     .22     .22     .25
   48.00 ELEV   737.68  737.71  737.73  737.72  737.73  737.72  737.72  737.75
   56.00 CFS      .26     .26     .26     .26     .26     .35     .40     .39
   56.00 ELEV   737.76  737.76  737.76  737.76  737.76  737.85  737.90  737.89
   64.00 CFS      .40     .39     .40     .35     .33     .33     .33     .33
   64.00 ELEV   737.90  737.89  737.90  737.85  737.83  737.83  737.83  737.83
   72.00 CFS      .33     .42     .48     .47     .48     .47     .48     .58
   72.00 ELEV   737.83  737.92  737.98  737.97  737.98  737.97  737.98  738.16
   80.00 CFS      .70     .76     .77     .78     .78     .80     .83     .84
   80.00 ELEV   738.41  738.52  738.55  738.55  738.56  738.60  738.66  738.68
   88.00 CFS      .84     .85     .85     .95    1.18    1.21    1.21    1.21
   88.00 ELEV   738.69  738.69  738.69  738.91  739.09  739.11  739.11  739.11
   96.00 CFS     1.21    1.64    2.09    2.12    2.12    2.12    2.12    2.11
   96.00 ELEV   739.11  739.32  739.55  739.56  739.56  739.56  739.56  739.55
  104.00 CFS     2.09    2.09    2.09    2.09    2.09    1.78    1.46    1.44
  104.00 ELEV   739.54  739.54  739.54  739.54  739.54  739.39  739.23  739.22
  112.00 CFS     1.44    1.44    1.44    1.46    1.48    1.48    1.48    1.48
  112.00 ELEV   739.22  739.22  739.22  739.23  739.24  739.24  739.24  739.24
  120.00 CFS     1.47     .86     .15    -.08     .05    -.03     .02    -.01
  120.00 ELEV   739.24  738.72  737.65  737.42  737.55  737.47  737.52  737.49

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  5.53 WATERSHED INCHES;      72 CFS-HRS;       6.0 ACRE-FEET.
```

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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROPERTY NORTH OF THE EAST-WEST TOLLWAY (JRB 11/1/95 FILE: 8932.04TEST
12:29:30                    PASS   4   JOB NO.   1                      PAGE  17


    DURATION(HRS)   4      8     12     16     20     24     28     32
    FLOW(CFS)       2      2      2      1      1      1      1      1

    DURATION(HRS)  36     40     43
    FLOW(CFS)       1      1      0

 --- STRUCTURE 11, ALTERNATE  0, STORM 14, HYDROGRAPH ADDED TO READHD FILE ---


OPERATION RUNOFF    XSECTION  96

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
      106.50                          1.1                        (RUNOFF)
      100.00                          1.2                        (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                 9.80 WATERSHED INCHES;      53 CFS-HRS;       4.4 ACRE-FEET.


OPERATION ADDHYD    XSECTION  97

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
       64.14                          7.5                        (NULL)
      100.45                         30.9                        (NULL)
      106.50                         29.3                        (NULL)
      118.34                         20.1                        (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                 7.16 WATERSHED INCHES;    1156 CFS-HRS;      95.5 ACRE-FEET.


OPERATION RESVOR    STRUCTURE  6

                    HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM =14
     HRS      MAIN TIME INCREMENT = 1.000 hr,      DRAINAGE AREA =    .28 SQ.MI.
      .00 CFS       .00     .02     .04     .05     .06     .06     .07     .12
      .00 ELEV   707.00  707.00  707.00  707.01  707.01  707.01  707.01  707.01
     8.00 CFS       .20     .25     .27     .28     .30     .45     .70     .85
     8.00 ELEV   707.02  707.03  707.03  707.03  707.04  707.05  707.08  707.10
    16.00 CFS       .94     .98    1.00    1.08    1.21    1.30    1.35    1.37
    16.00 ELEV   707.11  707.12  707.12  707.13  707.14  707.15  707.16  707.16
    24.00 CFS      1.39    1.71    2.26    2.61    2.80    2.90    2.95    3.15
    24.00 ELEV   707.17  707.20  707.27  707.31  707.33  707.35  707.35  707.38
    32.00 CFS      3.46    3.67    3.78    3.84    3.87    4.02    4.26    4.42
    32.00 ELEV   707.41  707.44  707.45  707.46  707.46  707.48  707.51  707.53
    40.00 CFS      4.51    4.55    4.58    4.70    4.89    5.02    5.09    5.12
    40.00 ELEV   707.54  707.54  707.54  707.56  707.58  707.60  707.61  707.61
    48.00 CFS      5.14    5.24    5.40    5.50    5.56    5.59    5.60    5.68
    48.00 ELEV   707.61  707.62  707.64  707.66  707.66  707.67  707.67  707.68
    56.00 CFS      5.81    5.90    5.94    5.97    5.99    6.47    7.31    7.85
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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROPERTY NORTH OF THE EAST-WEST TOLLWAY (JRB 11/1/95 FILE: 8932.04TEST
12:29:30                    PASS   4   JOB NO.   1                      PAGE  18

    56.00 ELEV   707.69  707.70  707.71  707.71  707.71  707.77  707.87  707.94
    64.00 CFS      8.15    8.30    8.37    8.05    7.47    7.09    6.88    6.77
    64.00 ELEV   707.97  707.99  708.00  707.96  707.89  707.84  707.82  707.81
    72.00 CFS      6.73    7.19    8.03    8.61    8.94    9.09    9.16   10.35
    72.00 ELEV   707.80  707.86  707.96  708.02  708.05  708.06  708.07  708.17
    80.00 CFS     12.28   13.42   13.95   14.18   14.29   14.45   14.66   14.79
    80.00 ELEV   708.33  708.43  708.48  708.50  708.51  708.52  708.54  708.55
    88.00 CFS     14.85   14.88   14.93   16.20   18.27   19.52   20.10   20.40
    88.00 ELEV   708.56  708.56  708.56  708.67  708.85  708.96  709.01  709.02
    96.00 CFS     20.48   24.52   30.61   33.32   34.14   34.36   34.41   33.89
    96.00 ELEV   709.03  709.25  709.59  709.74  709.79  709.80  709.80  709.77
   104.00 CFS     33.13   32.80   32.70   32.67   32.57   29.50   24.97   22.95
   104.00 ELEV   709.73  709.71  709.71  709.70  709.70  709.53  709.28  709.16
   112.00 CFS     22.34   22.17   22.12   22.16   22.25   22.29   22.30   22.31
   112.00 ELEV   709.13  709.12  709.12  709.12  709.12  709.13  709.13  709.13
   120.00 CFS     22.16   16.66    8.65    4.57    2.39    1.25     .65     .34
   120.00 ELEV   709.12  708.71  708.02  707.54  707.28  707.15  707.08  707.04
   128.00 CFS      .18     .09     .05     .03     .01
   128.00 ELEV   707.02  707.01  707.01  707.00  707.00

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                 7.28 WATERSHED INCHES;    1300 CFS-HRS;     107.4 ACRE-FEET.

    DURATION(HRS)  12     24     36     48     60     72     84     96
    FLOW(CFS)      25     20     14      8      7      5      4      3

    DURATION(HRS) 108    113
    FLOW(CFS)       1      0

 --- STRUCTURE  6, ALTERNATE  0, STORM 14, HYDROGRAPH ADDED TO READHD FILE ---


OPERATION RUNOFF    XSECTION  99

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
       64.50                          5.8                        (RUNOFF)
       99.00                         20.6 *                      (RUNOFF)
      106.10                         19.2                        (RUNOFF)
      117.28                         12.9                        (RUNOFF)
                                          * FIRST POINT OF FLAT PEAK

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                 8.41 WATERSHED INCHES;     828 CFS-HRS;      68.5 ACRE-FEET.


OPERATION ADDHYD    XSECTION  90
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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROPERTY NORTH OF THE EAST-WEST TOLLWAY (JRB 11/1/95 FILE: 8932.04TEST
12:29:30                    PASS   4   JOB NO.   1                      PAGE  19


    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
       65.00                         14.1                        (NULL)
      101.05                         55.0                        (NULL)
      118.50                         35.5                        (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  7.68 WATERSHED INCHES;    2129 CFS-HRS;     175.9 ACRE-FEET.


OPERATION RESVOR    STRUCTURE  7

                   HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM =14
     HRS      MAIN TIME INCREMENT = 1.000 hr,      DRAINAGE AREA =    .54 SQ.MI.
    4.00 CFS      .00    .01    .01    .03    .06    .10    .13    .17
    4.00 ELEV   700.00  700.00  700.00  700.01  700.02  700.02  700.03  700.04
   12.00 CFS      .20    .29    .41    .54    .67    .79    .91   1.03
   12.00 ELEV   700.05  700.07  700.10  700.13  700.17  700.20  700.23  700.26
   20.00 CFS     1.14   1.26   1.37   1.47   1.58   1.73   1.93   2.15
   20.00 ELEV   700.29  700.31  700.34  700.37  700.39  700.43  700.48  700.54
   28.00 CFS     2.36   2.58   2.79   3.01   3.24   3.48   3.71   3.93
   28.00 ELEV   700.59  700.64  700.70  700.75  700.81  700.87  700.93  700.98
   36.00 CFS     4.20   4.48   4.77   5.06   5.33   5.60   5.86   6.12
   36.00 ELEV   701.02  701.06  701.10  701.13  701.17  701.20  701.23  701.26
   44.00 CFS     6.38   6.63   6.88   7.12   7.35   7.58   7.81   8.04
   44.00 ELEV   701.30  701.33  701.36  701.39  701.42  701.45  701.48  701.50
   52.00 CFS     8.26   8.46   8.67   8.87   9.07   9.26   9.45   9.63
   52.00 ELEV   701.53  701.56  701.58  701.61  701.63  701.66  701.68  701.70
   60.00 CFS     9.81  10.05  10.37  10.72  11.07  11.41  11.73  11.98
   60.00 ELEV   701.73  701.76  701.80  701.84  701.88  701.93  701.97  702.00
   68.00 CFS    12.10  12.20  12.28  12.36  12.43  12.56  12.75  12.95
   68.00 ELEV   702.02  702.03  702.05  702.06  702.07  702.09  702.12  702.16
   76.00 CFS    13.16  13.38  13.59  13.91  14.36  14.85  15.36  15.86
   76.00 ELEV   702.19  702.23  702.26  702.32  702.39  702.48  702.56  702.64
   84.00 CFS    16.35  16.83  17.30  17.76  18.14  18.42  18.70  19.05
   84.00 ELEV   702.72  702.80  702.88  702.96  703.03  703.10  703.17  703.26
   92.00 CFS    19.49  19.95  20.42  20.90  21.36  22.02  22.88  23.82
   92.00 ELEV   703.37  703.49  703.61  703.72  703.84  704.00  704.22  704.46
  100.00 CFS    24.78  25.72  31.70  38.46  43.65  49.01  54.23  57.82
  100.00 ELEV   704.69  704.93  705.14  705.31  705.44  705.54  705.61  705.66
  108.00 CFS    60.12  59.54  56.43  53.28  50.69  48.78  47.42  46.50
  108.00 ELEV   705.70  705.69  705.64  705.60  705.57  705.54  705.52  705.51
  116.00 CFS    45.93  45.68  45.49  45.33  44.98  42.14  36.71  31.18
  116.00 ELEV   705.50  705.49  705.49  705.48  705.47  705.40  705.27  705.13
  124.00 CFS    26.08  25.50  24.98  24.47  23.96  23.46  22.97  22.49
  124.00 ELEV   705.00  704.87  704.75  704.62  704.49  704.37  704.24  704.12
  132.00 CFS    22.02
  132.00 ELEV   704.00

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  6.07 WATERSHED INCHES;    2119 CFS-HRS;     175.1 ACRE-FEET.
```



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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROPERTY NORTH OF THE EAST-WEST TOLLWAY (JRB 11/1/95 FILE: 8932.04TEST
12:29:30                    PASS   4   JOB NO.   1                      PAGE  20


    DURATION(HRS)  3     6     9     12    15    18    21    24
    FLOW(CFS)      56    51    47    46    45    38    31    25

    DURATION(HRS)  27    30    33
    FLOW(CFS)      24    23    22 TRUNCATED

 --- STRUCTURE  7, ALTERNATE  0, STORM 14, HYDROGRAPH ADDED TO READHD FILE ---


OPERATION RUNOFF    XSECTION  49

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  6.07 WATERSHED INCHES;     121 CFS-HRS;     175.1 ACRE-FEET.


OPERATION ADDHYD    XSECTION  50

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
      108.27                         60.5                        (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  6.08 WATERSHED INCHES;    2132 CFS-HRS;     176.2 ACRE-FEET.


OPERATION RESVOR    STRUCTURE 39

                   HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM =14
     HRS      MAIN TIME INCREMENT = 1.000 hr,      DRAINAGE AREA =    .62 SQ.MI.
    6.00 CFS      .00    .02    .06    .10    .14    .18    .22    .29
    6.00 ELEV   693.00  693.00  693.01  693.01  693.02  693.03  693.03  693.04
   14.00 CFS      .40    .50    .61    .72    .83    .94   1.04   1.14
   14.00 ELEV   693.06  693.07  693.09  693.10  693.12  693.13  693.15  693.16
   22.00 CFS     1.24   1.34   1.44   1.58   1.75   1.92   2.10   2.28
   22.00 ELEV   693.18  693.19  693.20  693.22  693.25  693.27  693.30  693.32
   30.00 CFS     2.46   2.65   2.86   3.06   3.27   3.48   3.69   3.91
   30.00 ELEV   693.35  693.38  693.40  693.43  693.46  693.49  693.52  693.55
   38.00 CFS     4.15   4.39   4.63   4.87   5.12   5.37   5.62   5.88
   38.00 ELEV   693.59  693.62  693.66  693.69  693.72  693.76  693.80  693.83
   46.00 CFS     6.13   6.39   6.64   6.89   7.12   7.31   7.50   7.69
   46.00 ELEV   693.87  693.90  693.94  693.98  694.01  694.05  694.08  694.11
   54.00 CFS     7.88   8.08   8.27   8.47   8.66   8.86   9.05   9.27
   54.00 ELEV   694.15  694.18  694.22  694.26  694.29  694.33  694.36  694.40
   62.00 CFS     9.52   9.77  10.03  10.30  10.57  10.81  11.03  11.25
   62.00 ELEV   694.45  694.49  694.54  694.59  694.64  694.68  694.72  694.76
   70.00 CFS    11.45  11.65  11.84  12.06  12.29  12.52  12.68  12.81
   70.00 ELEV   694.80  694.83  694.87  694.91  694.95  694.99  695.03  695.07
   78.00 CFS    12.96  13.13  13.35  13.57  13.80  14.05  14.30  14.56
   78.00 ELEV   695.11  695.16  695.22  695.29  695.36  695.43  695.50  695.57
   86.00 CFS    14.83  15.11  15.39  15.67  15.96  16.22  16.49  16.77
   86.00 ELEV   695.65  695.73  695.82  695.90  695.98  696.07  696.16  696.26
```

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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROPERTY NORTH OF THE EAST-WEST TOLLWAY (JRB 11/1/95 FILE: 8932.04TEST
12:29:30                    PASS   4   JOB NO.   1                      PAGE  21

    94.00 CFS     17.05   17.33   17.63   17.98   20.58   23.78   27.81   31.60
    94.00 ELEV   696.36  696.46  696.57  696.69  696.83  696.95  697.04  697.10
   102.00 CFS     35.23   39.95   45.06   50.25   55.49   60.34   64.30   66.07
   102.00 ELEV   697.16  697.24  697.32  697.40  697.49  697.56  697.63  697.65
   110.00 CFS     65.46   63.69   61.41   59.15   57.18   55.59   54.39   53.55
   110.00 ELEV   697.64  697.62  697.58  697.54  697.51  697.49  697.47  697.45
   118.00 CFS     52.99   52.61   52.23   49.75   45.03   39.96   34.77   30.66
   118.00 ELEV   697.45  697.44  697.43  697.39  697.32  697.24  697.16  697.09
   126.00 CFS     28.18   26.60   25.51   24.85   24.47   24.06   23.63
   126.00 ELEV   697.05  697.03  697.01  696.99  696.98  696.96  696.95

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                 5.52 WATERSHED INCHES;    2211 CFS-HRS;     182.8 ACRE-FEET.

    DURATION(HRS)   3      6      9     12     15     18     21     24
    FLOW(CFS)      64     59     55     53     50     45     35     31

    DURATION(HRS)  27     30     33     34
    FLOW(CFS)      27     24     24     24 TRUNCATED

 --- STRUCTURE 39, ALTERNATE  0, STORM 14, HYDROGRAPH ADDED TO READHD FILE ---


EXECUTIVE CONTROL  ENDCMP    COMPUTATIONS COMPLETED FOR PASS   4


EXECUTIVE CONTROL  COMPUT    FROM XSECTION  91  TO STRUCTURE 39          240-HR
    STARTING TIME =   .00       RAIN DEPTH = 11.14       RAIN DURATION =240.00
    ANT. RUNOFF COND. = 2       MAIN TIME INCREMENT =  1.000 HOURS
    ALTERNATE NO. = 0           STORM NO. =15            RAIN TABLE NO. = 4


OPERATION RUNOFF    XSECTION  91

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
      214.50                          6.0                       (RUNOFF)
      237.64                          4.1                       (RUNOFF)
      196.00                          6.4                       (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                 7.92 WATERSHED INCHES;     472 CFS-HRS;      39.0 ACRE-FEET.


OPERATION RUNOFF    XSECTION  92
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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROPERTY NORTH OF THE EAST-WEST TOLLWAY (JRB 11/1/95 FILE: 8932.04TEST
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    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
      131.21                          2.4                       (RUNOFF)
      202.50                          9.3                       (RUNOFF)
      214.50                          8.8                       (RUNOFF)
      238.50                          5.9                       (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                 8.59 WATERSHED INCHES;     716 CFS-HRS;      59.2 ACRE-FEET.


OPERATION ADDHYD    XSECTION  93

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
      202.35                         15.7                       (NULL)
      214.50                         14.8                       (NULL)
      238.00                         10.1                       (NULL)
      196.00                         15.7                       (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                 8.31 WATERSHED INCHES;    1188 CFS-HRS;      98.2 ACRE-FEET.


OPERATION RUNOFF    XSECTION  94

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
      214.00                          1.2 *                     (RUNOFF)
      196.00                          1.2                       (RUNOFF)
                                          * FIRST POINT OF FLAT PEAK

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                 6.53 WATERSHED INCHES;      86 CFS-HRS;       7.1 ACRE-FEET.


OPERATION RESVOR    STRUCTURE 11

                    HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM =15
     HRS      MAIN TIME INCREMENT = 1.000 hr,       DRAINAGE AREA =    .02 SQ.MI.
    48.00 CFS       .00     .02     .03     .02     .03     .03     .03     .03
    48.00 ELEV   737.50  737.52  737.53  737.52  737.53  737.53  737.53  737.53
    56.00 CFS       .03     .03     .03     .03     .03     .05     .06     .06
    56.00 ELEV   737.53  737.53  737.53  737.53  737.53  737.55  737.56  737.56
    64.00 CFS       .06     .06     .06     .06     .06     .06     .06     .06
    64.00 ELEV   737.56  737.56  737.56  737.56  737.56  737.56  737.56  737.56
    72.00 CFS       .06     .08     .10     .09     .09     .09     .09     .09
    72.00 ELEV   737.56  737.58  737.60  737.59  737.59  737.59  737.59  737.59
    80.00 CFS       .09     .09     .09     .09     .09     .11     .12     .12
    80.00 ELEV   737.59  737.59  737.59  737.59  737.59  737.61  737.62  737.62
    88.00 CFS       .12     .12     .12     .12     .12     .12     .12     .12
    88.00 ELEV   737.62  737.62  737.62  737.62  737.62  737.62  737.62  737.62
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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROPERTY NORTH OF THE EAST-WEST TOLLWAY (JRB 11/1/95 FILE: 8932.04TEST
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    96.00 CFS       .12     .14     .14     .14     .14     .14     .14     .14
    96.00 ELEV   737.62  737.64  737.64  737.64  737.64  737.64  737.64  737.64
   104.00 CFS       .14     .14     .14     .14     .14     .16     .16     .16
   104.00 ELEV   737.64  737.64  737.64  737.64  737.64  737.66  737.66  737.66
   112.00 CFS       .16     .16     .16     .16     .16     .16     .16     .16
   112.00 ELEV   737.66  737.66  737.66  737.66  737.66  737.66  737.66  737.66
   120.00 CFS       .16     .21     .25     .24     .25     .24     .25     .24
   120.00 ELEV   737.66  737.71  737.75  737.74  737.75  737.74  737.75  737.74
   128.00 CFS       .24     .24     .24     .24     .24     .22     .20     .20
   128.00 ELEV   737.74  737.74  737.74  737.74  737.74  737.72  737.70  737.70
   136.00 CFS       .20     .20     .20     .20     .20     .20     .20     .20
   136.00 ELEV   737.70  737.70  737.70  737.70  737.70  737.70  737.70  737.70
   144.00 CFS       .20     .26     .29     .28     .29     .29     .29     .29
   144.00 ELEV   737.70  737.76  737.79  737.78  737.79  737.79  737.79  737.79
   152.00 CFS       .29     .29     .29     .29     .29     .40     .47     .46
   152.00 ELEV   737.79  737.79  737.79  737.79  737.79  737.90  737.97  737.96
   160.00 CFS       .47     .46     .47     .47     .47     .47     .47     .47
   160.00 ELEV   737.97  737.96  737.97  737.97  737.97  737.97  737.97  737.97
   168.00 CFS       .47     .49     .50     .50     .50     .50     .50     .50
   168.00 ELEV   737.97  737.99  738.00  738.00  738.00  738.00  738.00  738.00
   176.00 CFS       .50     .50     .50     .50     .50     .56     .65     .70
   176.00 ELEV   738.00  738.00  738.00  738.00  738.00  738.13  738.31  738.39
   184.00 CFS       .71     .71     .71     .71     .71     .71     .71     .71
   184.00 ELEV   738.41  738.42  738.42  738.42  738.42  738.42  738.42  738.42
   192.00 CFS       .71     .87    1.15    1.25    1.23    1.24    1.24    1.24
   192.00 ELEV   738.43  738.73  739.07  739.12  739.12  739.12  739.12  739.12
   200.00 CFS      1.24    1.24    1.24    1.24    1.24    1.22    1.21    1.20
   200.00 ELEV   739.12  739.12  739.12  739.12  739.12  739.11  739.10  739.10
   208.00 CFS      1.20    1.20    1.20    1.20    1.20    1.20    1.20    1.20
   208.00 ELEV   739.10  739.10  739.10  739.10  739.10  739.10  739.10  739.10
   216.00 CFS      1.20    1.03     .90     .85     .83     .83     .83     .83
   216.00 ELEV   739.10  739.02  738.81  738.70  738.67  738.66  738.66  738.66
   224.00 CFS       .83     .83     .83     .83     .83     .83     .84     .84
   224.00 ELEV   738.66  738.66  738.66  738.66  738.66  738.67  738.68  738.69
   232.00 CFS       .84     .84     .84     .84     .84     .84     .84     .84
   232.00 ELEV   738.69  738.69  738.69  738.69  738.69  738.69  738.69  738.69
   240.00 CFS       .84     .60    -.09     .06    -.04     .02    -.01     .01
   240.00 ELEV   738.69  738.20  737.41  737.56  737.46  737.52  737.49  737.51
   248.00 CFS      -.01
   248.00 ELEV   737.49

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  6.54 WATERSHED INCHES;      86 CFS-HRS;       7.1 ACRE-FEET.

    DURATION(HRS)   6     12     18     24     30     36     42     48
    FLOW(CFS)       1      1      1      1      1      1      1      1

    DURATION(HRS)  54     60     66     72
    FLOW(CFS)       1      1      1      0
```



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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROPERTY NORTH OF THE EAST-WEST TOLLWAY (JRB 11/1/95 FILE: 8932.04TEST
12:29:30                    PASS   5   JOB NO.   1                      PAGE  24


 --- STRUCTURE 11, ALTERNATE  0, STORM 15, HYDROGRAPH ADDED TO READHD FILE ---


OPERATION RUNOFF    XSECTION  96

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
      196.00                           .7                       (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                 10.26 WATERSHED INCHES;      56 CFS-HRS;       4.6 ACRE-FEET.


OPERATION ADDHYD    XSECTION  97

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
      130.14                           4.4                      (NULL)
      202.41                          17.6                      (NULL)
      214.50                          16.6                      (NULL)
      229.55                          11.4                      (NULL)
      237.98                          10.9                      (NULL)
      195.00                          17.6                      (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  8.23 WATERSHED INCHES;    1329 CFS-HRS;     109.8 ACRE-FEET.


OPERATION RESVOR    STRUCTURE  6

                    HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM =15
     HRS      MAIN TIME INCREMENT = 1.000 hr,       DRAINAGE AREA =    .28 SQ.MI.
      .00 CFS      .00     .01     .02     .03     .03     .04     .04     .04
      .00 ELEV   707.00  707.00  707.00  707.00  707.00  707.00  707.00  707.00
     8.00 CFS      .04     .04     .04     .04     .04     .08     .13     .16
     8.00 ELEV   707.00  707.00  707.00  707.00  707.01  707.01  707.02  707.02
    16.00 CFS      .18     .18     .19     .19     .19     .19     .19     .19
    16.00 ELEV   707.02  707.02  707.02  707.02  707.02  707.02  707.02  707.02
    24.00 CFS      .20     .31     .50     .62     .69     .72     .74     .75
    24.00 ELEV   707.02  707.04  707.06  707.07  707.08  707.09  707.09  707.09
    32.00 CFS      .75     .76     .76     .76     .76     .78     .84     .88
    32.00 ELEV   707.09  707.09  707.09  707.09  707.09  707.09  707.10  707.11
    40.00 CFS      .91     .92     .93     .93     .93     .93     .93     .93
    40.00 ELEV   707.11  707.11  707.11  707.11  707.11  707.11  707.11  707.11
    48.00 CFS      .93    1.12    1.45    1.67    1.79    1.85    1.88    1.90
    48.00 ELEV   707.11  707.13  707.17  707.20  707.21  707.22  707.22  707.23
    56.00 CFS     1.91    1.91    1.92    1.92    1.92    2.01    2.18    2.29
    56.00 ELEV   707.23  707.23  707.23  707.23  707.23  707.24  707.26  707.27
    64.00 CFS     2.35    2.38    2.39    2.40    2.41    2.41    2.41    2.41
    64.00 ELEV   707.28  707.28  707.29  707.29  707.29  707.29  707.29  707.29
    72.00 CFS     2.41    2.48    2.61    2.70    2.74    2.77    2.78    2.78
    72.00 ELEV   707.29  707.30  707.31  707.32  707.33  707.33  707.33  707.33
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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROPERTY NORTH OF THE EAST-WEST TOLLWAY (JRB 11/1/95 FILE: 8932.04TEST
12:29:30                    PASS   5   JOB NO.   1                      PAGE  25
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80.00	CFS	2.79	2.79	2.79	2.79	2.79	2.85	2.95	3.01
80.00	ELEV	707.33	707.33	707.33	707.33	707.33	707.34	707.35	707.36
88.00	CFS	3.05	3.07	3.08	3.09	3.09	3.09	3.09	3.09
88.00	ELEV	707.36	707.37	707.37	707.37	707.37	707.37	707.37	707.37
96.00	CFS	3.09	3.14	3.22	3.27	3.30	3.31	3.32	3.33
96.00	ELEV	707.37	707.37	707.38	707.39	707.39	707.39	707.40	707.40
104.00	CFS	3.33	3.33	3.33	3.33	3.33	3.37	3.43	3.48
104.00	ELEV	707.40	707.40	707.40	707.40	707.40	707.40	707.41	707.41
112.00	CFS	3.50	3.51	3.52	3.52	3.53	3.53	3.53	3.53
112.00	ELEV	707.42	707.42	707.42	707.42	707.42	707.42	707.42	707.42
120.00	CFS	3.53	3.80	4.27	4.59	4.76	4.85	4.90	4.92
120.00	ELEV	707.42	707.45	707.51	707.55	707.57	707.58	707.58	707.59
128.00	CFS	4.94	4.94	4.95	4.95	4.94	4.73	4.38	4.14
128.00	ELEV	707.59	707.59	707.59	707.59	707.59	707.56	707.52	707.49
136.00	CFS	4.01	3.94	3.91	3.89	3.88	3.87	3.87	3.87
136.00	ELEV	707.48	707.47	707.46	707.46	707.46	707.46	707.46	707.46
144.00	CFS	3.88	4.15	4.63	4.96	5.13	5.22	5.27	5.29
144.00	ELEV	707.46	707.49	707.55	707.59	707.61	707.62	707.63	707.63
152.00	CFS	5.31	5.32	5.32	5.32	5.33	5.89	6.87	7.52
152.00	ELEV	707.63	707.63	707.63	707.63	707.63	707.70	707.82	707.90
160.00	CFS	7.88	8.07	8.16	8.22	8.24	8.26	8.26	8.27
160.00	ELEV	707.94	707.96	707.97	707.98	707.98	707.98	707.98	707.98
168.00	CFS	8.27	8.32	8.41	8.48	8.52	8.53	8.54	8.54
168.00	ELEV	707.98	707.99	708.00	708.01	708.01	708.01	708.01	708.01
176.00	CFS	8.54	8.54	8.54	8.54	8.56	9.26	10.41	11.11
176.00	ELEV	708.01	708.01	708.01	708.01	708.01	708.07	708.17	708.23
184.00	CFS	11.44	11.59	11.65	11.68	11.70	11.70	11.70	11.70
184.00	ELEV	708.26	708.27	708.28	708.28	708.28	708.28	708.28	708.28
192.00	CFS	11.72	13.43	16.33	18.11	18.94	19.30	19.45	19.52
192.00	ELEV	708.29	708.43	708.68	708.84	708.91	708.94	708.95	708.96
200.00	CFS	19.55	19.56	19.57	19.57	19.56	19.31	18.91	18.67
200.00	ELEV	708.96	708.96	708.96	708.96	708.96	708.94	708.91	708.89
208.00	CFS	18.57	18.52	18.50	18.49	18.49	18.48	18.48	18.48
208.00	ELEV	708.88	708.87	708.87	708.87	708.87	708.87	708.87	708.87
216.00	CFS	18.45	17.10	14.91	13.59	12.97	12.69	12.57	12.52
216.00	ELEV	708.87	708.75	708.56	708.45	708.39	708.37	708.36	708.36
224.00	CFS	12.50	12.49	12.48	12.48	12.12	11.63	11.44	11.26
224.00	ELEV	708.35	708.35	708.35	708.35	708.32	708.28	708.26	708.25
232.00	CFS	11.06	10.98	10.94	10.92	10.92	10.91	10.91	10.91
232.00	ELEV	708.23	708.22	708.22	708.22	708.22	708.22	708.22	708.22
240.00	CFS	10.90	8.63	5.22	2.78	1.46	.76	.40	.21
240.00	ELEV	708.22	708.02	707.62	707.33	707.17	707.09	707.05	707.02
248.00	CFS	.11	.06	.03	.02	.01	.00		
248.00	ELEV	707.01	707.01	707.00	707.00	707.00	707.00		

```
 RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
               8.27 WATERSHED INCHES;    1477 CFS-HRS;     122.0 ACRE-FEET.
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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROPERTY NORTH OF THE EAST-WEST TOLLWAY (JRB 11/1/95 FILE: 8932.04TEST
12:29:30                    PASS   5   JOB NO.   1                      PAGE  26


    DURATION(HRS)  24     48     72     96    120    144    168    192
    FLOW(CFS)      15     11      8      5      4      3      3      2

    DURATION(HRS) 216    219
    FLOW(CFS)       1      0

 --- STRUCTURE  6, ALTERNATE  0, STORM 15, HYDROGRAPH ADDED TO READHD FILE ---


OPERATION RUNOFF    XSECTION  99

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
       33.00                          1.1 *                      (RUNOFF)
      130.50                          3.3                        (RUNOFF)
      199.00                         11.6 *                      (RUNOFF)
      225.92                          7.2                        (RUNOFF)
                                          * FIRST POINT OF FLAT PEAK

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  8.67 WATERSHED INCHES;     854 CFS-HRS;      70.6 ACRE-FEET.


OPERATION ADDHYD    XSECTION  90

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
      130.51                         8.3                        (NULL)
      202.52                        31.2                        (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  8.41 WATERSHED INCHES;    2331 CFS-HRS;     192.6 ACRE-FEET.


OPERATION RESVOR    STRUCTURE  7

                    HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM =15
     HRS      MAIN TIME INCREMENT = 1.000 hr,      DRAINAGE AREA =    .54 SQ.MI.
     5.00 CFS       .00     .01     .01     .01     .01     .01     .01     .01
     5.00 ELEV   700.00  700.00  700.00  700.00  700.00  700.00  700.00  700.00
    13.00 CFS       .03     .05     .08     .11     .13     .16     .18     .20
    13.00 ELEV   700.01  700.01  700.02  700.03  700.03  700.04  700.05  700.05
    21.00 CFS       .23     .25     .27     .29     .35     .42     .50     .58
    21.00 ELEV   700.06  700.06  700.07  700.07  700.09  700.11  700.12  700.14
    29.00 CFS       .66     .73     .81     .88     .95    1.01    1.08    1.14
    29.00 ELEV   700.16  700.18  700.20  700.22  700.24  700.25  700.27  700.28
    37.00 CFS      1.20    1.25    1.30    1.35    1.40    1.45    1.50    1.54
    37.00 ELEV   700.30  700.31  700.32  700.34  700.35  700.36  700.37  700.39
    45.00 CFS      1.59    1.63    1.67    1.71    1.77    1.87    1.98    2.09
    45.00 ELEV   700.40  700.41  700.42  700.43  700.44  700.47  700.49  700.52
    53.00 CFS      2.19    2.30    2.40    2.50    2.59    2.69    2.77    2.86
```

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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROPERTY NORTH OF THE EAST-WEST TOLLWAY (JRB 11/1/95 FILE: 8932.04TEST
12:29:30                    PASS   5   JOB NO.   1                      PAGE  27

    53.00 ELEV   700.55  700.57  700.60  700.62  700.65  700.67  700.69  700.72
    61.00 CFS      2.95    3.05    3.15    3.25    3.35    3.45    3.54    3.63
    61.00 ELEV   700.74  700.76  700.79  700.81  700.84  700.86  700.88  700.91
    69.00 CFS      3.71    3.80    3.88    3.95    4.04    4.15    4.26    4.37
    69.00 ELEV   700.93  700.95  700.97  700.99  701.01  701.02  701.03  701.05
    77.00 CFS      4.47    4.57    4.66    4.75    4.84    4.92    5.00    5.07
    77.00 ELEV   701.06  701.07  701.08  701.09  701.10  701.12  701.12  701.13
    85.00 CFS      5.15    5.23    5.31    5.39    5.47    5.54    5.62    5.68
    85.00 ELEV   701.14  701.15  701.16  701.17  701.18  701.19  701.20  701.21
    93.00 CFS      5.75    5.81    5.87    5.93    5.98    6.05    6.11    6.17
    93.00 ELEV   701.22  701.23  701.23  701.24  701.25  701.26  701.26  701.27
   101.00 CFS      6.23    6.28    6.34    6.39    6.44    6.49    6.53    6.58
   101.00 ELEV   701.28  701.29  701.29  701.30  701.30  701.31  701.32  701.32
   109.00 CFS      6.62    6.67    6.71    6.76    6.81    6.85    6.89    6.93
   109.00 ELEV   701.33  701.33  701.34  701.35  701.35  701.36  701.36  701.37
   117.00 CFS      6.97    7.01    7.04    7.07    7.15    7.27    7.41    7.56
   117.00 ELEV   701.37  701.38  701.38  701.38  701.39  701.41  701.43  701.44
   125.00 CFS      7.70    7.84    7.97    8.10    8.22    8.34    8.45    8.56
   125.00 ELEV   701.46  701.48  701.50  701.51  701.53  701.54  701.56  701.57
   133.00 CFS      8.61    8.63    8.63    8.62    8.61    8.59    8.58    8.56
   133.00 ELEV   701.58  701.58  701.58  701.58  701.58  701.57  701.57  701.57
   141.00 CFS      8.55    8.53    8.52    8.51    8.55    8.63    8.73    8.84
   141.00 ELEV   701.57  701.57  701.57  701.56  701.57  701.58  701.59  701.60
   149.00 CFS      8.95    9.05    9.16    9.25    9.35    9.44    9.53    9.61
   149.00 ELEV   701.62  701.63  701.64  701.66  701.67  701.68  701.69  701.70
   157.00 CFS      9.77   10.04   10.33   10.64   10.94   11.24   11.52   11.80
   157.00 ELEV   701.72  701.76  701.79  701.83  701.87  701.90  701.94  701.97
   165.00 CFS     12.04   12.22   12.40   12.56   12.73   12.89   13.05   13.21
   165.00 ELEV   702.01  702.04  702.07  702.09  702.12  702.15  702.18  702.20
   173.00 CFS     13.36   13.51   13.65   13.79   13.93   14.05   14.18   14.31
   173.00 ELEV   702.23  702.25  702.28  702.30  702.32  702.34  702.36  702.38
   181.00 CFS     14.50   14.76   15.05   15.34   15.63   15.92   16.19   16.46
   181.00 ELEV   702.42  702.46  702.51  702.56  702.61  702.65  702.70  702.74
   189.00 CFS     16.72   16.97   17.21   17.45   17.84   18.27   18.69   19.13
   189.00 ELEV   702.79  702.83  702.87  702.91  702.97  703.07  703.17  703.28
   197.00 CFS     19.58   20.02   20.45   20.87   21.29   21.69   22.09   22.45
   197.00 ELEV   703.39  703.50  703.61  703.72  703.82  703.92  704.02  704.11
   205.00 CFS     22.80   23.12   23.42   23.71   24.00   24.28   24.55   24.82
   205.00 ELEV   704.20  704.28  704.35  704.43  704.50  704.57  704.64  704.70
   213.00 CFS     25.08   25.33   25.58   25.82   25.97   26.20   26.32   26.23
   213.00 ELEV   704.77  704.83  704.90  704.95  704.99  705.01  705.01  705.01
   221.00 CFS     26.08   25.99   25.97   25.95   25.93   25.92   25.90   25.80
   221.00 ELEV   705.00  705.00  704.99  704.99  704.98  704.98  704.97  704.95
   229.00 CFS     25.62   25.44   25.25   25.07   24.89   24.70   24.53   24.35
   229.00 ELEV   704.90  704.86  704.81  704.77  704.72  704.68  704.63  704.59
   237.00 CFS     24.18   24.02   23.85   23.68   23.44   23.09   22.69   22.26
   237.00 ELEV   704.55  704.50  704.46  704.42  704.36  704.27  704.17  704.07
   245.00 CFS     21.81   21.34   20.88   20.42   19.97   19.54   19.11   18.69
   245.00 ELEV   703.95  703.84  703.72  703.61  703.49  703.38  703.28  703.17
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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROPERTY NORTH OF THE EAST-WEST TOLLWAY (JRB 11/1/95 FILE: 8932.04TEST
12:29:30                    PASS   5   JOB NO.   1                      PAGE  28

   253.00 CFS     18.28   17.80
   253.00 ELEV   703.07  702.97

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  7.44 WATERSHED INCHES;    2598 CFS-HRS;     214.7 ACRE-FEET.

    DURATION(HRS)   6     12     18     24     30     36     42     48
    FLOW(CFS)      26     26     25     25     24     23     22     20

    DURATION(HRS)  54     60     62
    FLOW(CFS)      19     18     18 TRUNCATED

 --- STRUCTURE  7, ALTERNATE  0, STORM 15, HYDROGRAPH ADDED TO READHD FILE ---


OPERATION RUNOFF    XSECTION  49

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  7.44 WATERSHED INCHES;     216 CFS-HRS;     214.7 ACRE-FEET.


OPERATION ADDHYD    XSECTION  50

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
      219.06                          26.4                        (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  7.44 WATERSHED INCHES;    2612 CFS-HRS;     215.8 ACRE-FEET.


OPERATION RESVOR    STRUCTURE 39

                    HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM =15
     HRS      MAIN TIME INCREMENT = 1.000 hr,      DRAINAGE AREA =    .62 SQ.MI.
    12.00 CFS       .00     .02     .05     .08     .11     .13     .16     .19
    12.00 ELEV   693.00  693.00  693.01  693.01  693.02  693.02  693.02  693.03
    20.00 CFS       .22     .25     .27     .30     .33     .37     .43     .50
    20.00 ELEV   693.03  693.03  693.04  693.04  693.05  693.05  693.06  693.07
    28.00 CFS       .56     .63     .70     .76     .83     .90     .97    1.04
    28.00 ELEV   693.08  693.09  693.10  693.11  693.12  693.13  693.14  693.15
    36.00 CFS      1.10    1.17    1.22    1.28    1.33    1.39    1.44    1.50
    36.00 ELEV   693.16  693.17  693.17  693.18  693.19  693.20  693.20  693.21
    44.00 CFS      1.55    1.61    1.66    1.71    1.76    1.83    1.91    2.00
    44.00 ELEV   693.22  693.23  693.23  693.24  693.25  693.26  693.27  693.28
    52.00 CFS      2.09    2.18    2.28    2.37    2.46    2.56    2.65    2.75
    52.00 ELEV   693.30  693.31  693.32  693.34  693.35  693.36  693.38  693.39
    60.00 CFS      2.84    2.94    3.04    3.14    3.24    3.34    3.44    3.54
    60.00 ELEV   693.40  693.42  693.43  693.44  693.46  693.47  693.49  693.50
    68.00 CFS      3.64    3.74    3.83    3.93    4.02    4.12    4.22    4.32
    68.00 ELEV   693.52  693.53  693.54  693.56  693.57  693.58  693.60  693.61
    76.00 CFS      4.42    4.52    4.62    4.72    4.82    4.92    5.02    5.11
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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROPERTY NORTH OF THE EAST-WEST TOLLWAY (JRB 11/1/95 FILE: 8932.04TEST
12:29:30                    PASS   5   JOB NO.   1                      PAGE  29

    76.00 ELEV   693.63  693.64  693.65  693.67  693.68  693.70  693.71  693.72
    84.00 CFS      5.21    5.30    5.40    5.49    5.58    5.67    5.76    5.85
    84.00 ELEV   693.74  693.75  693.76  693.78  693.79  693.80  693.82  693.83
    92.00 CFS      5.94    6.03    6.11    6.19    6.27    6.35    6.43    6.51
    92.00 ELEV   693.84  693.85  693.87  693.88  693.89  693.90  693.91  693.92
   100.00 CFS      6.58    6.66    6.73    6.80    6.87    6.94    7.01    7.07
   100.00 ELEV   693.93  693.94  693.95  693.96  693.97  693.98  693.99  694.00
   108.00 CFS      7.12    7.17    7.21    7.26    7.31    7.36    7.41    7.45
   108.00 ELEV   694.01  694.02  694.03  694.04  694.05  694.05  694.06  694.07
   116.00 CFS      7.50    7.55    7.59    7.64    7.68    7.74    7.82    7.90
   116.00 ELEV   694.08  694.09  694.10  694.11  694.11  694.12  694.14  694.15
   124.00 CFS      7.98    8.07    8.16    8.25    8.35    8.45    8.54    8.64
   124.00 ELEV   694.17  694.18  694.20  694.22  694.23  694.25  694.27  694.29
   132.00 CFS      8.74    8.83    8.90    8.96    9.03    9.08    9.14    9.19
   132.00 ELEV   694.31  694.32  694.33  694.35  694.36  694.37  694.38  694.39
   140.00 CFS      9.23    9.27    9.31    9.34    9.38    9.42    9.48    9.54
   140.00 ELEV   694.39  694.40  694.41  694.41  694.42  694.43  694.44  694.45
   148.00 CFS      9.61    9.68    9.75    9.82    9.89    9.97   10.04   10.12
   148.00 ELEV   694.46  694.47  694.49  694.50  694.51  694.53  694.54  694.55
   156.00 CFS     10.20   10.31   10.45   10.60   10.76   10.93   11.11   11.29
   156.00 ELEV   694.57  694.59  694.62  694.64  694.67  694.70  694.73  694.77
   164.00 CFS     11.48   11.68   11.87   12.07   12.26   12.45   12.62   12.73
   164.00 ELEV   694.80  694.84  694.87  694.91  694.94  694.98  695.01  695.05
   172.00 CFS     12.84   12.96   13.08   13.20   13.32   13.44   13.56   13.68
   172.00 ELEV   695.08  695.11  695.15  695.18  695.22  695.25  695.29  695.32
   180.00 CFS     13.80   13.94   14.10   14.27   14.44   14.61   14.79   14.97
   180.00 ELEV   695.36  695.40  695.44  695.49  695.54  695.59  695.64  695.69
   188.00 CFS     15.16   15.34   15.53   15.73   15.92   16.13   16.36   16.59
   188.00 ELEV   695.75  695.80  695.86  695.91  695.97  696.04  696.12  696.20
   196.00 CFS     16.82   17.06   17.31   17.56   17.82   18.08   20.04   21.91
   196.00 ELEV   696.28  696.37  696.45  696.54  696.63  696.73  696.81  696.88
   204.00 CFS     23.43   24.62   26.06   27.37   28.21   28.80   29.25   29.62
   204.00 ELEV   696.94  696.98  697.02  697.04  697.05  697.06  697.07  697.07
   212.00 CFS     29.95   30.24   30.52   30.79   30.80   30.30   29.78   29.57
   212.00 ELEV   697.08  697.08  697.09  697.09  697.09  697.08  697.08  697.07
   220.00 CFS     29.46   29.35   29.23   29.15   29.09   29.05   29.02   29.00
   220.00 ELEV   697.07  697.07  697.07  697.07  697.06  697.06  697.06  697.06
   228.00 CFS     28.93   28.81   28.66   28.50   28.32   28.15   27.97   27.79
   228.00 ELEV   697.06  697.06  697.06  697.06  697.05  697.05  697.05  697.04
   236.00 CFS     27.61   27.43   27.26   27.09   26.92   26.06   24.91   24.43
   236.00 ELEV   697.04  697.04  697.04  697.03  697.03  697.02  697.00  696.98
   244.00 CFS     23.97   23.52   23.06   22.60   22.14   21.68   21.23   20.78
   244.00 ELEV   696.96  696.94  696.93  696.91  696.89  696.87  696.86  696.84
   252.00 CFS     20.34   19.90   19.46
   252.00 ELEV   696.82  696.81  696.79

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  6.86 WATERSHED INCHES;    2747 CFS-HRS;     227.0 ACRE-FEET.
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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROPERTY NORTH OF THE EAST-WEST TOLLWAY (JRB 11/1/95 FILE: 8932.04TEST
12:29:30                    PASS   5   JOB NO.   1                      PAGE  30


    DURATION(HRS)   6     12     18     24     30     36     42     48
    FLOW(CFS)      30     29     29     28     27     25     23     21

    DURATION(HRS)  52
    FLOW(CFS)      19 TRUNCATED

 --- STRUCTURE 39, ALTERNATE  0, STORM 15, HYDROGRAPH ADDED TO READHD FILE ---


EXECUTIVE CONTROL  ENDCMP    COMPUTATIONS COMPLETED FOR PASS   5
```

TR20 ---------- SCS -
001 CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE VERSION
04/19/** PROPERTY NORTH OF THE EAST-WEST TOLLWAY (JRB 11/1/95 FILE: 8932.04TEST
12:29:30 SUMMARY, JOB NO. 1 PAGE 31

SUMMARY TABLE 1

SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.
A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:
F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED HYDROGRAPH

XSECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RUNOFF AMOUNT (IN)	PEAK DISCHARGE ELEVATION (FT)	TIME (HR)	RATE (CFS)	RATE (CSM)
RAINFALL OF 7.58 inches AND 24.00 hr DURATION, BEGINS AT .0 hrs.							
RAINTABLE NUMBER 3, ARC 2							
MAIN TIME INCREMENT 1.000 HOURS							
ALTERNATE 0 STORM 11							
XSECTION 91	RUNOFF	.09	4.64	---	15.55	37	411.1
XSECTION 92	RUNOFF	.13	5.25	---	15.66	57	438.5
XSECTION 93	ADDHYD	.22	5.01	---	15.62	94	427.3
XSECTION 94	RUNOFF	.02	3.54	---	15.75	7	350.0
STRUCTURE 11	RESVOR	.02	3.55	741.63	16.29	6	300.0
XSECTION 95	ADDHYD	.24	4.85	---	15.65	100	416.7
XSECTION 96	RUNOFF	.01	7.21	---	14.70	5	500.0
XSECTION 97	ADDHYD	.25	4.93	---	15.59	104	416.0
XSECTION 10	RUNOFF	.03	6.00	---	14.76	13	433.3
XSECTION 98	ADDHYD	.28	5.03	---	15.43	115	410.7
STRUCTURE 6	RESVOR	.28	5.10	712.50	15.69	114	407.1
XSECTION 99	RUNOFF	.15	6.00	---	14.76	77	513.3
XSECTION 90	ADDHYD	.43	5.41	---	15.26	186	432.6
XSECTION 17	RUNOFF	.11	6.18	---	14.77	57	518.2
XSECTION 13	ADDHYD	.54	5.56	---	15.15	241	446.3
STRUCTURE 7	RESVOR	.54	3.44	706.35	18.61T	115T	213.0
XSECTION 49	RUNOFF	.00	6.23	---	14.74T	1T********	
XSECTION 50	ADDHYD	.54	3.46	---	18.59T	115T	213.0
XSECTION 24	RUNOFF	.01	6.31	---	14.74	8	800.0
XSECTION 17	ADDHYD	.56	3.53	---	18.47T	119T	212.5
XSECTION 19	RUNOFF	.06	6.34	---	14.75	32	533.3
XSECTION 15	ADDHYD	.62	3.81	---	18.20T	132T	212.9
STRUCTURE 39	RESVOR	.62	2.89	698.38	20.91T	107T	172.6

TR20 ---------- SCS -
001 CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE VERSION
04/19/** PROPERTY NORTH OF THE EAST-WEST TOLLWAY (JRB 11/1/95 FILE: 8932.04TEST
12:29:30 SUMMARY, JOB NO. 1 PAGE 32

SUMMARY TABLE 1

SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.
A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:
F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED HYDROGRAPH

XSECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RUNOFF AMOUNT (IN)	PEAK DISCHARGE ELEVATION (FT)	TIME (HR)	RATE (CFS)	RATE (CSM)
RAINFALL OF 8.16 inches AND 48.00 hr DURATION, BEGINS AT .0 hrs.							
RAINTABLE NUMBER 4, ARC 2							
ALTERNATE 0 STORM 12							
XSECTION 91	RUNOFF	.09	5.19	---	40.73	22	244.4
XSECTION 92	RUNOFF	.13	5.75	---	40.84	32	246.2
XSECTION 93	ADDHYD	.22	5.51	---	40.80	54	245.5
XSECTION 94	RUNOFF	.02	4.00	---	42.39	4	200.0
STRUCTURE 11	RESVOR	.02	4.00	740.49	42.50	4	200.0
XSECTION 95	ADDHYD	.24	5.38	---	40.90	58	241.7
XSECTION 96	RUNOFF	.01	7.96	---	39.50	2	200.0
XSECTION 97	ADDHYD	.25	5.47	---	40.87	60	240.0
XSECTION 10	RUNOFF	.03	6.65	---	39.50	7	233.3
XSECTION 98	ADDHYD	.28	5.58	---	40.77	67	239.3
STRUCTURE 6	RESVOR	.28	5.59	711.82	42.74	64	228.6
XSECTION 99	RUNOFF	.15	6.65	---	39.50	43	286.7
XSECTION 90	ADDHYD	.43	5.97	---	42.55	104	241.9
XSECTION 17	RUNOFF	.11	6.78	---	39.74	30	272.7
XSECTION 13	ADDHYD	.54	6.14	---	42.53	133	246.3
STRUCTURE 7	RESVOR	.54	3.96	706.19	45.05T	100T	185.2
XSECTION 49	RUNOFF	.00	6.89	---	40.00R	1R********	
XSECTION 50	ADDHYD	.54	3.97	---	45.05T	100T	185.2
XSECTION 24	RUNOFF	.01	7.01	---	39.50	4	400.0
XSECTION 17	ADDHYD	.56	4.05	---	45.05T	103T	183.9
XSECTION 19	RUNOFF	.06	7.04	---	39.57	17	283.3
XSECTION 15	ADDHYD	.62	4.35	---	45.06T	113T	182.3

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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROPERTY NORTH OF THE EAST-WEST TOLLWAY (JRB 11/1/95 FILE: 8932.04TEST
12:29:30                    SUMMARY, JOB NO.   1                        PAGE  33
```

SUMMARY TABLE 1

SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.
A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:
F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED HYDROGRAPH

XSECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RUNOFF AMOUNT (IN)	PEAK DISCHARGE ELEVATION (FT)	PEAK DISCHARGE TIME (HR)	PEAK DISCHARGE RATE (CFS)	PEAK DISCHARGE RATE (CSM)
ALTERNATE 0 STORM 12							
STRUCTURE 39	RESVOR	.62	3.42	698.39	47.72T	107T	172.6
RAINFALL OF 8.78 inches AND 72.00 hr DURATION, BEGINS AT .0 hrs.							
ALTERNATE 0 STORM 13							
XSECTION 91	RUNOFF	.09	5.75	---	60.52	16	177.8
XSECTION 92	RUNOFF	.13	6.35	---	60.58	24	184.6
XSECTION 93	ADDHYD	.22	6.10	---	60.56	40	181.8
XSECTION 94	RUNOFF	.02	4.53	---	61.00T	3T	150.0
STRUCTURE 11	RESVOR	.02	4.51	739.99	60.00	3	150.0
XSECTION 95	ADDHYD	.24	5.97	---	60.53	43	179.2
XSECTION 96	RUNOFF	.01	8.54	---	59.00	2	200.0
XSECTION 97	ADDHYD	.25	6.05	---	60.53	44	176.0
XSECTION 10	RUNOFF	.03	7.32	---	59.00F	5F	166.7
XSECTION 98	ADDHYD	.28	6.17	---	60.52	50	178.6
STRUCTURE 6	RESVOR	.28	6.17	710.61	61.87	48	171.4
XSECTION 99	RUNOFF	.15	7.32	---	59.50	30	200.0
XSECTION 90	ADDHYD	.43	6.57	---	61.13	78	181.4
XSECTION 17	RUNOFF	.11	7.39	---	60.50	22	200.0
XSECTION 13	ADDHYD	.54	6.72	---	60.98	100	185.2
STRUCTURE 7	RESVOR	.54	4.63	705.98	65.49T	80T	148.1
XSECTION 49	RUNOFF	.00	4.63	---	.00	0	********
XSECTION 50	ADDHYD	.54	4.64	---	65.48T	81T	150.0
XSECTION 24	RUNOFF	.01	7.69	---	62.66	3	300.0
XSECTION 17	ADDHYD	.56	4.72	---	65.43T	83T	148.2
XSECTION 19	RUNOFF	.06	7.61	---	59.50	12	200.0
XSECTION 15	ADDHYD	.62	5.01	---	64.98T	91T	146.8
STRUCTURE 39	RESVOR	.62	4.09	697.98	67.31T	86T	138.7


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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROPERTY NORTH OF THE EAST-WEST TOLLWAY (JRB 11/1/95 FILE: 8932.04TEST
12:29:30                    SUMMARY, JOB NO.   1                        PAGE  34
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SUMMARY TABLE 1

SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.
A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:
F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED HYDROGRAPH

XSECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RUNOFF AMOUNT (IN)	PEAK DISCHARGE ELEVATION (FT)	PEAK DISCHARGE TIME (HR)	PEAK DISCHARGE RATE (CFS)	PEAK DISCHARGE RATE (CSM)
RAINFALL OF 9.96 inches AND 120.00 hr DURATION, BEGINS AT .0 hrs.							
ALTERNATE 0 STORM 14							
XSECTION 91	RUNOFF	.09	6.83	---	100.50	11	122.2
XSECTION 92	RUNOFF	.13	7.48	---	101.50	17	130.8
XSECTION 93	ADDHYD	.22	7.21	---	100.50	28	127.3
XSECTION 94	RUNOFF	.02	5.53	---	106.50T	2T	100.0
STRUCTURE 11	RESVOR	.02	5.53	739.54	106.51	2	100.0
XSECTION 95	ADDHYD	.24	7.07	---	100.45	30	125.0
XSECTION 96	RUNOFF	.01	9.80	---	106.50	1	100.0
XSECTION 97	ADDHYD	.25	7.16	---	100.45	31	124.0
XSECTION 10	RUNOFF	.03	8.41	---	99.00	4	133.3
XSECTION 98	ADDHYD	.28	7.28	---	100.44	34	121.4
STRUCTURE 6	RESVOR	.28	7.28	709.80	101.58	34	121.4
XSECTION 99	RUNOFF	.15	8.41	---	99.00F	21F	140.0
XSECTION 90	ADDHYD	.43	7.68	---	101.05	55	127.9
XSECTION 17	RUNOFF	.11	8.43	---	99.72	15	136.4
XSECTION 13	ADDHYD	.54	7.84	---	101.05	70	129.6
STRUCTURE 7	RESVOR	.54	6.07	705.70	108.30T	60T	111.1
XSECTION 49	RUNOFF	.00	6.07	---	.00	0	********
XSECTION 50	ADDHYD	.54	6.08	---	108.27T	61T	113.0
XSECTION 24	RUNOFF	.01	8.79	---	100.50	2	200.0
XSECTION 17	ADDHYD	.56	6.15	---	108.15T	62T	110.7
XSECTION 19	RUNOFF	.06	8.81	---	99.00F	8F	133.3
XSECTION 15	ADDHYD	.62	6.42	---	107.87T	70T	112.9
STRUCTURE 39	RESVOR	.62	5.52	697.66	109.24T	66T	106.5

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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROPERTY NORTH OF THE EAST-WEST TOLLWAY (JRB 11/1/95 FILE: 8932.04TEST
12:29:30                    SUMMARY, JOB NO.   1                        PAGE  35
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SUMMARY TABLE 1

SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.
A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:
F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED HYDROGRAPH

XSECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RUNOFF AMOUNT (IN)	PEAK DISCHARGE ELEVATION (FT)	PEAK DISCHARGE TIME (HR)	PEAK DISCHARGE RATE (CFS)	PEAK DISCHARGE RATE (CSM)
RAINFALL OF 11.14 inches AND 240.00 hr DURATION, BEGINS AT .0 hrs.							
ALTERNATE 0 STORM 15							
XSECTION 91	RUNOFF	.09	7.92	---	214.50	6	66.7
XSECTION 92	RUNOFF	.13	8.59	---	202.50	9	69.2
XSECTION 93	ADDHYD	.22	8.31	---	202.35	16	72.7
XSECTION 94	RUNOFF	.02	6.53	---	214.00F	1F	50.0
STRUCTURE 11	RESVOR	.02	6.54	739.10	214.50	1	50.0
XSECTION 95	ADDHYD	.24	8.16	---	202.35	17	70.8
XSECTION 96	RUNOFF	.01	10.26	---	196.00R	1R	100.0
XSECTION 97	ADDHYD	.25	8.23	---	202.41	18	72.0
XSECTION 10	RUNOFF	.03	8.67	---	199.00F	2F	66.7
XSECTION 98	ADDHYD	.28	8.27	---	202.28	20	71.4
STRUCTURE 6	RESVOR	.28	8.27	708.96	202.71	20	71.4
XSECTION 99	RUNOFF	.15	8.67	---	199.00F	12F	80.0
XSECTION 90	ADDHYD	.43	8.41	---	202.52	31	72.1
XSECTION 17	RUNOFF	.11	9.73	---	202.50	9	81.8
XSECTION 13	ADDHYD	.54	8.68	---	202.51	40	74.1
STRUCTURE 7	RESVOR	.54	7.44	705.01	219.06T	26T	48.1
XSECTION 49	RUNOFF	.00	7.44	---	.00	0	********
XSECTION 50	ADDHYD	.54	7.44	---	219.06T	26T	48.1
XSECTION 24	RUNOFF	.01	8.15	---	214.50	1	100.0
XSECTION 17	ADDHYD	.56	7.46	---	214.73T	27T	48.2
XSECTION 19	RUNOFF	.06	9.99	---	203.00	5	83.3
XSECTION 15	ADDHYD	.62	7.72	---	214.73T	31T	50.0
STRUCTURE 39	RESVOR	.62	6.86	697.09	215.52T	31T	50.0


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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROPERTY NORTH OF THE EAST-WEST TOLLWAY (JRB 11/1/95 FILE: 8932.04TEST
12:29:30                    SUMMARY, JOB NO.   1                        PAGE  36
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SUMMARY TABLE 3

STORM DISCHARGES (CFS) AT XSECTIONS AND STRUCTURES FOR ALL ALTERNATES
QUESTION MARK (?) AFTER: OUTFLOW PEAK - RISING TRUNCATED HYDROGRAPH.

XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS..... 11	12	13	14	15
STRUCTURE 39	.62					
ALTERNATE 0		107	107	86	66	31
STRUCTURE 11	.02					
ALTERNATE 0		6	4	3	2	1
STRUCTURE 7	.54					
ALTERNATE 0		115	100	80	60	26
STRUCTURE 6	.28					
ALTERNATE 0		114	64	48	34	20
XSECTION 10	.03					
ALTERNATE 0		13	7	5	4	2
XSECTION 13	.54					
ALTERNATE 0		241	133	100	70	40
XSECTION 15	.62					
ALTERNATE 0		132	113	91	70	31
XSECTION 17	.56					
ALTERNATE 0		119	103	83	62	27
XSECTION 19	.06					
ALTERNATE 0		32	17	12	8	5
XSECTION 24	.01					
ALTERNATE 0		8	4	3	2	1
XSECTION 49	.00					
ALTERNATE 0		1	1?	0	0	0
XSECTION 50	.54					
ALTERNATE 0		115	100	81	61	26
XSECTION 90	.43					

ALTERNATE	0		186	104	78	55	31
XSECTION	91	.09					

SUMMARY TABLE 3

STORM DISCHARGES (CFS) AT XSECTIONS AND STRUCTURES FOR ALL ALTERNATES
QUESTION MARK (?) AFTER: OUTFLOW PEAK - RISING TRUNCATED HYDROGRAPH.

XSECTION/ STRUCTURE ID		DRAINAGE AREA (SQ MI)	STORM NUMBERS..... 11	12	13	14	15
XSECTION	91	.09					
ALTERNATE	0		37	22	16	11	6
XSECTION	92	.13					
ALTERNATE	0		57	32	24	17	9
XSECTION	93	.22					
ALTERNATE	0		94	54	40	28	16
XSECTION	94	.02					
ALTERNATE	0		7	4	3	2	1
XSECTION	95	.24					
ALTERNATE	0		100	58	43	30	17
XSECTION	96	.01					
ALTERNATE	0		5	2	2	1	1?
XSECTION	97	.25					
ALTERNATE	0		104	60	44	31	18
XSECTION	98	.28					
ALTERNATE	0		115	67	50	34	20
XSECTION	99	.15					
ALTERNATE	0		77	43	30	21	12

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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROPERTY NORTH OF THE EAST-WEST TOLLWAY (JRB 11/1/95 FILE: 8932.04TEST



END OF  1 JOBS IN THIS RUN









                    SCS  TR-20,  VERSION 2.04TEST
                           001       FILES

     INPUT  = C:\TR20\PRB.DAT                        , GIVEN DATA FILE
     OUTPUT = C:\TR20\PRB.OUT                        , DATED 04/19/**,12:29:30

              FILES GENERATED - DATED 04/19/**,12:29:30

    FILE C:\TR20\PRB.TRD CONTAINS READHD INFORMATION

    FILE C:\TR20\PRB.TMG CONTAINS MESSAGE + WARNING INFORMATION


           TOTAL NUMBER OF WARNINGS = 104,  MESSAGES =  35

                       JOB ENDED AT 12:29:30
                    *** TR-20 RUN COMPLETED ***
```

STORM SEWER CALCULATIONS

STORM SEWER COMPUTATION SHEET

Project: ***Riverview West***
Engineer: ***CN***

Date: ***04/16/18***
Revised:

Design Storm: ***10 YR***
Manning's n: ***0.0130***
Minimun Velocity (fps) ***3.0***

PIPE	STRUCTURE		PIPE LENGTH	Drainage Area A (ACRES)		RUNOFF COEFF. "C"	A x C		FLOW TIME (MIN)		INTENSITY "I"	C x I x A	PIPE DIAMETER (in)	CAPACITY FULL	VELOCITY (fps)	INVERT		PIPE SLOPE (ft/ft)
	UPSTREAM	DOWNSTREAM		INCREMENT	TOTAL		INCREMENT	TOTAL	TO UPPER END	IN SECTION						UPPER END	LOWER END	
P1	1	2	93	0.34	0.34	0.90	0.31	0.31	5.00	0.52	6.48	1.98	18	5.26	2.97	695.57	695.34	0.0025
P2	2	4	69	0.16	0.50	0.90	0.14	0.45	5.52	0.39	6.42	2.89	18	5.26	2.97	695.34	695.17	0.0025
P3	3	4	93	0.20	0.20	0.90	0.18	0.18	5.00	0.52	6.48	1.17	15	3.66	2.98	695.72	695.42	0.0032
P4	4	6	67	0.10	0.80	0.90	0.09	0.72	5.91	0.36	6.37	4.59	24	9.60	3.06	694.67	694.55	0.0018
P5	5	6	24	0.09	0.09	0.90	0.08	0.08	5.00	0.13	6.48	0.52	30	14.78	3.01	694.05	694.02	0.0013
P6	6	7	24	0.03	0.92	0.90	0.02	0.82	6.27	0.13	6.33	5.22	30	14.78	3.01	694.02	693.99	0.0013
P7	7	8	72	0.03	0.94	0.90	0.03	0.85	6.41	0.40	6.31	5.36	30	14.78	3.01	693.99	693.90	0.0013
P8	8	9	70	0.06	1.00	0.90	0.05	0.90	6.81	0.39	6.26	5.63	30	14.78	3.01	693.90	693.81	0.0013
P9	9	10	69	0.02	1.02	0.90	0.02	0.92	7.19	0.38	6.22	5.73	30	14.78	3.01	693.81	693.72	0.0013
P10	10	17	63	0.07	1.09	0.90	0.06	0.98	7.58	0.34	6.17	6.05	36	22.08	3.12	693.22	693.15	0.0011
P14	14	15	77	0.09	0.09	0.90	0.08	0.08	5.00	0.43	6.48	0.52	15	3.66	2.98	695.48	695.23	0.0032
P15	15	16	77	0.12	0.21	0.90	0.11	0.19	5.43	0.43	6.43	1.22	18	5.26	2.97	694.98	694.79	0.0025
P16	16	17	77	0.12	0.33	0.90	0.11	0.30	5.86	0.42	6.38	1.89	24	9.60	3.06	694.29	694.15	0.0018
P11	17	11	73	0.12	1.54	0.90	0.11	1.39	7.92	0.39	6.13	8.50	36	22.08	3.12	693.15	693.07	0.0011
P12	11	12	33	0.05	1.59	0.90	0.05	1.43	8.31	0.18	6.08	8.70	36	22.08	3.12	693.07	693.03	0.0011
P13	12	13	23	0.05	1.64	0.90	0.05	1.48	8.49	0.12	6.06	8.94	36	22.08	3.12	693.03	693.00	0.0011
P17	18	19	77	0.13	0.13	0.90	0.12	0.12	5.00	0.42	6.48	0.76	12	2.37	3.02	697.60	697.26	0.0044
P18	19	20	77	0.18	0.31	0.90	0.16	0.28	5.42	0.45	6.43	1.79	15	3.66	2.88	697.01	696.76	0.0032
P19	20	21	77	0.18	0.49	0.90	0.16	0.44	5.87	0.43	6.38	2.81	18	5.26	2.97	696.51	696.32	0.0025
P20	21	22	77	0.19	0.68	0.90	0.17	0.61	6.30	0.42	6.32	3.87	24	9.60	3.06	695.82	695.68	0.0018
P21	22	23	23	0.01	0.69	0.90	0.01	0.62	6.72	0.13	6.27	3.89	24	9.60	3.06	695.68	695.64	0.0018
P22	23	24	24	0.09	0.78	0.90	0.08	0.70	6.85	0.13	6.26	4.39	24	9.60	3.06	693.04	693.00	0.0018
P41	66	67	74	0.47	0.47	0.90	0.42	0.42	5.00	0.37	6.48	2.74	15	4.09	3.33	695.43	695.13	0.0040
P42	67	68	48	0.23	0.70	0.90	0.21	0.63	5.37	0.24	6.44	4.06	15	4.09	3.33	695.13	694.94	0.0040
P43	68	28	70	0.00	0.70	0.90	0.00	0.63	5.61	0.39	6.41	4.04	18	5.36	3.03	694.69	694.51	0.0026
P25	27	28	24	0.07	0.07	0.90	0.06	0.06	5.00	0.12	6.48	0.41	12	2.52	3.22	698.51	698.39	0.0050
P26	28	29	85	0.14	0.91	0.90	0.13	0.82	6.00	0.46	6.36	5.21	24	9.60	3.06	694.01	693.86	0.0018
P23	25	26	79	0.62	0.62	0.90	0.56	0.56	5.00	0.44	6.48	3.62	15	3.66	2.98	695.06	694.81	0.0032
P24	26	29	63	0.00	0.62	0.90	0.00	0.56	5.44	0.35	6.43	3.59	15	3.66	2.98	694.81	694.61	0.0032
P27	30	29	24	0.07	0.07	0.90	0.06	0.06	5.00	0.12	6.48	0.41	12	2.52	3.22	698.50	698.38	0.0050
P28	29	31	170	0.21	1.81	0.90	0.19	1.63	6.46	0.94	6.30	10.26	30	14.79	3.01	693.36	693.14	0.0013
P29	32	31	24	0.06	0.06	0.90	0.05	0.05	5.00	0.12	6.48	0.35	12	2.52	3.22	698.15	698.03	0.0050
P33	31	36	34	0.14	2.01	0.90	0.13	1.81	7.40	0.19	6.19	11.20	30	14.79	3.01	693.14	693.10	0.0013
P30	33	34	80	0.31	0.31	0.90	0.28	0.28	5.00	0.45	6.48	1.81	15	3.66	2.98	693.54	693.28	0.0032
P31	35	34	80	0.16	0.47	0.90	0.14	0.42	5.45	0.45	6.43	2.72	15	3.66	2.98	693.54	693.28	0.0032
P32	34	34A	19	0.23	0.70	0.90	0.21	0.63	5.89	0.14	6.37	4.01	18	4.07	2.30	693.03	693.00	0.0015
P34	36	38	12	0.00	2.71	0.90	0.00	2.44	7.59	0.06	6.17	15.05	30	15.88	3.24	693.10	693.08	0.0014
P35	37	38	24	0.02	0.02	0.90	0.02	0.02	7.65	0.12	6.16	0.11	12	2.52	3.22	697.75	697.63	0.0050
P36	39	40	24	0.05	0.05	0.90	0.05	0.05	5.00	0.12	6.48	0.29	12	2.52	3.22	697.05	696.94	0.0044
P37	40	42	20	0.05	0.10	0.90	0.05	0.09	5.12	0.10	6.46	0.58	15	2.52	3.22	694.63	694.56	0.0033
P38	41	42	24	0.03	0.03	0.90	0.03	0.03	5.00	0.12	6.48	0.17	12	2.52	3.22	697.05	696.94	0.0044

P39	42	38	70	0.03	0.16	0.90	0.03	0.14	5.23	0.36	6.45	0.93	15	2.52	3.22	694.56	694.33	0.0033
P40	38	43	49	0.04	2.93	0.90	0.04	2.64	7.77	0.22	6.15	16.22	30	18.34	3.74	693.08	693.00	0.0016
P78A	44	45	78	0.18	0.18	0.90	0.16	0.16	5.00	0.40	6.48	1.05	12	2.52	3.22	695.39	695.00	0.0050
P80	50	51	54	0.10	0.10	0.45	0.05	0.05	5.00	0.30	6.48	0.29	24	9.60	3.05	695.16	695.06	0.0018
P81	51	52	34	0.13	0.23	0.45	0.06	0.10	5.30	0.19	6.44	0.67	24	9.60	3.05	695.06	695.00	0.0018
P82	46	47	31	0.41	0.82	0.90	0.37	0.74	5.00	0.17	6.48	4.78	18	5.26	2.97	695.00	694.92	0.0025
P83	47	48	33	0.03	0.85	0.90	0.03	0.77	5.17	0.19	6.46	4.94	18	5.26	2.97	694.92	694.84	0.0025
P84	48	49	46	0.04	0.89	0.90	0.04	0.80	5.36	0.26	6.44	5.16	18	5.26	2.97	693.12	693.00	0.0025
P129	53	54	80	0.65	0.65	0.90	0.59	0.59	5.00	0.27	6.48	3.79	12	3.83	4.87	699.70	699.00	0.0115
P130	54	55	70	0.00	0.65	0.90	0.00	0.59	5.27	0.24	6.45	3.77	15	3.83	4.87	693.90	693.00	0.0115
P114	56	57	31	0.21	0.21	0.90	0.19	0.19	5.00	0.17	6.48	1.22	12	2.37	3.02	700.00	697.05	0.0044
P115	57	58	27	0.01	0.22	0.90	0.01	0.20	5.17	0.14	6.46	1.28	18	2.52	3.22	696.76	696.69	0.0025
P116	58	59	37	0.05	0.27	0.90	0.05	0.24	5.31	0.19	6.44	1.56	24	2.52	3.22	696.19	696.12	0.0018
P110	60	61	12	0.05	0.05	0.90	0.05	0.05	5.00	0.07	6.48	0.29	12	2.37	3.02	700.00	696.95	0.0044
P111	61	62	27	0.05	0.10	0.90	0.05	0.09	5.07	0.15	6.47	0.58	24	9.59	3.06	695.95	695.90	0.0018
P112	62	63	38	0.13	0.23	0.90	0.12	0.21	5.21	0.21	6.45	1.34	24	9.59	3.06	695.90	695.83	0.0018
P113	63	59	34	0.02	0.25	0.90	0.02	0.23	5.50	0.19	6.42	1.44	24	9.59	3.06	695.83	695.77	0.0018
P117	59	64	84	0.07	0.59	0.90	0.06	0.53	5.69	0.45	6.40	3.40	36	22.09	3.12	695.27	695.17	0.0011
P118	64	65	45	0.00	0.59	0.90	0.00	0.53	6.14	0.24	6.34	3.37	36	22.09	3.12	693.05	693.00	0.0011

Intensities used are Bulletin 71

Pipes designed to pass 100-YR Event

Pipes Part Quick Start Application

STORM SEWER COMPUTATION SHEET

Project: ***Riverview West***
Engineer: ***CN***

Date: ***04/16/18***
Revised:

Design Storm: ***10 YR***
Manning's n: ***0.0130***
Minimun Velocity (fps) ***3.0***

PIPE	STRUCTURE		PIPE LENGTH	Drainage Area A (ACRES)		RUNOFF COEFF. "C"	A x C		FLOW TIME (MIN)		INTENSITY "I"	C x I x A	PIPE DIAMETER (in)	CAPACITY FULL	VELOCITY (fps)	INVERT		PIPE SLOPE (ft/ft)
	UPSTREAM	DOWNSTREAM		INCREMENT	TOTAL		INCREMENT	TOTAL	TO UPPER END	IN SECTION						UPPER END	LOWER END	
P85	106	107	27	0.30	0.30	0.90	0.27	0.27	5.00	0.16	6.48	1.75	12	2.26	2.88	696.92	696.81	0.0040
P86	107	108	44	0.11	0.41	0.90	0.10	0.37	5.16	0.36	6.46	2.38	15	2.51	2.04	693.07	693.00	0.0015
P87	109	110	27	0.04	0.04	0.90	0.04	0.04	5.00	0.15	6.48	0.23	12	2.37	3.02	697.63	697.51	0.0044
P87A	110	110A	40	0.07	0.11	0.90	0.06	0.10	5.15	0.22	6.47	0.64	12	2.37	3.02	697.51	697.33	0.0044
P88	110A	111	80	0.03	0.14	0.90	0.03	0.13	5.37	0.45	6.44	0.81	15	3.66	2.98	693.26	693.00	0.0032
P89	112	113	27	0.04	0.04	0.90	0.04	0.04	5.00	0.15	6.48	0.23	12	2.37	3.02	697.63	697.51	0.0044
P89A	113	113A	40	0.10	0.14	0.90	0.09	0.13	5.15	0.22	6.47	0.82	12	2.37	3.02	697.51	697.33	0.0044
P90	113A	114	80	0.03	0.17	0.90	0.03	0.15	5.37	0.45	6.44	0.99	15	3.66	2.98	693.26	693.00	0.0032
P91	115	116	27	0.10	0.10	0.90	0.09	0.09	5.00	0.15	6.48	0.58	12	2.37	3.02	696.86	696.74	0.0044
P91A	116	116A	40	0.38	0.48	0.90	0.34	0.43	5.15	0.22	6.47	2.80	15	3.66	2.98	696.49	696.36	0.0032
P92	116A	117	80	0.04	0.52	0.90	0.04	0.47	5.37	0.44	6.44	3.01	24	9.60	3.06	693.14	693.00	0.0018
P93	118	119	12	0.07	0.07	0.90	0.06	0.06	5.00	0.07	6.48	0.41	12	2.37	3.02	700.00	697.63	0.0044
P94	119	120	27	0.01	0.08	0.90	0.01	0.07	5.07	0.15	6.48	0.47	12	2.37	3.02	697.63	697.51	0.0044
P94A	120	120A	40	0.02	0.10	0.90	0.02	0.09	5.22	0.22	6.45	0.58	12	2.37	3.02	697.51	697.33	0.0044
P95	120A	121	80	0.03	0.13	0.90	0.03	0.12	5.44	0.45	6.43	0.75	15	3.66	2.98	693.26	693.00	0.0032
P96	122	123	12	0.11	0.11	0.90	0.10	0.10	5.00	0.07	6.48	0.64	12	2.37	3.02	700.00	697.31	0.0044
P97	123	124	27	0.10	0.21	0.90	0.09	0.19	5.07	0.15	6.48	1.22	15	3.66	2.98	697.31	697.17	0.0032
P98	124	125	40	0.37	0.58	0.90	0.33	0.52	5.22	0.22	6.45	3.37	18	5.26	2.97	697.17	696.97	0.0025
P99	125	126	80	0.04	0.62	0.90	0.04	0.56	5.44	0.44	6.43	3.59	24	9.60	3.06	693.40	693.00	0.0018
P100	127	128	12	0.10	0.10	0.90	0.09	0.09	5.00	0.07	6.48	0.58	12	2.37	3.02	700.00	696.99	0.0044
P101	128	129	27	0.08	0.18	0.90	0.07	0.16	5.07	0.15	6.48	1.05	15	3.66	2.98	696.74	696.65	0.0032
P102	129	130	40	0.33	0.51	0.90	0.30	0.46	5.22	0.22	6.45	2.96	18	5.26	2.97	696.40	696.30	0.0025
P103	130	131	80	0.03	0.54	0.90	0.03	0.49	5.44	0.44	6.43	3.12	24	9.60	3.06	693.14	693.00	0.0018
P104	132	133	12	0.03	0.03	0.90	0.03	0.03	5.00	0.07	6.48	0.17	12	2.37	3.02	700.00	697.00	0.0044
P105	133	134	27	0.01	0.04	0.90	0.01	0.04	5.07	0.15	6.48	0.23	15	3.66	2.98	696.75	696.66	0.0032
P108	137	138	27	0.05	0.05	0.90	0.05	0.05	5.00	0.15	6.48	0.29	15	3.66	2.98	696.75	696.66	0.0032
P109	138	134	60	0.16	0.21	0.90	0.14	0.19	5.15	0.34	6.47	1.22	18	5.26	2.97	696.41	696.26	0.0025
P106	134	135	40	0.03	0.28	0.90	0.03	0.25	5.49	0.22	6.42	1.62	18	5.26	2.97	696.26	696.16	0.0025
P107	135	136	80	0.03	0.31	0.90	0.03	0.28	5.71	0.44	6.39	1.78	24	9.60	3.06	693.14	693.00	0.0018
P119	139	140	27	0.07	0.07	0.90	0.06	0.06	5.00	0.16	6.48	0.41	12	2.26	2.88	697.32	697.21	0.0040
P119A	140	140A	40	0.25	0.32	0.90	0.23	0.29	5.16	0.23	6.47	1.86	12	2.26	2.88	697.21	697.05	0.0040
P120	140A	141	80	0.04	0.36	0.90	0.04	0.32	5.39	0.48	6.43	2.08	15	3.54	2.79	693.24	693.00	0.0030
P121	142	143	30	0.09	0.09	0.90	0.08	0.08	5.00	0.17	6.48	0.52	12	2.37	3.02	697.77	697.64	0.0044
P122	143	144	30	0.28	0.37	0.90	0.25	0.33	5.17	0.17	6.46	2.15	12	2.37	3.02	697.64	697.31	0.0044
P123	144	145	90	0.05	0.42	0.90	0.05	0.38	5.33	0.50	6.44	2.43	15	3.66	2.98	693.29	693.00	0.0032

Intensities used are Bulletin 71

Pipes designed to pass 100-YR Event

Pipes Part Quick Start Application

STORM SEWER COMPUTATION SHEET

Project: ***Riverview West***
Engineer: ***CN***

Date: ***04/16/18***
Revised:

Design Storm: ***10 YR***
Manning's n: ***0.0130***
Minimun Velocity (fps) ***3.0***

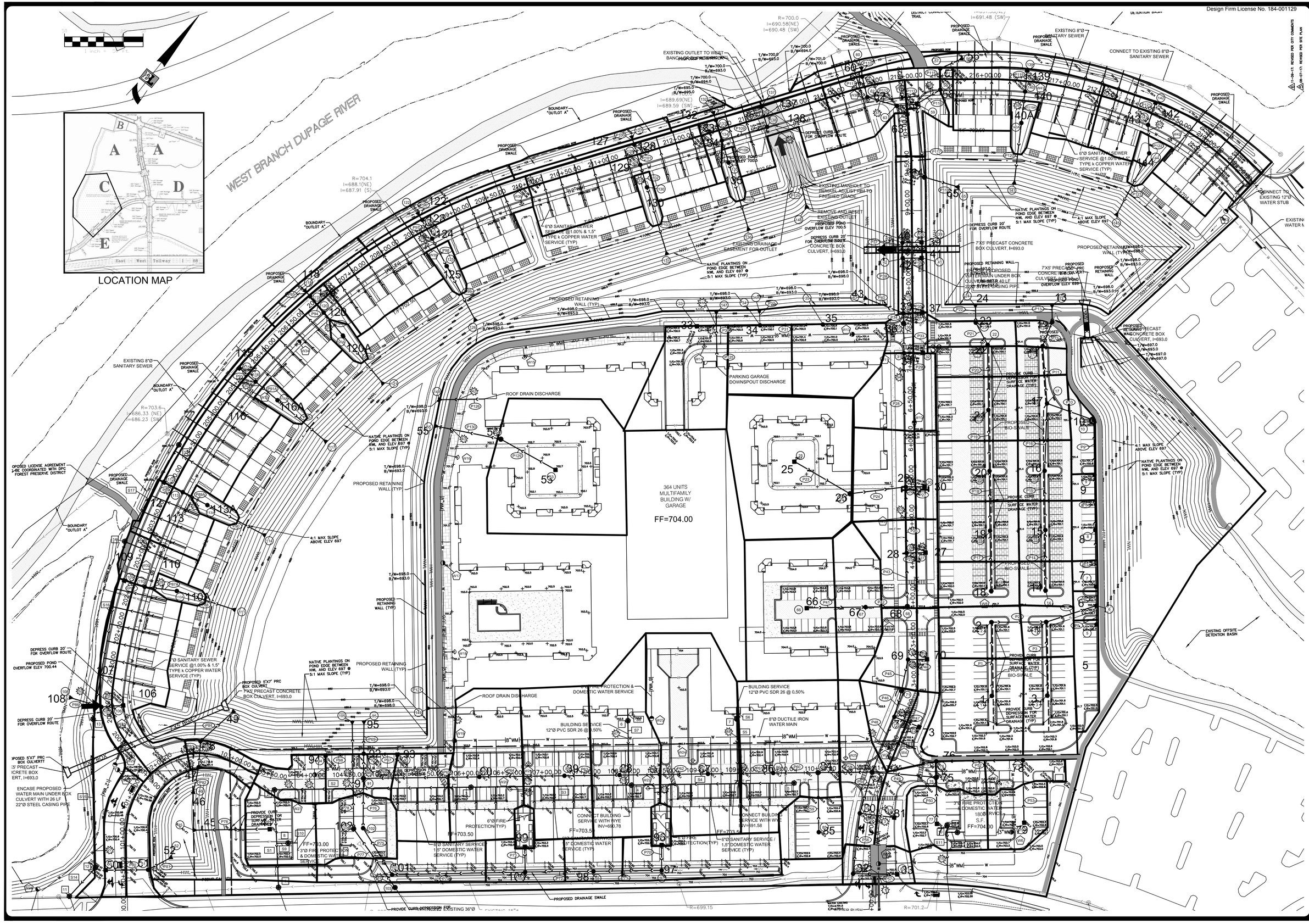
PIPE	STRUCTURE		PIPE LENGTH	Drainage Area A (ACRES)		RUNOFF COEFF. "C"	A x C		FLOW TIME (MIN)		INTENSITY "I"	C x I x A	PIPE DIAMETER (in)	CAPACITY FULL	VELOCITY (fps)	INVERT		PIPE SLOPE (ft/ft)
	UPSTREAM	DOWNSTREAM		INCREMENT	TOTAL		INCREMENT	TOTAL	TO UPPER END	IN SECTION						UPPER END	LOWER END	
P44	70	69	24	0.07	0.07	0.90	0.06	0.06	5.00	0.13	6.48	0.41	12	2.36	3.02	698.50	698.39	0.0044
P45	69	71	37	0.12	0.19	0.90	0.11	0.17	5.13	0.21	6.46	1.10	24	9.04	2.88	695.03	694.98	0.0016
P46	71	72	31	0.00	0.19	0.90	0.00	0.17	5.35	0.18	6.44	1.10	24	9.04	2.88	694.98	694.93	0.0016
P47	73	72	35	0.07	0.07	0.90	0.06	0.06	5.00	0.19	6.48	0.41	12	2.36	3.02	698.51	698.35	0.0044
P48	72	74	75	0.11	0.37	0.90	0.10	0.33	5.53	0.43	6.42	2.14	24	9.04	2.88	694.93	694.81	0.0016
P53	79	78	79	0.15	0.15	0.90	0.14	0.14	5.00	0.44	6.48	0.87	15	3.66	2.98	699.05	698.79	0.0032
P52	78	76	110	0.07	0.22	0.90	0.06	0.20	5.44	0.62	6.43	1.27	18	5.26	2.97	698.54	698.26	0.0025
P51	76	75	18	0.06	0.28	0.90	0.05	0.25	6.06	0.10	6.36	1.60	18	5.26	2.97	698.26	698.21	0.0025
P50	77	75	56	0.20	0.20	0.90	0.18	0.18	5.00	0.29	6.48	1.17	12	2.52	3.22	699.05	698.77	0.0050
P49	75	74	79	0.00	0.48	0.90	0.00	0.43	6.16	0.43	6.35	2.74	24	9.60	3.06	694.95	694.81	0.0018
P57	83	82	57	0.05	0.05	0.90	0.05	0.05	5.00	0.31	6.48	0.29	24	9.60	3.06	697.50	697.39	0.0018
P56	82	80	94	0.05	0.10	0.90	0.05	0.09	5.31	0.51	6.44	0.58	24	9.60	3.06	697.39	697.22	0.0018
P55	81	80	43	0.10	0.10	0.90	0.09	0.09	5.00	0.22	6.48	0.58	12	2.52	3.22	698.44	698.22	0.0050
P54	80	74	36	0.21	0.41	0.90	0.19	0.37	5.82	0.19	6.38	2.35	36	22.09	3.12	696.22	696.18	0.0011
P58	74	84	63	0.00	1.26	0.90	0.00	1.13	6.59	0.34	6.29	7.13	36	22.09	3.12	693.81	693.74	0.0011
P59	85	84	73	0.14	0.14	0.90	0.13	0.13	5.00	0.33	6.48	0.82	12	2.52	3.73	699.15	698.78	0.0050
P60	84	86	54	0.00	1.40	0.90	0.00	1.26	6.93	0.29	6.25	7.88	36	22.09	3.12	693.74	693.68	0.0011
P61	86	87	83	0.49	1.89	0.90	0.44	1.70	7.22	0.44	6.21	10.56	36	22.90	3.12	693.68	693.59	0.0011
P62	87	88	113	0.60	2.49	0.90	0.54	2.24	7.66	0.60	6.16	13.80	36	22.09	3.12	693.59	693.47	0.0011
P63	88	89	70	0.40	2.89	0.90	0.36	2.60	8.27	0.37	6.09	15.84	36	22.09	3.12	693.47	693.39	0.0011
P64	89	90	108	0.37	3.26	0.90	0.33	2.93	8.64	0.58	6.04	17.72	36	22.09	3.12	693.39	693.27	0.0011
P65	90	91	147	0.38	3.64	0.90	0.34	3.28	9.22	0.79	5.97	19.56	36	22.09	3.12	693.27	693.11	0.0011
P70	96	97	32	0.03	0.03	0.90	0.03	0.03	5.00	0.17	6.48	0.17	12	2.52	3.22	698.50	698.34	0.0050
P71	97	98	87	0.25	0.28	0.90	0.23	0.25	5.17	0.49	6.46	1.63	15	3.66	2.98	698.09	697.81	0.0032
P72	98	100	87	0.09	0.37	0.90	0.08	0.33	5.65	0.49	6.41	2.13	15	3.66	2.98	697.81	697.53	0.0032
P73	99	100	32	0.03	0.03	0.90	0.03	0.03	5.00	0.17	6.48	0.17	12	2.52	3.22	697.94	697.28	0.0050
P74	100	101	169	0.12	0.52	0.90	0.11	0.47	6.14	0.95	6.34	2.97	15	3.66	2.98	697.53	697.31	0.0032
P75	101	102	70	0.20	0.72	0.90	0.18	0.65	7.08	0.39	6.23	4.04	18	5.26	2.97	697.06	696.88	0.0025
P76	102	91	63	0.18	0.90	0.90	0.16	0.81	7.48	0.35	6.18	5.01	18	5.26	2.97	696.88	696.72	0.0025
P66	91	92	31	0.00	4.54	0.90	0.00	4.09	10.01	0.15	5.88	24.03	36	24.91	3.52	693.11	693.07	0.0014
P67	93	92	43	0.18	0.18	0.90	0.16	0.16	5.00	0.24	6.48	1.05	12	2.37	3.02	697.05	696.86	0.0044
P68	94	92	49	0.10	0.10	0.90	0.09	0.09	5.00	0.27	6.48	0.58	12	2.37	3.02	697.05	696.83	0.0044
P69	92	95	42	0.11	4.93	0.90	0.10	4.44	10.16	0.19	5.85	26.64	36	26.64	3.77	693.07	693.00	0.0016

Intensities used are Bulletin 71

Pipes designed to pass 100-YR Event

Pipes Part Quick Start Application

Design Firm License No. 184-001129



JOB NO: 080-020	
FIELD BOOK: N/A	
FIELD BOOK: N/A	
DRAWN BY: MK	
CHECKED BY: KEK	
COMPLETED: 02/22/17	

REVISIONS:
1. 03-09-17: REVISED PER OWNER & CITY COMMENTS
2. 05-09-17: REVISED PER OWNER & CITY COMMENTS
3. 06-26-17: REVISED PER SITE PLAN
4. 07-19-17: REVISED PER SITE PLAN
FILE: I:/080-020 LOT 2 CANTERA SUBAREA C/Engineering/Drawings

RIVERVIEW WEST DEVELOPMENT
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STORM SEWER TRIBUTARY AREA MAP

RIVERVIEW WEST DEVELOPMENT
CITY OF WARRENVILLE, ILLINOIS

SHEET NUMBER
1
OF 1

HGL CALCULATIONS

Hydraulic Grade Line Calculations
Riverview West

Project: Riverview West
Design Storm: 100-Year

	Structure	Outlet WSE	Do	Qo	Lo	Sfo	Hf	Junction Loss												Final H	Inlet WSE	Structure	Rim Elev
								Vo	Ho	Qi	Vi	QiVi	Vi^2/2g	Hi	Angle	HΔ	Ht	1.3 Ht	0.5Ht				
	Culvert Outfall																						
P40	43	698.39	30	28	49	0.16	0.08	5.61	0.12	27.53	5.61	154.40	0.49	0.17	70	0.30	0.59	-	0.30	0.37	**698.76**	**38**	**700.22**
P34	38	698.76	30	26	12	0.14	0.02	5.21	0.11	25.59	5.21	133.40	0.42	0.15	0	0.00	0.25	-	0.13	0.14	**698.91**	**36**	**700.42**
P33	36	698.91	30	19	34	0.13	0.04	3.87	0.06	19.01	3.87	73.62	0.23	0.08	0	0.00	0.14	-	0.07	0.11	**699.02**	**31**	**700.98**
P28	31	699.02	30	17	170	0.13	0.22	3.54	0.05	17.38	3.54	61.54	0.19	0.07	0	0.00	0.12	-	0.06	0.28	**699.30**	**29**	**701.86**
P26	29	699.30	24	9	85	0.18	0.15	2.80	0.03	8.80	2.80	24.65	0.12	0.04	0	0.00	0.07	-	0.04	0.19	**699.49**	**28**	**701.76**
P43	28	699.49	18	7	70	0.26	0.18	3.85	0.06	6.81	3.85	26.24	0.23	0.08	0	0.00	0.14	-	0.07	0.25	**699.74**	**68**	**702.30**
P42	68	699.74	15	7	53	0.36	0.19	5.57	0.12	6.84	5.57	38.12	0.48	0.17	90	0.34	0.63	-	0.31	0.50	**700.25**	**67**	**702.40**
P41	67	700.25	15	5	74	0.36	0.27	3.76	0.06	4.62	3.76	17.39	0.22	0.08	0	0.00	0.13	-	0.07	0.33	**700.58**	**66**	**702.40**
P39	38	698.76	15	2	70	0.33	0.23	1.28	0.01	1.57	1.28	2.01	0.03	0.01	90	0.02	0.03	-	0.02	0.25	**699.01**	**42**	**699.35**
P37	42	699.01	15	1	20	0.33	0.07	0.80	0.00	0.98	0.80	0.78	0.01	0.00	0	0.00	0.01	-	0.00	0.07	**699.08**	**40**	**699.30**
P38	42	699.01	12	0	24	0.44	0.11	0.37	0.00	0.29	0.37	0.11	0.00	0.00	90	0.00	0.00	-	0.00	0.11	**699.12**	**41**	**699.35**
P36	40	699.08	12	0	24	0.44	0.11	0.62	0.00	0.49	0.62	0.31	0.01	0.00	90	0.00	0.01	-	0.00	0.11	**699.19**	**39**	**699.30**
P32	34A	698.39	18	7	19	0.15	0.03	3.84	0.06	6.79	3.84	26.09	0.23	0.08	0	0.00	0.14	-	0.07	0.10	**698.49**	**34**	**700.10**
P31	34	698.49	15	5	80	0.32	0.26	3.74	0.05	4.59	3.74	17.17	0.22	0.08	90	0.15	0.28	-	0.14	0.40	**698.88**	**35**	**700.10**
P30	34	698.49	15	3	80	0.32	0.26	2.49	0.02	3.05	2.49	7.58	0.10	0.03	90	0.07	0.12	-	0.06	0.32	**698.81**	**33**	**700.10**
P35	38	698.76	12	0	24	0.50	0.12	0.24	0.00	0.19	0.24	0.05	0.00	0.00	90	0.00	0.00	-	0.00	0.12	**698.88**	**37**	**700.22**
P29	31	699.02	12	1	24	0.50	0.12	0.75	0.00	0.59	0.75	0.44	0.01	0.00	90	0.01	0.01	-	0.01	0.13	**699.15**	**32**	**700.98**
P27	29	699.30	12	1	24	0.50	0.12	0.88	0.00	0.69	0.88	0.61	0.01	0.00	90	0.01	0.02	-	0.01	0.13	**699.43**	**30**	**701.76**
P24	29	699.30	12	6	71	0.32	0.23	7.73	0.23	6.07	7.73	46.91	0.93	0.32	90	0.65	1.21	-	0.60	0.83	**700.13**	**26**	**703.00**
P23	26	700.13	12	6	79	0.32	0.25	7.75	0.23	6.09	7.75	47.22	0.93	0.33	30	0.26	0.82	-	0.41	0.66	**700.79**	**25**	**702.70**
P25	28	699.49	12	1	24	0.50	0.12	0.88	0.00	0.69	0.88	0.61	0.01	0.00	90	0.01	0.02	-	0.01	0.13	**699.62**	**27**	**701.76**
P69	95	698.39	36	45	42	0.16	0.07	6.37	0.16	45.04	6.37	286.99	0.63	0.22	0	0.00	0.38	-	0.19	0.26	**698.65**	**92**	**700.70**
P66	92	698.65	36	42	31	0.14	0.04	5.88	0.13	41.55	5.88	244.24	0.54	0.19	0	0.00	0.32	-	0.16	0.20	**698.85**	**91**	**701.70**
P67	92	698.65	12	2	43	0.44	0.19	2.25	0.02	1.77	2.25	3.99	0.08	0.03	90	0.06	0.10	-	0.05	0.24	**698.89**	**93**	**700.30**
P68	92	698.65	12	1	49	0.44	0.22	1.25	0.01	0.98	1.25	1.22	0.02	0.01	90	0.02	0.03	-	0.02	0.23	**698.88**	**94**	**700.30**
P65	91	698.85	36	34	147	0.11	0.16	4.76	0.09	33.68	4.76	160.48	0.35	0.12	90	0.25	0.46	-	0.23	0.39	**699.24**	**90**	**701.70**
P64	90	699.24	36	30	108	0.11	0.12	4.30	0.07	30.43	4.30	131.00	0.29	0.10	0	0.00	0.17	-	0.09	0.21	**699.45**	**89**	**701.70**
P63	89	699.45	36	27	70	0.11	0.08	3.84	0.06	27.13	3.84	104.13	0.23	0.08	0	0.00	0.14	-	0.07	0.15	**699.59**	**88**	**701.70**
P62	88	699.59	36	24	113	0.11	0.12	3.33	0.04	23.55	3.33	78.46	0.17	0.06	0	0.00	0.10	-	0.05	0.18	**699.77**	**87**	**701.70**
P61	87	699.77	36	18	83	0.11	0.09	2.55	0.03	18.00	2.55	45.84	0.10	0.04	0	0.00	0.06	-	0.03	0.12	**699.89**	**86**	**701.70**
P60	86	699.89	36	13	54	0.11	0.06	1.89	0.01	13.38	1.89	25.33	0.06	0.02	0	0.00	0.03	-	0.02	0.08	**699.97**	**84**	**702.30**
P58	84	699.97	36	12	36	0.11	0.04	1.71	0.01	12.09	1.71	20.68	0.05	0.02	0	0.00	0.03	-	0.01	0.05	**700.02**	**74**	**702.50**
P48	74	700.02	24	4	75	0.16	0.12	1.15	0.01	3.60	1.15	4.13	0.02	0.01	70	0.01	0.02	-	0.01	0.13	**700.15**	**72**	**701.76**
P46	72	700.15	24	2	31	0.16	0.05	0.59	0.00	1.86	0.59	1.10	0.01	0.00	0	0.00	0.00	-	0.00	0.05	**700.20**	**71**	**701.96**
P45	71	700.20	24	2	37	0.16	0.06	0.59	0.00	1.86	0.59	1.10	0.01	0.00	0	0.00	0.00	-	0.00	0.06	**700.26**	**69**	**701.76**
P44	69	700.26	12	1	24	0.44	0.11	0.88	0.00	0.69	0.88	0.61	0.01	0.00	90	0.01	0.02	-	0.01	0.11	**700.38**	**70**	**701.76**
P47	72	700.15	12	1	34	0.44	0.15	0.88	0.00	0.69	0.88	0.61	0.01	0.00	90	0.01	0.02	-	0.01	0.16	**700.31**	**73**	**701.76**
P54	74	700.02	36	4	36	0.60	0.11	0.56	0.00	3.98	0.56	2.24	0.00	0.00	90	0.00	0.01	-	0.00	0.11	**700.13**	**80**	**701.90**
P56	80	700.13	24	1	90	0.50	0.18	0.31	0.00	0.98	0.31	0.31	0.00	0.00	0	0.00	0.00	-	0.00	0.18	**700.31**	**82**	**702.00**
P57	82	700.31	24	0	57	0.50	0.18	0.16	0.00	0.49	0.16	0.08	0.00	0.00	90	0.00	0.00	-	0.00	0.18	**700.49**	**83**	**702.00**
P55	80	700.13	12	1	44	0.50	0.22	1.25	0.01	0.98	1.25	1.22	0.02	0.01	90	0.02	0.03	-	0.02	0.24	**700.37**	**81**	**701.90**
P49	74	700.02	24	5	79	0.18	0.14	1.48	0.01	4.64	1.48	6.85	0.03	0.01	0	0.00	0.02	-	0.01	0.15	**700.17**	**75**	**702.70**
P51	75	700.17	18	3	18	0.25	0.05	1.53	0.01	2.71	1.53	4.16	0.04	0.01	90	0.03	0.05	-	0.02	0.07	**700.24**	**76**	**702.70**
P52	76	700.24	18	2	110	0.25	0.28	1.22	0.01	2.15	1.22	2.62	0.02	0.01	90	0.02	0.03	-	0.01	0.29	**700.53**	**78**	**702.70**
P53	78	700.53	15	1	79	0.32	0.25	1.20	0.01	1.47	1.20	1.76	0.02	0.01	90	0.02	0.03	-	0.01	0.27	**700.80**	**79**	**702.30**
P50	75	700.17	12	2	56	0.50	0.28	2.51	0.02	1.97	2.51	4.94	0.10	0.03	90	0.07	0.13	-	0.06	0.34	**700.51**	**77**	**702.30**
P76	91	698.85	18	9	63	0.25	0.16	4.83	0.09	8.53	4.83	41.17	0.36	0.13	0	0.00	0.22	-	0.11	0.27	**699.12**	**102**	**702.70**
P75	102	699.12	18	7	70	0.25	0.18	3.88	0.06	6.86	3.88	26.63	0.23	0.08	45	0.09	0.23	-	0.11	0.29	**699.41**	**101**	**702.70**
P74	101	699.41	15	5	169	0.32	0.54	4.09	0.06	5.02	4.09	20.54	0.26	0.09	45	0.10	0.25	-	0.13	0.67	**700.07**	**100**	**702.70**
P72	100	700.07	15	4	87	0.32	0.28	2.93	0.03	3.60	2.93	10.56	0.13	0.05	0	0.00	0.08	-	0.04	0.32	**700.39**	**98**	**702.30**
P71	98	700.39	15	3	87	0.32	0.28	2.23	0.02	2.74	2.23	6.12	0.08	0.03	0	0.00	0.05	-	0.02	0.30	**700.69**	**97**	**702.25**
P70	97	700.69	12	0	32	0.50	0.16	0.37	0.00	0.29	0.37	0.11	0.00	0.00	90	0.00	0.00	-	0.00	0.16	**700.86**	**96**	**702.40**
P73	100	700.07	12	0	32	0.50	0.16	0.37	0.00	0.29	0.37	0.11	0.00	0.00	90	0.00	0.00	-	0.00	0.16	**700.24**	**99**	**702.70**

	Structure	Outlet WSE	Do	Qo	Lo	Sfo	Hf	Junction Loss												Final H	Inlet WSE	Structure	Rim Elev
								Vo	Ho	Qi	Vi	QiVi	Vi^2/2g	Hi	Angle	HΔ	Ht	1.3 Ht	0.5Ht				
P78	105	698.39	36	21	137	0.10	0.14	3.00	0.03	21.21	3.00	63.64	0.14	0.05	0	0.00	0.08	-	0.04	0.18	**698.57**	**104**	**701.83**
P77	104	698.57	36	21	91	0.10	0.09	3.00	0.03	21.21	3.00	63.64	0.14	0.05	30	0.04	0.12	-	0.06	0.15	**698.72**	**103**	**701.00**
P84A	BOX CULVERT	698.39	24	9	11	0.17	0.02	2.77	0.03	8.71	2.77	24.15	0.12	0.04	0	0.00	0.07	-	0.04	0.05	**698.44**	**49**	**699.32**
P84	49	698.44	24	8	23	0.17	0.04	2.39	0.02	7.50	2.39	17.90	0.09	0.03	90	0.06	0.12	-	0.06	0.10	**698.54**	**48**	**698.65**
P83	48	698.54	24	8	28	0.17	0.05	2.39	0.02	7.50	2.39	17.90	0.09	0.03	90	0.06	0.12	-	0.06	0.11	**698.65**	**47**	**698.65**
P82	47	698.65	24	8	33	0.17	0.06	2.57	0.03	8.06	2.57	20.68	0.10	0.04	0	0.00	0.06	-	0.03	0.09	**698.73**	**46**	**701.00**
P78A	45	698.39	12	2	137	0.50	0.69	2.25	0.02	1.77	2.25	3.99	0.08	0.03	0	0.00	0.05	-	0.02	0.71	**699.10**	**44**	**701.20**
P81	52	698.39	24	1	34	0.18	0.06	0.36	0.00	1.13	0.36	0.41	0.00	0.00	20	0.00	0.00	-	0.00	0.06	**698.45**	**51**	**699.95**
P80	51	698.45	24	0	54	0.18	0.10	0.16	0.00	0.49	0.16	0.08	0.00	0.00	0	0.00	0.00	-	0.00	0.10	**698.55**	**50**	**699.95**
P22	24	698.39	24	7	24	0.18	0.04	2.37	0.02	7.46	2.37	17.71	0.09	0.03	0	0.00	0.05	-	0.03	0.07	**698.46**	**23**	**701.00**
P21	23	698.46	24	7	79	0.18	0.14	2.10	0.02	6.61	2.10	13.91	0.07	0.02	20	0.01	0.05	-	0.03	0.17	**698.63**	**22**	**700.85**
P20	22	698.63	24	7	70	0.18	0.13	2.08	0.02	6.55	2.08	13.66	0.07	0.02	20	0.01	0.05	-	0.03	0.15	**698.78**	**21**	**700.85**
P19	21	698.78	18	5	77	0.25	0.19	2.69	0.03	4.75	2.69	12.77	0.11	0.04	0	0.00	0.07	-	0.03	0.23	**699.01**	**20**	**700.85**
P18	20	699.01	15	3	77	0.32	0.25	2.47	0.02	3.03	2.47	7.48	0.09	0.03	0	0.00	0.06	-	0.03	0.27	**699.28**	**19**	**700.85**
P17	19	699.28	12	1	77	0.44	0.34	1.63	0.01	1.28	1.63	2.09	0.04	0.01	0	0.00	0.02	-	0.01	0.35	**699.63**	**18**	**700.85**
P13	13	698.39	36	25	23	0.11	0.03	3.51	0.05	24.81	3.51	87.08	0.19	0.07	0	0.00	0.11	-	0.06	0.08	**698.47**	**12**	**699.50**
P12	12	698.47	36	24	33	0.11	0.04	3.45	0.05	24.38	3.45	84.09	0.18	0.06	0	0.00	0.11	-	0.06	0.09	**698.56**	**11**	**699.00**
P11	11	698.56	36	24	73	0.11	0.08	3.40	0.04	24.00	3.40	81.49	0.18	0.06	0	0.00	0.11	-	0.05	0.13	**698.70**	**17**	**699.00**
P10	17	698.70	36	20	63	0.11	0.07	2.81	0.03	19.84	2.81	55.69	0.12	0.04	45	0.05	0.12	-	0.06	0.13	**698.83**	**10**	**699.50**
P9	10	698.83	30	20	69	0.13	0.09	3.99	0.06	19.58	3.99	78.10	0.25	0.09	45	0.09	0.24	-	0.12	0.21	**699.04**	**9**	**699.50**
P8	9	699.04	30	15	70	0.13	0.09	3.03	0.04	14.86	3.03	44.99	0.14	0.05	0	0.00	0.09	-	0.04	0.13	**699.17**	**8**	**699.50**
P7	8	699.17	30	9	72	0.13	0.09	1.87	0.01	9.16	1.87	17.09	0.05	0.02	0	0.00	0.03	-	0.02	0.11	**699.28**	**7**	**699.50**
P6	7	699.28	30	9	24	0.13	0.03	1.75	0.01	8.59	1.75	15.03	0.05	0.02	0	0.00	0.03	-	0.01	0.05	**699.33**	**6**	**699.50**
P5	6	699.33	30	1	24	0.13	0.03	0.12	0.00	0.59	0.12	0.07	0.00	0.00	0	0.00	0.00	-	0.00	0.03	**699.36**	**5**	**699.70**
P16	17	698.70	24	3	77	0.18	0.14	1.02	0.00	3.20	1.02	3.26	0.02	0.01	0	0.00	0.01	-	0.00	0.14	**698.84**	**16**	**699.50**
P15	16	698.84	18	2	77	0.25	0.19	1.16	0.01	2.05	1.16	2.38	0.02	0.01	0	0.00	0.01	-	0.01	0.20	**699.04**	**15**	**699.50**
P14	15	699.04	15	1	77	0.32	0.25	0.72	0.00	0.88	0.72	0.63	0.01	0.00	0	0.00	0.00	-	0.00	0.25	**699.29**	**14**	**699.50**
P4	6	699.33	24	8	67	0.18	0.12	2.47	0.02	7.76	2.47	19.17	0.09	0.03	90	0.07	0.12	-	0.06	0.18	**699.51**	**4**	**699.60**
P2	4	699.51	18	5	69	0.25	0.17	2.76	0.03	4.87	2.76	13.42	0.12	0.04	0	0.00	0.07	-	0.04	0.21	**699.72**	**2**	**699.80**
P1	2	699.72	18	3	93	0.25	0.23	1.89	0.01	3.34	1.89	6.31	0.06	0.02	90	0.04	0.07	-	0.04	0.27	**699.99**	**1**	**700.50**
P3	4	699.51	15	2	93	0.32	0.30	1.61	0.01	1.97	1.61	3.16	0.04	0.01	90	0.03	0.05	-	0.03	0.32	**699.83**	**3**	**700.50**
P118	65	698.39	36	12	45	0.11	0.05	1.67	0.01	11.81	1.67	19.73	0.04	0.02	0	0.00	0.03	-	0.01	0.06	**698.45**	**64**	**700.31**
P117	64	698.45	36	12	94	0.11	0.10	1.68	0.01	11.86	1.68	19.90	0.04	0.02	60	0.02	0.05	-	0.03	0.13	**698.58**	**59**	**700.70**
P116	59	698.58	24	3	35	0.18	0.06	0.84	0.00	2.64	0.84	2.22	0.01	0.00	45	0.00	0.01	-	0.01	0.07	**698.65**	**58**	**701.23**
P115	58	698.65	18	2	30	0.25	0.08	1.22	0.01	2.16	1.22	2.64	0.02	0.01	45	0.01	0.02	-	0.01	0.09	**698.74**	**57**	**701.32**
P114	57	698.74	12	2	31	0.44	0.14	2.62	0.03	2.06	2.62	5.40	0.11	0.04	45	0.04	0.10	-	0.05	0.19	**698.92**	**56**	**700.00**
P113	59	698.58	24	2	25	0.18	0.05	0.78	0.00	2.44	0.78	1.90	0.01	0.00		0.00	0.01	-	0.00	0.05	**698.63**	**63**	**700.70**
P112	63	698.63	24	2	36	0.18	0.06	0.72	0.00	2.25	0.72	1.61	0.01	0.00		0.00	0.00	-	0.00	0.07	**698.70**	**62**	**700.50**
P111	62	698.70	24	1	27	0.18	0.05	0.31	0.00	0.98	0.31	0.31	0.00	0.00		0.00	0.00	-	0.00	0.05	**698.75**	**61**	**700.59**
P110	61	698.75	12	0	12	0.44	0.05	0.62	0.00	0.49	0.62	0.31	0.01	0.00		0.00	0.00	-	0.00	0.05	**698.80**	**60**	**700.00**
P86	108	698.39	15	4	60	0.15	0.09	3.28	0.04	4.02	3.28	13.17	0.17	0.06	0	0.00	0.10	-	0.05	0.14	**698.53**	**107**	**698.78**
P85	107	698.53	12	3	27	0.40	0.11	3.76	0.05	2.95	3.76	11.08	0.22	0.08	0	0.00	0.13	-	0.07	0.17	**698.70**	**106**	**698.78**
P88	111	698.39	15	1	80	0.32	0.26	1.12	0.00	1.37	1.12	1.53	0.02	0.01	0	0.00	0.01	-	0.01	0.26	**698.65**	**110A**	**700.50**
P87A	110A	698.65	12	1	40	0.44	0.18	1.38	0.01	1.08	1.38	1.49	0.03	0.01	0	0.00	0.02	-	0.01	0.18	**698.84**	**110**	**700.91**
P87	110	698.84	12	0	27	0.44	0.12	0.50	0.00	0.39	0.50	0.19	0.00	0.00	0	0.00	0.00	-	0.00	0.12	**698.96**	**109**	**700.91**
P90	114	698.39	15	2	80	0.32	0.26	1.35	0.01	1.66	1.35	2.25	0.03	0.01	0	0.00	0.02	-	0.01	0.26	**698.65**	**113A**	**700.50**
P89A	113A	698.65	12	1	40	0.44	0.18	1.76	0.01	1.38	1.76	2.42	0.05	0.02	0	0.00	0.03	-	0.01	0.19	**698.84**	**113**	**701.06**
P89	113	698.84	12	0	27	0.44	0.12	0.50	0.00	0.39	0.50	0.19	0.00	0.00	0	0.00	0.00	-	0.00	0.12	**698.96**	**112**	**701.06**
P92	117	698.39	24	5	80	0.18	0.14	1.62	0.01	5.08	1.62	8.21	0.04	0.01	0	0.00	0.02	-	0.01	0.16	**698.55**	**116A**	**700.50**
P91A	116A	698.55	15	5	40	0.32	0.13	3.84	0.06	4.71	3.84	18.08	0.23	0.08	0	0.00	0.14	-	0.07	0.20	**698.74**	**116**	**700.10**
P91	116	698.74	12	1	27	0.44	0.12	1.25	0.01	0.98	1.25	1.22	0.02	0.01	0	0.00	0.01	-	0.01	0.13	**698.87**	**115**	**700.10**
P95	121	698.39	15	1	80	0.32	0.26	1.03	0.00	1.27	1.03	1.31	0.02	0.01	0	0.00	0.01	-	0.00	0.26	**698.65**	**120A**	**700.50**
P94A	120A	698.65	12	1	40	0.44	0.18	1.25	0.01	0.98	1.25	1.22	0.02	0.01	0	0.00	0.01	-	0.01	0.18	**698.83**	**120**	**700.57**
P94	120	698.83	12	1	27	0.44	0.12	1.01	0.00	0.79	1.01	0.79	0.02	0.01	0	0.00	0.01	-	0.00	0.12	**698.96**	**119**	**700.57**
P93	119	698.96	12	1	12	0.44	0.05	0.88	0.00	0.69	0.88	0.61	0.01	0.00	0	0.00	0.01	-	0.00	0.06	**699.01**	**118**	**700.00**
P99	126	698.39	24	6	80	0.18	0.14	1.93	0.01	6.07	1.93	11.73	0.06	0.02	0	0.00	0.03	-	0.02	0.16	**698.55**	**125**	**700.50**
P98	125	698.55	18	6	40	0.25	0.10	3.22	0.04	5.69	3.22	18.32	0.16	0.06	0	0.00	0.10	-	0.05	0.15	**698.70**	**124**	**700.11**
P97	124	698.70	15	2	27	0.32	0.09	1.68	0.01	2.06	1.68	3.46	0.04	0.02	0	0.00	0.03	-	0.01	0.10	**698.80**	**123**	**700.11**
P96	123	698.80	12	1	12	0.44	0.05	1.38	0.01	1.08	1.38	1.49	0.03	0.01	0	0.00	0.02	-	0.01	0.06	**698.86**	**122**	**700.00**
P103	131	698.39	24	5	80	0.18	0.14	1.68	0.01	5.29	1.68	8.91	0.04	0.02	0	0.00	0.03	-	0.01	0.16	**698.55**	**130**	**700.50**
P102	130	698.55	18	5	40	0.25	0.10	2.83	0.03	5.00	2.83	14.15	0.12	0.04	0	0.00	0.07	-	0.04	0.14	**698.68**	**129**	**700.11**
P101	129	698.68	15	2	27	0.32	0.09	1.44	0.01	1.77	1.44	2.55	0.03	0.01	0	0.00	0.02	-	0.01	0.10	**698.78**	**128**	**700.11**
P100	128	698.78	12	1	12	0.44	0.05	1.25	0.01	0.98	1.25	1.22	0.02	0.01	0	0.00	0.01	-	0.01	0.06	**698.84**	**127**	**700.00**

	Structure	Outlet WSE	Do	Qo	Lo	Sfo	Hf	Junction Loss												Final H	Inlet WSE	Structure	Rim Elev
								Vo	Ho	Qi	Vi	QiVi	Vi^2/2g	Hi	Angle	HΔ	Ht	1.3 Ht	0.5Ht				
P107	136	698.39	24	3	80	0.18	0.14	0.96	0.00	3.02	0.96	2.90	0.01	0.01	0	0.00	0.01	-	0.00	0.15	**698.54**	**135**	**700.50**
P106	135	698.54	18	3	40	0.25	0.10	1.54	0.01	2.73	1.54	4.22	0.04	0.01	0	0.00	0.02	-	0.01	0.11	**698.65**	**134**	**700.12**
P105	134	698.65	15	0	27	0.32	0.09	0.32	0.00	0.39	0.32	0.12	0.00	0.00	0	0.00	0.00	-	0.00	0.09	**698.74**	**133**	**700.12**
P104	133	698.74	12	0	12	0.44	0.05	0.37	0.00	0.29	0.37	0.11	0.00	0.00	0	0.00	0.00	-	0.00	0.05	**698.79**	**132**	**700.00**
P109	134	698.65	18	2	74	0.25	0.19	1.17	0.01	2.06	1.17	2.40	0.02	0.01	90	0.01	0.03	-	0.01	0.20	**698.85**	**138**	**699.51**
P108	138	698.85	15	0	27	0.32	0.09	0.40	0.00	0.49	0.40	0.20	0.00	0.00	90	0.00	0.00	-	0.00	0.09	**698.94**	**137**	**699.51**
P120	141	698.39	15	4	80	0.30	0.24	2.88	0.03	3.53	2.88	10.15	0.13	0.04	0	0.00	0.08	-	0.04	0.28	**698.67**	**140A**	**700.50**
P119A	140A	698.67	12	3	40	0.40	0.16	4.00	0.06	3.14	4.00	12.55	0.25	0.09	0	0.00	0.15	-	0.07	0.23	**698.90**	**140**	**700.75**
P119	140	698.90	12	1	40	0.40	0.16	0.88	0.00	0.69	0.88	0.61	0.01	0.00	0	0.00	0.01	-	0.00	0.16	**699.07**	**139**	**700.75**
P123	145	698.39	15	4	90	0.32	0.29	3.35	0.04	4.11	3.35	13.76	0.17	0.06	0	0.00	0.10	-	0.05	0.34	**698.73**	**144**	**700.50**
P122	144	698.73	12	4	30	0.44	0.13	4.62	0.08	3.63	4.62	16.78	0.33	0.12	0	0.00	0.20	-	0.10	0.23	**698.96**	**143**	**701.02**
P121	143	698.96	12	1	30	0.44	0.13	1.12	0.00	0.88	1.12	0.99	0.02	0.01	0	0.00	0.01	-	0.01	0.14	**699.10**	**142**	**701.02**
P130	55	698.39	15	6	90	1.15	1.04	5.18	0.10	6.36	5.18	32.96	0.42	0.15	0	0.00	0.25	-	0.13	1.16	**699.55**	**54**	**703.00**
P129	54	699.55	12	6	77	1.15	0.89	8.14	0.26	6.39	8.14	51.99	1.03	0.36	0	0.00	0.62	-	0.31	1.19	**700.74**	**53**	**702.70**

FA RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO
			81	14
STA.	TO STA.			
FED. ROAD DIST. NO.	ILLINOIS	FED. AID PROJECT		

ST-4
STA 120+25; 33'RT
INLET T-A: SAG FRAME
RIM 699.98
INV. (OUT) 695.48

ST-8
STA 120+25; O'RT
MH T-A: T1-CL: 4' DIA
RIM 701.10
INV (IN-SE) 695.17
INV (IN-SW) 695.33
INV (OUT) 695.17

ST-3
STA 119+69; 9'RT
INLET T-A: T23F&G
RIM 700.36
INV (OUT) 695.86

ST-5
STA 120+25; 33'LT
CB T-C: SAG FRAME
RIM 699.77
INV (IN) 694.86
INV (OUT) 694.86

ST-11
STA 118+75; 45'LT
MH T-A, T1-CL: 4' DIA
RIM 701.00
INV (IN) 695.93
INV (OUT) 695.83

ST-10
STA 120+25; 45'LT
MH T-A:T1-CL: 4' DIA
RIM 700.30
INV (IN-NE) 693.10
INV (IN-SE) 694.78
INV (IN-SW) 693.01
INV (OUT) 692.41

ST-6
STA 121+75; 33'RT
INLET T-A: T-24F&G
RIM 700.34
INV 695.84

ST-7
STA 121+75; 33'LT
CB T-D: T24F&G
RIM 700.34
INV (IN) 695.18
INV (OUT) 695.18

ST-9
STA 121+75; 45' LT
MH T-A: T1-CL: 4' DIA
RIM 700.80
INV (IN) 695.10
INV (OUT) 695.10

FES-1
STA 120+25; 77.5' LT
15" RCCP
INV 692.10

ST-1
STA 118+75; 33'LT
CB T-C: T24 F&G
RIM 700.51
INV (IN) 696.01
INV (OUT) 696.01

ST-2
STA 118+75; 9'RT
INLET T-A, T23 F&G
RIM 700.99
INV (OUT) 696.43

CURVE 2

RADIUS:	1145.92'
DELTA:	58° 33' 26" L
DEGREE OF CURVE:	5°00'00"
LENGTH:	1171.15'
TANGENT:	642.50'
EXTERNAL:	167.83'
PC:	STA 106+97.89
PI:	STA 113+40.39
PT:	STA 118+69.04
SE:	4.00%
TRANSITION LENGTH	300'

EXISTING CONDITIONS

WEST BRANCH DUPAGE RIVER

CURVE #2

RETENTION BASIN (BY OTHERS)

BEGIN IMPROVEMENT STA 120+70

HWL=697.1

RETENTION BASIN (BY OTHERS) N.W.E.-692.1

PERMANENT EASEMENT

FES-1

PROPOSED R.O.W

COMB. CONC. CURB AND GUTTER, TYPE B.6.12

ROAD

FERRY

℄ FERRY ROAD

BEGIN TAPER

MATCH LINE STA. 124+00 SEE DWG. C5-2

CONSTRUCT EMBANKMENT

COMB. CONC. CURB AND GUTTER, TYPE B.6.24

FURNISHING AND PLACING TOPSOIL, 4" SODDING

BIT. CONC. SURF. CSE., CL I, 1-1/2"
BIT. CONC. BIND. CSE., 2-1/2"
BIT. BASE CSE., 11"
AGGREGATE SUBGRADE, 16"

GRAPHIC SCALE 50 25 0 50

STORM SEWER TABLES				
NO.	LENGTH (FT)	DIA (IN)	TYPE	TRENCH BACKFILL (CY)
P1	146	12	2	0.0
P2	53	12	2	0.3
P3	31	12	2	5.5
P4	31	12	2	6.0
P5	8	12	2	0.4
P6	146	12	2	0.0
P7	8	12	2	0.1
P8	66	12	2	8.7
P9	24.5	15	2	0.0
P1A	40	12	2	3.5
P1B	8	12	2	0.3

PROPOSED PROFILE GRADE LINE (BY OTHERS)

PVC STA. 116+00.00 EL. 701.94

H.P. STA. 116+75.00 ELEV. 702.18

PVI STA. 117+00.00 EL. 702.44 V.C. = 200'

EXISTING ℄ PROFILE

PVT STA. 118+00.00 EL. 701.61

PVC STA. 119+00.00 EL. 700.77

PVI STA. 120+00.00 EL. 699.94 V.C. = 200'

BEGIN IMPROVEMENT STA 120+70

ST 10 L.P. STA. 120+25.00 ELEV. 700.25

PROPOSED PROFILE GRADE LINE

PVT STA. 121+00.00 EL. 700.44

PVC STA. 122+25.00 EL. 701.07

H.P. STA. 123+00.00 ELEV. 701.26

PVI STA. 123+00.00 EL. 701.44 V.C. = 150'

PVT STA. 123+75.00 EL. 701.07

MATCH LINE STA. 124+00 SEE DWG. C5-2

0.50 %
-0.83 %
0.50 %

146'- 12" RCCP @ 2.00%
146'- 12" RCCP @ 1.37%

15" SAN 0.30%
15" SAN 0.30%
15" SAN 0.30%
15" SAN 0.30%

PROPOSED P&L ELEV.
EXISTING ELEV. ALONG ℄

| | | | |

Hydraulic Grade Line Calculations
Riverview West
Existing Conditions

Project: Riverview West
Design Storm: 100-Year

	Structure	Outlet WSE	Do	Qo	Lo	Sfo	Hf	Junction Loss												Final H	Inlet WSE	Structure	Rim Elev
								Vo	Ho	Qi	Vi	QiVi	Vi^2/2g	Hi	Angle	HΔ	Ht	1.3 Ht	0.5Ht				
	Culvert Outfall																						
P-9	FES-1	697.10	15	16.70	25	1.24	0.30	13.61	0.72	16.70	13.61	227.26	2.88	1.01	0	0.00	1.73	-	0.86	1.17	**698.27**	**ST-10**	**700.30**
P-5	ST-10	698.27	12	8.01	8	1.00	0.08	10.20	0.40	8.01	10.20	81.69	1.62	0.57	0	0.00	0.97	-	0.48	0.56	**698.83**	**ST-5**	**699.77**
P-4	ST-5	698.83	12	4.02	31	1.00	0.31	5.12	0.10	4.02	5.12	20.58	0.41	0.14	0	0.00	0.24	-	0.12	0.43	**699.26**	**ST-8**	**701.10**
P-2	ST-8	699.26	12	0.00	53	1.06	0.56	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	0.00	0.00	-	0.00	0.56	**699.82**	**ST-3**	**700.36**
P-3	ST-8	699.26	12	4.03	31	1.00	0.31	5.13	0.10	4.03	5.13	20.68	0.41	0.14	0	0.00	0.25	-	0.12	0.43	**699.70**	**ST-4**	**699.98**
P-1	ST-10	698.27	12	5.49	146	2.00	2.92	6.99	0.19	5.49	6.99	38.38	0.76	0.27	0	0.00	0.46	-	0.23	3.15	**701.41**	**ST-11**	**701.00**
P-1B	ST-11	701.41	12	5.49	8	1.00	0.08	6.99	0.19	5.49	6.99	38.38	0.76	0.27	90	0.53	0.99	-	0.49	0.57	**701.99**	**ST-1**	**700.51**
P-1A	ST-1	701.99	12	2.75	40	1.05	0.42	3.50	0.05	2.75	3.50	9.63	0.19	0.07	0	0.00	0.11	-	0.06	0.48	**702.46**	**ST-2**	**700.99**
P-6	ST-10	698.27	12	3.33	146	1.37	2.00	4.24	0.07	3.33	4.24	14.12	0.28	0.10	90	0.20	0.36	-	0.18	2.18	**700.45**	**ST-9**	**700.80**
P-7	ST-9	700.45	12	3.33	8	1.00	0.08	4.24	0.07	3.33	4.24	14.12	0.28	0.10	90	0.20	0.36	-	0.18	0.26	**700.71**	**ST-7**	**700.34**
P-8	ST-7	700.45	12	1.67	66	1.00	0.66	2.13	0.02	1.67	2.13	3.55	0.07	0.02	0	0.00	0.04	-	0.02	0.68	**701.13**	**ST-6**	**700.34**

PROPOSED CONDITIONS

CONCRETE BOX
CULVERT, I=693.0

EXISTING FLOODPLAIN BOUNDARY PER
FEMA MAP NUMBER 17043C0703H
EFFECTIVE DATE DECEMBER 16, 2004.
GRAPHICALLY SHOWN PER FIRM.

PROPOSED HWL = 698.46

688.6
689
682
692
694
696
698
699
700
701
NWL
HWL

15" FES
INV=693.00

24" FES
INV=693.00

24" FES
INV=693.00

68 LF 24"ø @ 0.18%

59 LF 24"ø @ 0.18%

57 LF 15"ø @ 0.33%

I=692.10
R=700.30
I=692.41 N
I=694.78 S
I=693.10 E
I=693.01 W

NEW MH
INV=693.13 (24")
INV=694.94 (15")

47 LF 15"ø @ 0.33%

12"WM

NEW MH
INV=693.19 (15")
INV=695.75 (12")

NEW MH
INV=693.11 (24")
INV=694.75 (15")

12"ØRCP

EXISTING 15"ø
SANITARY SEWER

R=699.1
I=685.31
I=695.21

R=701.00
I=695.93
I=695.83

R=700.51
I=696.01

8 LF 12"ø @ 1.00%

EXIST
INV=695.83

ABANDON EXIST PIPE

11 LF 15"ø @ 1.00%

EXIST
INV=694.86

R=699.77
I=694.86

R=698.2
I=686.15 (NE)
I=686.05 (SW)

ABANDON EXIST PIPE

EXIST
INV=694.86

R=700.80
I=695.10

R=700.34
I=695.18

R=700.99
I=696.43

R=700.36
I=695.86

R=701.10
I=695.17 N, S
I=695.33 SW

R=699.98
I=695.48

R=700.34
I=695.84

W

Revised 10-19-18
Revised 04-19-19

Hydraulic Grade Line Calculations
Riverview West
PROPOSED

DESIGN ALTERNATE 3: DISCONNECT ST-11 AND CONNECT DIRECTLY TO POND W/ 15" @ 0.33%
DISCONNECT ST-9, CONNECT DIRECTLY TO POND W/ 24" @ 0.18%
REPLACE OUTLET PIPE P-9 WITH 24" DIAMETER AT 0.18%
REPLACE MH S10
PLUG & ABANDON PIPE P-1
PLUG & ABANDON PIPE P-6

Project: Riverview West
Design Storm: 100-Year

	Structure	Outlet WSE	Do	Qo	Lo	Sfo	Hf	Junction Loss												Final H	Inlet WSE	Structure	Rim Elev
								Vo	Ho	Qi	Vi	QiVi	Vi^2/2g	Hi	Angle	HΔ	Ht	1.3 Ht	0.5Ht				
	Culvert Outfall																						
NEW P-9	NEW FES	698.39	24	8.01	59	0.18	0.11	2.55	0.03	8.01	2.55	20.42	0.10	0.04	0	0.00	0.06	-	0.03	0.14	**698.53**	NEW ST-10	**700.30**
P-5	NEW ST-10	698.53	15	8.01	11	1.00	0.11	6.53	0.17	8.01	6.53	52.28	0.66	0.23	0	0.00	0.40	-	0.20	0.31	**698.83**	**ST-5**	**699.77**
P-4	ST-5	698.83	12	4.02	31	1.00	0.31	5.12	0.10	4.02	5.12	20.58	0.41	0.14	0	0.00	0.24	-	0.12	0.43	**699.27**	**ST-8**	**701.10**
P-2	ST-8	699.27	12	0.00	53	1.00	0.53	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	0.00	0.00	-	0.00	0.53	**699.80**	**ST-3**	**700.36**
P-3	ST-8	699.27	12	4.03	31	1.00	0.31	5.13	0.10	4.03	5.13	20.68	0.41	0.14	0	0.00	0.25	-	0.12	0.43	**699.70**	**ST-4**	**699.98**
P-1	NEW FES	698.39	15	5.49	57	0.33	0.19	4.47	0.08	5.49	4.47	24.56	0.31	0.11	0	0.00	0.19	-	0.09	0.28	**698.67**	NEW MH	**701.00**
NEW	NEW MH	698.67	12	5.49	8	1.00	0.08	6.99	0.19	5.49	6.99	38.38	0.76	0.27	0	0.00	0.46	-	0.23	0.31	**698.98**	**ST-11**	**701.00**
P-1B	ST-11	698.98	12	5.49	8	1.00	0.08	6.99	0.19	5.49	6.99	38.38	0.76	0.27	0	0.00	0.46	-	0.23	0.31	**699.29**	**ST-1**	**700.51**
P-1A	ST-1	699.29	12	2.75	40	1.05	0.42	3.50	0.05	2.75	3.50	9.63	0.19	0.07	0	0.00	0.11	-	0.06	0.48	**699.76**	**ST-2**	**700.99**
NEW	NEW FES	698.39	24	3.33	68	0.18	0.12	1.06	0.00	3.33	1.06	3.53	0.02	0.01	0	0.00	0.01	-	0.01	0.13	**698.52**	NEW MH	**700.80**
P-6	NEW MH	698.52	15	3.33	47	0.33	0.16	2.71	0.03	3.33	2.71	9.04	0.11	0.04	30	0.04	0.11	-	0.05	0.21	**698.73**	**ST-9**	**700.80**
P-7	ST-9	698.73	12	3.33	11	1.00	0.11	4.24	0.07	3.33	4.24	14.12	0.28	0.10	90	0.20	0.36	-	0.18	0.29	**699.02**	**ST-7**	**700.34**
P-8	ST-7	699.02	12	1.67	66	1.00	0.66	2.13	0.02	1.67	2.13	3.55	0.07	0.02	0	0.00	0.04	-	0.02	0.68	**699.70**	**ST-6**	**700.34**

CULVERT CALCULATIONS

HY-8 Culvert Analysis Report

Crossing Discharge Data

Discharge Selection Method: Specify Minimum, Design, and Maximum Flow

Minimum Flow: 0 cfs

Design Flow: 291 cfs

Maximum Flow: 495 cfs

Table 1 - Summary of Culvert Flows at Crossing: N-S Road Culvert

Headwater Elevation (ft)	Total Discharge (cfs)	N-S Road Culvert Discharge (cfs)	Roadway Discharge (cfs)	Iterations
693.00	0.00	0.00	0.00	1
695.03	49.50	49.50	0.00	1
696.12	99.00	99.00	0.00	1
697.06	148.50	148.50	0.00	1
697.94	198.00	198.00	0.00	1
698.82	247.50	247.50	0.00	1
699.65	291.00	291.00	0.00	1
700.44	346.50	328.96	17.52	4
700.86	396.00	347.75	48.22	4
701.22	445.50	363.34	82.14	4
701.56	495.00	377.06	117.93	4
700.00	308.35	308.35	0.00	Overtopping

Rating Curve Plot for Crossing: N-S Road Culvert

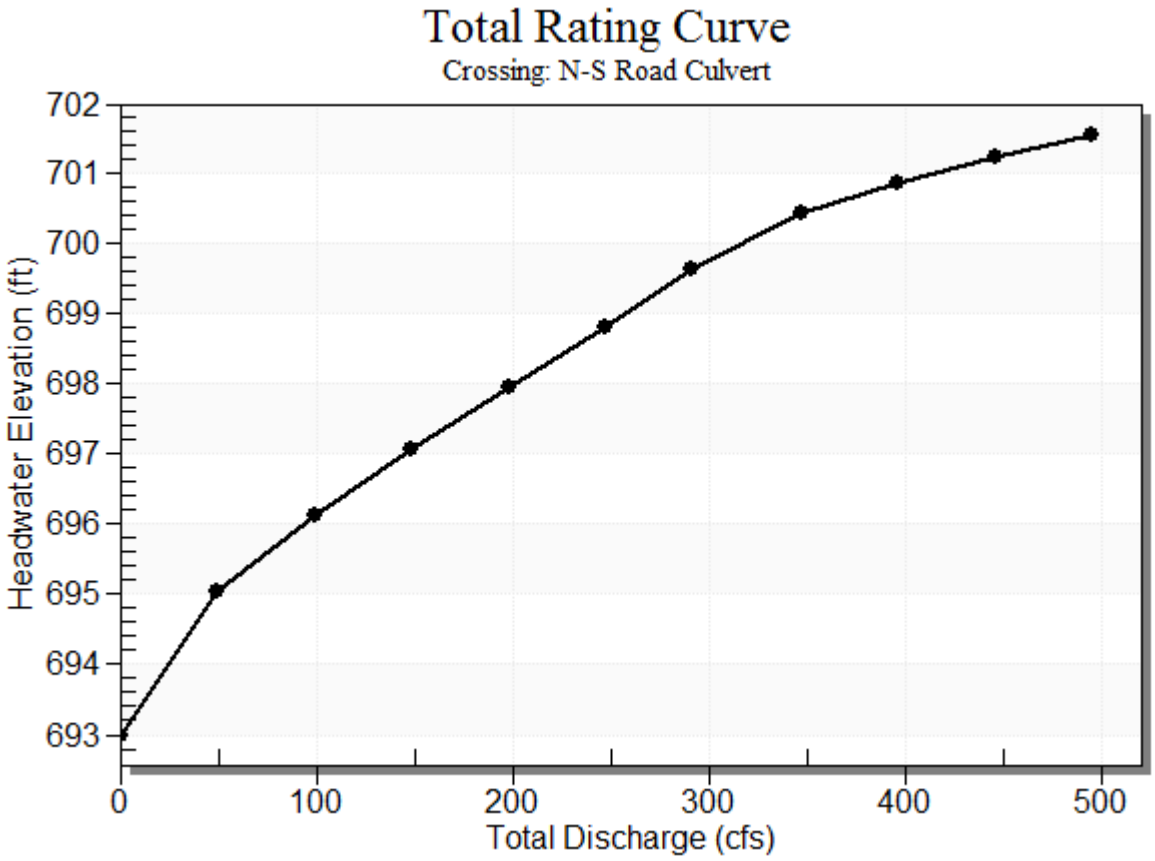


Table 2 - Culvert Summary Table: N-S Road Culvert

Total Discharge (cfs)	Culvert Discharge (cfs)	Headwater Elevation (ft)	Inlet Control Depth (ft)	Outlet Control Depth (ft)	Flow Type	Normal Depth (ft)	Critical Depth (ft)	Outlet Depth (ft)	Tailwater Depth (ft)	Outlet Velocity (ft/s)	Tailwater Velocity (ft/s)
0.00	0.00	693.00	0.000	0.000	0-NF	0.000	0.000	0.500	0.000	0.000	0.000
49.50	49.50	695.03	1.978	2.027	1-S1t	0.967	1.158	1.876	1.376	3.769	2.876
99.00	99.00	696.12	3.119	2.156	1-JS1t	1.541	1.838	2.435	1.935	5.807	3.470
148.50	148.50	697.06	4.063	2.842	1-JS1t	2.043	2.409	2.846	2.346	7.453	3.862
198.00	198.00	697.94	4.937	3.563	1-S2n	2.509	2.918	2.622	2.682	10.787	4.163
247.50	247.50	698.82	5.817	4.347	5-S2n	2.953	3.386	3.082	2.971	11.472	4.411
291.00	291.00	699.65	6.646	5.789	5-S2n	3.330	3.772	3.469	3.197	11.982	4.599
346.50	328.96	700.44	7.438	6.478	5-S2n	3.651	4.093	3.797	3.458	12.376	4.810
396.00	347.75	700.86	7.858	6.841	5-S2n	3.808	4.248	3.957	3.670	12.555	4.978
445.50	363.34	701.22	8.224	7.153	5-S2n	3.938	4.374	4.088	3.866	12.698	5.130
495.00	377.06	701.56	8.557	7.244	5-S2n	4.051	4.483	4.202	4.049	12.820	5.270

****

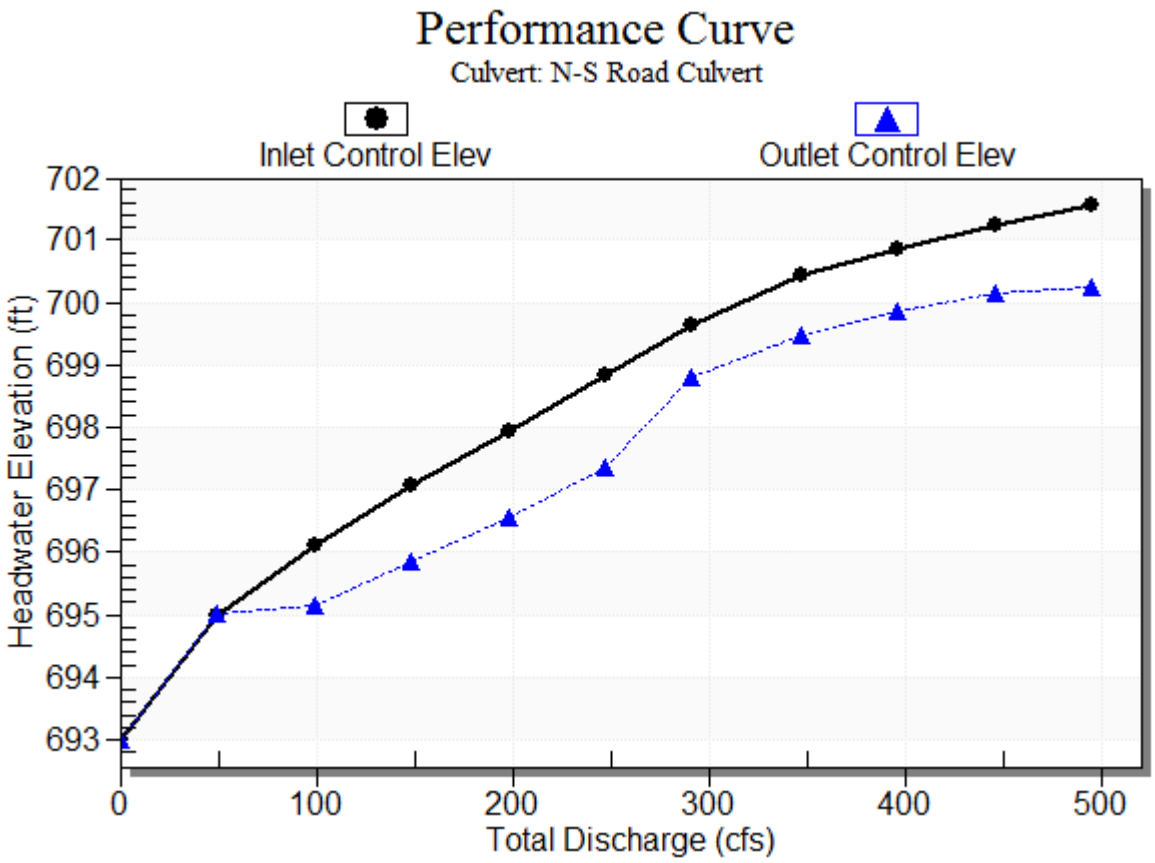
Straight Culvert

Inlet Elevation (invert): 693.00 ft, Outlet Elevation (invert): 692.50 ft

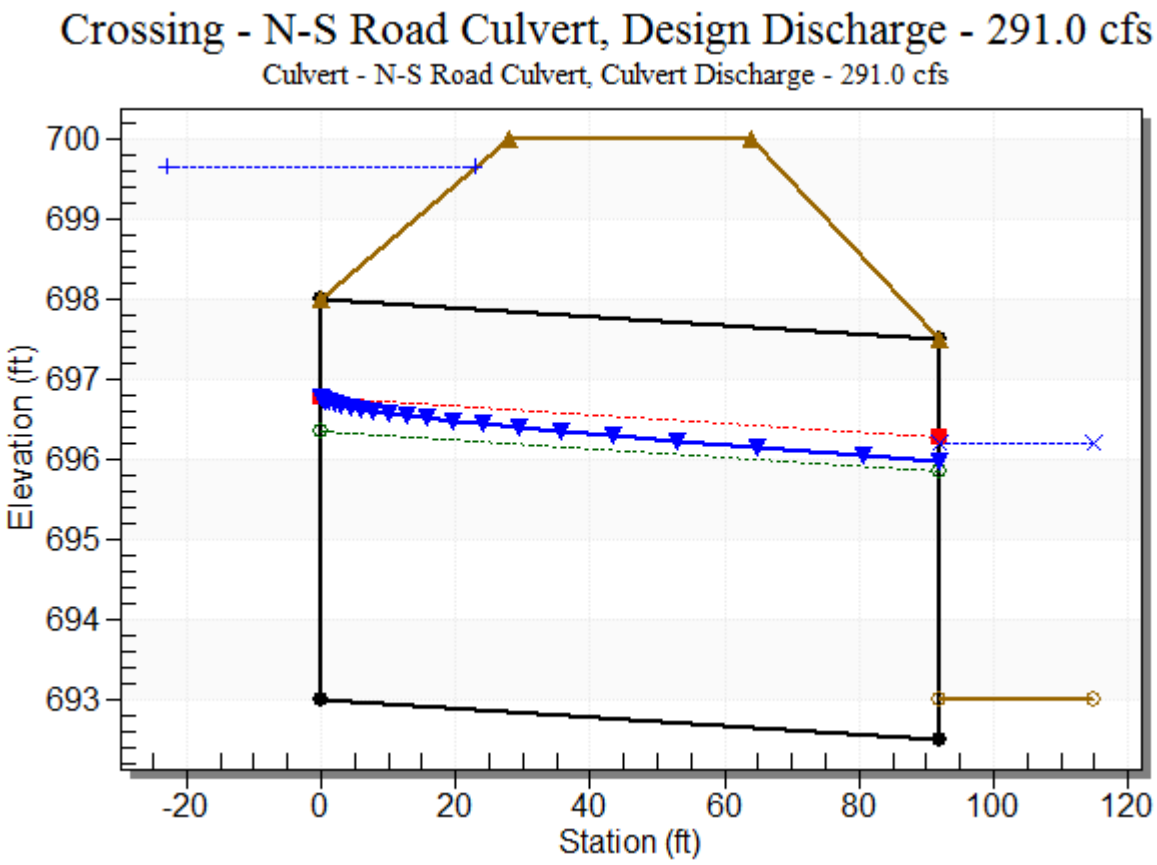
Culvert Length: 92.00 ft, Culvert Slope: 0.0054

****

Culvert Performance Curve Plot: N-S Road Culvert



Water Surface Profile Plot for Culvert: N-S Road Culvert



Site Data - N-S Road Culvert

Site Data Option: Culvert Invert Data

Inlet Station: 0.00 ft

Inlet Elevation: 693.00 ft

Outlet Station: 92.00 ft

Outlet Elevation: 692.50 ft

Number of Barrels: 1

Culvert Data Summary - N-S Road Culvert

Barrel Shape: Concrete Box

Barrel Span: 7.00 ft

Barrel Rise: 5.00 ft

Barrel Material: Concrete

Embedment: 0.00 in

Barrel Manning's n: 0.0130

Culvert Type: Straight

Inlet Configuration: Square Edge (90º) Headwall

Inlet Depression: None

Table 3 - Downstream Channel Rating Curve (Crossing: N-S Road Culvert)

Flow (cfs)	Water Surface Elev (ft)	Depth (ft)	Velocity (ft/s)	Shear (psf)	Froude Number
0.00	693.00	0.00	0.00	0.00	0.00
49.50	694.38	1.38	2.88	0.43	0.52
99.00	694.94	1.94	3.47	0.60	0.54
148.50	695.35	2.35	3.86	0.73	0.56
198.00	695.68	2.68	4.16	0.84	0.57
247.50	695.97	2.97	4.41	0.93	0.58
291.00	696.20	3.20	4.60	1.00	0.58
346.50	696.46	3.46	4.81	1.08	0.59
396.00	696.67	3.67	4.98	1.14	0.59
445.50	696.87	3.87	5.13	1.21	0.60
495.00	697.05	4.05	5.27	1.26	0.60

Tailwater Channel Data - N-S Road Culvert

Tailwater Channel Option: Trapezoidal Channel

Bottom Width: 7.00 ft

Side Slope (H:V): 4.00 (_:1)

Channel Slope: 0.0050

Channel Manning's n: 0.0350

Channel Invert Elevation: 693.00 ft

Roadway Data for Crossing: N-S Road Culvert

Roadway Profile Shape: Constant Roadway Elevation

Crest Length: 20.00 ft

Crest Elevation: 700.00 ft

Roadway Surface: Paved

Roadway Top Width: 36.00 ft

Crossing Discharge Data

Discharge Selection Method: Specify Minimum, Design, and Maximum Flow

Minimum Flow: 0 cfs

Design Flow: 291 cfs

Maximum Flow: 495 cfs

Table 4 - Summary of Culvert Flows at Crossing: East PL Culvert

Headwater Elevation (ft)	Total Discharge (cfs)	East PL Culvert Discharge (cfs)	Roadway Discharge (cfs)	Iterations
693.00	0.00	0.00	0.00	1
694.96	49.50	49.50	0.00	1
696.10	99.00	99.00	0.00	1
697.05	148.50	148.50	0.00	1
697.92	198.00	198.00	0.00	1
698.80	247.50	247.50	0.00	1
699.63	291.00	291.00	0.00	1
700.43	346.50	329.38	17.09	4
700.85	396.00	348.21	47.76	4
701.22	445.50	363.82	81.66	4
701.55	495.00	377.54	117.45	4
700.00	309.13	309.13	0.00	Overtopping

Rating Curve Plot for Crossing: East PL Culvert

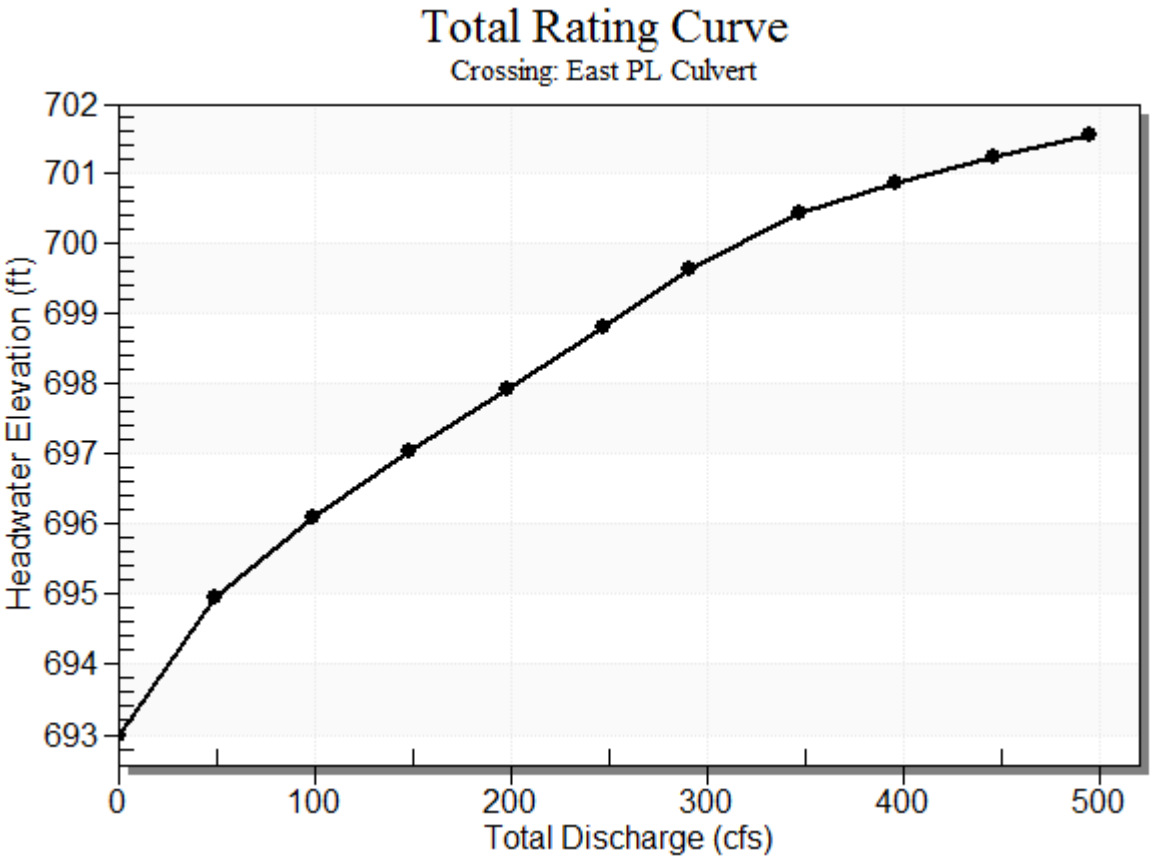


Table 5 - Culvert Summary Table: East PL Culvert

Total Discharge (cfs)	Culvert Discharge (cfs)	Headwater Elevation (ft)	Inlet Control Depth (ft)	Outlet Control Depth (ft)	Flow Type	Normal Depth (ft)	Critical Depth (ft)	Outlet Depth (ft)	Tailwater Depth (ft)	Outlet Velocity (ft/s)	Tailwater Velocity (ft/s)
0.00	0.00	693.00	0.000	0.000	0-NF	0.000	0.000	0.500	0.000	0.000	0.000
49.50	49.50	694.96	1.965	1.073	1-S2n	0.749	1.158	0.843	1.023	8.389	6.916
99.00	99.00	696.10	3.102	1.832	1-S2n	1.182	1.838	1.397	1.630	10.122	8.676
148.50	148.50	697.05	4.047	2.617	1-S2n	1.555	2.409	1.883	2.163	11.264	9.809
198.00	198.00	697.92	4.921	3.465	1-S2n	1.899	2.918	2.327	2.658	12.153	10.642
247.50	247.50	698.80	5.801	4.391	5-S2n	2.223	3.386	2.744	3.130	12.887	11.297
291.00	291.00	699.63	6.630	5.275	5-S2n	2.496	3.772	3.092	3.531	13.445	11.772
346.50	329.38	700.43	7.431	6.264	5-S2n	2.731	4.097	3.387	4.030	13.893	12.282
396.00	348.21	700.85	7.853	6.962	5-S2n	2.845	4.251	3.529	4.466	14.097	12.668
445.50	363.82	701.22	8.219	7.620	5-JS1f	2.938	4.378	5.000	4.894	10.395	13.004
495.00	377.54	701.55	8.553	8.252	4-FFf	3.019	4.487	5.000	5.317	10.787	13.300

****

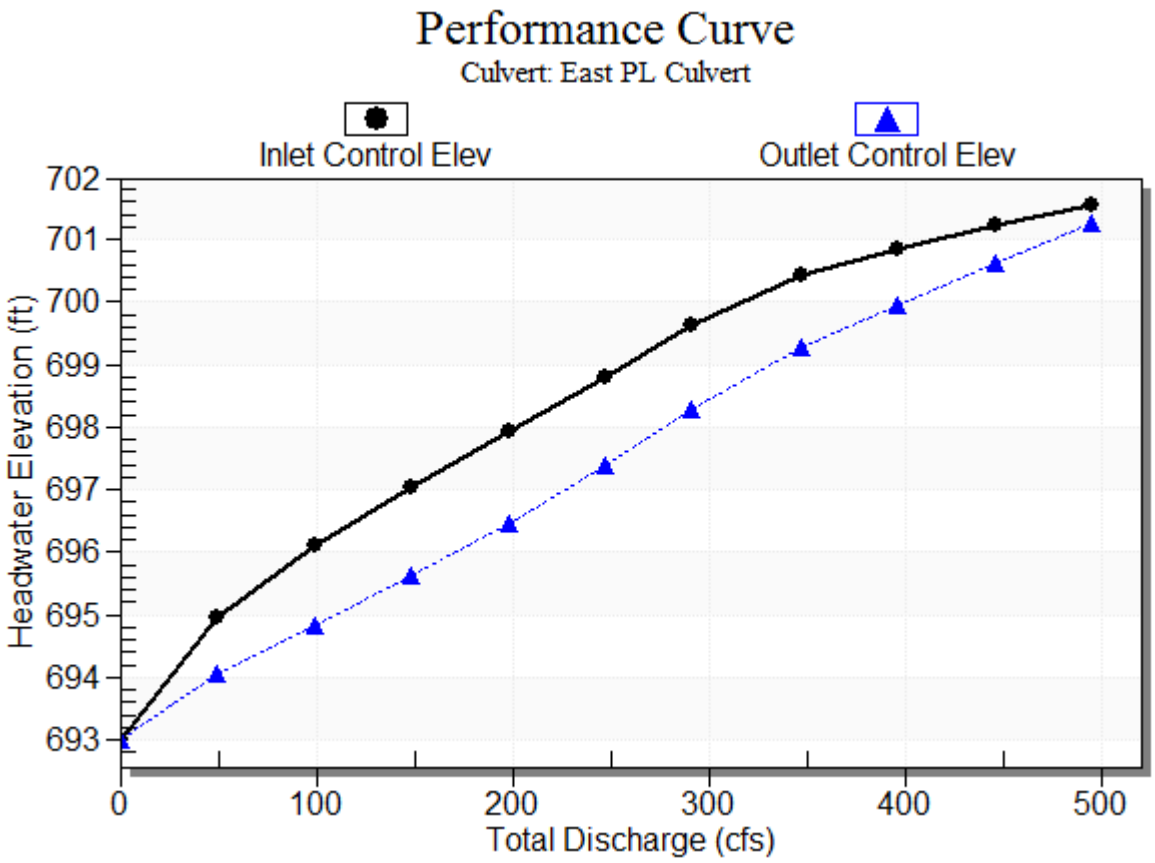
Straight Culvert

Inlet Elevation (invert): 693.00 ft, Outlet Elevation (invert): 692.50 ft

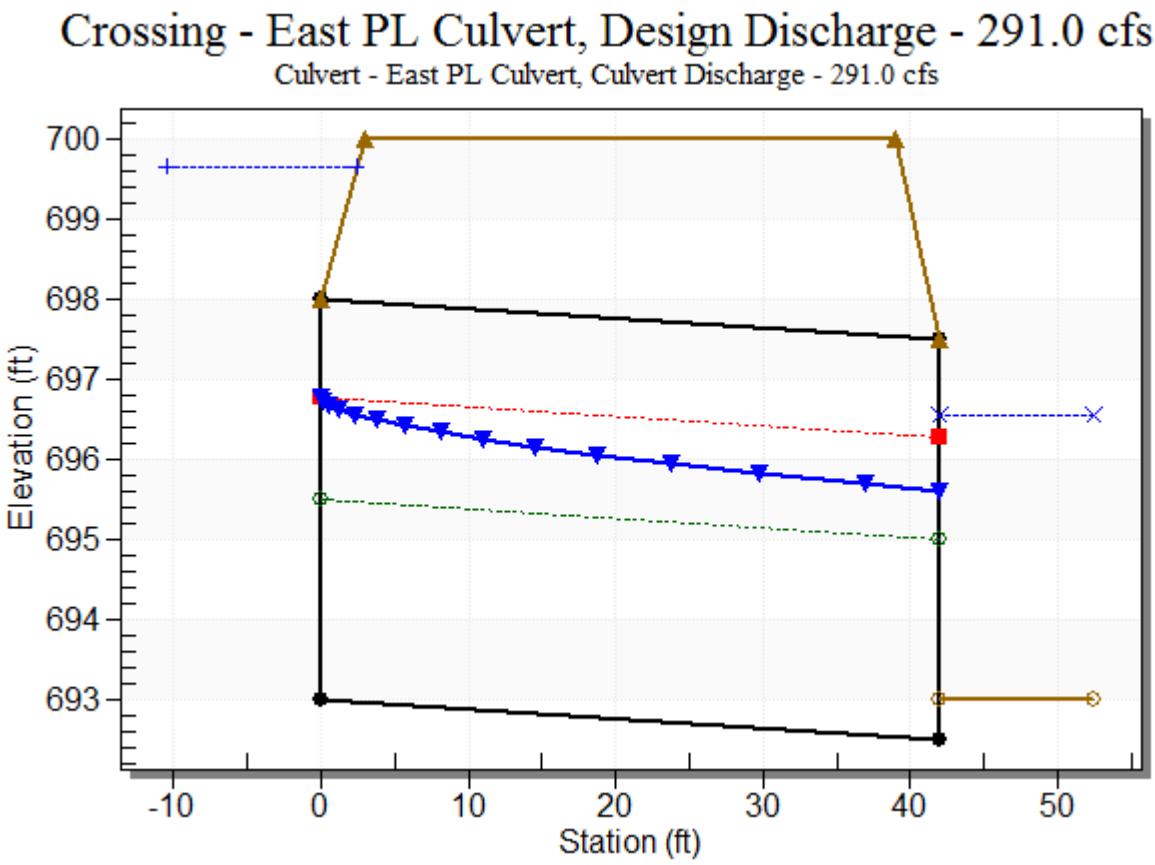
Culvert Length: 42.00 ft, Culvert Slope: 0.0119

****

Culvert Performance Curve Plot: East PL Culvert



Water Surface Profile Plot for Culvert: East PL Culvert



Site Data - East PL Culvert

Site Data Option: Culvert Invert Data

Inlet Station: 0.00 ft

Inlet Elevation: 693.00 ft

Outlet Station: 42.00 ft

Outlet Elevation: 692.50 ft

Number of Barrels: 1

Culvert Data Summary - East PL Culvert

Barrel Shape: Concrete Box

Barrel Span: 7.00 ft

Barrel Rise: 5.00 ft

Barrel Material: Concrete

Embedment: 0.00 in

Barrel Manning's n: 0.0130

Culvert Type: Straight

Inlet Configuration: Square Edge (90º) Headwall

Inlet Depression: None

Table 6 - Downstream Channel Rating Curve (Crossing: East PL Culvert)

Flow (cfs)	Water Surface Elev (ft)	Depth (ft)	Velocity (ft/s)	Shear (psf)	Froude Number
0.00	693.00	0.00	0.00	0.00	0.00
49.50	694.02	1.02	6.92	0.32	1.21
99.00	694.63	1.63	8.68	0.51	1.20
148.50	695.16	2.16	9.81	0.67	1.18
198.00	695.66	2.66	10.64	0.83	1.15
247.50	696.13	3.13	11.30	0.98	1.13
291.00	696.53	3.53	11.77	1.10	1.10
346.50	697.03	4.03	12.28	1.26	1.08
396.00	697.47	4.47	12.67	1.39	1.06
445.50	697.89	4.89	13.00	1.53	1.04
495.00	698.32	5.32	13.30	1.66	1.02

Tailwater Channel Data - East PL Culvert

Tailwater Channel Option: Rectangular Channel

Bottom Width: 7.00 ft

Channel Slope: 0.0050

Channel Manning's n: 0.0130

Channel Invert Elevation: 693.00 ft

Roadway Data for Crossing: East PL Culvert

Roadway Profile Shape: Constant Roadway Elevation

Crest Length: 20.00 ft

Crest Elevation: 700.00 ft

Roadway Surface: Paved

Roadway Top Width: 36.00 ft

Crossing Discharge Data

Discharge Selection Method: Specify Minimum, Design, and Maximum Flow

Minimum Flow: 0 cfs

Design Flow: 291 cfs

Maximum Flow: 495 cfs

Table 7 - Summary of Culvert Flows at Crossing: West PL Crossing

Headwater Elevation (ft)	Total Discharge (cfs)	Culvert 1 Discharge (cfs)	Roadway Discharge (cfs)	Iterations
693.00	0.00	0.00	0.00	1
694.99	49.50	49.50	0.00	1
696.16	99.00	99.00	0.00	1
697.14	148.50	148.50	0.00	1
698.01	198.00	198.00	0.00	1
698.83	247.50	247.50	0.00	1
699.65	291.00	291.00	0.00	1
700.44	346.50	328.76	17.72	4
700.86	396.00	347.52	48.44	4
701.23	445.50	363.11	82.37	4
701.56	495.00	376.83	118.16	4
700.00	307.98	307.98	0.00	Overtopping

Rating Curve Plot for Crossing: West PL Crossing

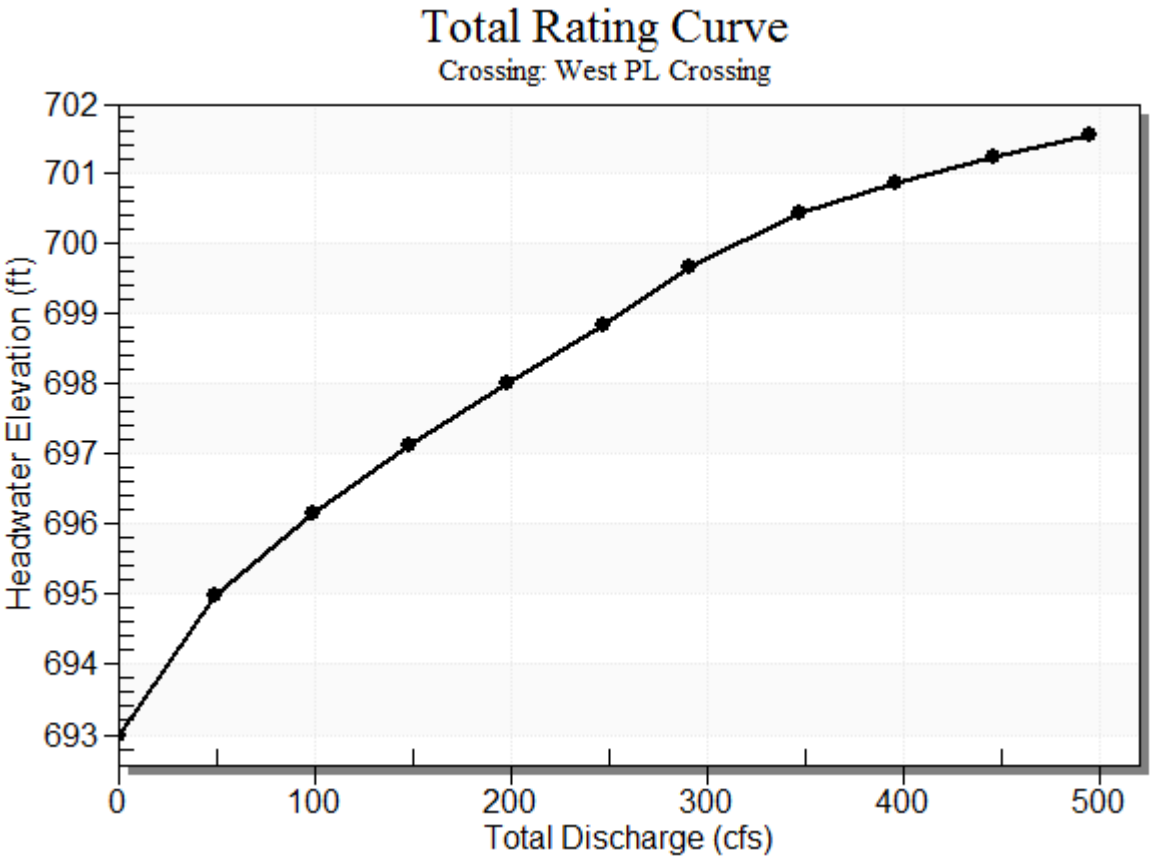


Table 8 - Culvert Summary Table: Culvert 1

Total Discharge (cfs)	Culvert Discharge (cfs)	Headwater Elevation (ft)	Inlet Control Depth (ft)	Outlet Control Depth (ft)	Flow Type	Normal Depth (ft)	Critical Depth (ft)	Outlet Depth (ft)	Tailwater Depth (ft)	Outlet Velocity (ft/s)	Tailwater Velocity (ft/s)
0.00	0.00	693.00	0.000	0.000	0-NF	0.000	0.000	0.500	0.000	0.000	0.000
49.50	49.50	694.99	1.984	1.989	3-M1t	1.276	1.158	1.523	1.023	4.645	6.916
99.00	99.00	696.16	3.126	3.157	3-M1t	2.057	1.838	2.130	1.630	6.639	8.676
148.50	148.50	697.14	4.071	4.137	3-M2t	2.752	2.409	2.663	2.163	7.967	9.809
198.00	198.00	698.01	4.944	5.014	3-M2t	3.405	2.918	3.158	2.658	8.957	10.642
247.50	247.50	698.83	5.825	5.820	3-M2t	4.033	3.386	3.630	3.130	9.741	11.297
291.00	291.00	699.65	6.654	6.485	3-M2t	5.000	3.772	4.031	3.531	10.312	11.772
346.50	328.76	700.44	7.441	7.040	3-M2t	5.000	4.092	4.530	4.030	10.367	12.282
396.00	347.52	700.86	7.861	7.702	7-M2t	5.000	4.246	4.966	4.466	9.998	12.668
445.50	363.11	701.23	8.226	8.446	4-FFf	5.000	4.372	5.000	4.894	10.375	13.004
495.00	376.83	701.56	8.559	9.143	4-FFf	5.000	4.481	5.000	5.317	10.766	13.300

****

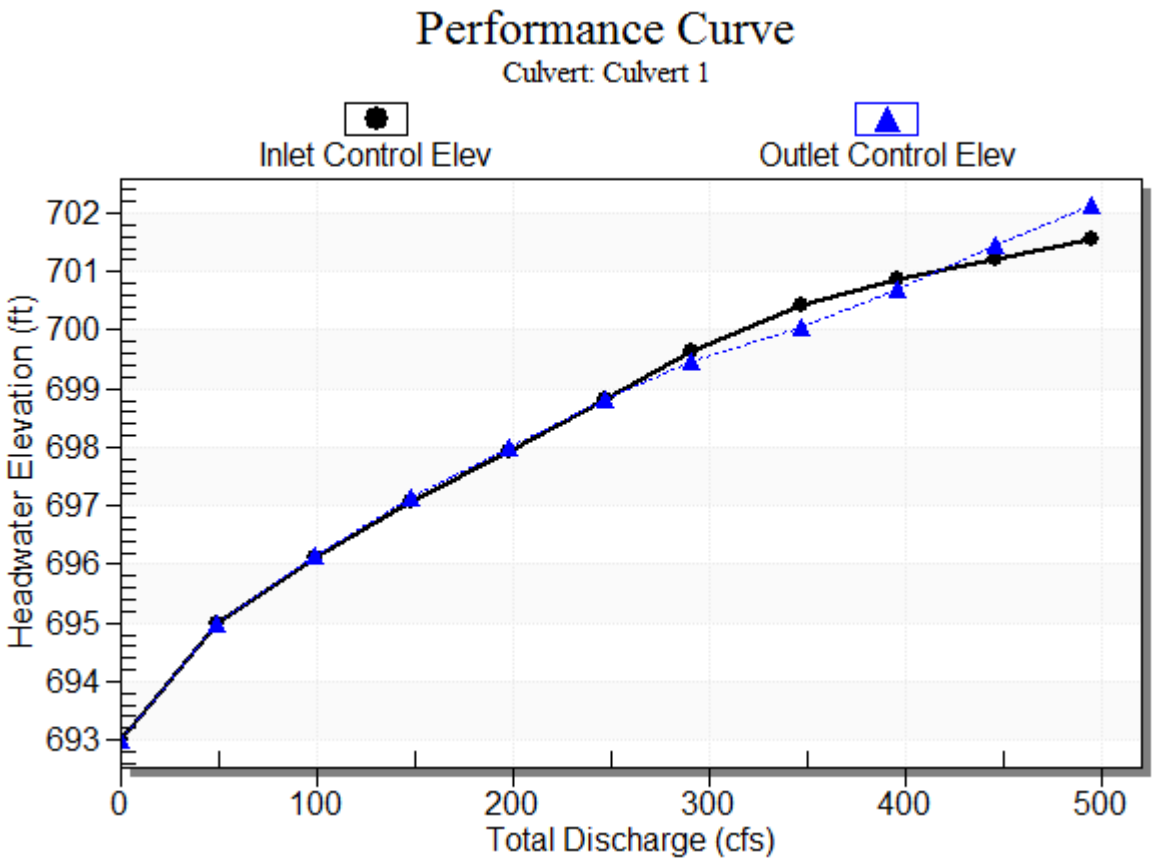
Straight Culvert

Inlet Elevation (invert): 693.00 ft, Outlet Elevation (invert): 692.50 ft

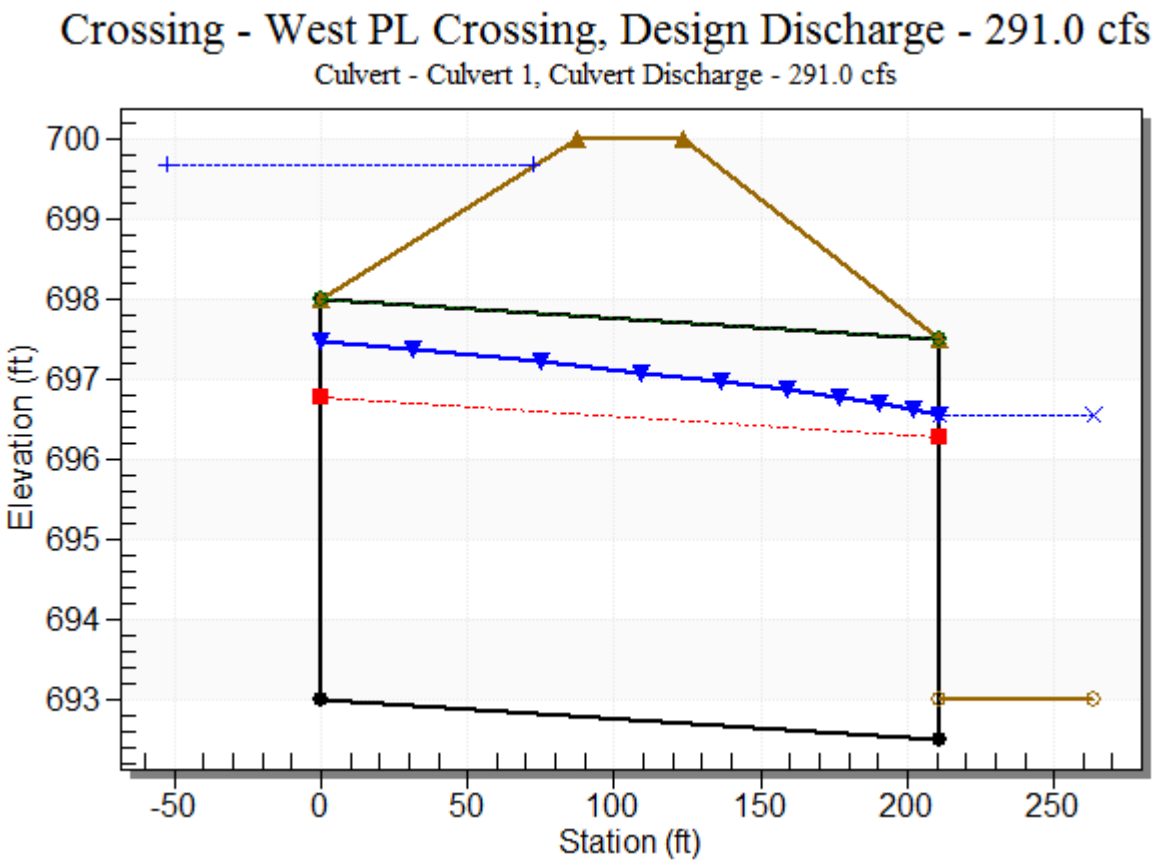
Culvert Length: 211.00 ft, Culvert Slope: 0.0024

****

Culvert Performance Curve Plot: Culvert 1



Water Surface Profile Plot for Culvert: Culvert 1



Site Data - Culvert 1

Site Data Option: Culvert Invert Data

Inlet Station: 0.00 ft

Inlet Elevation: 693.00 ft

Outlet Station: 211.00 ft

Outlet Elevation: 692.50 ft

Number of Barrels: 1

Culvert Data Summary - Culvert 1

Barrel Shape: Concrete Box

Barrel Span: 7.00 ft

Barrel Rise: 5.00 ft

Barrel Material: Concrete

Embedment: 0.00 in

Barrel Manning's n: 0.0130

Culvert Type: Straight

Inlet Configuration: Square Edge (90º) Headwall

Inlet Depression: None

Table 9 - Downstream Channel Rating Curve (Crossing: West PL Crossing)

Flow (cfs)	Water Surface Elev (ft)	Depth (ft)	Velocity (ft/s)	Shear (psf)	Froude Number
0.00	693.00	0.00	0.00	0.00	0.00
49.50	694.02	1.02	6.92	0.32	1.21
99.00	694.63	1.63	8.68	0.51	1.20
148.50	695.16	2.16	9.81	0.67	1.18
198.00	695.66	2.66	10.64	0.83	1.15
247.50	696.13	3.13	11.30	0.98	1.13
291.00	696.53	3.53	11.77	1.10	1.10
346.50	697.03	4.03	12.28	1.26	1.08
396.00	697.47	4.47	12.67	1.39	1.06
445.50	697.89	4.89	13.00	1.53	1.04
495.00	698.32	5.32	13.30	1.66	1.02

Tailwater Channel Data - West PL Crossing

Tailwater Channel Option: Rectangular Channel

Bottom Width: 7.00 ft

Channel Slope: 0.0050

Channel Manning's n: 0.0130

Channel Invert Elevation: 693.00 ft

Roadway Data for Crossing: West PL Crossing

Roadway Profile Shape: Constant Roadway Elevation

Crest Length: 20.00 ft

Crest Elevation: 700.00 ft

Roadway Surface: Paved

Roadway Top Width: 36.00 ft

WEIR CALCULATIONS

CONSULTING ENGINEERS

Bollinger, Lach & Associates, Inc.

JOB NO.:		SHEET:	OF:
PROJECT:			
SUBJECT:			
BY:	DATE:	CK:	DATE:

TORCH PARKWAY - COMMERCIAL DRIVE

TORCH PARKWAY OVERFLOW WEIR S. OF TOWNHOMES

TR C NORTH / EAST EDGE OF PAVEMENT CONTROLS

EAST TO WEST

700.76 - 0' - 0
700.65 - 47' - 47
699.32 - 50' - 97
699.15 - 29' - 126
699.31 - 24' - 150
699.52 - 15' - 165
699.45 - 15' - 180
699.28 - 18' - 198
699.43 - 33' - 201
699.92 - 47' - 248
700.45 - 48' - 296

WEIR WEST OF T.P

0 - 701
4 - 700
8 - 699
98 - 699
102 - 700
106 - 701

Free Online Segmented, Variable Depth, Irregular Broad-crested Weir Flow Calculator

>> Drop your fears at the door; love is spoken here. <<

Irregular Broad-crested Weir Flow Calculator

Can you help me translate, program, or host these calculators? (../contact.php) [Hide this request]

RIVERVIEW WEST-PROPOSED

COMMERCIAL DRIVE WEIR T/C @ Commercial Drive From Pond.

Headwater elevation	700.29
Weir coefficient, Cw ? (http://epg.modot.org/files/b/bc/749_Broad-Crested_Weir_Coefficients.pdf)	2.68

Weir points +/-

Station (distance)	Elevation	Ponding Height	Incremental Flow	Cumulative Flow
0	700.76	0.00		
47	700.05	0.24	2.00	2.00
97	699.32	0.97	65.97	67.97
126	699.15	1.14	84.29	152.26
150	699.31	0.98	70.24	222.50
165	699.52	0.77	32.96	255.47
180	699.45	0.84	29.04	284.51
198	699.28	1.01	42.96	327.47
201	699.43	0.86	7.27	334.74
248	699.92	0.37	61.96	396.71
296	700.45	0.00	8.08	404.79
296	705	0.00	0.00	404.79
296	705	0.00	0.00	404.79

Save and Calculate

Please give us your valued words of suggestion or praise. Did this free calculator exceed your expectations in every way? (../contact.php) [Hide this request]

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Irregular Broad-crested Weir Flow Calculator

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RIVERVIEW WEST-PROPOSED

COMMERCIAL DRIVE WEIR - West of T.P. to Pond outlet 'A'

Headwater elevation	700.4
Weir coefficient, Cw ? (http://epg.modot.org/files/b/bc/749_Broad-Crested_Weir_Coefficients.pdf)	2.68

Weir points +/-

Station (distance)	Elevation	Ponding Height	Incremental Flow	Cumulative Flow
0	701	0.00		
4	700	0.40	0.43	0.43
8	699	1.40	9.51	9.94
98	699	1.40	399.55	409.49
102	700	0.40	9.51	419.00
106	701	0.00	0.43	419.44
180	800	0.00	0.00	419.44
198	800	0.00	0.00	419.44
201	800	0.00	0.00	419.44
248	800	0.00	0.00	419.44
296	800	0.00	0.00	419.44
296	800	0.00	0.00	419.44
296	800	0.00	0.00	419.44

Save and Calculate

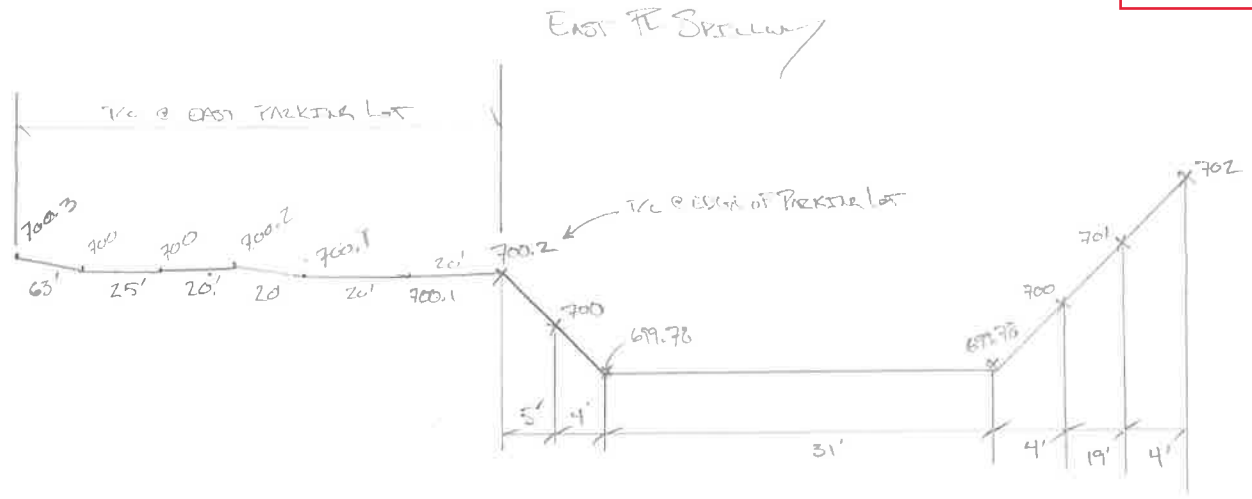
Please give us your valued words of suggestion or praise. Did this free calculator exceed your expectations in every way? (../contact.php) [Hide this request]

CONSULTING ENGINEERS

Bollinger, Lach & Associates, Inc.

JOB NO.: 080-020		SHEET:	OF:
PROJECT: Rogue Valley West - Final PUD			
SUBJECT: Spillway Calculations			
BY: KCK	DATE: 09/26/18	CK: BLA	DATE: 9/26/18

EAST PROPERTY LINE



5'x7' Box Culvert Has Capacity of 247cfs.

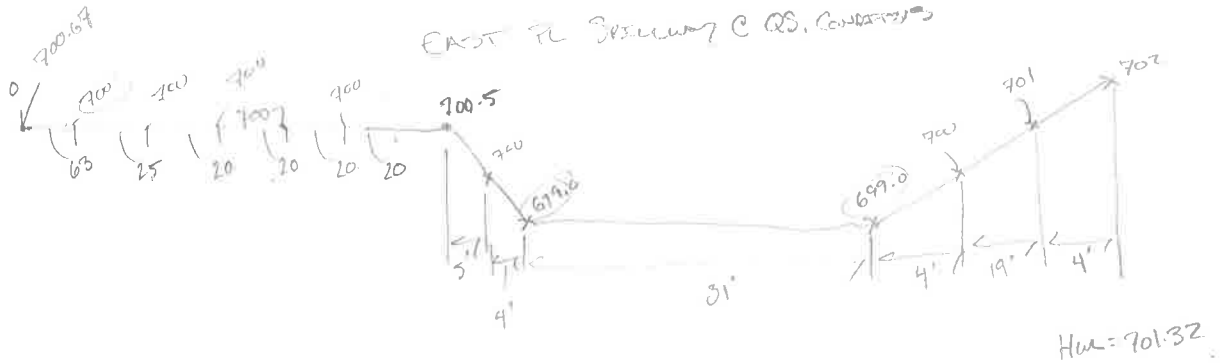
Overtop: 1100 - 247 = 853cfs.

Water Will Cross East Side of Parking Lot As Well As over Culvert

Flow Through Weir @ Parking Lot @ 700.50 = 177cfs.

Total Flow Through Weir & Culvert @ 700.50 = 247 + 177 = 424cfs.

Flow Through Weir Area @ ELEV = 700.84 = 411cfs.



HWL = 701.32

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Irregular Broad-crested Weir Flow Calculator

Can you help me translate, program, or host these calculators? (../contact.php) [Hide this request]

RIVERVIEW WEST-PROPOSED

QUICK START EAST PROPERTY LINE QUICK START CONFIGURATION

Headwater elevation	700.68
Weir coefficient, Cw ? (http://epg.modot.org/files/b/bc/749_Broad-Crested_Weir_Coefficients.pdf)	2.68

Weir points +/-

Station (distance)	Elevation	Ponding Height	Incremental Flow	Cumulative Flow
0	700.67	0.01		
63	700	0.68	38.43	38.43
88	700	0.68	37.57	76.00
108	700	0.68	30.06	106.06
128	700	0.68	30.06	136.12
148	700	0.68	30.06	166.17
168	700.5	0.18	15.76	181.93
173	700	0.68	3.94	185.87
177	699	1.68	14.05	199.92
208	699	1.68	180.91	380.83
212	700	0.68	14.05	394.88
231	701	0.00	7.77	402.65
235	702	0.00	0.00	402.65

Save and Calculate

Please give us your valued words of suggestion or praise. Did this free calculator exceed your expectations in every way? (../contact.php) [Hide this request]

Free Online Segmented, Variable Depth, Irregular Broad-crested Weir Flow Calculator

>> Nationalism not welcome here. <<

Irregular Broad-crested Weir Flow Calculator

Can you help me translate, program, or host these calculators? (../contact.php) [Hide this request]

RIVERVIEW WEST-~~QUICK START~~ FINAL

OVERFLOW AT EAST PL

Headwater elevation	700.5
Weir coefficient, Cw ? (http://epg.modot.org/files/b/bc/749_Broad-Crested_Weir_Coefficients.pdf)	2.68

Weir points +/-

Station	Elevation	Ponding Height	Incremental Flow	Cumulative Flow
0	700.3	0.20		
63	700	0.50	35.77	35.77
88	700	0.50	23.69	59.46
108	700.2	0.30	13.67	73.12
128	700.1	0.40	11.13	84.25
148	700.1	0.40	13.56	97.81
168	700.2	0.30	11.13	108.94
173	700	0.50	3.42	112.35
177	699.78	0.72	5.13	117.48
208	699.78	0.72	50.76	168.24
212	700	0.50	5.13	173.37
231	701	0.00	3.60	176.97
235	702	0.00	0.00	176.97
	705	0.00	0.00	176.97
	705	0.00	0.00	176.97
	705	0.00	0.00	176.97
	705	0.00	0.00	176.97
	705	0.00	0.00	176.97

BALANCE OF 400cfs FROM TRICKLE CHANNEL

Free Online Segmented, Variable Depth, Irregular Broad-crested Weir Flow Calculator

>> Nationalism not welcome here. <<

Irregular Broad-crested Weir Flow Calculator

Can you help me translate, program, or host these calculators? (../contact.php) [Hide this request]

RIVERVIEW WEST-~~QUICK START~~ FLOW

OVERFLOW AT EAST PL

Headwater elevation	700.84
Weir coefficient, Cw ? (http://epg.modot.org/files/b/bc/749_Broad-Crested_Weir_Coefficients.pdf)	2.68

Weir points +/-

Station	Elevation	Ponding Height	Incremental Flow	Cumulative Flow
0	700.3	0.54		
63	700	0.84	97.34	97.34
88	700	0.84	51.58	148.93
108	700.2	0.64	34.20	183.12
128	700.1	0.74	30.74	213.87
148	700.1	0.74	34.12	247.99
168	700.2	0.64	30.74	278.73
173	700	0.84	8.55	287.28
177	699.78	1.06	9.94	297.22
208	699.78	1.06	90.67	387.89
212	700	0.84	9.94	397.83
231	701	0.00	13.17	411.00
235	702	0.00	0.00	411.00
	705	0.00	0.00	411.00
	705	0.00	0.00	411.00
	705	0.00	0.00	411.00
	705	0.00	0.00	411.00
	705	0.00	0.00	411.00

ASSUMES NO (0) FLOW THROUGH CULVERT

Weir points +/-				
Station	**Elevation**	**Ponding Height**	**Incremental Flow**	**Cumulative Flow**
	705	0.00	0.00	411.00
	705	0.00	0.00	411.00
	705	0.00	0.00	411.00
	705	0.00	0.00	411.00

Save and Calculate

Please give us your valued words of suggestion or praise. Did this free calculator exceed your expectations in every way? (../contact.php) [Hide this request]

Notes

Weir Equation

q = if (length = 0) then 0 else if (slope=0) then cw*length*$d0^{1.5}$ else cw/(2.5*slope) * ($d0^{2.5}$ - $d1^{2.5}$) where d1 and d0 are always positive or zero

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CONSULTING ENGINEERS

Bollinger, Lach & Associates, Inc.

JOB NO.: 080-020		SHEET:	OF:
PROJECT: Rivulon West - Final PUD			
SUBJECT: Spillway Calculations.			
BY: KEK	DATE: 09/20/18	CK: GNO	DATE: 9/26/18

North End of East Parking Lot:



Flow will spill over North edge of Parking Lot @ Elevation 700

At Elevation 701.1, North edge of Parking Lot will pass 402.56cfs.

Free Online Segmented, Variable Depth, Irregular Broad-crested Weir Flow Calculator

>> Nationalism not welcome here. <<

Irregular Broad-crested Weir Flow Calculator

Can you help me translate, program, or host these calculators? (../contact.php) [Hide this request]

RIVERVIEW WEST-QUICK START

OVERFLOW AT EAST PL

Headwater elevation	701.14
Weir coefficient, Cw ? (http://epg.modot.org/files/b/bc/749_Broad-Crested_Weir_Coefficients.pdf)	2.68

Weir points +/-

Station	Elevation	Ponding Height	Incremental Flow	Cumulative Flow
0	701.1	0.04		
48	700	1.14	64.89	64.89
100	700.5	0.64	118.17	183.06
144	700	1.14	99.99	283.05
186	700.2	0.94	119.52	402.57
	80000	0.00	-0.00	402.57
	80000	0.00	-0.00	402.56
	80000	0.00	-0.00	402.56
	80000	0.00	-0.00	402.56
	80000	0.00	-0.00	402.56
	80000	0.00	-0.00	402.56
	80000	0.00	-0.00	402.55
	80000	0.00	-0.00	402.55
	80000	0.00	-0.00	402.55
	80000	0.00	-0.00	402.55
	80000	0.00	-0.00	402.54
	80000	0.00	-0.00	402.54
	80000	0.00	-0.00	402.54

Weir points +/-				
Station	**Elevation**	**Ponding Height**	**Incremental Flow**	**Cumulative Flow**
	80000	0.00	-0.00	402.54
	80000	0.00	-0.00	402.54
	80000	0.00	-0.00	402.53
	80000	0.00	-0.00	402.53

Save and Calculate

Please give us your valued words of suggestion or praise. Did this free calculator exceed your expectations in every way? (../contact.php) [Hide this request]

Notes

Weir Equation

q = if (length = 0) then 0 else if (slope=0) then cw*length*$d0^{1.5}$ else cw/(2.5*slope) * ($d0^{2.5}$ - $d1^{2.5}$) where d1 and d0 are always positive or zero

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CONSULTING ENGINEERS

Bollinger, Lach & Associates, Inc.

JOB NO.: 080-020		SHEET: 1	OF:
PROJECT: Riverview West – Future POD			
SUBJECT: Spillway Calculations.			
BY:	DATE:	CK: BLA	DATE: 9/26/18

EXISTING OUTFALL

OVERFLOW @ EXISTING POND OUTLET

FLOW THROUGH EXISTING STRUCTURE @ ELEVATION 700.78 ≐ 178 cfs

66" RCP @ 0.42% = 217.56 cfs. > 178 cfs ✓OK

FLOW OVER SPILLWAY IN SAG, ROADWAY PROFILE @ 700.78 = 298.95 (700.78 = Low Pt 699.78 + 1')

TOTAL FLOW THROUGH SPILLWAY STRUCTURE + ROAD PROFILE = 178 + 291 = 469 cfs

TOTAL FLOW FROM EXISTING POND OVERFLOW = 469 cfs.

FLOW OVER SPILLWAY ALONE @ ELEV 701 = 449 cfs.

Free Online Segmented, Variable Depth, Irregular Broad-crested Weir Flow Calculator

>> Nationalism not welcome here. <<

Irregular Broad-crested Weir Flow Calculator

Can you help me translate, program, or host these calculators? (../contact.php) [Hide this request]

RIVERVIEW WEST-PROPOSED

OVERFLOW AT EXISTING POND OUTLET

Headwater elevation	700.78
Weir coefficient, Cw ? (http://epg.modot.org/files/b/bc/749_Broad-Crested_Weir_Coefficients.pdf)	2.68

Weir points +/-

Station	Elevation	Ponding Height	Incremental Flow	Cumulative Flow
21206	700.57	0.21		
21225	700.59	0.19	4.56	4.56
21231	700.58	0.20	1.38	5.94
21250	700.43	0.35	7.41	13.35
21256	700.35	0.43	3.92	17.27
21269	700.18	0.60	12.92	30.19
21275	700.10	0.68	8.24	38.43
21300	699.87	0.91	47.62	86.05
21319	699.79	0.99	47.16	133.21
21325	699.78	1.00	15.96	149.17
21350	699.85	0.93	63.52	212.69
21369	699.99	0.79	40.64	253.33
21375	700.5	0.28	6.47	259.81
21400	700.29	0.49	16.15	275.96
21425	700.54	0.24	14.99	290.95

Assumes free flowing spillway

Save and Calculate

Please give us your valued words of suggestion or praise. Did this free calculator exceed your expectations

Free Online Segmented, Variable Depth, Irregular Broad-crested Weir Flow Calculator

>> Nationalism not welcome here. <<

Irregular Broad-crested Weir Flow Calculator

Can you help me translate, program, or host these calculators? (../contact.php) [Hide this request]

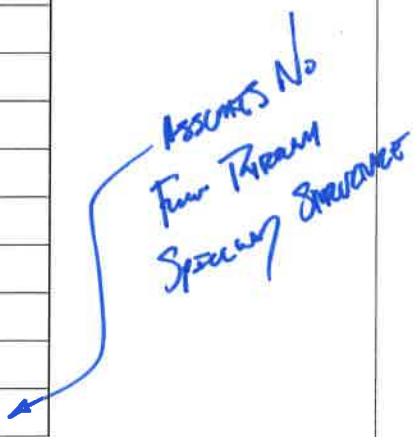
RIVERVIEW WEST-PROPOSED

OVERFLOW AT EXISTING POND OUTLET

Headwater elevation	701
Weir coefficient, Cw ? (http://epg.modot.org/files/b/bc/749_Broad-Crested_Weir_Coefficients.pdf)	2.68

Weir points +/-

Station	Elevation	Ponding Height	Incremental Flow	Cumulative Flow
21206	700.57	0.43		
21225	700.59	0.41	13.86	13.86
21231	700.58	0.42	4.30	18.16
21250	700.43	0.57	17.78	35.94
21256	700.35	0.65	7.67	43.61
21269	700.18	0.82	21.99	65.60
21275	700.10	0.90	12.83	78.43
21300	699.87	1.13	68.62	147.05
21319	699.79	1.21	64.45	211.50
21325	699.78	1.22	21.54	233.04
21350	699.85	1.15	86.44	319.47
21369	699.99	1.01	57.18	376.66
21375	700.5	0.50	10.70	387.36
21400	700.29	0.71	31.65	419.00
21425	700.54	0.46	30.15	449.15



Save and Calculate

Please give us your valued words of suggestion or praise. Did this free calculator exceed your expectations

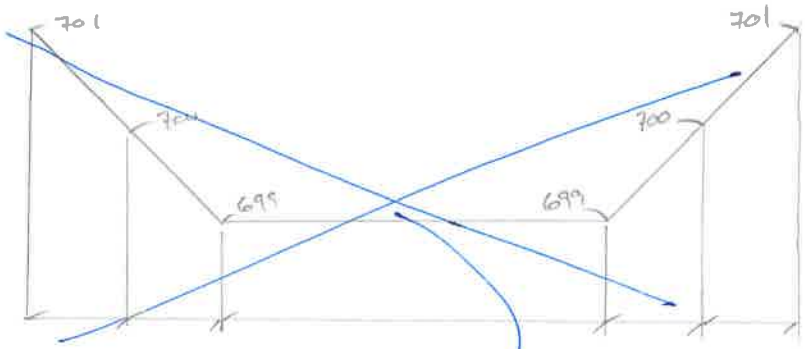
CONSULTING ENGINEERS

Bollinger, Lach & Associates, Inc.

JOB NO.: 080-070		SHEET:	OF:
PROJECT: River View West - Final PUD			
SUBJECT: Spillway Grades.			
BY: KLK	DATE: 09/26/18	CK: BLA	DATE: 9/26/18

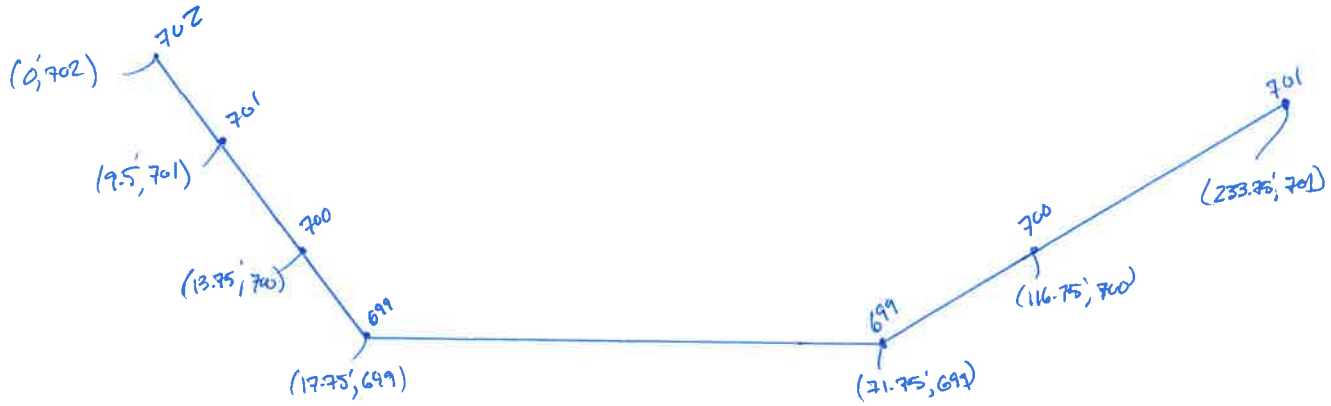
OUTLOT A

Out Lot A Spillway



Weir Capacity = 443cfs.

Revised for F.P.D. Comments.



Free Online Segmented, Variable Depth, Irregular Broad-crested Weir Flow Calculator

>> Nationalism not welcome here. <<

Irregular Broad-crested Weir Flow Calculator

Can you help me translate, program, or host these calculators? (../contact.php) [Hide this request]

RIVERVIEW WEST-QUICK START

OVERFLOW AT OUTLOT A

Headwater elevation	700.5
Weir coefficient, Cw ? (http://epg.modot.org/files/b/bc/749_Broad-Crested_Weir_Coefficients.pdf)	2.68

Weir points +/-

Station	Elevation	Ponding Height	Incremental Flow	Cumulative Flow
0	701	0.00		
30	700	0.50	5.69	5.69
60	699	1.50	82.94	88.62
114	699	1.50	265.87	354.49
144	700	0.50	82.94	437.43
174	701	0.00	5.69	443.11
	702	0.00	0.00	443.11
	702	0.00	0.00	443.11
	702	0.00	0.00	443.11
	702	0.00	0.00	443.11
	702	0.00	0.00	443.11
	702	0.00	0.00	443.11
	702	0.00	0.00	443.11
	702	0.00	0.00	443.11
	702	0.00	0.00	443.11
	702	0.00	0.00	443.11
	702	0.00	0.00	443.11
0	702	0.00	0.00	443.11

Weir points +/-				
Station	**Elevation**	**Ponding Height**	**Incremental Flow**	**Cumulative Flow**
0	702	0.00	0.00	443.11
0	702	0.00	0.00	443.11
0	702	0.00	0.00	443.11

Save and Calculate

Please give us your valued words of suggestion or praise. Did this free calculator exceed your expectations in every way? (../contact.php) [Hide this request]

Notes

Weir Equation

q = if (length = 0) then 0 else if (slope=0) then cw*length*$d0^{1.5}$ else cw/(2.5*slope) * ($d0^{2.5}$ - $d1^{2.5}$) where d1 and d0 are always positive or zero

Free Online Segmented, Variable Depth, Irregular Broad-crested Weir Flow Calculator

>> Drop your fears at the door; love is spoken here. <<

Irregular Broad-crested Weir Flow Calculator

Can you help me translate, program, or host these calculators? (../contact.php) [Hide this request]

RIVERVIEW WEST-QUICK START & FINAL

OUTLOT A SPILLWAY REVISED PER F.P.D. COMMENTS.

Headwater elevation	700.5
Weir coefficient, Cw ? (http://epg.modot.org/files/b/bc/749_Broad-Crested_Weir_Coefficients.pdf)	2.68

Weir points +/-

Station (distance)	Elevation	Ponding Height	Incremental Flow	Cumulative Flow
0	702	0.00		
9.5	701	0.00	0.00	0.00
13.75	700	0.50	0.81	0.81
17.75	699	1.50	11.06	11.86
71.75	699	1.50	265.87	277.73
116.75	700	0.50	124.41	402.14
233.75	701	0.00	22.17	424.31

Save and Calculate

Please give us your valued words of suggestion or praise. Did this free calculator exceed your expectations in every way? (../contact.php) [Hide this request]

Notes

Weir Equation

q = if (length = 0) then 0 else if (slope=0) then cw*length*$d0^{1.5}$ else cw/(2.5*slope) * ($d0^{2.5}$ - $d1^{2.5}$) where d1 and d0 are always positive or zero

CONSULTING ENGINEERS

Bollinger, Lach & Associates, Inc.

JOB NO.: 080-020	SHEET: 2	OF:
PROJECT: Riverview West - Final PUD		
SUBJECT: Spillway Calculations		
BY: KCK	DATE: 09/20/18	CK: BLA	DATE: 9/26/18

POLLARD DRIVE

Spillway @ N-S Road

Overflow over Roadway / Weir Determined by Profile.

Flow Through 5'x3' Culvert = 247 cfs.

Flow over Road @ 1' Depth (Elevation 700.54) = 306.50 cfs.

Total Flow Culvert + Road = 247 + 306 = 553 cfs. @ Elev 700.54

± 401 cfs over Roadway Alone @ Elevation 700.68

Free Online Segmented, Variable Depth, Irregular Broad-crested Weir Flow Calculator

>> Nationalism not welcome here. <<

Irregular Broad-crested Weir Flow Calculator

Can you help me translate, program, or host these calculators? (../contact.php) [Hide this request]

RIVERVIEW WEST-~~QUICK START~~ FINAL

OVERFLOW AT N-S ROAD

Headwater elevation	700.54
Weir coefficient, Cw ? (http://epg.modot.org/files/b/bc/749_Broad-Crested_Weir_Coefficients.pdf)	2.68

Weir points +/-

Station	Elevation	Ponding Height	Incremental Flow	Cumulative Flow
650	702.1	0.00		
660	702	0.00	0.00	0.00
675	701.7	0.00	0.00	0.00
700	701.35	0.00	0.00	0.00
725	700.98	0.00	0.00	0.00
750	700.60	0.00	0.00	0.00
775	700.23	0.31	3.88	3.88
790	700	0.54	11.24	15.12
800	699.86	0.68	12.79	27.91
825	699.62	0.92	48.08	75.98
840	699.55	0.99	37.52	113.50
850	699.54	1.00	26.60	140.10
875	699.61	0.93	63.52	203.63
890	699.72	0.82	32.92	236.55
900	699.81	0.73	18.29	254.84
925	700.05	0.49	32.08	286.92
950	700.28	0.26	15.57	302.48
975	700.51	0.03	4.00	306.48

ASSUMES FLOW THROUGH CULVERT

Weir points +/-				
Station	**Elevation**	**Ponding Height**	**Incremental Flow**	**Cumulative Flow**
1000	700.75	0.00	0.02	306.50
1025	700.98	0.00	0.00	306.50
1050	701.21	0.00	0.00	306.50
1056	701.27	0.00	0.00	306.50

Save and Calculate

Please give us your valued words of suggestion or praise. Did this free calculator exceed your expectations in every way? (../contact.php) [Hide this request]

Notes

Weir Equation

q = if (length = 0) then 0 else if (slope=0) then cw*length*$d0^{1.5}$ else cw/(2.5*slope) * ($d0^{2.5}$ - $d1^{2.5}$) where d1 and d0 are always positive or zero

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Free Online Segmented, Variable Depth, Irregular Broad-crested Weir Flow Calculator

>> Nationalism not welcome here. <<

Irregular Broad-crested Weir Flow Calculator

Can you help me translate, program, or host these calculators? (../contact.php) [Hide this request]

RIVERVIEW WEST-~~QUICK START~~ FINAL

OVERFLOW AT N-S ROAD

Headwater elevation	700.68
Weir coefficient, Cw ? (http://epg.modot.org/files/b/bc/749_Broad-Crested_Weir_Coefficients.pdf)	2.68

Weir points +/-

Station	Elevation	Ponding Height	Incremental Flow	Cumulative Flow
650	702.1	0.00		
660	702	0.00	0.00	0.00
675	701.7	0.00	0.00	0.00
700	701.35	0.00	0.00	0.00
725	700.98	0.00	0.00	0.00
750	700.60	0.08	0.13	0.13
775	700.23	0.45	9.71	9.84
790	700	0.68	17.16	27.00
800	699.86	0.82	17.43	44.42
825	699.62	1.06	61.19	105.61
840	699.55	1.13	46.07	151.68
850	699.54	1.14	32.41	184.08
875	699.61	1.07	77.83	261.92
890	699.72	0.96	41.12	303.04
900	699.81	0.87	23.46	326.50
925	700.05	0.63	43.66	370.16
950	700.28	0.40	24.92	395.08
975	700.51	0.17	10.40	405.48

ASSUMES NO FLOW THROUGH CULVERT.

Weir points +/-				
Station	**Elevation**	**Ponding Height**	**Incremental Flow**	**Cumulative Flow**
1000	700.75	0.00	1.33	406.81
1025	700.98	0.00	0.00	406.81
1050	701.21	0.00	0.00	406.81
1056	701.27	0.00	0.00	406.81

Save and Calculate

Please give us your valued words of suggestion or praise. Did this free calculator exceed your expectations in every way? (../contact.php) [Hide this request]

Notes

Weir Equation

q = if (length = 0) then 0 else if (slope=0) then cw*length*$d0^{1.5}$ else cw/(2.5*slope) * ($d0^{2.5}$ - $d1^{2.5}$) where d1 and d0 are always positive or zero

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Site Runoff Storage
(Tab 2)

RIVERVIEW WEST

City of Warrenville
DuPage County, Illinois

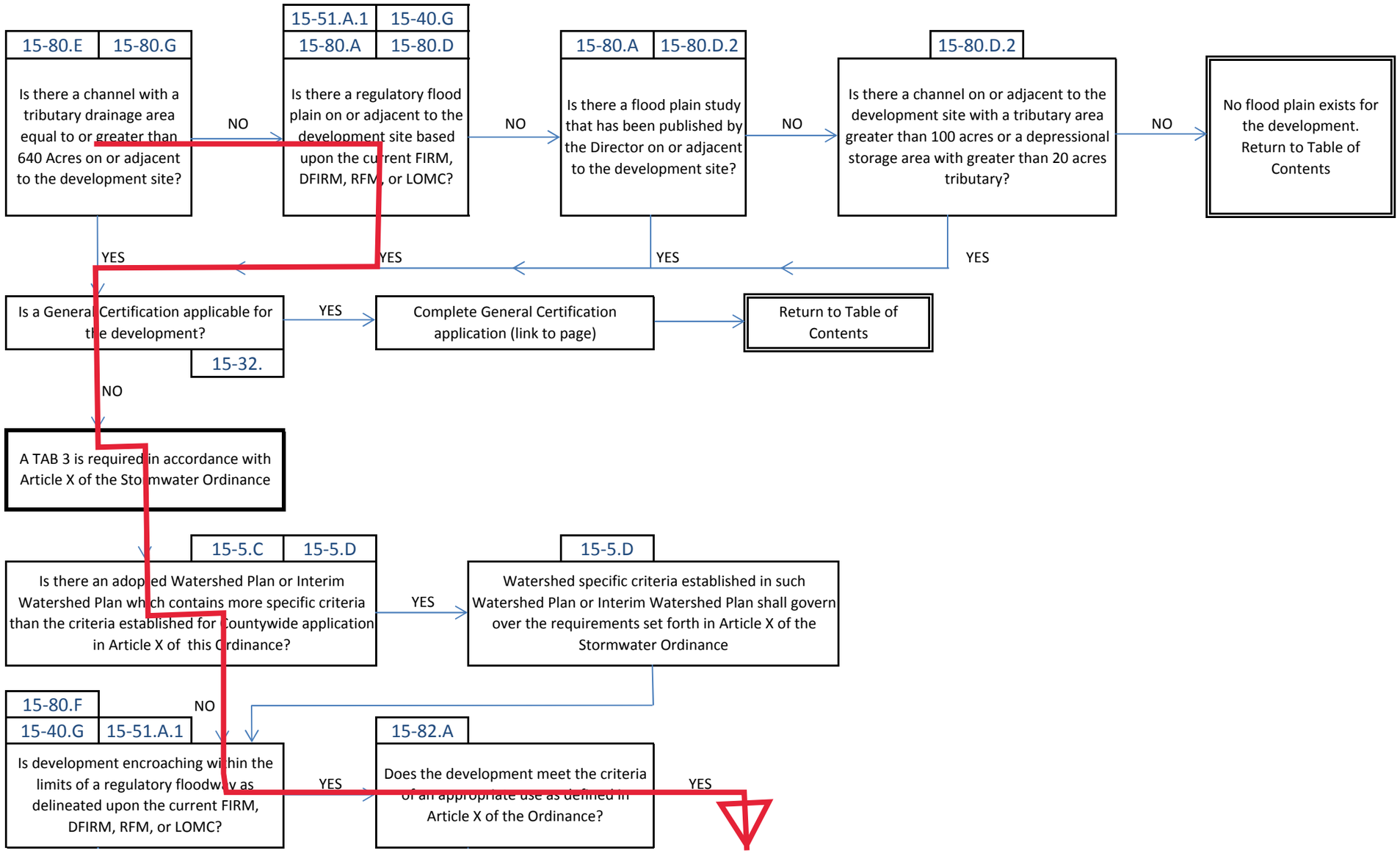
Prepared by:

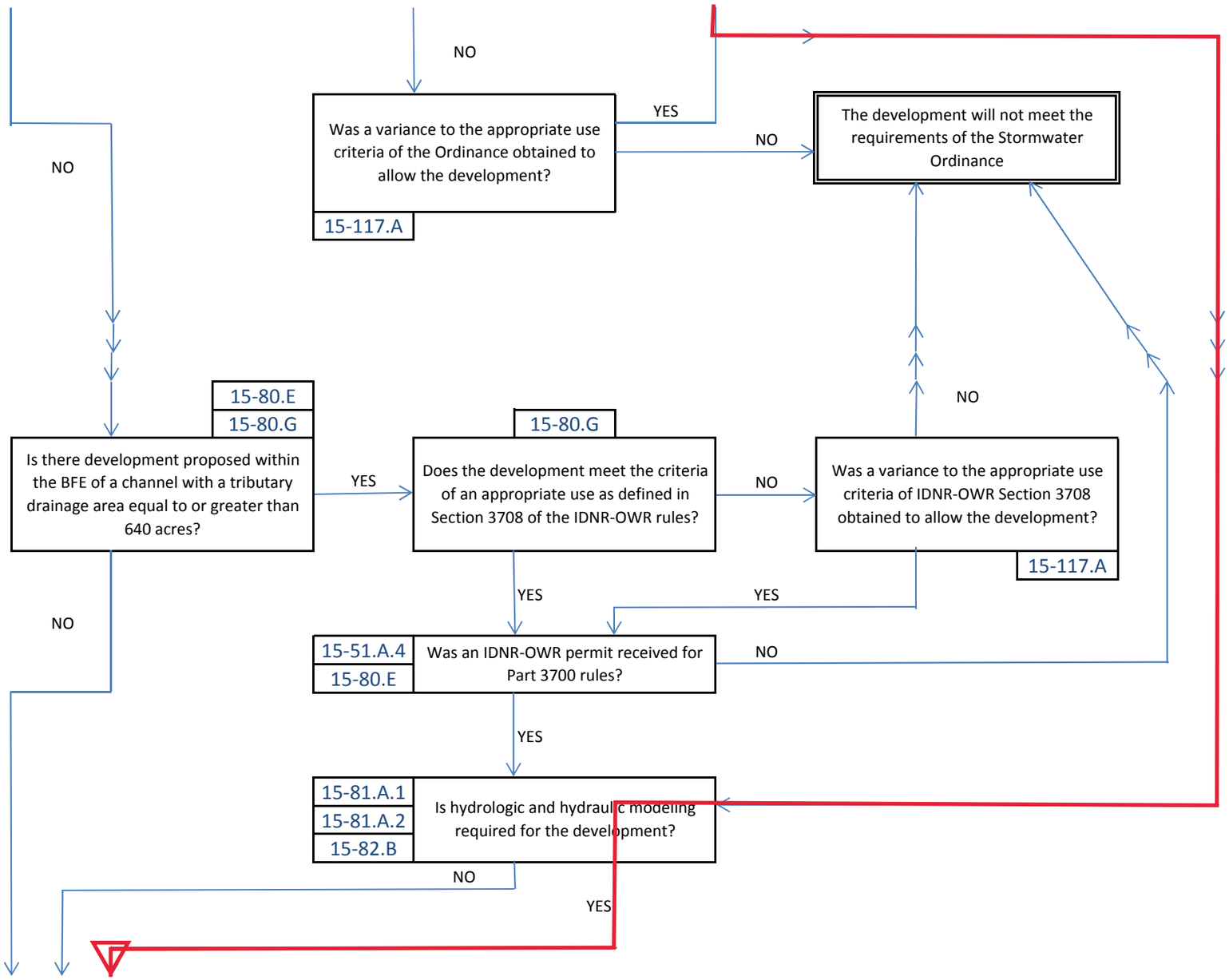
Bollinger, Lach & Associates, Inc.
333 Pierce Road, Suite 200
Itasca, IL 60143
Contact: Kevin Kenniff
p: 630.438.6400
f: 630.438.6444

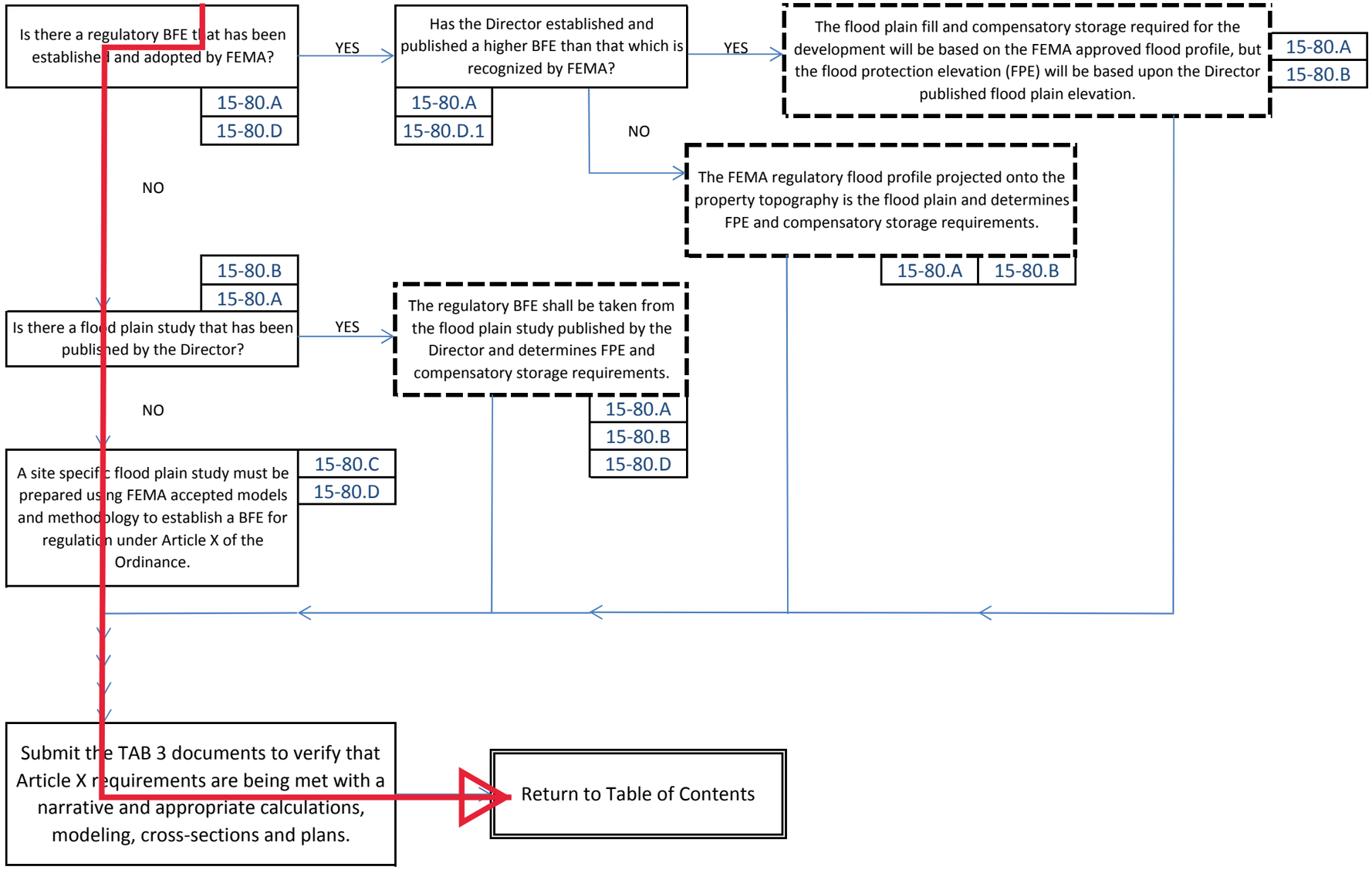
April 19, 2019

TAB 3 Flood Plain

9/22/2015




NO
Was a variance to the appropriate use criteria of the Ordinance obtained to allow the development?
15-117.A
YES
NO
The development will not meet the requirements of the Stormwater Ordinance
NO
15-80.E
15-80.G
Is there development proposed within the BFE of a channel with a tributary drainage area equal to or greater than 640 acres?
YES
15-80.G
Does the development meet the criteria of an appropriate use as defined in Section 3708 of the IDNR-OWR rules?
NO
Was a variance to the appropriate use criteria of IDNR-OWR Section 3708 obtained to allow the development?
15-117.A
NO
YES
YES
NO
15-51.A.4
15-80.E
Was an IDNR-OWR permit received for Part 3700 rules?
NO
YES
15-81.A.1
15-81.A.2
15-82.B
Is hydrologic and hydraulic modeling required for the development?
NO
YES


Is there a regulatory BFE that has been established and adopted by FEMA?
15-80.A
15-80.D
YES
Has the Director established and published a higher BFE than that which is recognized by FEMA?
15-80.A
15-80.D.1
YES
The flood plain fill and compensatory storage required for the development will be based on the FEMA approved flood profile, but the flood protection elevation (FPE) will be based upon the Director published flood plain elevation.
15-80.A
15-80.B
NO
The FEMA regulatory flood profile projected onto the property topography is the flood plain and determines FPE and compensatory storage requirements.
15-80.A
15-80.B
NO
15-80.B
15-80.A
Is there a flood plain study that has been published by the Director?
YES
The regulatory BFE shall be taken from the flood plain study published by the Director and determines FPE and compensatory storage requirements.
15-80.A
15-80.B
15-80.D
NO
A site specific flood plain study must be prepared using FEMA accepted models and methodology to establish a BFE for regulation under Article X of the Ordinance.
15-80.C
15-80.D
Submit the TAB 3 documents to verify that Article X requirements are being met with a narrative and appropriate calculations, modeling, cross-sections and plans.
Return to Table of Contents

TAB 3 - NARRATIVE

Floodplain environments are identified on the property. There are no floodway areas identified on the project site. Floodplain and floodway environments were determined using the following data sources:

- The Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) for DuPage County, Illinois and Incorporated Areas – Panel 0703H; Map Number 17043C0703H; effective December 16, 2004.

- The Regulatory Flood Map (RFM) for DuPage County, Illinois and Incorporated Areas, Panel 0141A of Quadrangle Naperville; Map Number 17043C0141A; effective July 7, 2010.

- The REVISED PRELIMINARY Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) for DuPage County, Illinois and Incorporated Areas – Panel 0141J; Map Number 17043C0141J; effective date to be determined; dated June 1, 2017.

Please refer to enclosed maps indicating project location

FLOODING SOURCE

The flooding source, identified on the effective FIRM as Zone A floodplain, is the existing stormwater detention facility for portions of the Cantera development that was approved by the City of Warrenville. The existing detention pond was originally designed for the purpose of stormwater management and is located within a stormwater management easement for both onsite and offsite areas. The West Branch of the DuPage River runs along the west side of the detention pond. Floodplain associated with the West Branch of the DuPage River is lower than the normal water level of the existing detention pond. The existing detention pond is separated from the river by an existing roadway embankment constructed for a future Torch Parkway road. The existing pond was subsequently regraded in 1999 and 2001 as shown on the as-built plans (Civil Plan 1999 and As-Built Pond 2001).

PROPOSED DEVELOPMENT

The proposed development will alter the boundaries of the Zone A floodplain indicated on the effective FIRM. A CLOMR application has been issued by FEMA for the modification of the effective floodpain boundaries. The CLOMR is dated October 11, 2018, and is included as part of this submittal. DuPage County has issued revised preliminary mapping for this area dated June 1, 2017. The revised mapping removes floodplain designations form the project site. It is unclear when this mapping will become effective, but estimates are early to mid 2019. A copy of the latest revised CLOMR application, dated August 20, 2018, is available upon request.

A Letter of Map Revision (LOMR) application will be prepared and submitted to FEMA for approval after the CLOMR has been granted.

Federal Emergency Management Agency

Washington, D.C. 20472

October 11, 2018

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

IN REPLY REFER TO:
Case No.: 18-05-4264R
Community Name: City of Warrenville, IL
Community No.: 170218

The Honorable David Brummel
Mayor, City of Warrenville
28W701 Stafford Place
Warrenville, IL 60555

Dear Mayor Brummel:

We are providing our comments with the enclosed Conditional Letter of Map Revision (CLOMR) on a proposed project within your community that, if constructed as proposed, could revise the effective Flood Insurance Rate Map for your community.

If you have any questions regarding the floodplain management regulations for your community, the National Flood Insurance Program (NFIP) in general, or technical questions regarding this CLOMR, please contact the Director, Mitigation Division of the Federal Emergency Management Agency (FEMA) Regional Office in Chicago, Illinois at (312) 408-5500, or the FEMA Map Information eXchange (FMIX) toll free at 1-877-336-2627 (1-877-FEMA MAP). Additional information about the NFIP is available on our website at http://www.fema.gov/nfip.

Sincerely,

Patrick "Rick" F. Sacbibit, P.E., Branch Chief
Engineering Services Branch
Federal Insurance and Mitigation Administration

List of Enclosures:
Conditional Letter of Map Revision Comment Document

cc: Mrs. Kristine Hocking
Senior Civil Engineer
3S258 Manning Avenue
Warrenville, IL 60555

Mr. Kevin Kenniff
Bollinger, Lach & Associates, Inc.
333 Pierce Road, Suite 200
Itasca, IL 60143

Mr. Paul Osman
Illinois Department of Natural Resources
One Natural Resources Way
Springfield, IL 62702-1271

Mr. Alex Zdanov
Interforum Holdings, Inc.
550 Frontage Road, #3700
Northfield, IL 60093

Federal Emergency Management Agency

Washington, D.C. 20472

CONDITIONAL LETTER OF MAP REVISION
COMMENT DOCUMENT

COMMUNITY INFORMATION		PROPOSED PROJECT DESCRIPTION	BASIS OF CONDITIONAL REQUEST
COMMUNITY	City of Warrenville DuPage County Illinois	FILL DETENTION BASIN	HYDROLOGIC ANALYSIS HYDRAULIC ANALYSIS NEW TOPOGRAPHIC DATA
	COMMUNITY NO.: 170218		
IDENTIFIER	Cantera Subarea C, Lot2	APPROXIMATE LATITUDE & LONGITUDE: 41.810, -88.173 SOURCE: OTHER DATUM: NAD 83	

AFFECTED MAP PANELS	
TYPE: FIRM* NO.: 17043C0703H DATE: December 16, 2004	* FIRM - Flood Insurance Rate Map

FLOODING SOURCE(S) AND REACH DESCRIPTION

At Cantera (Subarea C) Pond 1 – From approximately 150 feet North East of the Ferry Road Bridge over the West Branch of the DuPage River to approximately 500 feet North West of the intersection of Ferry Road and Winfield Road.

PROPOSED PROJECT DESCRIPTION

Flooding Source	Proposed Project	Location of Proposed Project
At Cantera (Subarea C) Pond 1	Fill Placement	North of Ferry Road between Winfield Road and the West Branch of the DuPage River
	New Detention Basin	North of Ferry Road between Winfield Road and the West Branch of the DuPage River

SUMMARY OF IMPACTS TO FLOOD HAZARD DATA

Flooding Source	Effective Flooding	Proposed Flooding	Increases	Decreases
At Cantera (Subarea C) Pond 1	Zone A	Zone A	None	Yes
	Zone AE	Zone AE	Yes	None
	Zone X (unshaded)	Zone X (unshaded)	Yes	Yes
	BFEs*	BFEs*	Yes	None

*BFEs - Base (1-percent-annual-chance) Flood Elevations

COMMENT

This document provides the Federal Emergency Management Agency's (FEMA's) comment regarding a request for a CLOMR for the project described above. This document is not a final determination; it only provides our comment on the proposed project in relation to the flood hazard information shown on the effective National Flood Insurance Program (NFIP) map. We reviewed the submitted data and the data used to prepare the effective flood hazard information for your community and determined that the proposed project meets the minimum floodplain management criteria of the NFIP. Your community is responsible for approving all floodplain development and for ensuring that all permits required by Federal or State/Commonwealth law have been received. State/Commonwealth, county, and community officials, based on their knowledge of local conditions and in the interest of safety, may set higher standards for construction in the Special Flood Hazard Area (SFHA), the area subject to inundation by the base flood). If the State/Commonwealth, county, or community has adopted more restrictive or comprehensive floodplain management criteria, these criteria take precedence over the minimum NFIP criteria.

This comment is based on the flood data presently available. If you have any questions about this document, please contact the FEMA Map Information eXchange (FMIX) toll free at 1-877-336-2627 (1-877-FEMA MAP) or by letter addressed to the LOMC Clearinghouse, 3601 Eisenhower Avenue Suite 500, Alexandria, VA 22304-6426. Additional Information about the NFIP is available on the FEMA website at http://www.fema.gov/nfip.

Patrick "Rick" F. Sacbibit, P.E., Branch Chief
Engineering Services Branch
Federal Insurance and Mitigation Administration

Federal Emergency Management Agency

Washington, D.C. 20472

CONDITIONAL LETTER OF MAP REVISION
COMMENT DOCUMENT (CONTINUED)

COMMUNITY INFORMATION

To determine the changes in flood hazards that will be caused by the proposed project, we compared the hydraulic modeling reflecting the proposed project (referred to as the proposed conditions model) to the hydraulic modeling reflecting the existing conditions.

The table below shows the changes in the base flood water-surface elevations (WSELs).

Base Flood WSEL Comparison Table

Flooding Source: Cantera (Subarea C) Pond 1		Base Flood WSEL Change (feet)	Location of maximum change
Proposed vs. Existing	Maximum increase	0	N/A
	Maximum decrease	0.02	Approximately 1000 feet North East of the Ferry Road Bridge over the West Branch of the DuPage River

NFIP regulations Subparagraph 60.3(b)(7) requires communities to ensure that the flood-carrying capacity within the altered or relocated portion of any watercourse is maintained. This provision is incorporated into your community's existing floodplain management ordinances; therefore, responsibility for maintenance of the altered or relocated watercourse, including any related appurtenances such as bridges, culverts, and other drainage structures, rests with your community. We may request that your community submit a description and schedule of maintenance activities necessary to ensure this requirement.

This comment is based on the flood data presently available. If you have any questions about this document, please contact the FEMA Map Information eXchange (FMIX) toll free at 1-877-336-2627 (1-877-FEMA MAP) or by letter addressed to the LOMC Clearinghouse, 3601 Eisenhower Avenue Suite 500, Alexandria, VA 22304-6426. Additional Information about the NFIP is available on the FEMA website at http://www.fema.gov/nfip.

Patrick "Rick" F. Sacbibit, P.E., Branch Chief
Engineering Services Branch
Federal Insurance and Mitigation Administration

Federal Emergency Management Agency
Washington, D.C. 20472

CONDITIONAL LETTER OF MAP REVISION
COMMENT DOCUMENT (CONTINUED)

COMMUNITY INFORMATION (CONTINUED)

DATA REQUIRED FOR FOLLOW-UP LOMR

Upon completion of the project, your community must submit the data listed below and request that we make a final determination on revising the effective FIRM. If the project is built as proposed and the data below are received, a revision to the FIRM would be warranted.

• Form 1, entitled "Overview & Concurrence Form". Detailed application and certification forms must be used for requesting final revisions to the maps. Therefore, when the map revision request for the area covered by this letter is submitted, Form 1 must be included. If as-built conditions differ from the proposed plans, please submit new forms, which may be accessed at https://www.fema.gov/media-library/assets/documents/1343, or annotated copies of the previously submitted forms showing the revised information.

• Hydraulic analyses, for as-built conditions, of the base flood together with a topographic work map showing the revised floodplain boundaries. Please ensure that the revised information ties in with the current effective information at the downstream and upstream ends of the revised reach.

• An annotated copy of the FIRM, at the scale of the effective FIRM, that shows the revised floodplain boundary delineations shown on the submitted work map and how they tie into the floodplain boundary delineations shown on the current effective FIRM at the downstream and upstream ends of the revised reach

• As-built plans, certified by a registered professional engineer, of all proposed project elements

• Documentation of the individual legal notices sent to property owners who will be affected by any widening/shifting of the base floodplain and increases in BFEs at Cantera (Subarea C) Pond 1

This comment is based on the flood data presently available. If you have any questions about this document, please contact the FEMA Map Information eXchange (FMIX) toll free at 1-877-336-2627 (1-877-FEMA MAP) or by letter addressed to the LOMC Clearinghouse, 3601 Eisenhower Avenue Suite 500, Alexandria, VA 22304-6426. Additional Information about the NFIP is available on the FEMA website at http://www.fema.gov/nfip.

Patrick "Rick" F. Sacbibit, P.E., Branch Chief
Engineering Services Branch
Federal Insurance and Mitigation Administration

Federal Emergency Management Agency
Washington, D.C. 20472

CONDITIONAL LETTER OF MAP REVISION
COMMENT DOCUMENT (CONTINUED)

COMMUNITY INFORMATION (CONTINUED)

• An officially adopted maintenance and operation plan for the stormwater detention basin. This plan, which may be in the form of a written statement from the community Chief Executive Officer, an ordinance, or other legislation, must describe the nature of the maintenance activities, the frequency with which they will be performed, and the title of the local community official who will be responsible for ensuring that the maintenance activities are accomplished.

• FEMA's fee schedule for reviewing and processing requests for conditional and final modifications to published flood information and maps may be accessed at http://www.fema.gov/plan/prevent/fhm/frm_fees.shtm. The fee at the time of the map revision submittal must be received before we can begin processing the request. Payment of this fee can be made through a check or money order, made payable in U.S. funds to the National Flood Insurance Program, or by credit card (Visa or MasterCard only). Please forward the payment, along with the revision application, to the following address:

Illinois State Water Survey
Attn: MT-2 Process Leader
2204 Griffith Drive
Champaign, IL 61820

After receiving appropriate documentation to show that the project has been completed, FEMA will initiate a revision to the FIRM. Because the flood hazard information (i.e., base flood elevations, base flood depths, SFHAs, zone designations, and/or regulatory floodways) will change as a result of the project, a 90-day appeal period will be initiated for the revision, during which community officials and interested persons may appeal the revised flood hazard information based on scientific or technical data.

This comment is based on the flood data presently available. If you have any questions about this document, please contact the FEMA Map Information eXchange (FMIX) toll free at 1-877-336-2627 (1-877-FEMA MAP) or by letter addressed to the LOMC Clearinghouse, 3601 Eisenhower Avenue Suite 500, Alexandria, VA 22304-6426. Additional Information about the NFIP is available on the FEMA website at http://www.fema.gov/nfip.

Patrick "Rick" F. Sacbibit, P.E., Branch Chief
Engineering Services Branch
Federal Insurance and Mitigation Administration

Federal Emergency Management Agency

Washington, D.C. 20472

CONDITIONAL LETTER OF MAP REVISION
COMMENT DOCUMENT (CONTINUED)

COMMUNITY INFORMATION (CONTINUED)

COMMUNITY REMINDERS

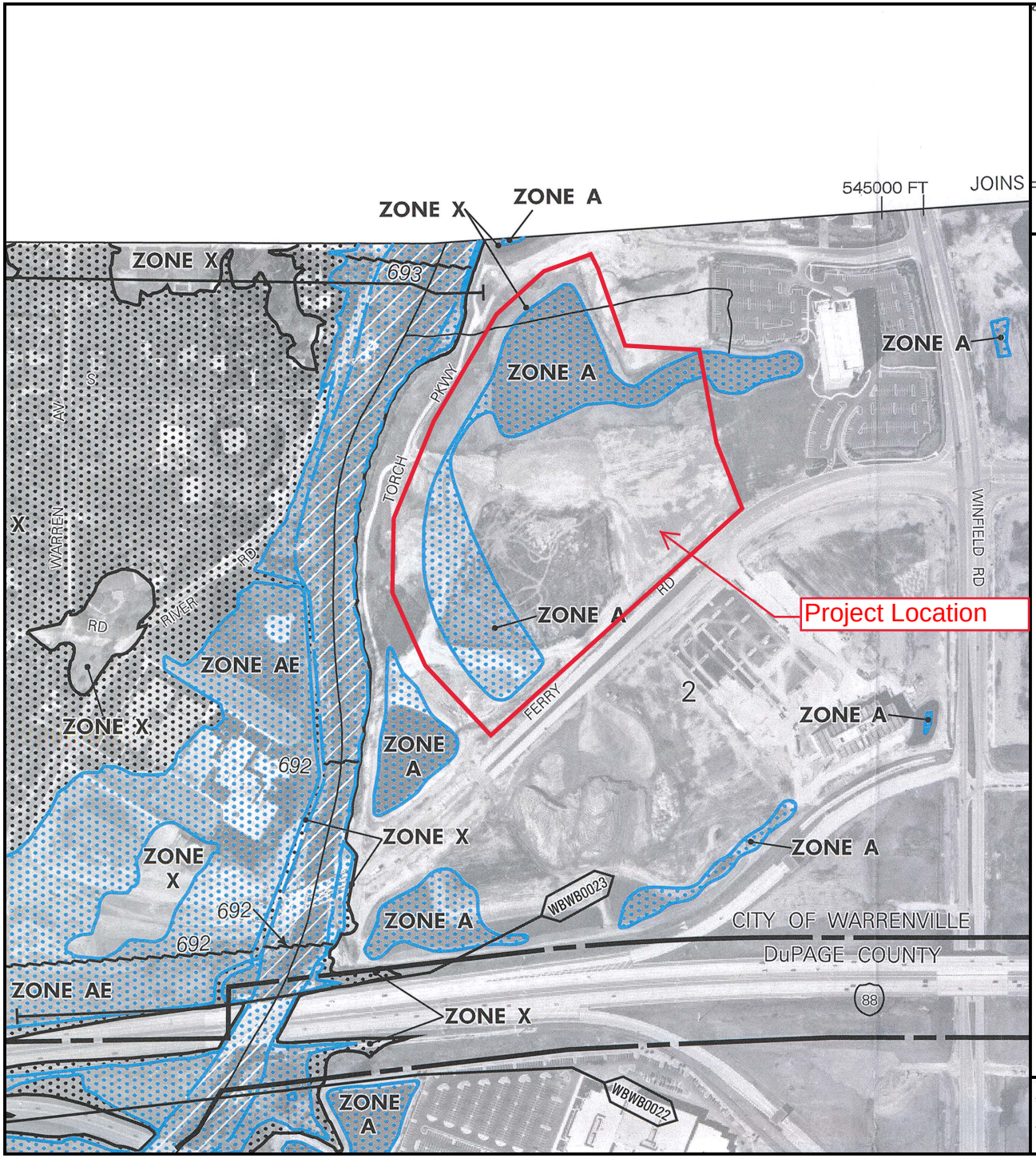
We have designated a Consultation Coordination Officer (CCO) to assist your community. The CCO will be the primary liaison between your community and FEMA. For information regarding your CCO, please contact:

Ms. Mary Beth Caruso
Director, Mitigation Division
Federal Emergency Management Agency, Region V
536 South Clark Street, Sixth Floor
Chicago, IL 60605
(312) 408-5500

A preliminary study is being conducted for the City of Warrenville. Preliminary copies of the revised FIRM and FIS report were submitted to your community for review on June 1, 2017, and may become effective before the revision request following this CLOMR is submitted. Please ensure that the data submitted for the revision ties into the data effective at the time of the submittal.

This comment is based on the flood data presently available. If you have any questions about this document, please contact the FEMA Map Information eXchange (FMIX) toll free at 1-877-336-2627 (1-877-FEMA MAP) or by letter addressed to the LOMC Clearinghouse, 3601 Eisenhower Avenue Suite 500, Alexandria, VA 22304-6426. Additional Information about the NFIP is available on the FEMA website at http://www.fema.gov/nfip.

Patrick "Rick" F. Sacbibit, P.E., Branch Chief
Engineering Services Branch
Federal Insurance and Mitigation Administration



MAP SCALE 1" = 500'

250 0 500 1000 FEET

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0703H

FIRM

FLOOD INSURANCE RATE MAP

DuPAGE COUNTY,
ILLINOIS
AND INCORPORATED AREAS

PANEL 0703 OF 1006

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
DuPAGE COUNTY	170197	0703	H
WARRENVILLE, CITY OF	170218	0703	H

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
17043C0703H

EFFECTIVE DATE
DECEMBER 16, 2004

Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov

NOTES TO USERS

This map is for use in administering the DuPage Regulatory Flood Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The community map repository should be consulted for possible updated or additional flood hazard information.

Users should be aware that Base Flood Elevations (BFEs) shown on the RFM represent rounded whole foot elevations. The BFEs are intended for regulatory enforcment purposes only and should not be used as the sole source of flood elevation information.

Boundaries of the floodways were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the DuPage Regulatory Flood Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study reports for this jurisdiction. This data may be supplemented by FEMA and DuPage flood study updates. Approximate centerlines of obstructions to or passageways for floodways are shown.

The projection used in the preparation of this map is State Plane zone 3376, Fipszone 1201. The horizontal datum is NAD27, on the GRS1980 spheroid. Differences in datum, spheroid, projection or State Plane zones used in the production of RFMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdictional boundaries. The differences do not affect the accuracy of this RFM.

The State Plane coordinates near the corners of the map neatline correspond to the respective nearby corners of the fully contained Map Panel. The grid lines are even thousand foot northings and eastings.

Flood elevations on this map are referenced to the National Geodetic Vertical Datum of 1929. These flood elevations must be compared to structures and ground elevations referenced to the same vertical datum. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey at its website at www.ngs.noaa.gov or contact it at the following address:

Spatial Reference System Division
National Geodetic Survey, NOAA, Silver Spring Metro Center
1315 East-West Highway, Silver Spring, Maryland 20910
(301)713-3191

BASE MAP SOURCE: Base map information was obtained in 2008 from AeroMetric, Inc. These maps were photogrammetrically compiled at a scale of 1:1200 (1" = 100') based on LIDAR data acquired using AeroMetric's Digital Mapping Camera in Spring 2006. Aerial photography was also acquired soon after the LIDAR flight for areas within the County.

Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

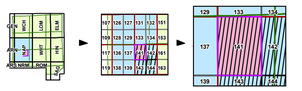
Accompanying Flood Insurance Study reports, Letters of Map Revision or Letters of Map Amendment revising portions of this panel and digital versions of this RFM may be available. These reports may be supplemented by DuPage flood study reports.

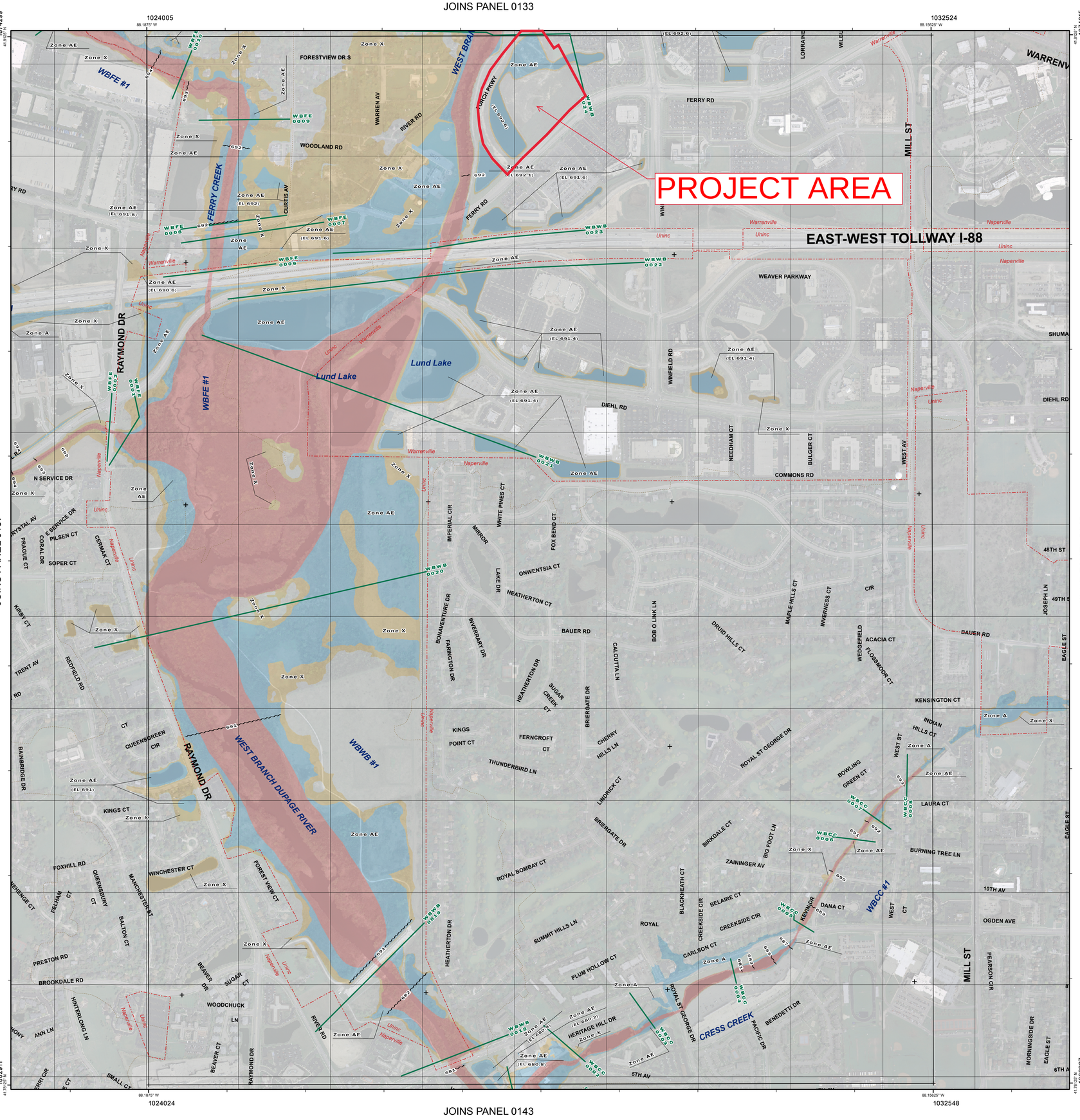
If you have questions about this map or questions concerning the DuPage Regulatory Flood Program in general, please call 1-630-407-6800 or visit the DuPage County Stormwater Management.

For adjoining map panels, see the separately printed Map Index.

This digital Regulatory Flood Map (RFM) was produced through a unique cooperative partnership between DuPage County and the Federal Emergency Management Agency (FEMA). DuPage County has implemented a long term approach of floodplain management to decrease the costs associated with flooding. This is demonstrated by the County's commitment to map floodplain areas at the local level. As a part of this effort, DuPage County has joined in a Cooperative Technical Partnership agreement with FEMA to produce this digital RFM.

PANEL LOCATION





DuPage County Illinois
CTP Cooperating Technical Partners
Data for Disaster Resistance
U.S. Department of Homeland Security

LEGEND

SPECIAL FLOOD HAZARD AREAS INUNDATED BY THE 1% ANNUAL CHANCE FLOOD EVENTS

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water surface elevation of the 1% annual chance flood.

Zone AE Base flood elevations determined. BFE lines shown.

Zone A Base flood elevations undetermined.

FLOODWAY AREAS — Approximate Structure Centerline

OTHER FLOOD AREAS

Zone X Areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; areas protected by levees from the 1% annual chance flood; areas of 0.2% annual chance flood.

OTHER AREAS — Approximate Structure Centerline

Underground Passage Areas over underground passages carrying some or all of the 1% annual chance flood.

- 1% Annual Chance Floodplain Boundary
- Floodway Boundary
- 0.2% Annual Chance Floodplain Boundary
- Other Areas
- Boundary dividing SFHAs of different Base Flood Elevations, depths, velocities, or zones.
- *Incorporated*
- 513 — Base Flood Elevation line and value; elevation in feet*
- (EL 678.9) — Base Flood Elevation value where uniform within zone; elevation in feet*
- *Referenced to the National Geodetic Vertical Datum of 1929 (NGVD29).
- WBWF 0012 — Cross Section Line and Name

MAP REPOSITORY
DuPage County Stormwater Management
421 N. County Farm Rd., Wheaton, IL 60187

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP
December 16, 2004

DATE(S) OF REVISION(S) TO THIS PANEL:

Code	Riverbasin	Tributary	Revision Date	Rev.
FRWA	Fox River Tributaries	Waubansee Crk.	Jul. 7, 2010	A
WBCC	West Branch DuPage R.	Cress Crk.	Jul. 7, 2010	A
WBFE	West Branch DuPage R.	Ferry Crk.	Jul. 7, 2010	A
WBWB	West Branch DuPage R.	Main Stem	Jul. 7, 2010	A

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study reports for the jurisdictions appearing in this map panel.

To determine if flood regulations apply in this Map Panel, contact the DuPage County Stormwater Management at 1-630-407-6800.

MAP SCALE 1" = 500' (1:6000)
0 250 500 1000 1500 Feet
0 75 150 300 450 Meters

DFIRM DUPAGE COUNTY, ILLINOIS AND INCORPORATED AREAS

PANEL 0141 A

RFM

REGULATORY FLOOD MAP
DuPAGE COUNTY, ILLINOIS
and INCORPORATED AREAS

PANEL 0141 of QUADRANGLE
NAPERVILLE

(SEE MAP INDEX FOR PANEL LAYOUT)

CONTAINS:

COMMUNITY	CODE	FIPS #	TYPE
NAPERVILLE	24	170213	City
Unincorporated DuPAGE	0	170197	County
WARRENVILLE	31	170218	City

Notice to User: The Map Number shown below should be used when placing map orders; the Community Number show above should be used on insurance applications for the subject community.

MAP NUMBER:
17043C0141 A
EFFECTIVE DATE:
July 7, 2010

Federal Emergency Management Agency

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The **community map repository** should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations** (BFEs) and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or flood plain management.

Coastal Base Flood Elevations shown on this map apply only landward of 0.0' North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations table in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations table should be used for construction and/or flood plain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

In the State of Illinois, any portion of a stream or watercourse that lies within the **floodway fringe** of a studied (AE) stream may have a state regulated floodway. The FIRM may not depict these state regulated floodways.

Floodways restricted by anthropogenic features such as bridges and culverts are drawn to reflect natural conditions and may not agree with the model computed widths listed in the Floodway Data table in the Flood Insurance Study report.

Multiple **topographic sources** may have been used in the delineation of Special Flood Hazard Areas. See Flood Insurance Study report for details on source resolution and geographic extent.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures for this jurisdiction.

The **projection** used in the preparation of this map was Universal Transverse Mercator (UTM) zone 16. The **horizontal datum** was NAD 83, GRS80 spheroid. Differences in datum, spheroid, projection or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum**. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at www.ngs.noaa.gov or contact the National Geodetic Survey at the following address:

NGS Information Services, NOAA, N/NGS12
National Geodetic Survey SSMC-3, #9202
1315 East-West Highway
Silver Spring, Maryland 20910-3282
(301) 713-3242

To obtain current elevation, description, and/or location for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at (301) 713-3242, or visit its website at www.ngs.noaa.gov.

Base map information shown on this FIRM was provided in digital format by the Cook County Board of Commissioners. Color digital orthoimages with a 6-inch pixel resolution were photogrammetrically compiled from aerial photography acquired during the leaf-off period of spring 2012.

This map reflects more detailed and up-to-date **stream channel configurations** than those shown on the previous FIRM for this jurisdiction. The Special Flood Hazard Areas and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables in the Flood Insurance Study report (which contains authoritative hydraulic data) may reflect stream channel distances that differ from what is shown on this map.

Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

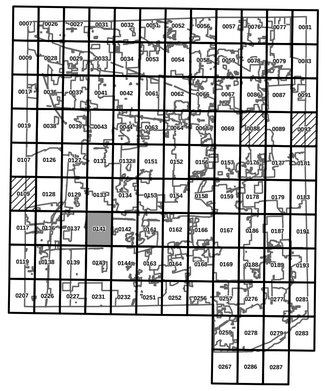
Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels; community map repository addresses; and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

For information on available products associated with this FIRM visit the Map Service Center (MSC) website at http://msc.fema.gov. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of this map. Many of these products can be ordered or obtained directly from the MSC website.

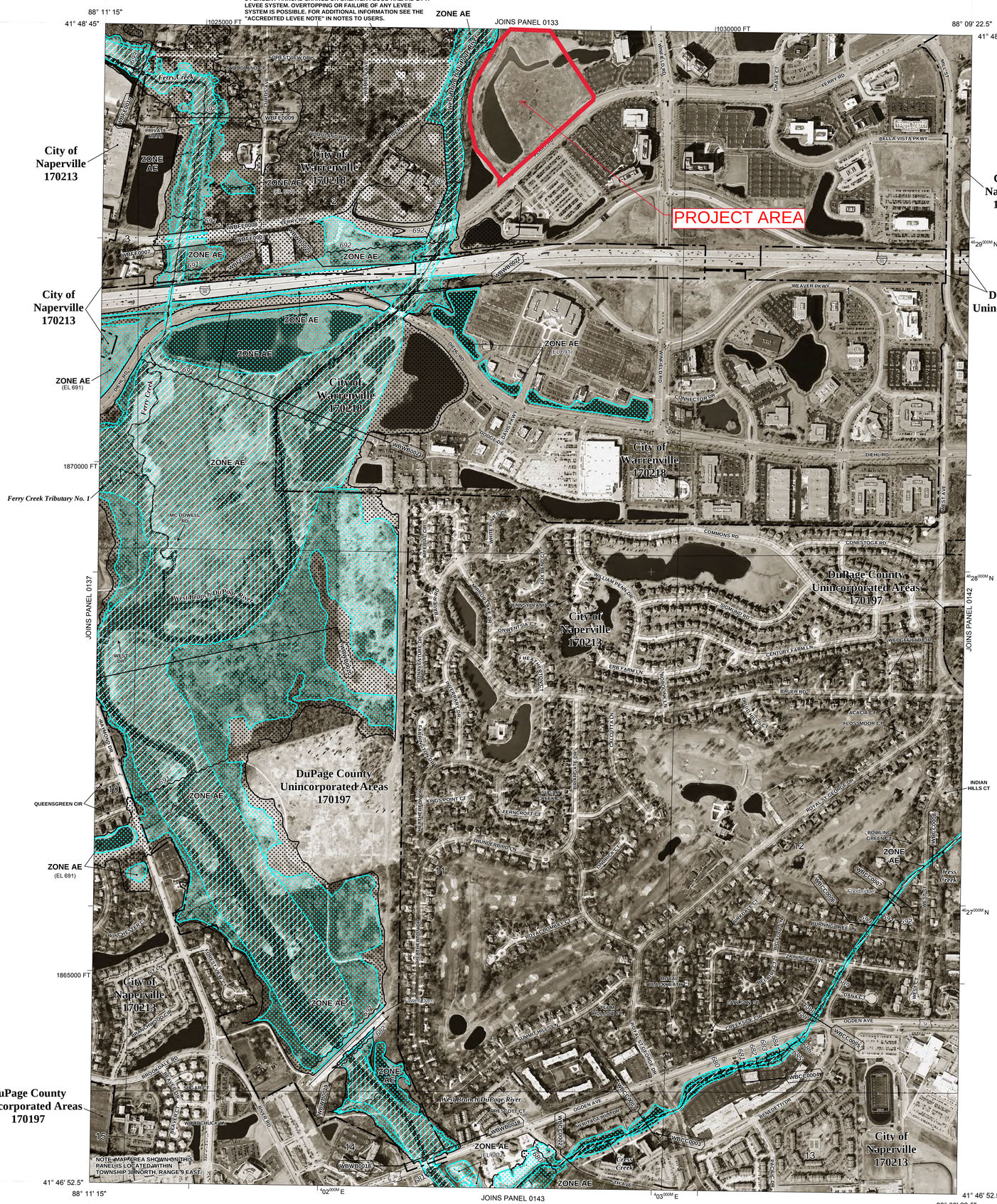
If you have **questions about this map**, how to order products or the National Flood Insurance Program in general, please call the **FEMA Map Information eXchange (FMIX)** at 1-877-FEMA-MAP (1-877-336-2627) or visit the FEMA website at http://www.fema.gov/business/nfip.

Accredited Levee: Check with your local community to obtain more information, such as the estimated level of protection provided (which may exceed the 1-percent-annual-chance level) and Emergency Action Plan, on the levee system(s) shown as providing protection for areas on this panel. To mitigate flood risk in residual risk areas, property owners and residents are encouraged to consider flood insurance and floodproofing or other protective measures. For more information on flood insurance, interested parties should visit the FEMA website at http://www.fema.gov/national-flood-insurance-program.

PANEL INDEX



Panel Not Printed



LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equalled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR	Special Flood Hazard Areas formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99	Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D	Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

- 1% annual chance floodplain boundary
- 0.2% annual chance floodplain boundary
- Floodway boundary
- Zone D boundary
- CBRS and OPA boundary
- Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
- 513 — Base Flood Elevation line and value; elevation in feet*
- (EL 987) — Base Flood Elevation value where uniform within zone; elevation in feet*

*Referenced to the North American Vertical Datum of 1988

- A — A — Cross section line
- 23 — 23 — Transect line
- 45° 02' 08", 93° 02' 12" — Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)
- 4889000M N — 1000-meter Universal Transverse Mercator grid values, zone 16
- 1565000 FT — 5000-foot grid tick: Illinois State Plane East Coordinate System, 3776 zone (FIPSZONE 1201) Transverse Mercator
- DX5510 — Bench mark (see explanation in Notes to Users section of this FIRM panel)
- M1.5 — River Mile

MAP REPOSITORIES
Refer to Map Repositories list on Map Index

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP
DECEMBER 16, 2004

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 500'

250 0 500 1000 FEET
150 0 150 300 METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0141J

FIRM

FLOOD INSURANCE RATE MAP

DU PAGE COUNTY, ILLINOIS AND INCORPORATED AREAS

PANEL 141 OF 287

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
DU PAGE COUNTY	170197	0141	J
NAPERVILLE, CITY OF	170213	0141	J
WARRENVILLE, CITY OF	170218	0141	J

REVISED PRELIMINARY 6/1/2017

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
17043C0141J

MAP REVISED
to be determined

Federal Emergency Management Agency

Floodplain
(Tab 3)

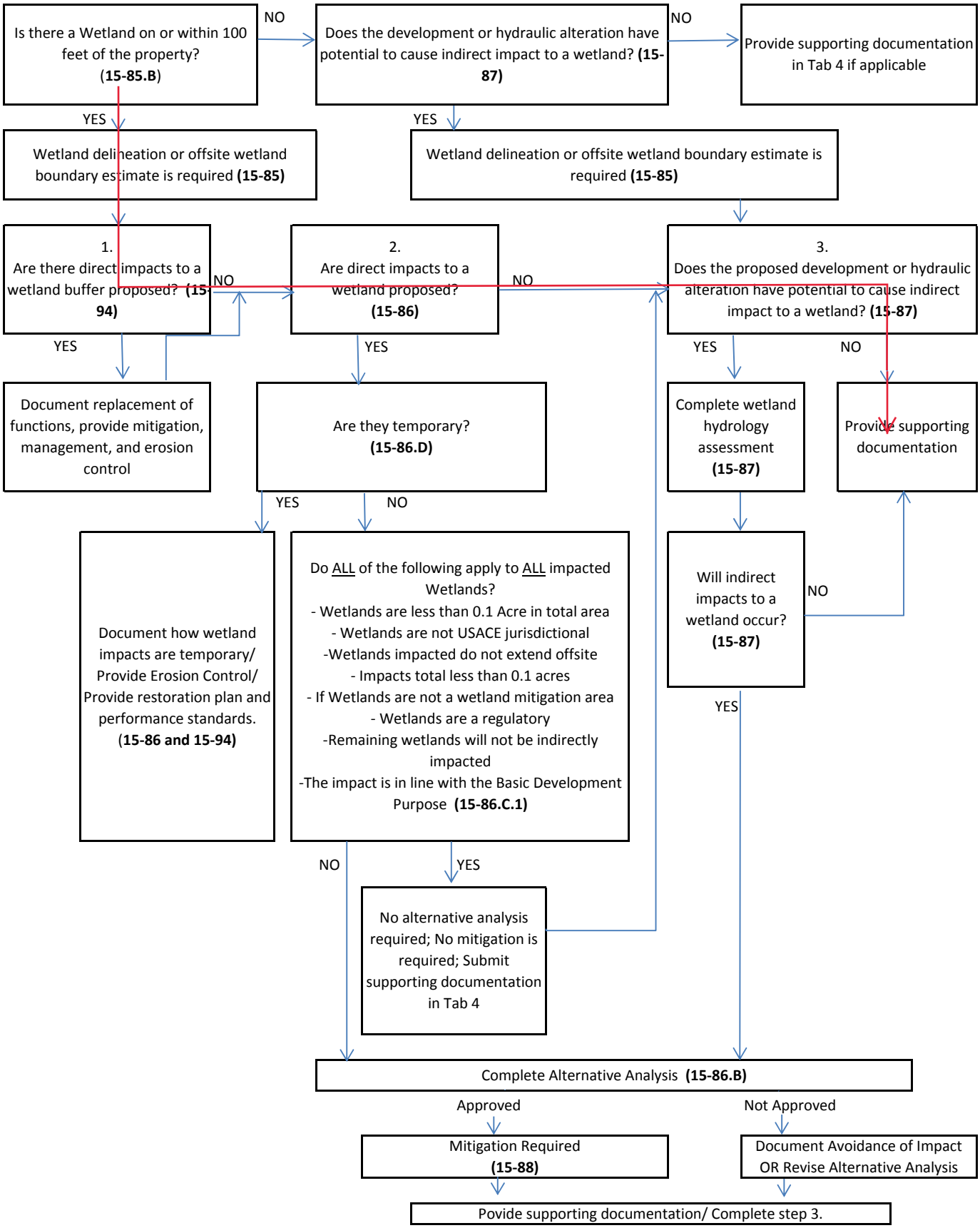
RIVERVIEW WEST

City of Warrenville
DuPage County, Illinois

Prepared by:

Bollinger, Lach & Associates, Inc.
333 Pierce Road, Suite 200
Itasca, IL 60143
Contact: Kevin Kenniff
p: 630.438.6400
f: 630.438.6444

April 19, 2019


Is there a Wetland on or within 100 feet of the property? (15-85.B)
NO
Does the development or hydraulic alteration have potential to cause indirect impact to a wetland? (15-87)
NO
Provide supporting documentation in Tab 4 if applicable
YES
Wetland delineation or offsite wetland boundary estimate is required (15-85)
YES
Wetland delineation or offsite wetland boundary estimate is required (15-85)
1. Are there direct impacts to a wetland buffer proposed? (15-94)
NO
2. Are direct impacts to a wetland proposed? (15-86)
NO
3. Does the proposed development or hydraulic alteration have potential to cause indirect impact to a wetland? (15-87)
YES
YES
YES
NO
Document replacement of functions, provide mitigation, management, and erosion control
Are they temporary? (15-86.D)
Complete wetland hydrology assessment (15-87)
Provide supporting documentation
YES
NO
Document how wetland impacts are temporary/ Provide Erosion Control/ Provide restoration plan and performance standards. (15-86 and 15-94)
Do ALL of the following apply to ALL impacted Wetlands?
- Wetlands are less than 0.1 Acre in total area
- Wetlands are not USACE jurisdictional
-Wetlands impacted do not extend offsite
- Impacts total less than 0.1 acres
- If Wetlands are not a wetland mitigation area
- Wetlands are a regulatory
-Remaining wetlands will not be indirectly impacted
-The impact is in line with the Basic Development Purpose (15-86.C.1)
Will indirect impacts to a wetland occur? (15-87)
NO
YES
NO
YES
No alternative analysis required; No mitigation is required; Submit supporting documentation in Tab 4
Complete Alternative Analysis (15-86.B)
Approved
Not Approved
Mitigation Required (15-88)
Document Avoidance of Impact OR Revise Alternative Analysis
Povide supporting documentation/ Complete step 3.

TAB 4 - NARRATIVE

The wetlands on the subject property have been previously mitigated as part of the Cantera Wetland Mitigation Program and Section 404 Permit in 1992. The site has been the subject of mass grading at several points since the original development as evidenced by historic aerial imagery. There are no wetland environments located on the site. Please refer to email correspondence with the City of Warrenville confirming that the wetlands were previously mitigated as part of the larger Canter Development.

Wetlands are present along the West Branch of the DuPage River. The waters buffer shown on the drawings is the boundary of the floodplain along the West Branch of the DuPage River. The wetlands and wetland buffer along the West Branch of the DuPage River have been shown on the drawings and are included in the Wetlands Buffer Exhibit provided in this Tab. The wetlands have been delineated based on the information provided in the DuPage County Wetland Map GIS database. The field conditions were generally verified to confirm the information provided by the county database. The area west of the Forest Preserve District trail slopes steeply towards the river. It appears that the areas at the toe of the embankment, along the river are wetlands. This is consistent with the DuPage County map. The embankment slopes of the river are wooded. The Forest Preserve District trail is paved and has an aggregate shoulder. The FPD maintains the trail system corridor. The Cantera Property Owners Association maintains the areas of Outlot A, adjacent to the FPD trail. The area on Outlot A is made up of manicured turf grass. The wetlands are shown as non-critical on the DuPage County GIS Data. The Wetland Buffer shown is a 50’ buffer, except where that 50’ buffer crosses the FPD trail. When the 50’ buffer crosses the FPD trail. The edge of the trail is used as the buffer. This is consistent with the DCFSPO Article XII: 15-92.B.2.

The proposed improvement end at the FPD trail. There are no proposed impacts to the wetland buffer along the West Branch of the DuPage River. The natural area between the river and the Forest Preserve District of DuPage County West Branch of the DuPage River Trail is being maintained except at the location of the trail connections. The natural buffer between the Forest Preserve District of DuPage County West Branch of the DuPage River Trail and the property is being regraded on the eastern fifteen (15) feet to provide the required 60’ Right of Way for the future Torch Parkway. The maximum encroachment onto Outlot “A” for the purposes of ROW grading is fifteen (15) feet. This area is sloped to drain to the proposed development and the proposed stormwater management facility through a vegetated swale and storm sewers prior to discharge to the West Branch of the DuPage River through the existing detention pond outlet. Grading work is proposed at the existing pond on Outlot A and at the proposed trail connections. This work is proposed entirely east of the existing trail. The disturbed areas are scheduled to be planted with native plantings. The disturbed areas immediately adjacent to the trail will be replanted with turf grass at the request of the FPD. This configuration is the final land configuration recommended by the Forest Preserve District of DuPage County. Please refer to the plans for additional information.

Kevin Kenniff

From: Hocking, Kristine <khocking@warrenville.il.us>
Sent: Tuesday, December 27, 2016 9:34 AM
To: Kevin Kenniff
Cc: Kuchler, Phil; Mentzer, Ron
Subject: RE: Wetland on Cantera Subarea C Lot

Morning Kevin,
I have two pieces of good information for you regarding the floodplain and wetlands.

Wetlands: All wetlands on the site were mitigated as part of the Cantera Wetland Mitigation Program and Section 404 Corp Permit back in 1992. There is no need to delineate any wetlands on site from the City's perspective. The Stormwater Management Permit Report Tab 4 would just have to provide a statement referencing the historic plans that show that this area was graded previously for development including the creation of the stormwater management basin. I can provide you those excerpts for inclusion in the report.

Floodplain: After speaking with Dave at the County, he concurred with the following:

From a compensatory storage standpoint:

- *The pond is shown as a Zone A on the FEMA effective FIRM, an AE with BFE on the County's Regulatory Flood Map (RFM), and AE with BFE on FEMA's Preliminary FIRM. For this situation, the RFM would govern for comp storage and since the NWL of the pond is above the RFM BFE, no comp storage is required.*

From a floodplain standpoint:

- *Developer has two options from a FEMA flood insurance standpoint*
  - *Submit a CLOMR for the site and follow up with a LOMR OR*
  - *Submit a LOMA when the building is complete to remove it from the floodplain*
- *CLOMR route is probably less risky for the developer but I am ok with either way due to the fact that for local regulatory requirements, there isn't any floodplain.*

Floodway:

- *The TR-20 model shows 0.60 square miles tributary to the pond so it is not considered floodway. Plus the RFM doesn't show floodway.*

In the end, if the ISWS removes the ponds from the floodplain, then the developer won't need to follow up with a LOMR for flood insurance purposes.

Please let me know if you have any questions. Hope you had a good holiday!

Kristine

From: Hocking, Kristine
Sent: Tuesday, December 20, 2016 4:45 PM
To: Kevin Kenniff - Bollinger Lach (kkenniff@bollingerlach.com) <kkenniff@bollingerlach.com>
Subject: Wetland on Cantera Subarea C Lot

Kevin,

Has anyone checked to ensure there aren't any wetlands on the lot? The County GIS map shows the ponds as "Freshwater Ponds" and "Regulatory Wetland". I just wanted to make sure. If there was a delineation done then we can have our consultant verify it since we are a full waiver.
Kristine

Kristine Hocking, P.E, CFM
Senior Civil Engineer
City of Warrenville
630-836-3066 (phone)
630-393-1531 (fax)
khocking@warrenville.il.us

Du Page Wetland Map

DuPage Web Mapping Application - DuPage County, Illinois



DuPage County
Information Technology Department / GIS Division
421 N County Farm Rd.
Wheaton, IL 60187

Ph# 1(630)407-5000
Email gis@dupageco.org
DuPage Maps Portal :
http://dupage.maps.arcgis.com/home

This map is for assessment purposes only.

DuPage County Web Site :
www.dupageco.org

N

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60 0 30 60
1 inch = 60 ft.

WEST BRANCH DUPAGE RIVER

EXISTING OFFSITE DETENTION BASIN

EXISTING DETENTION BASIN
NWL=693.19
HWL=698.48
EXISTING STORAGE PROVIDED= 34.37 AC-FT
EXISTING TRIBUTARY AREA= 392.38 AC

EXISTING DETENTION BASIN
NWL=692.10
HWL=697.10
EXISTING STORAGE PROVIDED= 8.07 AC-FT
EXISTING TRIBUTARY AREA= 4.61 AC

FERRY ROAD

EXISTING WETLAND BOUNDARY WEST BRANCH OF THE DUPAGE RIVER
EXISTING BFE BOUNDARY WEST BRANCH OF THE DUPAGE RIVER (ELEV=692.6)
EXISTING BUFFER BOUNDARY WEST BRANCH OF THE DUPAGE RIVER (ELEV=692.6)
EXISTING WATER EDGE WEST BRANCH OF THE DUPAGE
EXISTING DUPAGE COUNTY FOREST PRESERVE DISTRICT WEST BRANCH OF THE DUPAGE TRAIL
EXISTING WEST BRANCH OF THE DUPAGE RIVER WETLAND BUFFER
EXISTING SPLIT RAIL FENCE (TYP)
EXISTING 66"ø RCP W/ HEADWALL INV=683.77
EXISTING POND OUTLET
EXISTING POND OUTLET EASEMENT
EXISTING 54"ø POND OVERFLOW RIM=696.74 18"ø INV=692.70 66"ø INV=684.34
EXISTING 18"ø RCP FES INV=693.19
EXISTING 12"ø FES INV=685.5
EXISTING MH RIM=696.85 INV=685.65 6"ø RESTRICTOR
12"FES INV=691.40
EXISTING OUTLET FOR POND ON OUTLOT A. OUTLET TO REMAIN. OUTLET PIPE & FES TO BE REMOVED AND RESET. REFER TO UTILITY PLAN FOR INFORMATION.
EXISTING ZONE A FLOODPLAIN PER FEMA MAP NUMBER 17043C0703H, EFFECTIVE DATE DECEMBER 16, 2004. GRAPHICALY SHOWN PER FIRM.
EXISTING ZONE A FLOODPLAIN PER FEMA MAP NUMBER 17043C0703H, EFFECTIVE DATE DECEMBER 16, 2004. GRAPHICALY SHOWN PER FIRM.
EXISTING FERRY ROAD OUTFALL 36"ø RCP FES INV=692.10
EXISTING TRAFFIC SIGNAL POLES AND CONTROL BOXES
EXISTING 100 HWL FOR DETENTION POND BASED ON APPROVED CITY OF WARRENVILLE SUPPLIED MODELING
EXISTING 12"ø FES OUTLET TO REMAIN. OUTLET PIPE & FES TO BE REMOVED AND RESET. REFER TO UTILITY PLAN FOR INFORMATION.
15' EXISTING WATERS BUFFER
BOUNDARY OUTLOT A
BOUNDARY LOT 2
EXISTING WATER EDGE WEST BRANCH OF THE DUPAGE
EXISTING BUFFER BOUNDARY WEST BRANCH OF THE DUPAGE RIVER (ELEV=692.6)
EXISTING BFE BOUNDARY WEST BRANCH OF THE DUPAGE RIVER (ELEV=692.6)
EXISTING ROW
EXISTING 15"ø SANITARY SEWER
EXISTING 12"ø WATER MAIN
10' SIDEWALK EASEMENT PER DOC R199-246748

REVISIONS:	JOB NO: 080-020
09-18-18: REVISED PER CITY COMMENTS	FIELD BOOK: N/A
11-05-18: REVISED PER FPD COMMENTS	FIELD BOOK: N/A
01-18-19: REVISED PER CITY COMMENTS	DRAWN BY: MK
02-18-19: REVISED PER CITY COMMENTS	CHECKED BY: KEK
FILE: I:\080-020 Cantera Lot 2 Sub Area 4\Engineering\Drawings	COMPLETED:04/07/18

04-19-19: PER CITY COMMENTS
03-25-19: PER FPD COMMENTS
03-15-19: PER DUDOT COMMENTS
02-25-19: PER INTERNAL COORDINATION

PREPARED FOR:
CANTERA DEVELOPMENT HOLDINGS, LLC.
TWO NORTHFIELD PLAZA, SUITE 320
NORTHFIELD, IL 60093
TEL: (847) 562-2001

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333 PIERCE ROAD SUITE 200 ITASCA, IL 60143
P:(630) 438 6400 F:(630) 438 6444 www.bollingerlach.com
ITASCA * CHICAGO * ALGONQUIN * LAKE GENEVA * SOUTH BEND * INDIANAPOLIS

WETLANDS BUFFER EXHIBIT

RIVER VIEW WEST
CITY OF WARRENVILLE, ILLINOIS

SHEET NUMBER
1
OF 1

FILE: I:\080-020 Cantera Lot 2 Sub Area 4\Engineering\Drawings\Final Engineering

Site Photos



Photo 1: Forest Preserve District Trail Looking South



Photo 2: Forest Preserve District Trail Looking North

Wetlands & Wetland Buffer
(Tab 4)

RIVERVIEW WEST

City of Warrenville
DuPage County, Illinois

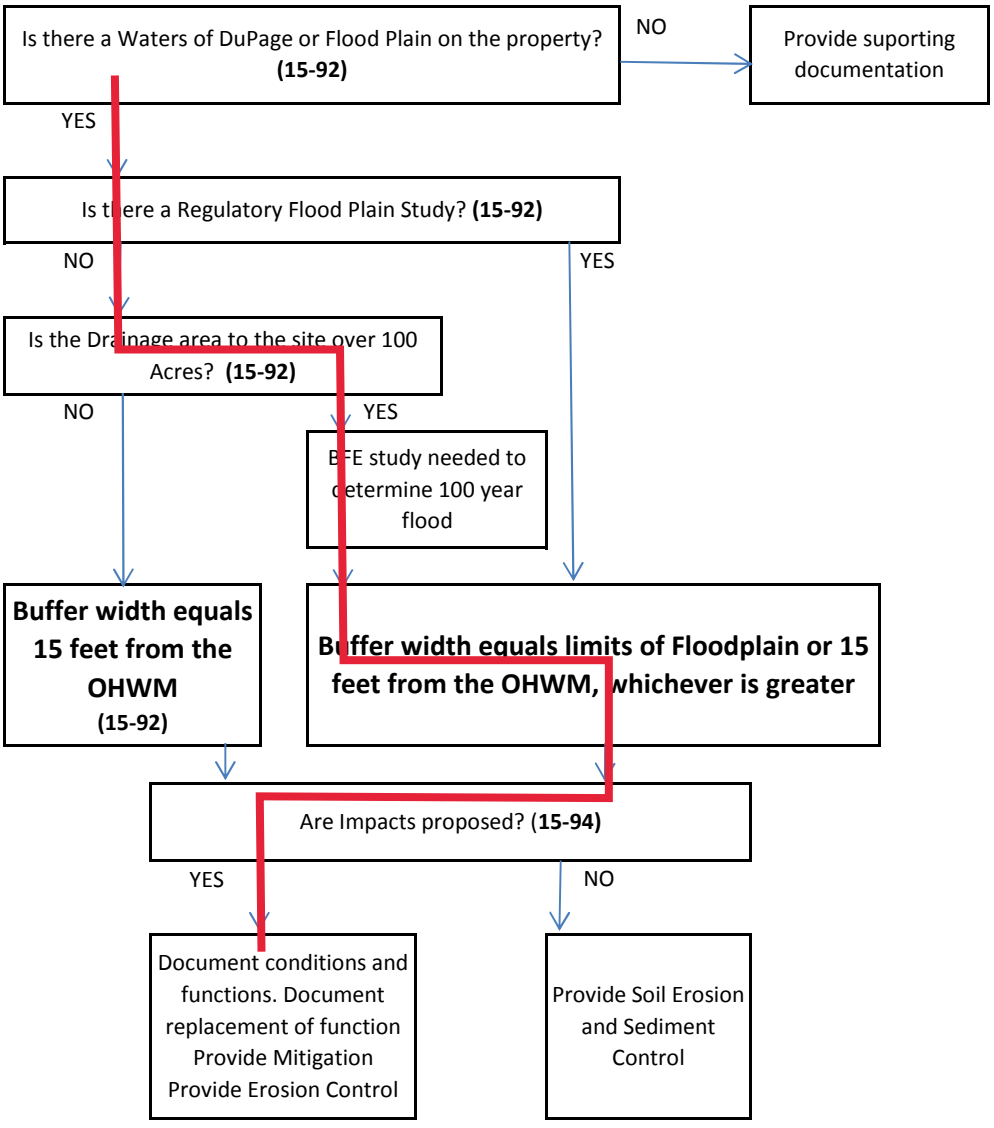
Prepared by:

Bollinger, Lach & Associates, Inc.
333 Pierce Road, Suite 200
Itasca, IL 60143
Contact: Kevin Kenniff
p: 630.438.6400
f: 630.438.6444

April 19, 2019

TAB 5--RIPARIAN BUFFER

3/4/2015

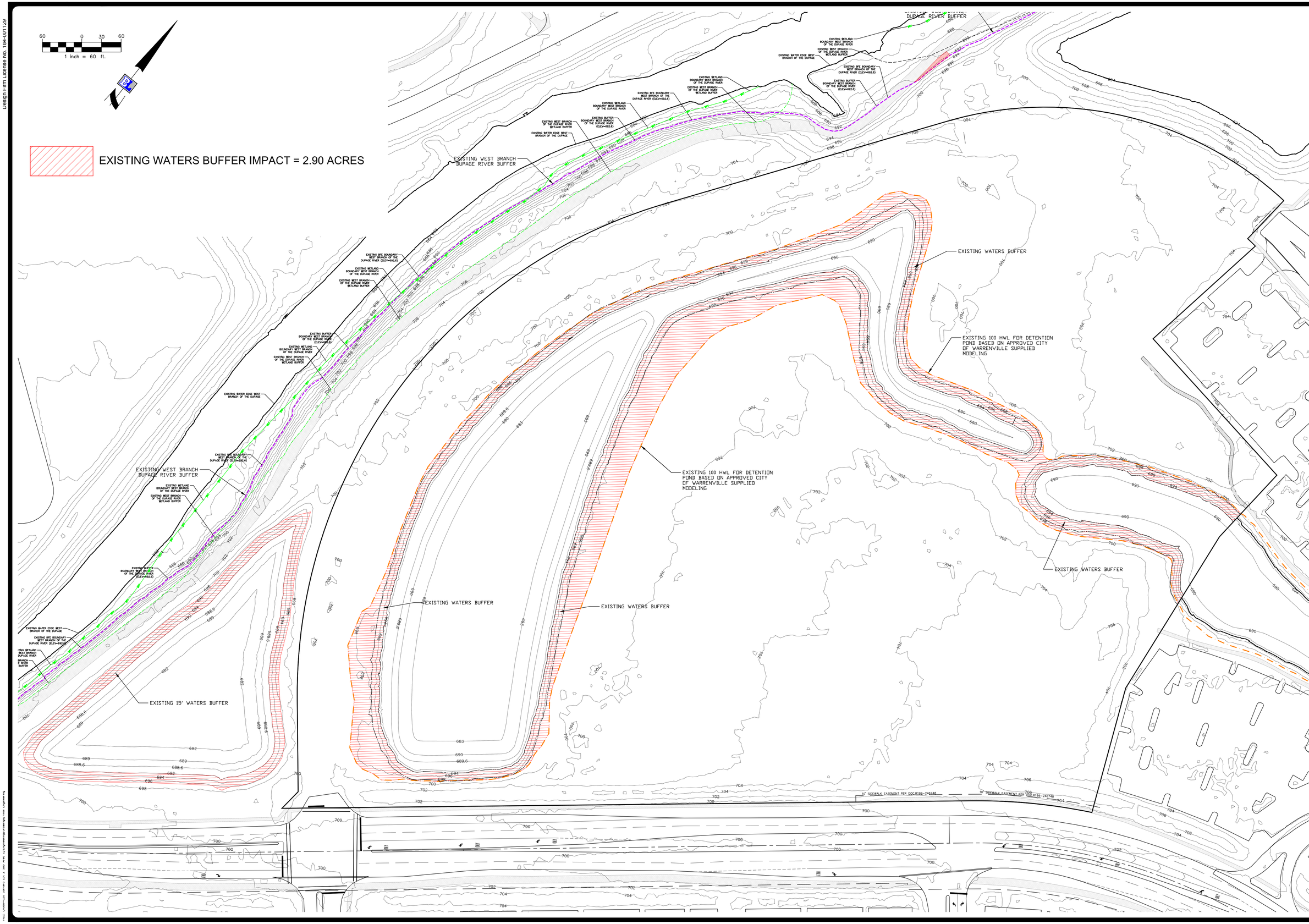


TAB 5 - NARRATIVE

Waterway buffers have been indicated on the proposed site plans and in the enclosed exhibits. The existing floodplain elevation was used as the on-site waterway buffer. A 15' waters buffer was applied to the existing detention pond on Outlot A. The total existing waterway buffer is estimated at 2.90 acres. The buffer for the West Branch of the DuPage River is also shown on the proposed plans. The 100-Year BFE of the West Branch of the DuPage River was used as the waters buffer for the river. There is a small (341 square foot) proposed impact to the buffer for the West Branch of the DuPage River due to the proposed northern trail connection. The Forest Preserve District of DuPage County owns and maintains the West Branch Trail. The FPD has reviewed and signed off on the proposed improvements including the trail connection. The FPD, as part of their review has requested that the disturbed areas along the trail associated with the proposed trail connections be planted with turf grass to aid in their maintenance and mowing of the trail system corridor. Efforts have been made to minimize the disturbance to the West Branch waters buffer. The locations of the proposed rail connections were coordinated with the city of Warrenville and the FPD.

The proposed development includes the planting of the proposed pond shorelines with native plantings to an elevation of one (1) foot above the proposed High Water Level. Native plantings are also proposed to an elevation of 18" below the Normal Water Level. Additional native plantings are proposed in the bioswale areas throughout the development and the disturbed areas adjacent to the FPD property. The proposed plantings on the pond shorelines totals approximately 3.06 acres. The shoreline plantings total approximately 0.86 acres. The native plantings in the bioswales and adjacent to the FPD property total approximately 1.71 acres. The total area of native plantings and shoreline plantings is 5.63 acres.

The existing buffers function as a shoreline stabilization and filter for runoff waters prior to entering the constant water pool of the detention facility. The proposed pond shorelines will be planted with native seeding described on the plans and in the stormwater report and will serve the same function to stabilize the shoreline and to filter runoff waters prior to entering proposed detention facility. The proposed plantings adjacent to the FPD property will provide a buffer between the proposed development and the FPD trail system. These plantings will also promote wildlife habitats along the river corridor. Please refer to the exhibits and plans for additional information.



Design Firm License No. 184-001129

JOB NO: 080-020
FIELD BOOK: N/A
FIELD BOOK: N/A
DRAWN BY: MK
CHECKED BY: KEK
COMPLETED: 04/07/18

REVISIONS:

PREPARED FOR:
RIVERVIEW WEST DEVELOPMENT
TWO NORTHFIELD PLAZA, SUITE 320
NORTHFIELD, IL 60093
TEL :(847) 562-2001

Bollinger, Lach & Associates, Inc.
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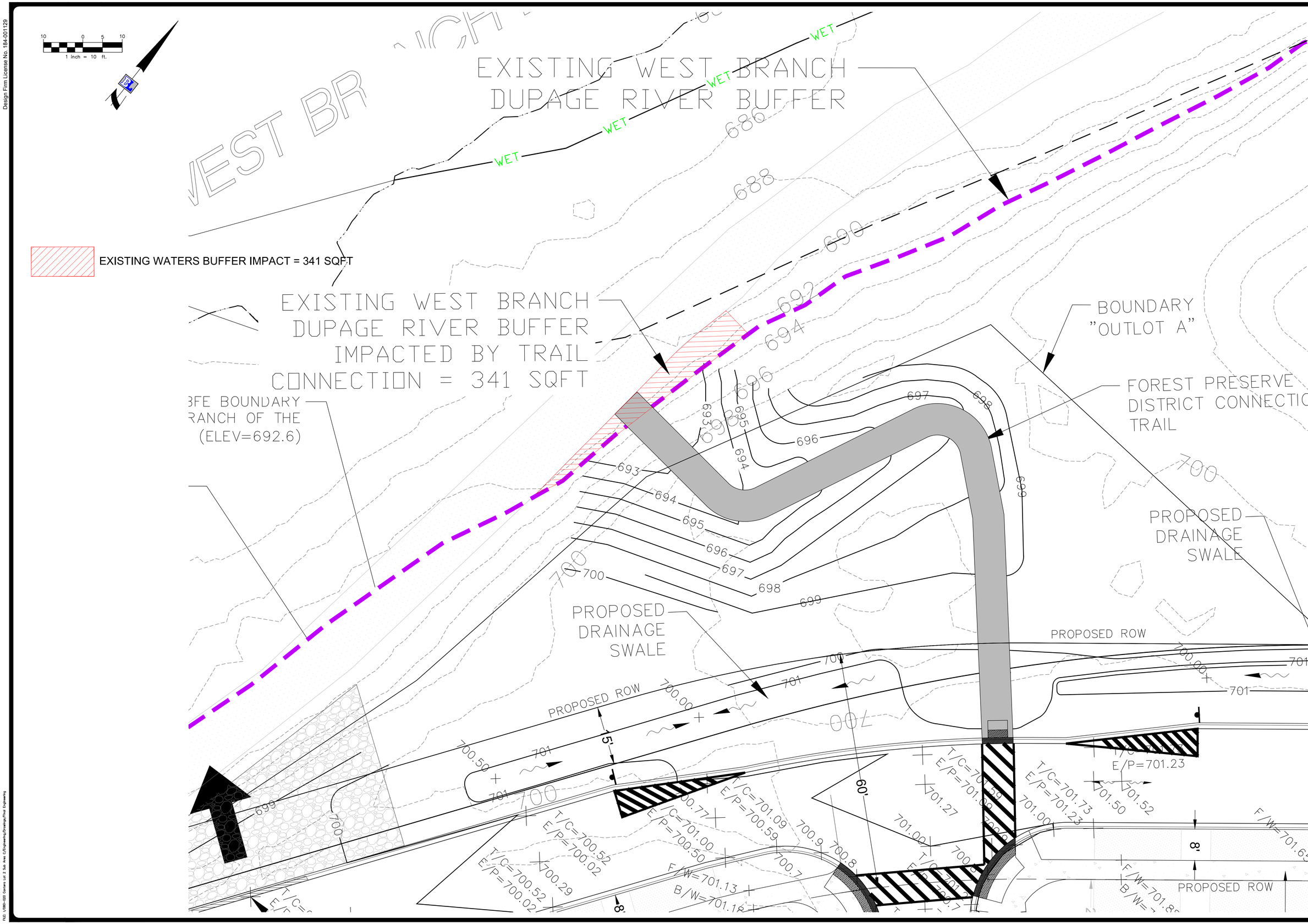
ITASCA • CHICAGO • ALGONQUIN • LAKE GENEVA • SOUTH BEND • INDIANAPOLIS
CONSULTING ENGINEERS

RIPARIAN BUFFER IMPACT EXHIBIT

RIVERVIEW WEST DEVELOPMENT
CITY OF WARRENVILLE, ILLINOIS

SHEET NUMBER
1
OF 2



Design Firm License No. 184-001129

JOB NO: 080-020
FIELD BOOK: N/A
FIELD BOOK: N/A
DRAWN BY: MK
CHECKED BY: KEK
COMPLETED: 04/07/18

REVISIONS:

PREPARED FOR:
RIVERVIEW WEST DEVELOPMENT
TWO NORTHFIELD PLAZA, SUITE 320
NORTHFIELD, IL 60093
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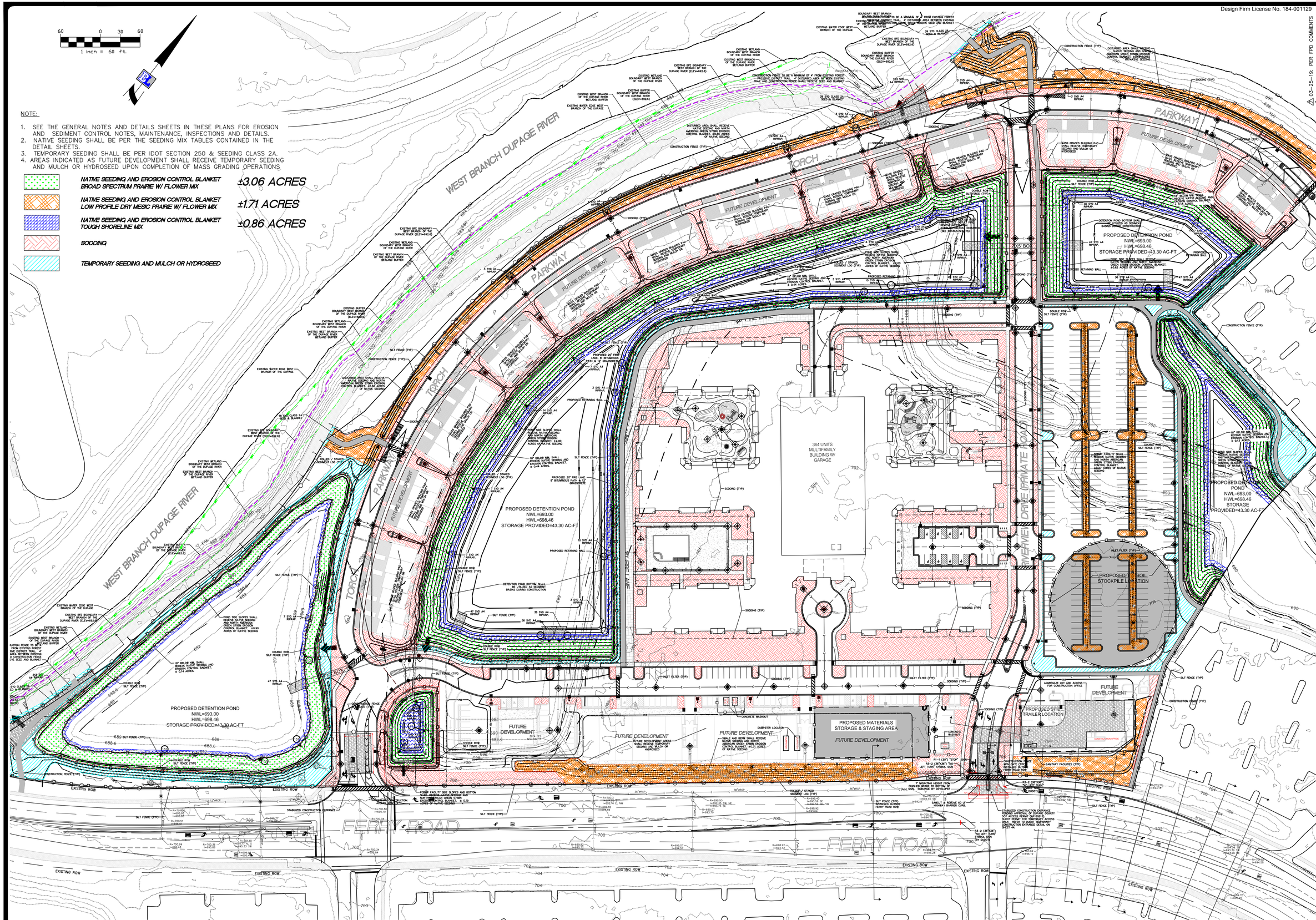
ITASCA * CHICAGO * ALGONQUIN * LAKE GENEVA * SOUTH BEND * INDIANAPOLIS

RIPARIAN BUFFER IMPACT EXHIBIT

RIVERVIEW WEST DEVELOPMENT
CITY OF WARRENVILLE, ILLINOIS

SHEET NUMBER
2
OF 2

Design Firm License No. 184-001129



NOTE:

1. SEE THE GENERAL NOTES AND DETAILS SHEETS IN THESE PLANS FOR EROSION AND SEDIMENT CONTROL NOTES, MAINTENANCE, INSPECTIONS AND DETAILS.
2. NATIVE SEEDING SHALL BE PER THE SEEDING MIX TABLES CONTAINED IN THE DETAIL SHEETS.
3. TEMPORARY SEEDING SHALL BE PER IDOT SECTION 250 & SEEDING CLASS 2A.
4. AREAS INDICATED AS FUTURE DEVELOPMENT SHALL RECEIVE TEMPORARY SEEDING AND MULCH OR HYDROSEED UPON COMPLETION OF MASS GRADING OPERATIONS

NATIVE SEEDING AND EROSION CONTROL BLANKET BROAD SPECTRUM PRAIRIE W/ FLOWER MIX	±3.06 ACRES
NATIVE SEEDING AND EROSION CONTROL BLANKET LOW PROFILE DRY MESIC PRAIRIE W/ FLOWER MIX	±1.71 ACRES
NATIVE SEEDING AND EROSION CONTROL BLANKET TOUGH SHORELINE MIX	±0.86 ACRES
SODDING	
TEMPORARY SEEDING AND MULCH OR HYDROSEED	

03-25-19: PER FPD COMMENTS
03-15-19: PER DUDOT REVIEW

JOB NO: 080-020
FIELD BOOK: N/A
FIELD BOOK: N/A
DRAWN BY: MK
CHECKED BY: KEK
COMPLETED: 02/22/17

REVISIONS:
09-18-18: REVISED PER CITY COMMENTS
11-05-18: REVISED PER FPD COMMENTS
01-18-19: REVISED PER CITY COMMENTS
02-18-19: REVISED PER CITY COMMENTS
FILE: I:/080-020 LOT 2 CANTERA SUBAREA C/Engineering/Drawings

PREPARED FOR:
CANTERA DEVELOPMENT HOLDINGS, LLC.
TWO NORTHFIELD PLAZA, SUITE 320
NORTHFIELD, IL 60093
TEL: (847) 562-2001

Bollinger, Lach & Associates, Inc.
333 PIERCE ROAD SUITE 200 ITASCA, IL 60143
P:(630) 438 6400 F:(630) 438 6444 www.bollingerlach.com
ITASCA • CHICAGO • ALGONQUIN • LAKE GENEVA • SOUTH BEND • INDIANAPOLIS
CONSULTING ENGINEERS

PROPOSED BUFFER EXHIBIT

RIVERVIEW WEST DEVELOPMENT
CITY OF WARRENVILLE, ILLINOIS

SHEET NUMBER
1
OF 1

Waterway Buffer
(Tab 5)

RIVERVIEW WEST

City of Warrenville
DuPage County, Illinois

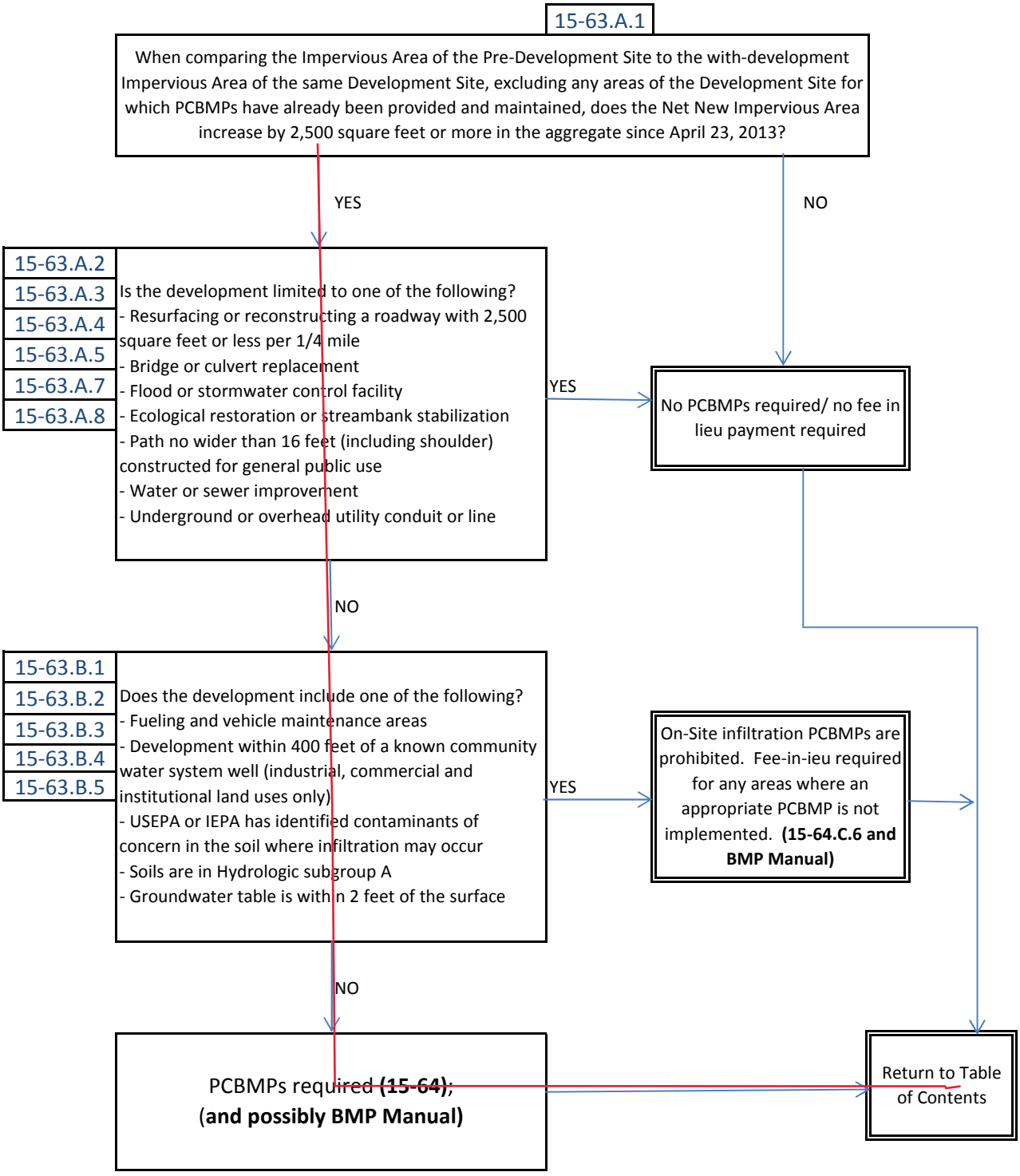
Prepared by:

Bollinger, Lach & Associates, Inc.
333 Pierce Road, Suite 200
Itasca, IL 60143
Contact: Kevin Kenniff
p: 630.438.6400
f: 630.438.6444

April 19, 2019

Post Construction Best Management Practices (PCBMPs)

9/23/2015



TAB 6 - NARRATIVE

Post-Construction Best Management Practices are required for the proposed development. The existing and proposed impervious areas of the proposed site are as follows:

Proposed Site:
Lot 1:
Impervious Areas = 3.29 Acres
Lot 2:
Impervious Areas = 7.87 Acres
Lot 3:
Impervious Areas = 2.13Acres
Torch Parkway ROW:
Impervious Areas = 1.99 Acres
Outlot "A":
Impervious Area = 0.09 Acres

Total Proposed Impervious Area = 15.37 Acres

The net new impervious area is 15.37 acres. Infiltration of 1.25 inches of rainfall is required over the impervious area. This results in a required infiltration volume of 1.60 acre-feet.

The proposed plans will provide 1.41 acre-feet of BMP volume. The proposed infiltration volume will be provided in several facilities within the development, such as a bioinfiltration basin, bioswales and permeable pavers. Additional volume retention is provided in the existing retention facilities that are being modified.

There are two (2) existing wet-bottom detention facilities which will be reconfigured in the proposed condition. In addition, the existing wet detention basins located onsite will be enhanced in the proposed condition by installing native seeding on the side slopes of the ponds. The native plantings will further promote infiltration of runoff and filter stormwater pollutants. The side slopes in these areas will have a maximum of a 4:1 slope to reduce the potential of side slope erosion. The lower 18" of the detention ponds will be planted with a tough shoreline seed mixture. The detention pond will provide settlement of suspended solids and will provide 15.64 acre-feet of runoff volume retention during the 2-year storm event.

Please refer to the Plantings noted on the erosion control plans for seeding specifications.

Best Management Practice (BMP) Summary				
Project:	Riverview West Development		Created by:	MK
Location:	Warrenville, IL		Checked by:	KEK
Date:	3/21/2018			
Proposed Land Coverage:				
	Area (sq ft)	Area (ac)		
Proposed Impervious Area:	669,517	15.37		
BMP Overview:				
Required:	New Impervious Area (ac)	Infiltration Rainfall (in)	Infiltration Volume (cu ft)	Infiltration Volume (ac-ft)
Per DuPage County Ordinance	15.37	1.25	69,741	**1.60**
Provided:	Volume Calculations		Infiltration Volume (cu ft)	Infiltration Volume (ac-ft)
Bioinfiltration Basin	See attached spreadsheets		17,248	0.40
Bioswale	See attached spreadsheets		31,117	0.71
Permeable Pavers	See attached spreadsheets		12,892	0.30
			Total Infiltration Volume Provided:	**1.41**

Bioinfiltration Basin (Volume Calculations)				
Surface Storage				
Elevation	Area	Average Area	Incremental Storage	Cummulative Storage
(ft)	(ft^2)	(ft^2)	(ft^3)	(ft^3)
693.5	1234			0
		1402	701	
694	1570			701
		1947	1947	
695	2324			2648
		2766	2766	
696.00	3208			5414
		3713	3713	
697.00	4218			9127
		4783	4783	
698.00	5347			13910
		5971	2329	
698.39	6595			16238
			Total (ft^3) =	16238
Media Storage				
Media Type	Porosity	Area (ft^2)	Depth (in)	Storage (ft^3)
CA-7 Aggregate	0.36	1402	24	1009
			Total (ft^3) =	1009
			Total Storage (Surface Storage + Media Storage) (cu ft) =	**17248**

Bioswale Volume Calculations - Parking Islands					
Media Type	Porosity	Area (ft^2)	Depth (in)	Depth (ft)	Storage (ft^3)
Surface Water	1	8685	9	0.75	6514
CA-7 Aggregate	0.36	8685	30	2.50	7817
				Total	14330
Total Volume Control Storage (ft^3) =					**14330**
Total Volume Control Storage (ac-ft) =					**0.33**

Bioswale Volume Calculations - Southeast Side Site					
Media Type	Porosity	Area (ft^2)	Depth (in)	Depth (ft)	Storage (ft^3)
Surface Water	1	3957	12	1.00	3957
CA-7 Aggregate	0.36	3957	30	2.50	3561
				Total	7518
Total Volume Control Storage (ft^3) =					**7518**
Total Volume Control Storage (ac-ft) =					**0.17**

Bioswale Volume Calculations - South of Commercial Property					
Media Type	Porosity	Area (ft^2)	Depth (in)	Depth (ft)	Storage (ft^3)
Surface Water	1	4878	12	1.00	4878
CA-7 Aggregate	0.36	4878	30	2.50	4390
				Total	9268
Total Volume Control Storage (ft^3) =					**9268**
Total Volume Control Storage (ac-ft) =					**0.21**

Total	**31117**
Total	**0.71**

Permeable Pavement Volume Calculations					
Media Type	Porosity	Area (ft^2)	Depth (in)	Depth (ft)	Storage (ft^3)
CA-7 Aggregate	0.36	17906	24	2.00	12892
				Total	12892
Total Volume Control Storage (ft^3) =					**12892**
Total Volume Control Storage (ac-ft) =					**0.30**

CRITICAL DURATION
2-YEAR STORM EVENT


```
******************80-80 LIST OF INPUT DATA FOR TR-20 HYDROLOGY******************

JOB TR-20 001                          PASS=     SUMMARY
TITLE     CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE
TITLE     PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DAT)
 5 RAINFL 1              0.05
 8          0.00         0.16         0.33         0.43         0.52
 8          0.60         0.66         0.71         0.75         0.79
 8          0.82         0.84         0.86         0.88         0.90
 8          0.92         0.94         0.96         0.97         0.98
 8          1.00         1.00         1.00         1.00         1.00
 9 ENDTBL
 5 RAINFL 2              0.05
 8          0.00         0.03         0.08         0.12         0.16
 8          0.22         0.29         0.39         0.51         0.62
 8          0.70         0.76         0.81         0.85         0.88
 8          0.91         0.93         0.95         0.97         0.98
 8          1.00         1.00         1.00         1.00         1.00
 9 ENDTBL
 5 RAINFL 3              0.05
 8          0.00         0.03         0.06         0.09         0.12
 8          0.15         0.19         0.23         0.27         0.32
 8          0.38         0.45         0.57         0.70         0.79
 8          0.85         0.89         0.92         0.95         0.97
 8          1.00         1.00         1.00         1.00         1.00
 9 ENDTBL
 5 RAINFL 4              0.05
 8          0.00         0.02         0.05         0.08         0.10
 8          0.13         0.16         0.19         0.22         0.25
 8          0.28         0.32         0.35         0.39         0.45
 8          0.51         0.59         0.72         0.84         0.92
 8          1.00         1.00         1.00         1.00         1.00
 9 ENDTBL
 3 STRUCT      06
 8                       707.0        0.00         0.00           POND-B6 - AEAST
 8                       708.0        8.40         1.11           36" DIA. RCP
 8                       709.0        20.0         2.32           INLET CONTROL
 8                       710.0        38.0         3.63
 8                       711.0        55.0         5.02
 8                       712.0        66.0         6.52           12' WEIR; C=3.0
 8                       712.5        114.0        7.32
 9 ENDTBL
 3 STRUCT      11
 8                       737.5         0.0          0.0
 8                       738.          0.5         .005           DRYBASIN
 8                       739.          1.0         .040
 8                       740.          3.0         .098
 8                       741.          5.0         .176
 8                       742.          7.0         .288
 8                       743.          9.0         .446
 8                       744.         33.9         .566
 9 ENDTBL
 3 STRUCT      07
 8                       700.          0.0          0.0           POND-D7
 8                       701.          4.0         8.59           REINDEER LAKE
 8                       702.          12.        22.08           INCLUDES PONDS F
 8                       703.          18.        36.22           21" DIA RCP
 8                       704.          22.        51.08           INLET CONTROL
```

**********80-80 LIST OF INPUT DATA (CONTINUED)**********

```
 8                     705.         26.        66.65
 8                     705.5        46.        74.81          20' WEIR; C=2.6
 8                     706.         82.        82.97
 8                     706.5       128.        92.99
 9 ENDTBL
 3 STRUCT      39
 8                     693.          0.0         0.0           POND-C2
 8                     694.        7.06         6.73          REVISED STAGE-D
 8                     695.       12.57        13.95           FOR PHASE 1 IM
 8                     696.       16.03       21.66
 8                     696.74     18.12       27.74
 8                     697.       25.03       29.88
 8                     698.       87.74       38.61
 8                     699.       138.39      47.99
 8                     700.       163.48      58.17
 8                     700.25     187.22      60.82
 8                     701.       329.76      68.76
 8                     701.5      460.91      74.05
 9 ENDTBL
 6 RUNOFF 1 091       1 0.0923      75.00       0.84       1         1
 6 RUNOFF 1 092       2 0.1292      80.00       1.00       1         1
 6 ADDHYD 4 093   1 2 3                                    1
 6 RUNOFF 1 094       4 0.0203      65.00       0.91       1         1
 6 RESVOR 2    11 4   5                                      1 1 1 1 1
 6 ADDHYD 4 095   3 5 6
 6 RUNOFF 1 096       1 0.0084      98.00       0.16       1         1
 6 ADDHYD 4 097   6 1 7                                    1
 6 RUNOFF 1 010       4 0.0265      87.00       0.15
 6 ADDHYD 4 098   7 4 1
 6 RESVOR 2     6 1   5                                      1 1 1 1 1
 6 RUNOFF 1 099       7 0.1526      87.00       0.15       1         1
 6 ADDHYD 4 090   5 7 2                                    1
 6 RUNOFF 1 017       7 0.1120      88.00       0.30
 6 ADDHYD 4 013   2 7 1
 6 RESVOR 2     7 1   2                                      1 1 1 1 1
 6 RUNOFF 1 049       7 0.0023      89.00       0.15       1         1
 6 ADDHYD 4 050   2 7 1                                    1
 6 RUNOFF 1 024       7 0.0149      90.00       0.15
 6 ADDHYD 4 017   1 7 2
 6 RUNOFF 1 019       6 0.0618      90.00       0.25
 6 ADDHYD 4 015   2 6 7
 6 RESVOR 2    39 7   1                                      1 1 1 1 1
   ENDATA
 7 INCREM 6             0.008
 7 COMPUT 7 091      39 0.00        0.36        0.09       1 2      01   5-MIN
   ENDCMP 1
 7 COMPUT 7 091      39 0.00        0.67        0.17       1 2      02   10-MIN
   ENDCMP 1
 7 COMPUT 7 091      39 0.00        0.82        0.25       1 2      03   15-MIN
   ENDCMP 1
 7 COMPUT 7 091      39 0.00        1.12        0.50       1 2      04   30-MIN
   ENDCMP 1
 7 COMPUT 7 091      39 0.00        1.43        1.00       1 2      05   1-HR
   ENDCMP 1
 7 INCREM 6             0.10
 7 COMPUT 7 091      39 0.00        1.79        2.00       1 2      06   2-HR
```


**********80-80 LIST OF INPUT DATA (CONTINUED)**********

```
   ENDCMP 1
 7 COMPUT 7 091      39 0.00        1.94        3.00       1 2      07   3-HR
   ENDCMP 1
 7 COMPUT 7 091      39 0.00        2.28        6.00       1 2      08   6-HR
   ENDCMP 1
 7 INCREM 6             0.50
 7 COMPUT 7 091      39 0.00        2.64        12.0       2 2      09   12-HR
   ENDCMP 1
 7 COMPUT 7 091      39 0.00        2.79        18.0       2 2      10   18-HR
   ENDCMP 1
   ENDJOB 2
```

**********END OF 80-80 LIST**********

```
TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
12:30:03                    PASS   1   JOB NO.   1                      PAGE   1


EXECUTIVE CONTROL  INCREM    MAIN TIME INCREMENT =   .008 HOURS


EXECUTIVE CONTROL  COMPUT    FROM XSECTION  91  TO STRUCTURE 39           5-MIN
    STARTING TIME =   .00       RAIN DEPTH =   .36       RAIN DURATION =   .09
    ANT. RUNOFF COND. = 2       MAIN TIME INCREMENT =   .008 HOURS
    ALTERNATE NO. = 0           STORM NO. = 1            RAIN TABLE NO. = 1


OPERATION RUNOFF    XSECTION  91

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .00 WATERSHED INCHES;       0 CFS-HRS;        .0 ACRE-FEET.


OPERATION RUNOFF    XSECTION  92

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .00 WATERSHED INCHES;       0 CFS-HRS;        .0 ACRE-FEET.


OPERATION ADDHYD    XSECTION  93

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .00 WATERSHED INCHES;       0 CFS-HRS;        .0 ACRE-FEET.


OPERATION RUNOFF    XSECTION  94

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .00 WATERSHED INCHES;       0 CFS-HRS;        .0 ACRE-FEET.


OPERATION RESVOR    STRUCTURE 11

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .00 WATERSHED INCHES;      -1 CFS-HRS;        .0 ACRE-FEET.
            FOR XSECTION  95, OPERATION ADDHYD.


OPERATION RUNOFF    XSECTION  96

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .13                          7.2                        (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .19 WATERSHED INCHES;       1 CFS-HRS;        .1 ACRE-FEET.
```



```
TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
12:30:03                    PASS   1   JOB NO.   1                      PAGE   2


OPERATION ADDHYD    XSECTION  97

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .13                          7.2                        (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .01 WATERSHED INCHES;       1 CFS-HRS;        .1 ACRE-FEET.


OPERATION RESVOR    STRUCTURE  6

                  HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM = 1
    HRS      MAIN TIME INCREMENT =  .008 hr,       DRAINAGE AREA =    .28 SQ.MI.
     .03 CFS      .00     .01     .01     .02     .03     .04     .06     .08
     .03 ELEV   707.00  707.00  707.00  707.00  707.00  707.01  707.01  707.01
     .10 CFS      .11     .14     .17     .21     .24     .28     .31     .35
     .10 ELEV   707.01  707.02  707.02  707.02  707.03  707.03  707.04  707.04
     .16 CFS      .38     .41     .44     .46     .49     .51     .52     .54
     .16 ELEV   707.05  707.05  707.05  707.06  707.06  707.06  707.06  707.06
     .22 CFS      .55     .56     .57     .58     .58     .59     .59     .59
     .22 ELEV   707.07  707.07  707.07  707.07  707.07  707.07  707.07  707.07
     .29 CFS      .60     .60     .60     .60     .60     .60     .60     .60
     .29 ELEV   707.07  707.07  707.07  707.07  707.07  707.07  707.07  707.07
     .35 CFS      .60     .60     .59     .59     .59     .59     .59     .58
     .35 ELEV   707.07  707.07  707.07  707.07  707.07  707.07  707.07  707.07
     .42 CFS      .58     .58     .58     .57     .57     .57     .57     .56
     .42 ELEV   707.07  707.07  707.07  707.07  707.07  707.07  707.07  707.07
     .48 CFS      .56     .56     .56     .55     .55     .55     .54     .54
     .48 ELEV   707.07  707.07  707.07  707.07  707.07  707.07  707.06  707.06
     .54 CFS      .54     .54     .53     .53     .53     .53     .52     .52
     .54 ELEV   707.06  707.06  707.06  707.06  707.06  707.06  707.06  707.06
     .61 CFS      .52     .52     .51     .51     .51     .51     .50     .50
     .61 ELEV   707.06  707.06  707.06  707.06  707.06  707.06  707.06  707.06
     .67 CFS      .50     .50     .49     .49     .49     .49     .48     .48
     .67 ELEV   707.06  707.06  707.06  707.06  707.06  707.06  707.06  707.06
     .74 CFS      .48     .48     .47     .47     .47     .47     .46     .46
     .74 ELEV   707.06  707.06  707.06  707.06  707.06  707.06  707.06  707.05
     .80 CFS      .46     .46     .46     .45     .45     .45     .45     .44
     .80 ELEV   707.05  707.05  707.05  707.05  707.05  707.05  707.05  707.05
     .86 CFS      .44     .44     .44     .44     .43     .43     .43     .43
     .86 ELEV   707.05  707.05  707.05  707.05  707.05  707.05  707.05  707.05
     .93 CFS      .42     .42     .42     .42     .42     .41     .41     .41
     .93 ELEV   707.05  707.05  707.05  707.05  707.05  707.05  707.05  707.05
     .99 CFS      .41     .41     .40     .40     .40     .40     .40     .39
     .99 ELEV   707.05  707.05  707.05  707.05  707.05  707.05  707.05  707.05
    1.06 CFS      .39     .39     .39     .39     .38     .38     .38     .38
    1.06 ELEV   707.05  707.05  707.05  707.05  707.05  707.05  707.05  707.05
    1.12 CFS      .38     .37     .37     .37     .37     .37     .37     .36
    1.12 ELEV   707.04  707.04  707.04  707.04  707.04  707.04  707.04  707.04
```

```
TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
12:30:03                    PASS   1   JOB NO.   1                      PAGE   3

     1.18 CFS       .36     .36     .36     .36     .35     .35     .35     .35
     1.18 ELEV   707.04  707.04  707.04  707.04  707.04  707.04  707.04  707.04
     1.25 CFS       .35     .35     .34     .34     .34     .34     .34     .34
     1.25 ELEV   707.04  707.04  707.04  707.04  707.04  707.04  707.04  707.04
     1.31 CFS       .33     .33     .33     .33     .33     .33     .32     .32
     1.31 ELEV   707.04  707.04  707.04  707.04  707.04  707.04  707.04  707.04
     1.38 CFS       .32     .32     .32     .32     .31     .31     .31     .31
     1.38 ELEV   707.04  707.04  707.04  707.04  707.04  707.04  707.04  707.04
     1.44 CFS       .31     .31     .31     .30     .30     .30     .30     .30
     1.44 ELEV   707.04  707.04  707.04  707.04  707.04  707.04  707.04  707.04
     1.50 CFS       .30     .29     .29     .29     .29     .29     .29     .29
     1.50 ELEV   707.04  707.04  707.03  707.03  707.03  707.03  707.03  707.03
     1.57 CFS       .28     .28     .28     .28     .28     .28     .28     .27
     1.57 ELEV   707.03  707.03  707.03  707.03  707.03  707.03  707.03  707.03
     1.63 CFS       .27     .27     .27     .27     .27     .27     .27     .26
     1.63 ELEV   707.03  707.03  707.03  707.03  707.03  707.03  707.03  707.03
     1.70 CFS       .26     .26     .26     .26     .26     .26     .25     .25
     1.70 ELEV   707.03  707.03  707.03  707.03  707.03  707.03  707.03  707.03
     1.76 CFS       .25     .25     .25     .25     .25     .25     .24     .24
     1.76 ELEV   707.03  707.03  707.03  707.03  707.03  707.03  707.03  707.03
     1.82 CFS       .24     .24     .24     .24     .24     .24     .24     .23
     1.82 ELEV   707.03  707.03  707.03  707.03  707.03  707.03  707.03  707.03
     1.89 CFS       .23     .23     .23     .23     .23     .23     .23     .22
     1.89 ELEV   707.03  707.03  707.03  707.03  707.03  707.03  707.03  707.03
     1.95 CFS       .22     .22     .22     .22     .22     .22     .22     .22
     1.95 ELEV   707.03  707.03  707.03  707.03  707.03  707.03  707.03  707.03
     2.02 CFS       .21     .21     .21     .21     .21     .21     .21     .21
     2.02 ELEV   707.03  707.03  707.03  707.03  707.03  707.02  707.02  707.02
     2.08 CFS       .21     .21     .20     .20     .20     .20     .20     .20
     2.08 ELEV   707.02  707.02  707.02  707.02  707.02  707.02  707.02  707.02
     2.14 CFS       .20     .20     .20     .20     .19     .19     .19     .19
     2.14 ELEV   707.02  707.02  707.02  707.02  707.02  707.02  707.02  707.02
     2.21 CFS       .19     .19     .19     .19     .19     .19     .18     .18
     2.21 ELEV   707.02  707.02  707.02  707.02  707.02  707.02  707.02  707.02
     2.27 CFS       .18     .18     .18     .18     .18     .18     .18     .18
     2.27 ELEV   707.02  707.02  707.02  707.02  707.02  707.02  707.02  707.02
     2.34 CFS       .18     .18     .17     .17     .17     .17     .17     .17
     2.34 ELEV   707.02  707.02  707.02  707.02  707.02  707.02  707.02  707.02
     2.40 CFS       .17     .17     .17     .17     .17     .16     .16     .16
     2.40 ELEV   707.02  707.02  707.02  707.02  707.02  707.02  707.02  707.02
     2.46 CFS       .16     .16     .16     .16     .16     .16     .16     .16
     2.46 ELEV   707.02  707.02  707.02  707.02  707.02  707.02  707.02  707.02
     2.53 CFS       .16     .16     .15     .15     .15     .15     .15     .15
     2.53 ELEV   707.02  707.02  707.02  707.02  707.02  707.02  707.02  707.02
     2.59 CFS       .15     .15     .15     .15     .15     .15     .15     .14
     2.59 ELEV   707.02  707.02  707.02  707.02  707.02  707.02  707.02  707.02
     2.66 CFS       .14     .14     .14     .14     .14     .14     .14     .14
     2.66 ELEV   707.02  707.02  707.02  707.02  707.02  707.02  707.02  707.02
     2.72 CFS       .14     .14     .14     .14     .14     .13     .13     .13
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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
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     2.72 ELEV   707.02  707.02  707.02  707.02  707.02  707.02  707.02  707.02
     2.78 CFS       .13     .13     .13     .13     .13     .13     .13     .13
     2.78 ELEV   707.02  707.02  707.02  707.02  707.02  707.02  707.02  707.02
     2.85 CFS       .13     .13     .13     .13     .13     .12     .12     .12
     2.85 ELEV   707.02  707.02  707.02  707.01  707.01  707.01  707.01  707.01
     2.91 CFS       .12     .12     .12     .12     .12     .12     .12     .12
     2.91 ELEV   707.01  707.01  707.01  707.01  707.01  707.01  707.01  707.01
     2.98 CFS       .12     .12     .12     .12     .12     .11     .11     .11
     2.98 ELEV   707.01  707.01  707.01  707.01  707.01  707.01  707.01  707.01
     3.04 CFS       .11     .11     .11     .11     .11     .11     .11     .11
     3.04 ELEV   707.01  707.01  707.01  707.01  707.01  707.01  707.01  707.01
     3.10 CFS       .11     .11     .11     .11     .11     .11     .11     .11
     3.10 ELEV   707.01  707.01  707.01  707.01  707.01  707.01  707.01  707.01
     3.17 CFS       .10     .10     .10     .10
     3.17 ELEV   707.01  707.01  707.01  707.01

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                    .01 WATERSHED INCHES;       1 CFS-HRS;        .1 ACRE-FEET.

    DURATION(HRS)   0
    FLOW(CFS)       0

 --- STRUCTURE  6, ALTERNATE  0, STORM  1, HYDROGRAPH ADDED TO READHD FILE ---


OPERATION RUNOFF    XSECTION  99

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .16                          1.9                        (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                    .00 WATERSHED INCHES;       0 CFS-HRS;        .0 ACRE-FEET.


OPERATION ADDHYD    XSECTION  90

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .17                          2.3                        (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                    .00 WATERSHED INCHES;       1 CFS-HRS;        .1 ACRE-FEET.


OPERATION RESVOR    STRUCTURE  7

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                    .00 WATERSHED INCHES;       0 CFS-HRS;        .0 ACRE-FEET.
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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
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OPERATION RUNOFF    XSECTION  49

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .00 WATERSHED INCHES;      67 CFS-HRS;        .0 ACRE-FEET.


OPERATION ADDHYD    XSECTION  50

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .00 WATERSHED INCHES;     399 CFS-HRS;        .0 ACRE-FEET.


OPERATION RESVOR    STRUCTURE 39

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .00 WATERSHED INCHES;       0 CFS-HRS;        .0 ACRE-FEET.


EXECUTIVE CONTROL  ENDCMP    COMPUTATIONS COMPLETED FOR PASS   1


EXECUTIVE CONTROL  COMPUT    FROM XSECTION  91  TO STRUCTURE 39           10-MIN
    STARTING TIME =   .00       RAIN DEPTH =   .67       RAIN DURATION =   .17
    ANT. RUNOFF COND. = 2       MAIN TIME INCREMENT =   .008 HOURS
    ALTERNATE NO. = 0           STORM NO. = 2            RAIN TABLE NO. = 1


OPERATION RUNOFF    XSECTION  91

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .00 WATERSHED INCHES;     324 CFS-HRS;        .0 ACRE-FEET.


OPERATION RUNOFF    XSECTION  92

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .73                          1.1 *                       (RUNOFF)
                                  * FIRST POINT OF FLAT PEAK

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .01 WATERSHED INCHES;       1 CFS-HRS;        .1 ACRE-FEET.


OPERATION ADDHYD    XSECTION  93
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TR20 ------------------------------------------------------------------- SCS -
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    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .73                          1.1 *                       (NULL)
                                  * FIRST POINT OF FLAT PEAK

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .01 WATERSHED INCHES;       1 CFS-HRS;        .1 ACRE-FEET.


OPERATION RUNOFF    XSECTION  94

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .00 WATERSHED INCHES;       0 CFS-HRS;        .0 ACRE-FEET.


OPERATION RESVOR    STRUCTURE 11

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .00 WATERSHED INCHES;      -1 CFS-HRS;        .0 ACRE-FEET.


OPERATION RUNOFF    XSECTION  96

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .15                         14.3                        (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .47 WATERSHED INCHES;       3 CFS-HRS;        .2 ACRE-FEET.


OPERATION ADDHYD    XSECTION  97

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .15                         14.3                        (NULL)
         .73                          1.1 *                      (NULL)
                                  * FIRST POINT OF FLAT PEAK

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .02 WATERSHED INCHES;       3 CFS-HRS;        .3 ACRE-FEET.


OPERATION RESVOR    STRUCTURE  6

                    HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM = 2
     HRS      MAIN TIME INCREMENT =  .008 hr,       DRAINAGE AREA =    .28 SQ.MI.
      .03 CFS      .00     .01     .02     .03     .05     .07     .11     .15
      .03 ELEV   707.00  707.00  707.00  707.00  707.01  707.01  707.01  707.02
      .10 CFS      .21     .27     .34     .42     .51     .60     .70     .79
      .10 ELEV   707.02  707.03  707.04  707.05  707.06  707.07  707.08  707.09
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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
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      .16 CFS       .89     .99    1.09    1.18    1.27    1.36    1.44    1.52
      .16 ELEV   707.11  707.12  707.13  707.14  707.15  707.16  707.17  707.18
      .22 CFS      1.60    1.67    1.73    1.79    1.84    1.89    1.93    1.96
      .22 ELEV   707.19  707.20  707.21  707.21  707.22  707.22  707.23  707.23
      .29 CFS      1.99    2.02    2.04    2.05    2.07    2.08    2.09    2.09
      .29 ELEV   707.24  707.24  707.24  707.24  707.25  707.25  707.25  707.25
      .35 CFS      2.10    2.10    2.10    2.10    2.10    2.10    2.10    2.09
      .35 ELEV   707.25  707.25  707.25  707.25  707.25  707.25  707.25  707.25
      .42 CFS      2.09    2.09    2.08    2.08    2.07    2.07    2.06    2.06
      .42 ELEV   707.25  707.25  707.25  707.25  707.25  707.25  707.25  707.25
      .48 CFS      2.05    2.05    2.04    2.04    2.03    2.03    2.02    2.02
      .48 ELEV   707.24  707.24  707.24  707.24  707.24  707.24  707.24  707.24
      .54 CFS      2.01    2.01    2.00    2.00    1.99    1.99    1.98    1.98
      .54 ELEV   707.24  707.24  707.24  707.24  707.24  707.24  707.24  707.24
      .61 CFS      1.97    1.97    1.96    1.96    1.95    1.95    1.95    1.94
      .61 ELEV   707.23  707.23  707.23  707.23  707.23  707.23  707.23  707.23
      .67 CFS      1.94    1.93    1.93    1.92    1.92    1.92    1.91    1.91
      .67 ELEV   707.23  707.23  707.23  707.23  707.23  707.23  707.23  707.23
      .74 CFS      1.90    1.90    1.90    1.89    1.89    1.88    1.88    1.88
      .74 ELEV   707.23  707.23  707.23  707.23  707.22  707.22  707.22  707.22
      .80 CFS      1.87    1.87    1.87    1.86    1.86    1.85    1.85    1.85
      .80 ELEV   707.22  707.22  707.22  707.22  707.22  707.22  707.22  707.22
      .86 CFS      1.84    1.84    1.83    1.83    1.82    1.82    1.82    1.81
      .86 ELEV   707.22  707.22  707.22  707.22  707.22  707.22  707.22  707.22
      .93 CFS      1.81    1.80    1.80    1.79    1.79    1.78    1.78    1.78
      .93 ELEV   707.22  707.21  707.21  707.21  707.21  707.21  707.21  707.21
      .99 CFS      1.77    1.77    1.76    1.76    1.75    1.75    1.74    1.74
      .99 ELEV   707.21  707.21  707.21  707.21  707.21  707.21  707.21  707.21
     1.06 CFS      1.73    1.73    1.72    1.72    1.71    1.70    1.70    1.69
     1.06 ELEV   707.21  707.21  707.20  707.20  707.20  707.20  707.20  707.20
     1.12 CFS      1.69    1.68    1.68    1.67    1.67    1.66    1.65    1.65
     1.12 ELEV   707.20  707.20  707.20  707.20  707.20  707.20  707.20  707.20
     1.18 CFS      1.64    1.64    1.63    1.62    1.62    1.61    1.61    1.60
     1.18 ELEV   707.20  707.19  707.19  707.19  707.19  707.19  707.19  707.19
     1.25 CFS      1.59    1.59    1.58    1.58    1.57    1.56    1.56    1.55
     1.25 ELEV   707.19  707.19  707.19  707.19  707.19  707.19  707.19  707.18
     1.31 CFS      1.55    1.54    1.53    1.53    1.52    1.52    1.51    1.50
     1.31 ELEV   707.18  707.18  707.18  707.18  707.18  707.18  707.18  707.18
     1.38 CFS      1.50    1.49    1.49    1.48    1.47    1.47    1.46    1.46
     1.38 ELEV   707.18  707.18  707.18  707.18  707.18  707.17  707.17  707.17
     1.44 CFS      1.45    1.44    1.44    1.43    1.43    1.42    1.41    1.41
     1.44 ELEV   707.17  707.17  707.17  707.17  707.17  707.17  707.17  707.17
     1.50 CFS      1.40    1.40    1.39    1.38    1.38    1.37    1.37    1.36
     1.50 ELEV   707.17  707.17  707.17  707.16  707.16  707.16  707.16  707.16
     1.57 CFS      1.35    1.35    1.34    1.34    1.33    1.32    1.32    1.31
     1.57 ELEV   707.16  707.16  707.16  707.16  707.16  707.16  707.16  707.16
     1.63 CFS      1.31    1.30    1.29    1.29    1.28    1.28    1.27    1.27
     1.63 ELEV   707.16  707.15  707.15  707.15  707.15  707.15  707.15  707.15
     1.70 CFS      1.26    1.25    1.25    1.24    1.24    1.23    1.23    1.22
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TR20 ------------------------------------------------------------------------ SCS -
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     1.70 ELEV   707.15  707.15  707.15  707.15  707.15  707.15  707.15  707.15
     1.76 CFS      1.21    1.21    1.20    1.20    1.19    1.19    1.18    1.18
     1.76 ELEV   707.14  707.14  707.14  707.14  707.14  707.14  707.14  707.14
     1.82 CFS      1.17    1.17    1.16    1.15    1.15    1.14    1.14    1.13
     1.82 ELEV   707.14  707.14  707.14  707.14  707.14  707.14  707.14  707.13
     1.89 CFS      1.13    1.12    1.12    1.11    1.11    1.10    1.10    1.09
     1.89 ELEV   707.13  707.13  707.13  707.13  707.13  707.13  707.13  707.13
     1.95 CFS      1.09    1.08    1.08    1.07    1.07    1.06    1.06    1.05
     1.95 ELEV   707.13  707.13  707.13  707.13  707.13  707.13  707.13  707.13
     2.02 CFS      1.05    1.04    1.04    1.03    1.03    1.02    1.02    1.01
     2.02 ELEV   707.12  707.12  707.12  707.12  707.12  707.12  707.12  707.12
     2.08 CFS      1.01    1.00    1.00     .99     .99     .98     .98     .97
     2.08 ELEV   707.12  707.12  707.12  707.12  707.12  707.12  707.12  707.12
     2.14 CFS       .97     .96     .96     .95     .95     .95     .94     .94
     2.14 ELEV   707.12  707.11  707.11  707.11  707.11  707.11  707.11  707.11
     2.21 CFS       .93     .93     .92     .92     .91     .91     .91     .90
     2.21 ELEV   707.11  707.11  707.11  707.11  707.11  707.11  707.11  707.11
     2.27 CFS       .90     .89     .89     .88     .88     .87     .87     .87
     2.27 ELEV   707.11  707.11  707.11  707.11  707.10  707.10  707.10  707.10
     2.34 CFS       .86     .86     .85     .85     .85     .84     .84     .83
     2.34 ELEV   707.10  707.10  707.10  707.10  707.10  707.10  707.10  707.10
     2.40 CFS       .83     .83     .82     .82     .81     .81     .81     .80
     2.40 ELEV   707.10  707.10  707.10  707.10  707.10  707.10  707.10  707.10
     2.46 CFS       .80     .79     .79     .79     .78     .78     .77     .77
     2.46 ELEV   707.09  707.09  707.09  707.09  707.09  707.09  707.09  707.09
     2.53 CFS       .77     .76     .76     .76     .75     .75     .74     .74
     2.53 ELEV   707.09  707.09  707.09  707.09  707.09  707.09  707.09  707.09
     2.59 CFS       .74     .73     .73     .73     .72     .72     .72     .71
     2.59 ELEV   707.09  707.09  707.09  707.09  707.09  707.09  707.09  707.08
     2.66 CFS       .71     .70     .70     .70     .69     .69     .69     .68
     2.66 ELEV   707.08  707.08  707.08  707.08  707.08  707.08  707.08  707.08
     2.72 CFS       .68     .68     .67     .67     .67     .66     .66     .66
     2.72 ELEV   707.08  707.08  707.08  707.08  707.08  707.08  707.08  707.08
     2.78 CFS       .65     .65     .65     .64     .64     .64     .64     .63
     2.78 ELEV   707.08  707.08  707.08  707.08  707.08  707.08  707.08  707.08
     2.85 CFS       .63     .63     .62     .62     .62     .61     .61     .61
     2.85 ELEV   707.07  707.07  707.07  707.07  707.07  707.07  707.07  707.07
     2.91 CFS       .60     .60     .60     .60     .59     .59     .59     .58
     2.91 ELEV   707.07  707.07  707.07  707.07  707.07  707.07  707.07  707.07
     2.98 CFS       .58     .58     .57     .57     .57     .57     .56     .56
     2.98 ELEV   707.07  707.07  707.07  707.07  707.07  707.07  707.07  707.07
     3.04 CFS       .56     .56     .55     .55     .55     .54     .54     .54
     3.04 ELEV   707.07  707.07  707.07  707.07  707.07  707.06  707.06  707.06
     3.10 CFS       .54     .53     .53     .53     .53     .52     .52     .52
     3.10 ELEV   707.06  707.06  707.06  707.06  707.06  707.06  707.06  707.06
     3.17 CFS       .51     .51     .51     .51
     3.17 ELEV   707.06  707.06  707.06  707.06
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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
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    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .02 WATERSHED INCHES;       4 CFS-HRS;        .3 ACRE-FEET.

    DURATION(HRS)   2      3
    FLOW(CFS)       1      1 TRUNCATED

 --- STRUCTURE  6, ALTERNATE  0, STORM  2, HYDROGRAPH ADDED TO READHD FILE ---


OPERATION RUNOFF    XSECTION  99

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .19                         41.9                        (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .07 WATERSHED INCHES;       7 CFS-HRS;        .6 ACRE-FEET.


OPERATION ADDHYD    XSECTION  90

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .19                         43.2                        (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .04 WATERSHED INCHES;      11 CFS-HRS;        .9 ACRE-FEET.


OPERATION RESVOR    STRUCTURE  7

                  HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM = 2
     HRS      MAIN TIME INCREMENT =  .008 hr,      DRAINAGE AREA =    .54 SQ.MI.
      .08 CFS       .00     .01     .01     .02     .02     .03     .04     .05
      .08 ELEV   700.00  700.00  700.00  700.00  700.01  700.01  700.01  700.01
      .14 CFS       .06     .07     .09     .10     .12     .14     .16     .17
      .14 ELEV   700.02  700.02  700.02  700.03  700.03  700.03  700.04  700.04
      .21 CFS       .19     .21     .23     .25     .27     .28     .30     .32
      .21 ELEV   700.05  700.05  700.06  700.06  700.07  700.07  700.08  700.08
      .27 CFS       .33     .35     .36     .37     .38     .40     .41     .42
      .27 ELEV   700.08  700.09  700.09  700.09  700.10  700.10  700.10  700.10
      .34 CFS       .43     .44     .44     .45     .46     .47     .47     .48
      .34 ELEV   700.11  700.11  700.11  700.11  700.11  700.12  700.12  700.12
      .40 CFS       .48     .49     .49     .50     .50     .50     .51     .51
      .40 ELEV   700.12  700.12  700.12  700.12  700.13  700.13  700.13  700.13
      .46 CFS       .51     .52     .52     .52     .53     .53     .53     .53
      .46 ELEV   700.13  700.13  700.13  700.13  700.13  700.13  700.13  700.13
      .53 CFS       .53     .54     .54     .54     .54     .54     .54     .54
      .53 ELEV   700.13  700.13  700.13  700.13  700.14  700.14  700.14  700.14
      .59 CFS       .55     .55     .55     .55     .55     .55     .55     .55
      .59 ELEV   700.14  700.14  700.14  700.14  700.14  700.14  700.14  700.14
      .66 CFS       .55     .55     .55     .56     .56     .56     .56     .56
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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
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      .66 ELEV   700.14  700.14  700.14  700.14  700.14  700.14  700.14  700.14
      .72 CFS       .56     .56     .56     .56     .56     .56     .56     .56
      .72 ELEV   700.14  700.14  700.14  700.14  700.14  700.14  700.14  700.14
      .78 CFS       .56     .56     .56     .57     .57     .57     .57     .57
      .78 ELEV   700.14  700.14  700.14  700.14  700.14  700.14  700.14  700.14
      .85 CFS       .57     .57     .57     .57     .57     .57     .57     .57
      .85 ELEV   700.14  700.14  700.14  700.14  700.14  700.14  700.14  700.14
      .91 CFS       .57     .57     .57     .57     .57     .57     .57     .57
      .91 ELEV   700.14  700.14  700.14  700.14  700.14  700.14  700.14  700.14
      .98 CFS       .57     .57     .58     .58     .58     .58     .58     .58
      .98 ELEV   700.14  700.14  700.14  700.14  700.14  700.14  700.14  700.14
     1.04 CFS       .58     .58     .58     .58     .58     .58     .58     .58
     1.04 ELEV   700.14  700.14  700.14  700.14  700.14  700.14  700.14  700.15
     1.10 CFS       .58     .58     .58     .58     .58     .58     .58     .58
     1.10 ELEV   700.15  700.15  700.15  700.15  700.15  700.15  700.15  700.15
     1.17 CFS       .58     .58     .58     .58     .58     .58     .59     .59
     1.17 ELEV   700.15  700.15  700.15  700.15  700.15  700.15  700.15  700.15
     1.23 CFS       .59     .59     .59     .59     .59     .59     .59     .59
     1.23 ELEV   700.15  700.15  700.15  700.15  700.15  700.15  700.15  700.15
     1.30 CFS       .59     .59     .59     .59     .59     .59     .59     .59
     1.30 ELEV   700.15  700.15  700.15  700.15  700.15  700.15  700.15  700.15
     1.36 CFS       .59     .59     .59     .59     .59     .59     .59     .59
     1.36 ELEV   700.15  700.15  700.15  700.15  700.15  700.15  700.15  700.15
     1.42 CFS       .59     .59     .59     .59     .59     .59     .59     .59
     1.42 ELEV   700.15  700.15  700.15  700.15  700.15  700.15  700.15  700.15
     1.49 CFS       .59     .59     .60     .60     .60     .60     .60     .60
     1.49 ELEV   700.15  700.15  700.15  700.15  700.15  700.15  700.15  700.15
     1.55 CFS       .60     .60     .60     .60     .60     .60     .60     .60
     1.55 ELEV   700.15  700.15  700.15  700.15  700.15  700.15  700.15  700.15
     1.62 CFS       .60     .60     .60     .60     .60     .60     .60     .60
     1.62 ELEV   700.15  700.15  700.15  700.15  700.15  700.15  700.15  700.15
     1.68 CFS       .60     .60     .60     .60     .60     .60     .60     .60
     1.68 ELEV   700.15  700.15  700.15  700.15  700.15  700.15  700.15  700.15
     1.74 CFS       .60     .60     .60     .60     .60     .60     .60     .60
     1.74 ELEV   700.15  700.15  700.15  700.15  700.15  700.15  700.15  700.15
     1.81 CFS       .60     .60     .60     .60     .60     .60     .60     .60
     1.81 ELEV   700.15  700.15  700.15  700.15  700.15  700.15  700.15  700.15
     1.87 CFS       .60     .60     .61     .61     .61     .61     .61     .61
     1.87 ELEV   700.15  700.15  700.15  700.15  700.15  700.15  700.15  700.15
     1.94 CFS       .61     .61     .61     .61     .61     .61     .61     .61
     1.94 ELEV   700.15  700.15  700.15  700.15  700.15  700.15  700.15  700.15
     2.00 CFS       .61     .61     .61     .61     .61     .61     .61     .61
     2.00 ELEV   700.15  700.15  700.15  700.15  700.15  700.15  700.15  700.15
     2.06 CFS       .61     .61     .61     .61     .61     .61     .61     .61
     2.06 ELEV   700.15  700.15  700.15  700.15  700.15  700.15  700.15  700.15
     2.13 CFS       .61     .61     .61     .61     .61     .61     .61     .61
     2.13 ELEV   700.15  700.15  700.15  700.15  700.15  700.15  700.15  700.15
     2.19 CFS       .61     .61     .61     .61     .61     .61     .61     .61
     2.19 ELEV   700.15  700.15  700.15  700.15  700.15  700.15  700.15  700.15
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TR20 ------------------------------------------------------------------------ SCS -
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     2.26 CFS       .61     .61     .61     .61     .61     .61     .61     .61
     2.26 ELEV   700.15  700.15  700.15  700.15  700.15  700.15  700.15  700.15
     2.32 CFS       .61     .61     .61     .61     .61     .61     .61     .61
     2.32 ELEV   700.15  700.15  700.15  700.15  700.15  700.15  700.15  700.15
     2.38 CFS       .61     .61     .61     .61     .61     .61     .61     .61
     2.38 ELEV   700.15  700.15  700.15  700.15  700.15  700.15  700.15  700.15
     2.45 CFS       .61     .61     .61     .61     .61     .61     .61     .61
     2.45 ELEV   700.15  700.15  700.15  700.15  700.15  700.15  700.15  700.15
     2.51 CFS       .61     .61     .61     .61     .61     .61     .61     .61
     2.51 ELEV   700.15  700.15  700.15  700.15  700.15  700.15  700.15  700.15
     2.58 CFS       .61     .61     .61     .61     .61     .61     .61     .61
     2.58 ELEV   700.15  700.15  700.15  700.15  700.15  700.15  700.15  700.15
     2.64 CFS       .61     .61     .61     .61     .61     .61     .61     .61
     2.64 ELEV   700.15  700.15  700.15  700.15  700.15  700.15  700.15  700.15
     2.70 CFS       .61     .61     .61     .61     .61     .61     .61     .61
     2.70 ELEV   700.15  700.15  700.15  700.15  700.15  700.15  700.15  700.15
     2.77 CFS       .61     .61     .61     .61     .61     .61     .61     .61
     2.77 ELEV   700.15  700.15  700.15  700.15  700.15  700.15  700.15  700.15
     2.83 CFS       .61     .61     .61     .61     .61     .61     .61     .61
     2.83 ELEV   700.15  700.15  700.15  700.15  700.15  700.15  700.15  700.15
     2.90 CFS       .61     .61     .61     .61     .61     .61     .61     .61
     2.90 ELEV   700.15  700.15  700.15  700.15  700.15  700.15  700.15  700.15
     2.96 CFS       .61     .61     .61     .61     .61     .61     .61     .61
     2.96 ELEV   700.15  700.15  700.15  700.15  700.15  700.15  700.15  700.15
     3.02 CFS       .61     .61     .61     .61     .61     .61     .61     .61
     3.02 ELEV   700.15  700.15  700.15  700.15  700.15  700.15  700.15  700.15
     3.09 CFS       .61     .61     .61     .61     .61     .61     .61     .61
     3.09 ELEV   700.15  700.15  700.15  700.15  700.15  700.15  700.15  700.15
     3.15 CFS       .61     .61     .61     .61     .61     .61
     3.15 ELEV   700.15  700.15  700.15  700.15  700.15  700.15

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .00 WATERSHED INCHES;       2 CFS-HRS;        .1 ACRE-FEET.

    DURATION(HRS)   2      3
    FLOW(CFS)       1      1 TRUNCATED

 --- STRUCTURE  7, ALTERNATE  0, STORM  2, HYDROGRAPH ADDED TO READHD FILE ---


OPERATION RUNOFF    XSECTION  49

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .18                          .9                        (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .11 WATERSHED INCHES;       0 CFS-HRS;        .0 ACRE-FEET.
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TR20 ------------------------------------------------------------------------ SCS -
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OPERATION ADDHYD    XSECTION  50

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .20                          1.0                       (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .01 WATERSHED INCHES;       2 CFS-HRS;        .2 ACRE-FEET.


OPERATION RESVOR    STRUCTURE 39

                  HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM = 2
    HRS      MAIN TIME INCREMENT =  .008 hr,       DRAINAGE AREA =    .62 SQ.MI.
     .07 CFS       .00     .01     .01     .01     .02     .02     .03     .04
     .07 ELEV   693.00  693.00  693.00  693.00  693.00  693.00  693.00  693.01
     .14 CFS       .05     .06     .08     .09     .10     .12     .14     .16
     .14 ELEV   693.01  693.01  693.01  693.01  693.01  693.02  693.02  693.02
     .20 CFS       .17     .19     .21     .23     .25     .27     .29     .31
     .20 ELEV   693.02  693.03  693.03  693.03  693.04  693.04  693.04  693.04
     .26 CFS       .32     .34     .36     .37     .39     .40     .41     .43
     .26 ELEV   693.05  693.05  693.05  693.05  693.05  693.06  693.06  693.06
     .33 CFS       .44     .45     .46     .47     .48     .48     .49     .50
     .33 ELEV   693.06  693.06  693.06  693.07  693.07  693.07  693.07  693.07
     .39 CFS       .50     .51     .51     .52     .52     .52     .53     .53
     .39 ELEV   693.07  693.07  693.07  693.07  693.07  693.07  693.07  693.08
     .46 CFS       .53     .54     .54     .54     .54     .55     .55     .55
     .46 ELEV   693.08  693.08  693.08  693.08  693.08  693.08  693.08  693.08
     .52 CFS       .55     .55     .55     .55     .55     .56     .56     .56
     .52 ELEV   693.08  693.08  693.08  693.08  693.08  693.08  693.08  693.08
     .58 CFS       .56     .56     .56     .56     .56     .56     .56     .56
     .58 ELEV   693.08  693.08  693.08  693.08  693.08  693.08  693.08  693.08
     .65 CFS       .56     .56     .56     .56     .56     .56     .56     .56
     .65 ELEV   693.08  693.08  693.08  693.08  693.08  693.08  693.08  693.08
     .71 CFS       .56     .56     .56     .56     .56     .56     .56     .56
     .71 ELEV   693.08  693.08  693.08  693.08  693.08  693.08  693.08  693.08
     .78 CFS       .56     .56     .56     .56     .56     .56     .56     .56
     .78 ELEV   693.08  693.08  693.08  693.08  693.08  693.08  693.08  693.08
     .84 CFS       .56     .56     .56     .56     .56     .56     .56     .56
     .84 ELEV   693.08  693.08  693.08  693.08  693.08  693.08  693.08  693.08
     .90 CFS       .56     .56     .56     .56     .57     .57     .57     .57
     .90 ELEV   693.08  693.08  693.08  693.08  693.08  693.08  693.08  693.08
     .97 CFS       .57     .57     .57     .57     .57     .57     .57     .57
     .97 ELEV   693.08  693.08  693.08  693.08  693.08  693.08  693.08  693.08
    1.03 CFS       .57     .57     .57     .57     .57     .57     .57     .57
    1.03 ELEV   693.08  693.08  693.08  693.08  693.08  693.08  693.08  693.08
    1.10 CFS       .57     .57     .57     .57     .57     .57     .57     .57
    1.10 ELEV   693.08  693.08  693.08  693.08  693.08  693.08  693.08  693.08
    1.16 CFS       .57     .57     .57     .57     .57     .57     .57     .57
    1.16 ELEV   693.08  693.08  693.08  693.08  693.08  693.08  693.08  693.08
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TR20 ------------------------------------------------------------------- SCS -
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     1.22 CFS       .57     .57     .57     .57     .57     .57     .57     .57
     1.22 ELEV   693.08  693.08  693.08  693.08  693.08  693.08  693.08  693.08
     1.29 CFS       .57     .57     .57     .57     .57     .57     .57     .57
     1.29 ELEV   693.08  693.08  693.08  693.08  693.08  693.08  693.08  693.08
     1.35 CFS       .57     .57     .57     .57     .57     .57     .57     .57
     1.35 ELEV   693.08  693.08  693.08  693.08  693.08  693.08  693.08  693.08
     1.42 CFS       .57     .57     .57     .57     .57     .57     .57     .57
     1.42 ELEV   693.08  693.08  693.08  693.08  693.08  693.08  693.08  693.08
     1.48 CFS       .57     .57     .57     .57     .57     .57     .57     .57
     1.48 ELEV   693.08  693.08  693.08  693.08  693.08  693.08  693.08  693.08
     1.54 CFS       .57     .57     .57     .57     .57     .57     .57     .57
     1.54 ELEV   693.08  693.08  693.08  693.08  693.08  693.08  693.08  693.08
     1.61 CFS       .57     .57     .57     .57     .57     .57     .57     .57
     1.61 ELEV   693.08  693.08  693.08  693.08  693.08  693.08  693.08  693.08
     1.67 CFS       .57     .57     .57     .57     .57     .57     .57     .57
     1.67 ELEV   693.08  693.08  693.08  693.08  693.08  693.08  693.08  693.08
     1.74 CFS       .57     .57     .57     .57     .57     .57     .57     .57
     1.74 ELEV   693.08  693.08  693.08  693.08  693.08  693.08  693.08  693.08
     1.80 CFS       .57     .57     .57     .57     .57     .57     .57     .57
     1.80 ELEV   693.08  693.08  693.08  693.08  693.08  693.08  693.08  693.08
     1.86 CFS       .57     .57     .57     .57     .57     .57     .57     .57
     1.86 ELEV   693.08  693.08  693.08  693.08  693.08  693.08  693.08  693.08
     1.93 CFS       .57     .57     .57     .57     .57     .57     .57     .57
     1.93 ELEV   693.08  693.08  693.08  693.08  693.08  693.08  693.08  693.08
     1.99 CFS       .57     .57     .57     .57     .57     .57     .57     .57
     1.99 ELEV   693.08  693.08  693.08  693.08  693.08  693.08  693.08  693.08
     2.06 CFS       .57     .57     .57     .57     .57     .57     .57     .57
     2.06 ELEV   693.08  693.08  693.08  693.08  693.08  693.08  693.08  693.08
     2.12 CFS       .57     .57     .57     .57     .57     .57     .57     .57
     2.12 ELEV   693.08  693.08  693.08  693.08  693.08  693.08  693.08  693.08
     2.18 CFS       .57     .57     .57     .57     .57     .57     .57     .57
     2.18 ELEV   693.08  693.08  693.08  693.08  693.08  693.08  693.08  693.08
     2.25 CFS       .57     .57     .57     .57     .57     .57     .57     .57
     2.25 ELEV   693.08  693.08  693.08  693.08  693.08  693.08  693.08  693.08
     2.31 CFS       .57     .57     .57     .57     .57     .57     .57     .57
     2.31 ELEV   693.08  693.08  693.08  693.08  693.08  693.08  693.08  693.08
     2.38 CFS       .57     .57     .57     .57     .57     .57     .57     .57
     2.38 ELEV   693.08  693.08  693.08  693.08  693.08  693.08  693.08  693.08
     2.44 CFS       .57     .57     .57     .57     .57     .57     .57     .57
     2.44 ELEV   693.08  693.08  693.08  693.08  693.08  693.08  693.08  693.08
     2.50 CFS       .57     .57     .57     .57     .57     .57     .57     .57
     2.50 ELEV   693.08  693.08  693.08  693.08  693.08  693.08  693.08  693.08
     2.57 CFS       .57     .57     .57     .57     .57     .57     .57     .57
     2.57 ELEV   693.08  693.08  693.08  693.08  693.08  693.08  693.08  693.08
     2.63 CFS       .57     .57     .57     .57     .57     .57     .57     .57
     2.63 ELEV   693.08  693.08  693.08  693.08  693.08  693.08  693.08  693.08
     2.70 CFS       .57     .57     .57     .57     .57     .57     .57     .57
     2.70 ELEV   693.08  693.08  693.08  693.08  693.08  693.08  693.08  693.08
     2.76 CFS       .57     .57     .57     .57     .57     .57     .57     .57
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     2.76 ELEV   693.08  693.08  693.08  693.08  693.08  693.08  693.08  693.08
     2.82 CFS       .57     .57     .57     .57     .57     .57     .57     .57
     2.82 ELEV   693.08  693.08  693.08  693.08  693.08  693.08  693.08  693.08
     2.89 CFS       .57     .57     .57     .57     .57     .57     .57     .57
     2.89 ELEV   693.08  693.08  693.08  693.08  693.08  693.08  693.08  693.08
     2.95 CFS       .57     .57     .57     .57     .57     .57     .57     .57
     2.95 ELEV   693.08  693.08  693.08  693.08  693.08  693.08  693.08  693.08
     3.02 CFS       .57     .57     .57     .57     .57     .57     .57     .57
     3.02 ELEV   693.08  693.08  693.08  693.08  693.08  693.08  693.08  693.08
     3.08 CFS       .57     .57     .57     .57     .57     .57     .57     .57
     3.08 ELEV   693.08  693.08  693.08  693.08  693.08  693.08  693.08  693.08
     3.14 CFS       .57     .57     .57     .57     .57     .57     .57
     3.14 ELEV   693.08  693.08  693.08  693.08  693.08  693.08  693.08

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .00 WATERSHED INCHES;       2 CFS-HRS;        .1 ACRE-FEET.

    DURATION(HRS)   2      3
    FLOW(CFS)       1      1 TRUNCATED

 --- STRUCTURE 39, ALTERNATE  0, STORM  2, HYDROGRAPH ADDED TO READHD FILE ---


EXECUTIVE CONTROL  ENDCMP    COMPUTATIONS COMPLETED FOR PASS   2


EXECUTIVE CONTROL  COMPUT    FROM XSECTION  91  TO STRUCTURE 39           15-MIN
    STARTING TIME =   .00       RAIN DEPTH =   .82       RAIN DURATION =   .25
    ANT. RUNOFF COND. = 2       MAIN TIME INCREMENT =   .008 HOURS
    ALTERNATE NO. = 0           STORM NO. = 3            RAIN TABLE NO. = 1


OPERATION RUNOFF    XSECTION  91

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .70                          .6                          (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .01 WATERSHED INCHES;       0 CFS-HRS;        .0 ACRE-FEET.


OPERATION RUNOFF    XSECTION  92

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .76                          3.7 *                       (RUNOFF)
                                           * FIRST POINT OF FLAT PEAK
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TR20 ------------------------------------------------------------------------ SCS -
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    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .04 WATERSHED INCHES;       3 CFS-HRS;        .3 ACRE-FEET.


OPERATION ADDHYD    XSECTION  93

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .75                          4.3                        (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .02 WATERSHED INCHES;       3 CFS-HRS;        .3 ACRE-FEET.


OPERATION RUNOFF    XSECTION  94

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .00 WATERSHED INCHES;       0 CFS-HRS;        .0 ACRE-FEET.


OPERATION RESVOR    STRUCTURE 11

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .00 WATERSHED INCHES;      -1 CFS-HRS;        .0 ACRE-FEET.


OPERATION RUNOFF    XSECTION  96

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .16                         16.0                        (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .62 WATERSHED INCHES;       3 CFS-HRS;        .3 ACRE-FEET.


OPERATION ADDHYD    XSECTION  97

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .16                         16.1                        (NULL)
         .75                          4.3                        (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .04 WATERSHED INCHES;       7 CFS-HRS;        .6 ACRE-FEET.


OPERATION RESVOR    STRUCTURE  6

                   HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM = 3
     HRS      MAIN TIME INCREMENT =  .008 hr,      DRAINAGE AREA =    .28 SQ.MI.
      .03 CFS       .00     .01     .01     .03     .04     .07     .10     .14
      .03 ELEV   707.00  707.00  707.00  707.00  707.01  707.01  707.01  707.02
```



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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
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      .10 CFS      .20     .26     .34     .42     .52     .62     .73     .84
      .10 ELEV   707.02  707.03  707.04  707.05  707.06  707.07  707.09  707.10
      .16 CFS      .96    1.08    1.20    1.32    1.44    1.56    1.67    1.77
      .16 ELEV   707.11  707.13  707.14  707.16  707.17  707.19  707.20  707.21
      .22 CFS     1.88    1.98    2.07    2.16    2.25    2.33    2.41    2.49
      .22 ELEV   707.22  707.24  707.25  707.26  707.27  707.28  707.29  707.30
      .29 CFS     2.56    2.63    2.70    2.76    2.81    2.86    2.91    2.95
      .29 ELEV   707.31  707.31  707.32  707.33  707.33  707.34  707.35  707.35
      .35 CFS     2.98    3.01    3.04    3.06    3.08    3.09    3.10    3.11
      .35 ELEV   707.35  707.36  707.36  707.36  707.37  707.37  707.37  707.37
      .42 CFS     3.12    3.13    3.13    3.14    3.14    3.14    3.14    3.15
      .42 ELEV   707.37  707.37  707.37  707.37  707.37  707.37  707.37  707.37
      .48 CFS     3.15    3.15    3.15    3.15    3.15    3.15    3.15    3.15
      .48 ELEV   707.37  707.37  707.37  707.38  707.38  707.38  707.38  707.38
      .54 CFS     3.16    3.16    3.16    3.16    3.16    3.17    3.17    3.17
      .54 ELEV   707.38  707.38  707.38  707.38  707.38  707.38  707.38  707.38
      .61 CFS     3.17    3.18    3.18    3.19    3.19    3.19    3.20    3.20
      .61 ELEV   707.38  707.38  707.38  707.38  707.38  707.38  707.38  707.38
      .67 CFS     3.21    3.21    3.22    3.22    3.23    3.23    3.24    3.24
      .67 ELEV   707.38  707.38  707.38  707.38  707.38  707.38  707.39  707.39
      .74 CFS     3.25    3.25    3.26    3.26    3.27    3.27    3.28    3.28
      .74 ELEV   707.39  707.39  707.39  707.39  707.39  707.39  707.39  707.39
      .80 CFS     3.29    3.29    3.30    3.30    3.31    3.31    3.31    3.32
      .80 ELEV   707.39  707.39  707.39  707.39  707.39  707.39  707.39  707.39
      .86 CFS     3.32    3.32    3.33    3.33    3.33    3.34    3.34    3.34
      .86 ELEV   707.40  707.40  707.40  707.40  707.40  707.40  707.40  707.40
      .93 CFS     3.34    3.35    3.35    3.35    3.35    3.35    3.35    3.35
      .93 ELEV   707.40  707.40  707.40  707.40  707.40  707.40  707.40  707.40
      .99 CFS     3.35    3.35    3.35    3.35    3.35    3.35    3.34    3.34
      .99 ELEV   707.40  707.40  707.40  707.40  707.40  707.40  707.40  707.40
     1.06 CFS     3.34    3.34    3.33    3.33    3.33    3.32    3.32    3.32
     1.06 ELEV   707.40  707.40  707.40  707.40  707.40  707.40  707.40  707.39
     1.12 CFS     3.31    3.31    3.30    3.30    3.29    3.29    3.28    3.27
     1.12 ELEV   707.39  707.39  707.39  707.39  707.39  707.39  707.39  707.39
     1.18 CFS     3.27    3.26    3.25    3.25    3.24    3.23    3.22    3.22
     1.18 ELEV   707.39  707.39  707.39  707.39  707.39  707.38  707.38  707.38
     1.25 CFS     3.21    3.20    3.19    3.18    3.18    3.17    3.16    3.15
     1.25 ELEV   707.38  707.38  707.38  707.38  707.38  707.38  707.38  707.37
     1.31 CFS     3.14    3.13    3.12    3.11    3.10    3.09    3.09    3.08
     1.31 ELEV   707.37  707.37  707.37  707.37  707.37  707.37  707.37  707.37
     1.38 CFS     3.07    3.06    3.05    3.04    3.03    3.02    3.01    3.00
     1.38 ELEV   707.37  707.36  707.36  707.36  707.36  707.36  707.36  707.36
     1.44 CFS     2.99    2.98    2.97    2.96    2.95    2.94    2.93    2.92
     1.44 ELEV   707.36  707.35  707.35  707.35  707.35  707.35  707.35  707.35
     1.50 CFS     2.90    2.89    2.88    2.87    2.86    2.85    2.84    2.83
     1.50 ELEV   707.35  707.34  707.34  707.34  707.34  707.34  707.34  707.34
     1.57 CFS     2.82    2.81    2.80    2.79    2.78    2.77    2.76    2.74
     1.57 ELEV   707.34  707.33  707.33  707.33  707.33  707.33  707.33  707.33
     1.63 CFS     2.73    2.72    2.71    2.70    2.69    2.68    2.67    2.66
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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
12:30:03                    PASS   3   JOB NO.   1                      PAGE  17

     1.63 ELEV   707.33  707.32  707.32  707.32  707.32  707.32  707.32  707.32
     1.70 CFS      2.65    2.64    2.63    2.61    2.60    2.59    2.58    2.57
     1.70 ELEV   707.32  707.31  707.31  707.31  707.31  707.31  707.31  707.31
     1.76 CFS      2.56    2.55    2.54    2.53    2.52    2.51    2.50    2.48
     1.76 ELEV   707.30  707.30  707.30  707.30  707.30  707.30  707.30  707.30
     1.82 CFS      2.47    2.46    2.45    2.44    2.43    2.42    2.41    2.40
     1.82 ELEV   707.29  707.29  707.29  707.29  707.29  707.29  707.29  707.29
     1.89 CFS      2.39    2.38    2.37    2.36    2.35    2.34    2.33    2.32
     1.89 ELEV   707.28  707.28  707.28  707.28  707.28  707.28  707.28  707.28
     1.95 CFS      2.31    2.30    2.29    2.27    2.26    2.25    2.24    2.23
     1.95 ELEV   707.27  707.27  707.27  707.27  707.27  707.27  707.27  707.27
     2.02 CFS      2.22    2.21    2.20    2.19    2.18    2.17    2.16    2.15
     2.02 ELEV   707.26  707.26  707.26  707.26  707.26  707.26  707.26  707.26
     2.08 CFS      2.14    2.13    2.12    2.11    2.10    2.09    2.08    2.08
     2.08 ELEV   707.26  707.25  707.25  707.25  707.25  707.25  707.25  707.25
     2.14 CFS      2.07    2.06    2.05    2.04    2.03    2.02    2.01    2.00
     2.14 ELEV   707.25  707.24  707.24  707.24  707.24  707.24  707.24  707.24
     2.21 CFS      1.99    1.98    1.97    1.96    1.95    1.94    1.93    1.92
     2.21 ELEV   707.24  707.24  707.23  707.23  707.23  707.23  707.23  707.23
     2.27 CFS      1.92    1.91    1.90    1.89    1.88    1.87    1.86    1.85
     2.27 ELEV   707.23  707.23  707.23  707.22  707.22  707.22  707.22  707.22
     2.34 CFS      1.84    1.84    1.83    1.82    1.81    1.80    1.79    1.78
     2.34 ELEV   707.22  707.22  707.22  707.22  707.22  707.21  707.21  707.21
     2.40 CFS      1.77    1.77    1.76    1.75    1.74    1.73    1.72    1.72
     2.40 ELEV   707.21  707.21  707.21  707.21  707.21  707.21  707.21  707.20
     2.46 CFS      1.71    1.70    1.69    1.68    1.67    1.67    1.66    1.65
     2.46 ELEV   707.20  707.20  707.20  707.20  707.20  707.20  707.20  707.20
     2.53 CFS      1.64    1.63    1.63    1.62    1.61    1.60    1.60    1.59
     2.53 ELEV   707.20  707.19  707.19  707.19  707.19  707.19  707.19  707.19
     2.59 CFS      1.58    1.57    1.56    1.56    1.55    1.54    1.53    1.53
     2.59 ELEV   707.19  707.19  707.19  707.19  707.18  707.18  707.18  707.18
     2.66 CFS      1.52    1.51    1.50    1.50    1.49    1.48    1.48    1.47
     2.66 ELEV   707.18  707.18  707.18  707.18  707.18  707.18  707.18  707.17
     2.72 CFS      1.46    1.45    1.45    1.44    1.43    1.43    1.42    1.41
     2.72 ELEV   707.17  707.17  707.17  707.17  707.17  707.17  707.17  707.17
     2.78 CFS      1.40    1.40    1.39    1.38    1.38    1.37    1.36    1.36
     2.78 ELEV   707.17  707.17  707.17  707.16  707.16  707.16  707.16  707.16
     2.85 CFS      1.35    1.34    1.34    1.33    1.32    1.32    1.31    1.30
     2.85 ELEV   707.16  707.16  707.16  707.16  707.16  707.16  707.16  707.16
     2.91 CFS      1.30    1.29    1.29    1.28    1.27    1.27    1.26    1.25
     2.91 ELEV   707.15  707.15  707.15  707.15  707.15  707.15  707.15  707.15
     2.98 CFS      1.25    1.24    1.24    1.23    1.22    1.22    1.21    1.21
     2.98 ELEV   707.15  707.15  707.15  707.15  707.15  707.14  707.14  707.14
     3.04 CFS      1.20    1.19    1.19    1.18    1.18    1.17    1.16    1.16
     3.04 ELEV   707.14  707.14  707.14  707.14  707.14  707.14  707.14  707.14
     3.10 CFS      1.15    1.15    1.14    1.14    1.13    1.12    1.12    1.11
     3.10 ELEV   707.14  707.14  707.14  707.14  707.13  707.13  707.13  707.13
     3.17 CFS      1.11    1.10    1.10    1.09
     3.17 ELEV   707.13  707.13  707.13  707.13
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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
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    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .04 WATERSHED INCHES;       7 CFS-HRS;        .6 ACRE-FEET.

    DURATION(HRS)   2      2
    FLOW(CFS)       2      1 TRUNCATED

 --- STRUCTURE  6, ALTERNATE  0, STORM  3, HYDROGRAPH ADDED TO READHD FILE ---


OPERATION RUNOFF    XSECTION  99

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .20                          58.7                        (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .13 WATERSHED INCHES;      13 CFS-HRS;       1.1 ACRE-FEET.


OPERATION ADDHYD    XSECTION  90

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .20                          60.3                        (NULL)
         .98                           3.4 *                      (NULL)
                                           * FIRST POINT OF FLAT PEAK

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .07 WATERSHED INCHES;      21 CFS-HRS;       1.7 ACRE-FEET.


OPERATION RESVOR    STRUCTURE  7

                    HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM = 3
     HRS      MAIN TIME INCREMENT =  .008 hr,      DRAINAGE AREA =    .54 SQ.MI.
      .08 CFS       .00     .01     .01     .02     .02     .03     .04     .06
      .08 ELEV   700.00  700.00  700.00  700.00  700.01  700.01  700.01  700.01
      .14 CFS       .07     .09     .11     .13     .15     .17     .20     .22
      .14 ELEV   700.02  700.02  700.03  700.03  700.04  700.04  700.05  700.06
      .21 CFS       .25     .27     .30     .33     .35     .38     .41     .44
      .21 ELEV   700.06  700.07  700.07  700.08  700.09  700.10  700.10  700.11
      .27 CFS       .46     .49     .52     .54     .57     .59     .62     .64
      .27 ELEV   700.12  700.12  700.13  700.14  700.14  700.15  700.15  700.16
      .34 CFS       .66     .68     .70     .72     .74     .76     .77     .79
      .34 ELEV   700.17  700.17  700.18  700.18  700.19  700.19  700.19  700.20
      .40 CFS       .80     .81     .83     .84     .85     .86     .87     .87
      .40 ELEV   700.20  700.20  700.21  700.21  700.21  700.21  700.22  700.22
      .46 CFS       .88     .89     .90     .90     .91     .91     .92     .92
      .46 ELEV   700.22  700.22  700.22  700.23  700.23  700.23  700.23  700.23
      .53 CFS       .93     .93     .94     .94     .94     .95     .95     .95
      .53 ELEV   700.23  700.23  700.23  700.23  700.24  700.24  700.24  700.24
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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
12:30:03                    PASS   3   JOB NO.   1                      PAGE  19

      .59 CFS      .96    .96    .96    .96    .96    .97    .97    .97
      .59 ELEV   700.24 700.24 700.24 700.24 700.24 700.24 700.24 700.24
      .66 CFS      .97    .97    .98    .98    .98    .98    .98    .98
      .66 ELEV   700.24 700.24 700.24 700.24 700.24 700.25 700.25 700.25
      .72 CFS      .98    .99    .99    .99    .99    .99    .99    .99
      .72 ELEV   700.25 700.25 700.25 700.25 700.25 700.25 700.25 700.25
      .78 CFS      .99    .99   1.00   1.00   1.00   1.00   1.00   1.00
      .78 ELEV   700.25 700.25 700.25 700.25 700.25 700.25 700.25 700.25
      .85 CFS     1.00   1.00   1.00   1.00   1.01   1.01   1.01   1.01
      .85 ELEV   700.25 700.25 700.25 700.25 700.25 700.25 700.25 700.25
      .91 CFS     1.01   1.01   1.01   1.01   1.01   1.01   1.01   1.01
      .91 ELEV   700.25 700.25 700.25 700.25 700.25 700.25 700.25 700.25
      .98 CFS     1.01   1.02   1.02   1.02   1.02   1.02   1.02   1.02
      .98 ELEV   700.25 700.25 700.25 700.25 700.25 700.25 700.25 700.26
     1.04 CFS     1.02   1.02   1.02   1.02   1.02   1.02   1.03   1.03
     1.04 ELEV   700.26 700.26 700.26 700.26 700.26 700.26 700.26 700.26
     1.10 CFS     1.03   1.03   1.03   1.03   1.03   1.03   1.03   1.03
     1.10 ELEV   700.26 700.26 700.26 700.26 700.26 700.26 700.26 700.26
     1.17 CFS     1.03   1.03   1.03   1.03   1.03   1.04   1.04   1.04
     1.17 ELEV   700.26 700.26 700.26 700.26 700.26 700.26 700.26 700.26
     1.23 CFS     1.04   1.04   1.04   1.04   1.04   1.04   1.04   1.04
     1.23 ELEV   700.26 700.26 700.26 700.26 700.26 700.26 700.26 700.26
     1.30 CFS     1.04   1.04   1.04   1.04   1.05   1.05   1.05   1.05
     1.30 ELEV   700.26 700.26 700.26 700.26 700.26 700.26 700.26 700.26
     1.36 CFS     1.05   1.05   1.05   1.05   1.05   1.05   1.05   1.05
     1.36 ELEV   700.26 700.26 700.26 700.26 700.26 700.26 700.26 700.26
     1.42 CFS     1.05   1.05   1.05   1.05   1.06   1.06   1.06   1.06
     1.42 ELEV   700.26 700.26 700.26 700.26 700.26 700.26 700.26 700.26
     1.49 CFS     1.06   1.06   1.06   1.06   1.06   1.06   1.06   1.06
     1.49 ELEV   700.26 700.26 700.26 700.26 700.27 700.27 700.27 700.27
     1.55 CFS     1.06   1.06   1.06   1.06   1.06   1.06   1.07   1.07
     1.55 ELEV   700.27 700.27 700.27 700.27 700.27 700.27 700.27 700.27
     1.62 CFS     1.07   1.07   1.07   1.07   1.07   1.07   1.07   1.07
     1.62 ELEV   700.27 700.27 700.27 700.27 700.27 700.27 700.27 700.27
     1.68 CFS     1.07   1.07   1.07   1.07   1.07   1.07   1.07   1.07
     1.68 ELEV   700.27 700.27 700.27 700.27 700.27 700.27 700.27 700.27
     1.74 CFS     1.07   1.07   1.08   1.08   1.08   1.08   1.08   1.08
     1.74 ELEV   700.27 700.27 700.27 700.27 700.27 700.27 700.27 700.27
     1.81 CFS     1.08   1.08   1.08   1.08   1.08   1.08   1.08   1.08
     1.81 ELEV   700.27 700.27 700.27 700.27 700.27 700.27 700.27 700.27
     1.87 CFS     1.08   1.08   1.08   1.08   1.08   1.08   1.08   1.08
     1.87 ELEV   700.27 700.27 700.27 700.27 700.27 700.27 700.27 700.27
     1.94 CFS     1.08   1.08   1.09   1.09   1.09   1.09   1.09   1.09
     1.94 ELEV   700.27 700.27 700.27 700.27 700.27 700.27 700.27 700.27
     2.00 CFS     1.09   1.09   1.09   1.09   1.09   1.09   1.09   1.09
     2.00 ELEV   700.27 700.27 700.27 700.27 700.27 700.27 700.27 700.27
     2.06 CFS     1.09   1.09   1.09   1.09   1.09   1.09   1.09   1.09
     2.06 ELEV   700.27 700.27 700.27 700.27 700.27 700.27 700.27 700.27
     2.13 CFS     1.09   1.09   1.09   1.09   1.09   1.09   1.09   1.09
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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
12:30:03                    PASS   3   JOB NO.   1                      PAGE  20

     2.13 ELEV   700.27 700.27 700.27 700.27 700.27 700.27 700.27 700.27
     2.19 CFS     1.10   1.10   1.10   1.10   1.10   1.10   1.10   1.10
     2.19 ELEV   700.27 700.27 700.27 700.27 700.27 700.27 700.27 700.27
     2.26 CFS     1.10   1.10   1.10   1.10   1.10   1.10   1.10   1.10
     2.26 ELEV   700.27 700.27 700.27 700.27 700.27 700.27 700.27 700.27
     2.32 CFS     1.10   1.10   1.10   1.10   1.10   1.10   1.10   1.10
     2.32 ELEV   700.27 700.27 700.27 700.27 700.28 700.28 700.28 700.28
     2.38 CFS     1.10   1.10   1.10   1.10   1.10   1.10   1.10   1.10
     2.38 ELEV   700.28 700.28 700.28 700.28 700.28 700.28 700.28 700.28
     2.45 CFS     1.10   1.10   1.10   1.10   1.10   1.10   1.10   1.10
     2.45 ELEV   700.28 700.28 700.28 700.28 700.28 700.28 700.28 700.28
     2.51 CFS     1.10   1.10   1.10   1.10   1.10   1.10   1.11   1.11
     2.51 ELEV   700.28 700.28 700.28 700.28 700.28 700.28 700.28 700.28
     2.58 CFS     1.11   1.11   1.11   1.11   1.11   1.11   1.11   1.11
     2.58 ELEV   700.28 700.28 700.28 700.28 700.28 700.28 700.28 700.28
     2.64 CFS     1.11   1.11   1.11   1.11   1.11   1.11   1.11   1.11
     2.64 ELEV   700.28 700.28 700.28 700.28 700.28 700.28 700.28 700.28
     2.70 CFS     1.11   1.11   1.11   1.11   1.11   1.11   1.11   1.11
     2.70 ELEV   700.28 700.28 700.28 700.28 700.28 700.28 700.28 700.28
     2.77 CFS     1.11   1.11   1.11   1.11   1.11   1.11   1.11   1.11
     2.77 ELEV   700.28 700.28 700.28 700.28 700.28 700.28 700.28 700.28
     2.83 CFS     1.11   1.11   1.11   1.11   1.11   1.11   1.11   1.11
     2.83 ELEV   700.28 700.28 700.28 700.28 700.28 700.28 700.28 700.28
     2.90 CFS     1.11   1.11   1.11   1.11   1.11   1.11   1.11   1.11
     2.90 ELEV   700.28 700.28 700.28 700.28 700.28 700.28 700.28 700.28
     2.96 CFS     1.11   1.11   1.11   1.11   1.11   1.11   1.11   1.11
     2.96 ELEV   700.28 700.28 700.28 700.28 700.28 700.28 700.28 700.28
     3.02 CFS     1.11   1.11   1.11   1.11   1.11   1.11   1.11   1.11
     3.02 ELEV   700.28 700.28 700.28 700.28 700.28 700.28 700.28 700.28
     3.09 CFS     1.11   1.11   1.11   1.11   1.11   1.11   1.11   1.11
     3.09 ELEV   700.28 700.28 700.28 700.28 700.28 700.28 700.28 700.28
     3.15 CFS     1.11   1.11   1.11   1.11   1.11   1.11
     3.15 ELEV   700.28 700.28 700.28 700.28 700.28 700.28

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .01 WATERSHED INCHES;       3 CFS-HRS;        .3 ACRE-FEET.

 --- STRUCTURE  7, ALTERNATE  0, STORM  3, HYDROGRAPH ADDED TO READHD FILE ---


OPERATION RUNOFF    XSECTION  49

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .19                          1.2                        (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .18 WATERSHED INCHES;       0 CFS-HRS;        .0 ACRE-FEET.
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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
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OPERATION ADDHYD    XSECTION  50

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .26                          1.4                        (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .01 WATERSHED INCHES;       3 CFS-HRS;        .3 ACRE-FEET.


OPERATION RESVOR    STRUCTURE 39

                  HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM = 3
     HRS      MAIN TIME INCREMENT =  .008 hr,      DRAINAGE AREA =    .62 SQ.MI.
      .08 CFS      .00     .01     .01     .02     .02     .03     .04     .05
      .08 ELEV   693.00  693.00  693.00  693.00  693.00  693.00  693.01  693.01
      .14 CFS      .07     .08     .10     .12     .14     .16     .18     .21
      .14 ELEV   693.01  693.01  693.01  693.02  693.02  693.02  693.03  693.03
      .21 CFS      .23     .26     .28     .31     .33     .36     .39     .41
      .21 ELEV   693.03  693.04  693.04  693.04  693.05  693.05  693.05  693.06
      .27 CFS      .44     .47     .49     .52     .54     .57     .59     .61
      .27 ELEV   693.06  693.07  693.07  693.07  693.08  693.08  693.08  693.09
      .34 CFS      .63     .65     .67     .69     .71     .72     .74     .75
      .34 ELEV   693.09  693.09  693.10  693.10  693.10  693.10  693.10  693.11
      .40 CFS      .77     .78     .79     .80     .81     .82     .83     .84
      .40 ELEV   693.11  693.11  693.11  693.11  693.12  693.12  693.12  693.12
      .46 CFS      .85     .85     .86     .86     .87     .87     .88     .88
      .46 ELEV   693.12  693.12  693.12  693.12  693.12  693.12  693.12  693.12
      .53 CFS      .88     .89     .89     .89     .90     .90     .90     .90
      .53 ELEV   693.13  693.13  693.13  693.13  693.13  693.13  693.13  693.13
      .59 CFS      .90     .91     .91     .91     .91     .91     .91     .91
      .59 ELEV   693.13  693.13  693.13  693.13  693.13  693.13  693.13  693.13
      .66 CFS      .91     .91     .92     .92     .92     .92     .92     .92
      .66 ELEV   693.13  693.13  693.13  693.13  693.13  693.13  693.13  693.13
      .72 CFS      .92     .92     .92     .92     .92     .92     .92     .92
      .72 ELEV   693.13  693.13  693.13  693.13  693.13  693.13  693.13  693.13
      .78 CFS      .92     .92     .92     .92     .92     .92     .92     .92
      .78 ELEV   693.13  693.13  693.13  693.13  693.13  693.13  693.13  693.13
      .85 CFS      .92     .92     .92     .92     .92     .92     .92     .92
      .85 ELEV   693.13  693.13  693.13  693.13  693.13  693.13  693.13  693.13
      .91 CFS      .92     .92     .92     .92     .92     .92     .92     .92
      .91 ELEV   693.13  693.13  693.13  693.13  693.13  693.13  693.13  693.13
      .98 CFS      .92     .92     .92     .92     .92     .92     .92     .92
      .98 ELEV   693.13  693.13  693.13  693.13  693.13  693.13  693.13  693.13
     1.04 CFS      .92     .92     .93     .93     .93     .93     .93     .93
     1.04 ELEV   693.13  693.13  693.13  693.13  693.13  693.13  693.13  693.13
     1.10 CFS      .93     .93     .93     .93     .93     .93     .93     .93
     1.10 ELEV   693.13  693.13  693.13  693.13  693.13  693.13  693.13  693.13
     1.17 CFS      .93     .93     .93     .93     .93     .93     .93     .93
     1.17 ELEV   693.13  693.13  693.13  693.13  693.13  693.13  693.13  693.13
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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
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     1.23 CFS      .93     .93     .93     .93     .93     .93     .93     .93
     1.23 ELEV   693.13  693.13  693.13  693.13  693.13  693.13  693.13  693.13
     1.30 CFS      .93     .93     .93     .93     .93     .93     .93     .93
     1.30 ELEV   693.13  693.13  693.13  693.13  693.13  693.13  693.13  693.13
     1.36 CFS      .93     .93     .93     .93     .93     .93     .93     .93
     1.36 ELEV   693.13  693.13  693.13  693.13  693.13  693.13  693.13  693.13
     1.42 CFS      .93     .93     .93     .93     .93     .93     .93     .93
     1.42 ELEV   693.13  693.13  693.13  693.13  693.13  693.13  693.13  693.13
     1.49 CFS      .93     .93     .93     .93     .93     .93     .93     .93
     1.49 ELEV   693.13  693.13  693.13  693.13  693.13  693.13  693.13  693.13
     1.55 CFS      .93     .93     .93     .93     .93     .93     .93     .93
     1.55 ELEV   693.13  693.13  693.13  693.13  693.13  693.13  693.13  693.13
     1.62 CFS      .93     .93     .93     .93     .93     .93     .93     .93
     1.62 ELEV   693.13  693.13  693.13  693.13  693.13  693.13  693.13  693.13
     1.68 CFS      .93     .93     .93     .93     .93     .93     .93     .93
     1.68 ELEV   693.13  693.13  693.13  693.13  693.13  693.13  693.13  693.13
     1.74 CFS      .93     .93     .93     .93     .93     .93     .93     .93
     1.74 ELEV   693.13  693.13  693.13  693.13  693.13  693.13  693.13  693.13
     1.81 CFS      .93     .93     .93     .93     .93     .93     .93     .93
     1.81 ELEV   693.13  693.13  693.13  693.13  693.13  693.13  693.13  693.13
     1.87 CFS      .93     .93     .93     .93     .93     .93     .93     .93
     1.87 ELEV   693.13  693.13  693.13  693.13  693.13  693.13  693.13  693.13
     1.94 CFS      .93     .93     .93     .94     .94     .94     .94     .94
     1.94 ELEV   693.13  693.13  693.13  693.13  693.13  693.13  693.13  693.13
     2.00 CFS      .94     .94     .94     .94     .94     .94     .94     .94
     2.00 ELEV   693.13  693.13  693.13  693.13  693.13  693.13  693.13  693.13
     2.06 CFS      .94     .94     .94     .94     .94     .94     .94     .94
     2.06 ELEV   693.13  693.13  693.13  693.13  693.13  693.13  693.13  693.13
     2.13 CFS      .94     .94     .94     .94     .94     .94     .94     .94
     2.13 ELEV   693.13  693.13  693.13  693.13  693.13  693.13  693.13  693.13
     2.19 CFS      .94     .94     .94     .94     .94     .94     .94     .94
     2.19 ELEV   693.13  693.13  693.13  693.13  693.13  693.13  693.13  693.13
     2.26 CFS      .94     .94     .94     .94     .94     .94     .94     .94
     2.26 ELEV   693.13  693.13  693.13  693.13  693.13  693.13  693.13  693.13
     2.32 CFS      .94     .94     .94     .94     .94     .94     .94     .94
     2.32 ELEV   693.13  693.13  693.13  693.13  693.13  693.13  693.13  693.13
     2.38 CFS      .94     .94     .94     .94     .94     .94     .94     .94
     2.38 ELEV   693.13  693.13  693.13  693.13  693.13  693.13  693.13  693.13
     2.45 CFS      .94     .94     .94     .94     .94     .94     .94     .94
     2.45 ELEV   693.13  693.13  693.13  693.13  693.13  693.13  693.13  693.13
     2.51 CFS      .94     .94     .94     .94     .94     .94     .94     .94
     2.51 ELEV   693.13  693.13  693.13  693.13  693.13  693.13  693.13  693.13
     2.58 CFS      .94     .94     .94     .94     .94     .94     .94     .94
     2.58 ELEV   693.13  693.13  693.13  693.13  693.13  693.13  693.13  693.13
     2.64 CFS      .94     .94     .94     .94     .94     .94     .95     .95
     2.64 ELEV   693.13  693.13  693.13  693.13  693.13  693.13  693.13  693.13
     2.70 CFS      .95     .95     .95     .95     .95     .95     .95     .95
     2.70 ELEV   693.13  693.13  693.13  693.13  693.13  693.13  693.13  693.13
     2.77 CFS      .95     .95     .95     .95     .95     .95     .95     .95
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TR20 ---------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
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     2.77 ELEV   693.13  693.13  693.13  693.13  693.13  693.13  693.13  693.13
     2.83 CFS       .95     .95     .95     .95     .95     .95     .95     .95
     2.83 ELEV   693.13  693.13  693.13  693.13  693.13  693.13  693.13  693.13
     2.90 CFS       .95     .95     .95     .95     .95     .95     .95     .95
     2.90 ELEV   693.13  693.13  693.13  693.13  693.13  693.13  693.13  693.13
     2.96 CFS       .95     .95     .95     .95     .95     .95     .95     .95
     2.96 ELEV   693.13  693.13  693.13  693.13  693.13  693.13  693.13  693.13
     3.02 CFS       .95     .95     .95     .95     .95     .95     .95     .95
     3.02 ELEV   693.13  693.13  693.13  693.13  693.13  693.13  693.13  693.13
     3.09 CFS       .95     .95     .95     .95     .95     .95     .95     .95
     3.09 ELEV   693.13  693.13  693.13  693.13  693.13  693.13  693.13  693.13
     3.15 CFS       .95     .95     .95     .95     .95     .95
     3.15 ELEV   693.13  693.13  693.13  693.13  693.13  693.13

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .01 WATERSHED INCHES;       3 CFS-HRS;        .2 ACRE-FEET.

    DURATION(HRS)   2      3
    FLOW(CFS)       1      1 TRUNCATED

 --- STRUCTURE 39, ALTERNATE  0, STORM  3, HYDROGRAPH ADDED TO READHD FILE ---


EXECUTIVE CONTROL  ENDCMP    COMPUTATIONS COMPLETED FOR PASS   3


EXECUTIVE CONTROL  COMPUT    FROM XSECTION  91  TO STRUCTURE 39           30-MIN
    STARTING TIME =   .00       RAIN DEPTH =  1.12       RAIN DURATION =   .50
    ANT. RUNOFF COND. = 2       MAIN TIME INCREMENT =   .008 HOURS
    ALTERNATE NO. = 0           STORM NO. = 4            RAIN TABLE NO. = 1


OPERATION RUNOFF    XSECTION  91

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .84                          4.4                        (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .05 WATERSHED INCHES;       3 CFS-HRS;        .3 ACRE-FEET.


OPERATION RUNOFF    XSECTION  92

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .89                         11.9                        (RUNOFF)
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TR20 ---------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
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    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .12 WATERSHED INCHES;      10 CFS-HRS;        .8 ACRE-FEET.


OPERATION ADDHYD    XSECTION  93

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .87                         16.2                        (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .09 WATERSHED INCHES;      14 CFS-HRS;       1.1 ACRE-FEET.


OPERATION RUNOFF    XSECTION  94

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .09 WATERSHED INCHES;     360 CFS-HRS;       1.1 ACRE-FEET.


OPERATION RESVOR    STRUCTURE 11

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .00 WATERSHED INCHES;       0 CFS-HRS;        .0 ACRE-FEET.


OPERATION RUNOFF    XSECTION  96

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .18                         16.8                        (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .91 WATERSHED INCHES;       5 CFS-HRS;        .4 ACRE-FEET.


OPERATION ADDHYD    XSECTION  97

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .18                         16.9                        (NULL)
         .87                         16.3                        (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .11 WATERSHED INCHES;      18 CFS-HRS;       1.5 ACRE-FEET.


OPERATION RESVOR    STRUCTURE  6

                    HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM = 4
     HRS      MAIN TIME INCREMENT =  .008 hr,      DRAINAGE AREA =    .28 SQ.MI.
      .04 CFS       .00     .01     .02     .03     .05     .07     .10     .14
      .04 ELEV   707.00  707.00  707.00  707.00  707.01  707.01  707.01  707.02
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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
12:30:03                    PASS   4   JOB NO.   1                      PAGE  25
```

.10	CFS	.19	.25	.32	.40	.49	.59	.69	.81
.10	ELEV	707.02	707.03	707.04	707.05	707.06	707.07	707.08	707.10
.17	CFS	.93	1.06	1.20	1.34	1.48	1.62	1.76	1.90
.17	ELEV	707.11	707.13	707.14	707.16	707.18	707.19	707.21	707.23
.23	CFS	2.04	2.18	2.32	2.45	2.58	2.70	2.83	2.95
.23	ELEV	707.24	707.26	707.28	707.29	707.31	707.32	707.34	707.35
.30	CFS	3.06	3.17	3.28	3.38	3.48	3.57	3.66	3.75
.30	ELEV	707.36	707.38	707.39	707.40	707.41	707.43	707.44	707.45
.36	CFS	3.83	3.91	3.99	4.06	4.14	4.21	4.28	4.35
.36	ELEV	707.46	707.47	707.47	707.48	707.49	707.50	707.51	707.52
.42	CFS	4.41	4.48	4.55	4.62	4.69	4.76	4.82	4.89
.42	ELEV	707.53	707.53	707.54	707.55	707.56	707.57	707.57	707.58
.49	CFS	4.96	5.02	5.09	5.15	5.22	5.28	5.34	5.41
.49	ELEV	707.59	707.60	707.61	707.61	707.62	707.63	707.64	707.64
.55	CFS	5.47	5.53	5.59	5.65	5.70	5.76	5.81	5.86
.55	ELEV	707.65	707.66	707.67	707.67	707.68	707.69	707.69	707.70
.62	CFS	5.91	5.95	6.00	6.04	6.09	6.13	6.17	6.21
.62	ELEV	707.70	707.71	707.71	707.72	707.72	707.73	707.73	707.74
.68	CFS	6.25	6.29	6.34	6.38	6.42	6.46	6.50	6.54
.68	ELEV	707.74	707.75	707.75	707.76	707.76	707.77	707.77	707.78
.74	CFS	6.59	6.63	6.67	6.72	6.76	6.81	6.85	6.90
.74	ELEV	707.78	707.79	707.79	707.80	707.81	707.81	707.82	707.82
.81	CFS	6.94	6.99	7.03	7.08	7.13	7.17	7.22	7.26
.81	ELEV	707.83	707.83	707.84	707.84	707.85	707.85	707.86	707.86
.87	CFS	7.31	7.35	7.40	7.44	7.48	7.53	7.57	7.61
.87	ELEV	707.87	707.88	707.88	707.89	707.89	707.90	707.90	707.91
.94	CFS	7.65	7.70	7.74	7.78	7.81	7.85	7.89	7.93
.94	ELEV	707.91	707.92	707.92	707.93	707.93	707.93	707.94	707.94
1.00	CFS	7.96	8.00	8.03	8.07	8.10	8.13	8.16	8.19
1.00	ELEV	707.95	707.95	707.96	707.96	707.96	707.97	707.97	707.97
1.06	CFS	8.22	8.24	8.27	8.29	8.32	8.34	8.36	8.38
1.06	ELEV	707.98	707.98	707.98	707.99	707.99	707.99	708.00	708.00
1.13	CFS	8.40	8.42	8.44	8.46	8.48	8.50	8.51	8.53
1.13	ELEV	708.00	708.00	708.00	708.01	708.01	708.01	708.01	708.01
1.19	CFS	8.54	8.55	8.56	8.57	8.58	8.58	8.59	8.59
1.19	ELEV	708.01	708.01	708.01	708.01	708.02	708.02	708.02	708.02
1.26	CFS	8.59	8.60	8.60	8.59	8.59	8.59	8.58	8.58
1.26	ELEV	708.02	708.02	708.02	708.02	708.02	708.02	708.02	708.02
1.32	CFS	8.57	8.56	8.55	8.54	8.53	8.52	8.51	8.50
1.32	ELEV	708.01	708.01	708.01	708.01	708.01	708.01	708.01	708.01
1.38	CFS	8.48	8.47	8.45	8.43	8.42	8.40	8.38	8.37
1.38	ELEV	708.01	708.01	708.00	708.00	708.00	708.00	708.00	708.00
1.45	CFS	8.35	8.34	8.32	8.30	8.28	8.27	8.25	8.23
1.45	ELEV	707.99	707.99	707.99	707.99	707.99	707.98	707.98	707.98
1.51	CFS	8.21	8.19	8.17	8.15	8.13	8.11	8.08	8.06
1.51	ELEV	707.98	707.97	707.97	707.97	707.97	707.96	707.96	707.96
1.58	CFS	8.04	8.02	7.99	7.97	7.95	7.92	7.90	7.88
1.58	ELEV	707.96	707.95	707.95	707.95	707.95	707.94	707.94	707.94
1.64	CFS	7.85	7.83	7.80	7.78	7.75	7.73	7.70	7.68


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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
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1.64	ELEV	707.93	707.93	707.93	707.93	707.92	707.92	707.92	707.91
1.70	CFS	7.65	7.63	7.60	7.57	7.55	7.52	7.50	7.47
1.70	ELEV	707.91	707.91	707.90	707.90	707.90	707.90	707.89	707.89
1.77	CFS	7.44	7.42	7.39	7.36	7.33	7.31	7.28	7.25
1.77	ELEV	707.89	707.88	707.88	707.88	707.87	707.87	707.87	707.86
1.83	CFS	7.23	7.20	7.17	7.14	7.12	7.09	7.06	7.03
1.83	ELEV	707.86	707.86	707.85	707.85	707.85	707.84	707.84	707.84
1.90	CFS	7.01	6.98	6.95	6.92	6.89	6.87	6.84	6.81
1.90	ELEV	707.83	707.83	707.83	707.82	707.82	707.82	707.81	707.81
1.96	CFS	6.78	6.76	6.73	6.70	6.67	6.64	6.62	6.59
1.96	ELEV	707.81	707.80	707.80	707.80	707.79	707.79	707.79	707.78
2.02	CFS	6.56	6.53	6.51	6.48	6.45	6.42	6.40	6.37
2.02	ELEV	707.78	707.78	707.77	707.77	707.77	707.76	707.76	707.76
2.09	CFS	6.34	6.31	6.29	6.26	6.23	6.20	6.18	6.15
2.09	ELEV	707.75	707.75	707.75	707.75	707.74	707.74	707.74	707.73
2.15	CFS	6.12	6.10	6.07	6.04	6.02	5.99	5.96	5.94
2.15	ELEV	707.73	707.73	707.72	707.72	707.72	707.71	707.71	707.71
2.22	CFS	5.91	5.88	5.86	5.83	5.80	5.78	5.75	5.72
2.22	ELEV	707.70	707.70	707.70	707.69	707.69	707.69	707.68	707.68
2.28	CFS	5.70	5.67	5.65	5.62	5.60	5.57	5.54	5.52
2.28	ELEV	707.68	707.68	707.67	707.67	707.67	707.66	707.66	707.66
2.34	CFS	5.49	5.47	5.44	5.42	5.39	5.37	5.34	5.32
2.34	ELEV	707.65	707.65	707.65	707.64	707.64	707.64	707.64	707.63
2.41	CFS	5.29	5.27	5.24	5.22	5.19	5.17	5.15	5.12
2.41	ELEV	707.63	707.63	707.62	707.62	707.62	707.62	707.61	707.61
2.47	CFS	5.10	5.07	5.05	5.03	5.00	4.98	4.96	4.93
2.47	ELEV	707.61	707.60	707.60	707.60	707.60	707.59	707.59	707.59
2.54	CFS	4.91	4.89	4.86	4.84	4.82	4.79	4.77	4.75
2.54	ELEV	707.58	707.58	707.58	707.58	707.57	707.57	707.57	707.57
2.60	CFS	4.73	4.70	4.68	4.66	4.64	4.61	4.59	4.57
2.60	ELEV	707.56	707.56	707.56	707.55	707.55	707.55	707.55	707.54
2.66	CFS	4.55	4.53	4.50	4.48	4.46	4.44	4.42	4.40
2.66	ELEV	707.54	707.54	707.54	707.53	707.53	707.53	707.53	707.52
2.73	CFS	4.38	4.35	4.33	4.31	4.29	4.27	4.25	4.23
2.73	ELEV	707.52	707.52	707.52	707.51	707.51	707.51	707.51	707.50
2.79	CFS	4.21	4.19	4.17	4.15	4.13	4.11	4.09	4.07
2.79	ELEV	707.50	707.50	707.50	707.49	707.49	707.49	707.49	707.48
2.86	CFS	4.05	4.03	4.01	3.99	3.97	3.95	3.93	3.91
2.86	ELEV	707.48	707.48	707.48	707.47	707.47	707.47	707.47	707.47
2.92	CFS	3.89	3.87	3.85	3.84	3.82	3.80	3.78	3.76
2.92	ELEV	707.46	707.46	707.46	707.46	707.45	707.45	707.45	707.45
2.98	CFS	3.74	3.72	3.71	3.69	3.67	3.65	3.63	3.62
2.98	ELEV	707.45	707.44	707.44	707.44	707.44	707.43	707.43	707.43
3.05	CFS	3.60	3.58	3.56	3.55	3.53	3.51	3.49	3.48
3.05	ELEV	707.43	707.43	707.42	707.42	707.42	707.42	707.42	707.41
3.11	CFS	3.46	3.44	3.42	3.41	3.39	3.37	3.36	3.34
3.11	ELEV	707.41	707.41	707.41	707.41	707.40	707.40	707.40	707.40
3.18	CFS	3.32	3.31	3.29					
3.18	ELEV	707.40	707.39	707.39					

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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
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    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .10 WATERSHED INCHES;      18 CFS-HRS;       1.5 ACRE-FEET.

    DURATION(HRS)   2      3
    FLOW(CFS)       5      3 TRUNCATED

 --- STRUCTURE  6, ALTERNATE  0, STORM  4, HYDROGRAPH ADDED TO READHD FILE ---


OPERATION RUNOFF    XSECTION  99

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .25                          84.3                       (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .29 WATERSHED INCHES;      29 CFS-HRS;       2.4 ACRE-FEET.


OPERATION ADDHYD    XSECTION  90

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .25                          86.7                       (NULL)
        1.26                           8.6 *                     (NULL)
                                         * FIRST POINT OF FLAT PEAK

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .17 WATERSHED INCHES;      47 CFS-HRS;       3.9 ACRE-FEET.


OPERATION RESVOR    STRUCTURE  7

                   HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM = 4
     HRS      MAIN TIME INCREMENT =  .008 hr,      DRAINAGE AREA =    .54 SQ.MI.
      .09 CFS       .00     .01     .01     .01     .02     .03     .04     .05
      .09 ELEV   700.00  700.00  700.00  700.00  700.00  700.01  700.01  700.01
      .15 CFS       .07     .08     .10     .13     .15     .18     .21     .24
      .15 ELEV   700.02  700.02  700.03  700.03  700.04  700.04  700.05  700.06
      .22 CFS       .27     .31     .34     .38     .41     .45     .49     .53
      .22 ELEV   700.07  700.08  700.09  700.09  700.10  700.11  700.12  700.13
      .28 CFS       .57     .61     .65     .69     .73     .77     .81     .85
      .28 ELEV   700.14  700.15  700.16  700.17  700.18  700.19  700.20  700.21
      .34 CFS       .88     .92     .96     .99    1.03    1.06    1.10    1.13
      .34 ELEV   700.22  700.23  700.24  700.25  700.26  700.27  700.27  700.28
      .41 CFS      1.16    1.20    1.23    1.26    1.29    1.33    1.36    1.39
      .41 ELEV   700.29  700.30  700.31  700.32  700.32  700.33  700.34  700.35
      .47 CFS      1.42    1.45    1.48    1.50    1.53    1.56    1.59    1.61
      .47 ELEV   700.35  700.36  700.37  700.38  700.38  700.39  700.40  700.40
      .54 CFS      1.64    1.66    1.69    1.71    1.74    1.76    1.78    1.80
      .54 ELEV   700.41  700.42  700.42  700.43  700.43  700.44  700.44  700.45
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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
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      .60 CFS      1.82    1.84    1.85    1.87    1.88    1.90    1.91    1.92
      .60 ELEV   700.45  700.46  700.46  700.47  700.47  700.47  700.48  700.48
      .66 CFS      1.93    1.95    1.96    1.96    1.97    1.98    1.99    2.00
      .66 ELEV   700.48  700.49  700.49  700.49  700.49  700.50  700.50  700.50
      .73 CFS      2.00    2.01    2.02    2.02    2.03    2.03    2.04    2.04
      .73 ELEV   700.50  700.50  700.50  700.51  700.51  700.51  700.51  700.51
      .79 CFS      2.05    2.05    2.06    2.06    2.06    2.07    2.07    2.08
      .79 ELEV   700.51  700.51  700.51  700.52  700.52  700.52  700.52  700.52
      .86 CFS      2.08    2.08    2.08    2.09    2.09    2.09    2.10    2.10
      .86 ELEV   700.52  700.52  700.52  700.52  700.52  700.52  700.52  700.52
      .92 CFS      2.10    2.10    2.11    2.11    2.11    2.11    2.12    2.12
      .92 ELEV   700.53  700.53  700.53  700.53  700.53  700.53  700.53  700.53
      .98 CFS      2.12    2.12    2.12    2.13    2.13    2.13    2.13    2.14
      .98 ELEV   700.53  700.53  700.53  700.53  700.53  700.53  700.53  700.53
     1.05 CFS      2.14    2.14    2.14    2.14    2.15    2.15    2.15    2.15
     1.05 ELEV   700.53  700.53  700.54  700.54  700.54  700.54  700.54  700.54
     1.11 CFS      2.15    2.16    2.16    2.16    2.16    2.16    2.17    2.17
     1.11 ELEV   700.54  700.54  700.54  700.54  700.54  700.54  700.54  700.54
     1.18 CFS      2.17    2.17    2.17    2.18    2.18    2.18    2.18    2.18
     1.18 ELEV   700.54  700.54  700.54  700.54  700.54  700.55  700.55  700.55
     1.24 CFS      2.19    2.19    2.19    2.19    2.19    2.20    2.20    2.20
     1.24 ELEV   700.55  700.55  700.55  700.55  700.55  700.55  700.55  700.55
     1.30 CFS      2.20    2.20    2.21    2.21    2.21    2.21    2.21    2.22
     1.30 ELEV   700.55  700.55  700.55  700.55  700.55  700.55  700.55  700.55
     1.37 CFS      2.22    2.22    2.22    2.22    2.23    2.23    2.23    2.23
     1.37 ELEV   700.55  700.55  700.56  700.56  700.56  700.56  700.56  700.56
     1.43 CFS      2.23    2.24    2.24    2.24    2.24    2.24    2.24    2.25
     1.43 ELEV   700.56  700.56  700.56  700.56  700.56  700.56  700.56  700.56
     1.50 CFS      2.25    2.25    2.25    2.25    2.26    2.26    2.26    2.26
     1.50 ELEV   700.56  700.56  700.56  700.56  700.56  700.56  700.56  700.57
     1.56 CFS      2.26    2.26    2.27    2.27    2.27    2.27    2.27    2.28
     1.56 ELEV   700.57  700.57  700.57  700.57  700.57  700.57  700.57  700.57
     1.62 CFS      2.28    2.28    2.28    2.28    2.28    2.29    2.29    2.29
     1.62 ELEV   700.57  700.57  700.57  700.57  700.57  700.57  700.57  700.57
     1.69 CFS      2.29    2.29    2.29    2.30    2.30    2.30    2.30    2.30
     1.69 ELEV   700.57  700.57  700.57  700.57  700.57  700.57  700.58  700.58
     1.75 CFS      2.30    2.31    2.31    2.31    2.31    2.31    2.31    2.31
     1.75 ELEV   700.58  700.58  700.58  700.58  700.58  700.58  700.58  700.58
     1.82 CFS      2.32    2.32    2.32    2.32    2.32    2.32    2.33    2.33
     1.82 ELEV   700.58  700.58  700.58  700.58  700.58  700.58  700.58  700.58
     1.88 CFS      2.33    2.33    2.33    2.33    2.33    2.34    2.34    2.34
     1.88 ELEV   700.58  700.58  700.58  700.58  700.58  700.58  700.58  700.58
     1.94 CFS      2.34    2.34    2.34    2.34    2.34    2.35    2.35    2.35
     1.94 ELEV   700.58  700.59  700.59  700.59  700.59  700.59  700.59  700.59
     2.01 CFS      2.35    2.35    2.35    2.35    2.36    2.36    2.36    2.36
     2.01 ELEV   700.59  700.59  700.59  700.59  700.59  700.59  700.59  700.59
     2.07 CFS      2.36    2.36    2.36    2.36    2.37    2.37    2.37    2.37
     2.07 ELEV   700.59  700.59  700.59  700.59  700.59  700.59  700.59  700.59
     2.14 CFS      2.37    2.37    2.37    2.37    2.37    2.38    2.38    2.38
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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
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     2.14 ELEV   700.59  700.59  700.59  700.59  700.59  700.59  700.59  700.59
     2.20 CFS      2.38    2.38    2.38    2.38    2.38    2.38    2.39    2.39
     2.20 ELEV   700.59  700.60  700.60  700.60  700.60  700.60  700.60  700.60
     2.26 CFS      2.39    2.39    2.39    2.39    2.39    2.39    2.39    2.39
     2.26 ELEV   700.60  700.60  700.60  700.60  700.60  700.60  700.60  700.60
     2.33 CFS      2.40    2.40    2.40    2.40    2.40    2.40    2.40    2.40
     2.33 ELEV   700.60  700.60  700.60  700.60  700.60  700.60  700.60  700.60
     2.39 CFS      2.40    2.40    2.40    2.41    2.41    2.41    2.41    2.41
     2.39 ELEV   700.60  700.60  700.60  700.60  700.60  700.60  700.60  700.60
     2.46 CFS      2.41    2.41    2.41    2.41    2.41    2.41    2.42    2.42
     2.46 ELEV   700.60  700.60  700.60  700.60  700.60  700.60  700.60  700.60
     2.52 CFS      2.42    2.42    2.42    2.42    2.42    2.42    2.42    2.42
     2.52 ELEV   700.60  700.60  700.60  700.60  700.60  700.61  700.61  700.61
     2.58 CFS      2.42    2.42    2.42    2.42    2.43    2.43    2.43    2.43
     2.58 ELEV   700.61  700.61  700.61  700.61  700.61  700.61  700.61  700.61
     2.65 CFS      2.43    2.43    2.43    2.43    2.43    2.43    2.43    2.43
     2.65 ELEV   700.61  700.61  700.61  700.61  700.61  700.61  700.61  700.61
     2.71 CFS      2.43    2.43    2.43    2.44    2.44    2.44    2.44    2.44
     2.71 ELEV   700.61  700.61  700.61  700.61  700.61  700.61  700.61  700.61
     2.78 CFS      2.44    2.44    2.44    2.44    2.44    2.44    2.44    2.44
     2.78 ELEV   700.61  700.61  700.61  700.61  700.61  700.61  700.61  700.61
     2.84 CFS      2.44    2.44    2.44    2.44    2.44    2.44    2.45    2.45
     2.84 ELEV   700.61  700.61  700.61  700.61  700.61  700.61  700.61  700.61
     2.90 CFS      2.45    2.45    2.45    2.45    2.45    2.45    2.45    2.45
     2.90 ELEV   700.61  700.61  700.61  700.61  700.61  700.61  700.61  700.61
     2.97 CFS      2.45    2.45    2.45    2.45    2.45    2.45    2.45    2.45
     2.97 ELEV   700.61  700.61  700.61  700.61  700.61  700.61  700.61  700.61
     3.03 CFS      2.45    2.45    2.45    2.45    2.45    2.45    2.45    2.46
     3.03 ELEV   700.61  700.61  700.61  700.61  700.61  700.61  700.61  700.61
     3.10 CFS      2.46    2.46    2.46    2.46    2.46    2.46    2.46    2.46
     3.10 ELEV   700.61  700.61  700.61  700.61  700.61  700.61  700.61  700.61
     3.16 CFS      2.46    2.46    2.46    2.46    2.46
     3.16 ELEV   700.61  700.61  700.61  700.61  700.61

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                    .02 WATERSHED INCHES;       6 CFS-HRS;        .5 ACRE-FEET.

 --- STRUCTURE  7, ALTERNATE  0, STORM  4, HYDROGRAPH ADDED TO READHD FILE ---


OPERATION RUNOFF    XSECTION  49

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .23                          1.6                        (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                    .36 WATERSHED INCHES;       1 CFS-HRS;        .0 ACRE-FEET.
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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
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OPERATION ADDHYD    XSECTION  50

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        3.19                         2.5                        (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                    .02 WATERSHED INCHES;       7 CFS-HRS;        .6 ACRE-FEET.


OPERATION RESVOR    STRUCTURE 39

                    HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM = 4
     HRS      MAIN TIME INCREMENT =  .008 hr,      DRAINAGE AREA =    .62 SQ.MI.
      .09 CFS      .00     .01     .01     .02     .02     .03     .04     .05
      .09 ELEV   693.00  693.00  693.00  693.00  693.00  693.00  693.01  693.01
      .15 CFS      .06     .08     .10     .12     .14     .16     .19     .21
      .15 ELEV   693.01  693.01  693.01  693.02  693.02  693.02  693.03  693.03
      .22 CFS      .24     .27     .30     .33     .37     .40     .44     .47
      .22 ELEV   693.03  693.04  693.04  693.05  693.05  693.06  693.06  693.07
      .28 CFS      .51     .54     .58     .62     .65     .69     .72     .76
      .28 ELEV   693.07  693.08  693.08  693.09  693.09  693.10  693.10  693.11
      .34 CFS      .79     .82     .86     .89     .92     .95     .98    1.01
      .34 ELEV   693.11  693.12  693.12  693.13  693.13  693.13  693.14  693.14
      .41 CFS     1.04    1.07    1.09    1.12    1.15    1.17    1.20    1.22
      .41 ELEV   693.15  693.15  693.15  693.16  693.16  693.17  693.17  693.17
      .47 CFS     1.25    1.27    1.30    1.32    1.34    1.36    1.39    1.41
      .47 ELEV   693.18  693.18  693.18  693.19  693.19  693.19  693.20  693.20
      .54 CFS     1.43    1.45    1.47    1.49    1.51    1.52    1.54    1.56
      .54 ELEV   693.20  693.21  693.21  693.21  693.21  693.22  693.22  693.22
      .60 CFS     1.57    1.59    1.60    1.62    1.63    1.64    1.65    1.66
      .60 ELEV   693.22  693.22  693.23  693.23  693.23  693.23  693.23  693.24
      .66 CFS     1.67    1.68    1.69    1.69    1.70    1.71    1.71    1.72
      .66 ELEV   693.24  693.24  693.24  693.24  693.24  693.24  693.24  693.24
      .73 CFS     1.72    1.73    1.73    1.74    1.74    1.74    1.75    1.75
      .73 ELEV   693.24  693.24  693.25  693.25  693.25  693.25  693.25  693.25
      .79 CFS     1.75    1.75    1.76    1.76    1.76    1.76    1.76    1.77
      .79 ELEV   693.25  693.25  693.25  693.25  693.25  693.25  693.25  693.25
      .86 CFS     1.77    1.77    1.77    1.77    1.77    1.77    1.77    1.77
      .86 ELEV   693.25  693.25  693.25  693.25  693.25  693.25  693.25  693.25
      .92 CFS     1.78    1.78    1.78    1.78    1.78    1.78    1.78    1.78
      .92 ELEV   693.25  693.25  693.25  693.25  693.25  693.25  693.25  693.25
      .98 CFS     1.78    1.78    1.78    1.78    1.78    1.78    1.78    1.78
      .98 ELEV   693.25  693.25  693.25  693.25  693.25  693.25  693.25  693.25
     1.05 CFS     1.78    1.78    1.78    1.78    1.78    1.79    1.79    1.79
     1.05 ELEV   693.25  693.25  693.25  693.25  693.25  693.25  693.25  693.25
     1.11 CFS     1.79    1.79    1.79    1.79    1.79    1.79    1.79    1.79
     1.11 ELEV   693.25  693.25  693.25  693.25  693.25  693.25  693.25  693.25
     1.18 CFS     1.79    1.79    1.79    1.79    1.79    1.79    1.79    1.79
     1.18 ELEV   693.25  693.25  693.25  693.25  693.25  693.25  693.25  693.25
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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
12:30:03                    PASS   4   JOB NO.   1                     PAGE  31

     1.24 CFS     1.79    1.79    1.79    1.79    1.79    1.79    1.79    1.79
     1.24 ELEV   693.25  693.25  693.25  693.25  693.25  693.25  693.25  693.25
     1.30 CFS     1.79    1.79    1.79    1.79    1.79    1.79    1.79    1.79
     1.30 ELEV   693.25  693.25  693.25  693.25  693.25  693.25  693.25  693.25
     1.37 CFS     1.80    1.80    1.80    1.80    1.80    1.80    1.80    1.80
     1.37 ELEV   693.25  693.25  693.25  693.25  693.25  693.25  693.25  693.25
     1.43 CFS     1.80    1.80    1.80    1.80    1.80    1.80    1.80    1.80
     1.43 ELEV   693.25  693.25  693.25  693.25  693.25  693.25  693.25  693.25
     1.50 CFS     1.80    1.80    1.80    1.80    1.80    1.80    1.80    1.80
     1.50 ELEV   693.25  693.26  693.26  693.26  693.26  693.26  693.26  693.26
     1.56 CFS     1.80    1.80    1.80    1.80    1.80    1.80    1.80    1.80
     1.56 ELEV   693.26  693.26  693.26  693.26  693.26  693.26  693.26  693.26
     1.62 CFS     1.81    1.81    1.81    1.81    1.81    1.81    1.81    1.81
     1.62 ELEV   693.26  693.26  693.26  693.26  693.26  693.26  693.26  693.26
     1.69 CFS     1.81    1.81    1.81    1.81    1.81    1.81    1.81    1.81
     1.69 ELEV   693.26  693.26  693.26  693.26  693.26  693.26  693.26  693.26
     1.75 CFS     1.81    1.81    1.81    1.81    1.81    1.81    1.81    1.81
     1.75 ELEV   693.26  693.26  693.26  693.26  693.26  693.26  693.26  693.26
     1.82 CFS     1.81    1.81    1.81    1.81    1.81    1.81    1.82    1.82
     1.82 ELEV   693.26  693.26  693.26  693.26  693.26  693.26  693.26  693.26
     1.88 CFS     1.82    1.82    1.82    1.82    1.82    1.82    1.82    1.82
     1.88 ELEV   693.26  693.26  693.26  693.26  693.26  693.26  693.26  693.26
     1.94 CFS     1.82    1.82    1.82    1.82    1.82    1.82    1.82    1.82
     1.94 ELEV   693.26  693.26  693.26  693.26  693.26  693.26  693.26  693.26
     2.01 CFS     1.82    1.82    1.82    1.82    1.82    1.82    1.82    1.82
     2.01 ELEV   693.26  693.26  693.26  693.26  693.26  693.26  693.26  693.26
     2.07 CFS     1.82    1.83    1.83    1.83    1.83    1.83    1.83    1.83
     2.07 ELEV   693.26  693.26  693.26  693.26  693.26  693.26  693.26  693.26
     2.14 CFS     1.83    1.83    1.83    1.83    1.83    1.83    1.83    1.83
     2.14 ELEV   693.26  693.26  693.26  693.26  693.26  693.26  693.26  693.26
     2.20 CFS     1.83    1.83    1.83    1.83    1.83    1.83    1.83    1.83
     2.20 ELEV   693.26  693.26  693.26  693.26  693.26  693.26  693.26  693.26
     2.26 CFS     1.83    1.83    1.83    1.83    1.84    1.84    1.84    1.84
     2.26 ELEV   693.26  693.26  693.26  693.26  693.26  693.26  693.26  693.26
     2.33 CFS     1.84    1.84    1.84    1.84    1.84    1.84    1.84    1.84
     2.33 ELEV   693.26  693.26  693.26  693.26  693.26  693.26  693.26  693.26
     2.39 CFS     1.84    1.84    1.84    1.84    1.84    1.84    1.84    1.84
     2.39 ELEV   693.26  693.26  693.26  693.26  693.26  693.26  693.26  693.26
     2.46 CFS     1.84    1.84    1.84    1.84    1.84    1.85    1.85    1.85
     2.46 ELEV   693.26  693.26  693.26  693.26  693.26  693.26  693.26  693.26
     2.52 CFS     1.85    1.85    1.85    1.85    1.85    1.85    1.85    1.85
     2.52 ELEV   693.26  693.26  693.26  693.26  693.26  693.26  693.26  693.26
     2.58 CFS     1.85    1.85    1.85    1.85    1.85    1.85    1.85    1.85
     2.58 ELEV   693.26  693.26  693.26  693.26  693.26  693.26  693.26  693.26
     2.65 CFS     1.85    1.85    1.85    1.85    1.85    1.85    1.86    1.86
     2.65 ELEV   693.26  693.26  693.26  693.26  693.26  693.26  693.26  693.26
     2.71 CFS     1.86    1.86    1.86    1.86    1.86    1.86    1.86    1.86
     2.71 ELEV   693.26  693.26  693.26  693.26  693.26  693.26  693.26  693.26
     2.78 CFS     1.86    1.86    1.86    1.86    1.86    1.86    1.86    1.86
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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
12:30:03                    PASS   4   JOB NO.   1                     PAGE  32

     2.78 ELEV   693.26  693.26  693.26  693.26  693.26  693.26  693.26  693.26
     2.84 CFS     1.86    1.86    1.86    1.86    1.86    1.86    1.86    1.87
     2.84 ELEV   693.26  693.26  693.26  693.26  693.26  693.26  693.26  693.26
     2.90 CFS     1.87    1.87    1.87    1.87    1.87    1.87    1.87    1.87
     2.90 ELEV   693.26  693.26  693.26  693.26  693.26  693.26  693.26  693.26
     2.97 CFS     1.87    1.87    1.87    1.87    1.87    1.87    1.87    1.87
     2.97 ELEV   693.26  693.26  693.26  693.26  693.26  693.26  693.27  693.27
     3.03 CFS     1.87    1.87    1.87    1.87    1.87    1.87    1.87    1.87
     3.03 ELEV   693.27  693.27  693.27  693.27  693.27  693.27  693.27  693.27
     3.10 CFS     1.88    1.88    1.88    1.88    1.88    1.88    1.88    1.88
     3.10 ELEV   693.27  693.27  693.27  693.27  693.27  693.27  693.27  693.27
     3.16 CFS     1.88    1.88    1.88    1.88    1.88
     3.16 ELEV   693.27  693.27  693.27  693.27  693.27

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .01 WATERSHED INCHES;       5 CFS-HRS;        .4 ACRE-FEET.

    DURATION(HRS)   2      3
    FLOW(CFS)       2      2 TRUNCATED

 --- STRUCTURE 39, ALTERNATE  0, STORM  4, HYDROGRAPH ADDED TO READHD FILE ---


EXECUTIVE CONTROL  ENDCMP    COMPUTATIONS COMPLETED FOR PASS   4


EXECUTIVE CONTROL  COMPUT    FROM XSECTION  91  TO STRUCTURE 39          1-HR
    STARTING TIME =   .00       RAIN DEPTH =  1.43       RAIN DURATION =  1.00
    ANT. RUNOFF COND. = 2       MAIN TIME INCREMENT =   .008 HOURS
    ALTERNATE NO. = 0           STORM NO. = 5            RAIN TABLE NO. = 1


OPERATION RUNOFF    XSECTION  91

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        1.11                          8.7                        (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .14 WATERSHED INCHES;       8 CFS-HRS;        .7 ACRE-FEET.


OPERATION RUNOFF    XSECTION  92

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        1.13                         19.3                        (RUNOFF)
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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
12:30:03                    PASS   5   JOB NO.   1                      PAGE  33


    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .25 WATERSHED INCHES;      21 CFS-HRS;       1.7 ACRE-FEET.


OPERATION ADDHYD    XSECTION  93

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        1.12                         28.0                       (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .21 WATERSHED INCHES;      29 CFS-HRS;       2.4 ACRE-FEET.


OPERATION RUNOFF    XSECTION  94

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .21 WATERSHED INCHES;     399 CFS-HRS;       2.4 ACRE-FEET.


OPERATION RESVOR    STRUCTURE 11

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .02 WATERSHED INCHES;       0 CFS-HRS;        .0 ACRE-FEET.


OPERATION RUNOFF    XSECTION  96

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .21                         14.2                       (RUNOFF)
        1.04                          2.1                       (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                 1.21 WATERSHED INCHES;       7 CFS-HRS;        .5 ACRE-FEET.


OPERATION ADDHYD    XSECTION  97

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .22                         14.3                       (NULL)
        1.06                         29.8                       (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .22 WATERSHED INCHES;      36 CFS-HRS;       3.0 ACRE-FEET.


OPERATION RESVOR    STRUCTURE  6

                  HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM = 5
     HRS      MAIN TIME INCREMENT =  .008 hr,      DRAINAGE AREA =    .28 SQ.MI.
      .04 CFS       .00     .01     .01     .02     .03     .04     .06     .08
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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
12:30:03                    PASS   5   JOB NO.   1                      PAGE  34

      .04 ELEV   707.00  707.00  707.00  707.00  707.00  707.00  707.01  707.01
      .10 CFS       .11     .14     .18     .23     .28     .35     .42     .49
      .10 ELEV   707.01  707.02  707.02  707.03  707.03  707.04  707.05  707.06
      .17 CFS       .58     .67     .76     .86     .96    1.07    1.18    1.30
      .17 ELEV   707.07  707.08  707.09  707.10  707.11  707.13  707.14  707.15
      .23 CFS      1.42    1.54    1.66    1.78    1.90    2.03    2.16    2.28
      .23 ELEV   707.17  707.18  707.20  707.21  707.23  707.24  707.26  707.27
      .30 CFS      2.41    2.54    2.66    2.79    2.91    3.04    3.16    3.28
      .30 ELEV   707.29  707.30  707.32  707.33  707.35  707.36  707.38  707.39
      .36 CFS      3.40    3.51    3.62    3.74    3.84    3.95    4.06    4.16
      .36 ELEV   707.40  707.42  707.43  707.44  707.46  707.47  707.48  707.50
      .42 CFS      4.26    4.36    4.46    4.55    4.65    4.74    4.84    4.93
      .42 ELEV   707.51  707.52  707.53  707.54  707.55  707.56  707.58  707.59
      .49 CFS      5.02    5.11    5.20    5.29    5.38    5.47    5.56    5.65
      .49 ELEV   707.60  707.61  707.62  707.63  707.64  707.65  707.66  707.67
      .55 CFS      5.74    5.82    5.91    5.99    6.07    6.16    6.24    6.32
      .55 ELEV   707.68  707.69  707.70  707.71  707.72  707.73  707.74  707.75
      .62 CFS      6.40    6.48    6.56    6.64    6.73    6.81    6.89    6.98
      .62 ELEV   707.76  707.77  707.78  707.79  707.80  707.81  707.82  707.83
      .68 CFS      7.06    7.15    7.24    7.33    7.42    7.51    7.60    7.70
      .68 ELEV   707.84  707.85  707.86  707.87  707.88  707.89  707.90  707.92
      .74 CFS      7.79    7.89    7.99    8.09    8.19    8.29    8.40    8.53
      .74 ELEV   707.93  707.94  707.95  707.96  707.98  707.99  708.00  708.01
      .81 CFS      8.67    8.80    8.94    9.08    9.22    9.36    9.51    9.65
      .81 ELEV   708.02  708.03  708.05  708.06  708.07  708.08  708.10  708.11
      .87 CFS      9.80    9.94   10.09   10.23   10.38   10.53   10.67   10.81
      .87 ELEV   708.12  708.13  708.15  708.16  708.17  708.18  708.20  708.21
      .94 CFS     10.96   11.10   11.24   11.38   11.51   11.65   11.78   11.92
      .94 ELEV   708.22  708.23  708.24  708.26  708.27  708.28  708.29  708.30
     1.00 CFS     12.05   12.19   12.32   12.46   12.59   12.73   12.87   13.00
     1.00 ELEV   708.31  708.33  708.34  708.35  708.36  708.37  708.39  708.40
     1.06 CFS     13.13   13.27   13.39   13.52   13.64   13.76   13.88   13.99
     1.06 ELEV   708.41  708.42  708.43  708.44  708.45  708.46  708.47  708.48
     1.13 CFS     14.10   14.21   14.31   14.41   14.51   14.60   14.69   14.79
     1.13 ELEV   708.49  708.50  708.51  708.52  708.53  708.53  708.54  708.55
     1.19 CFS     14.87   14.96   15.05   15.13   15.21   15.29   15.37   15.45
     1.19 ELEV   708.56  708.57  708.57  708.58  708.59  708.59  708.60  708.61
     1.26 CFS     15.52   15.60   15.67   15.74   15.81   15.88   15.94   16.01
     1.26 ELEV   708.61  708.62  708.63  708.63  708.64  708.64  708.65  708.66
     1.32 CFS     16.07   16.13   16.19   16.24   16.30   16.35   16.40   16.45
     1.32 ELEV   708.66  708.67  708.67  708.68  708.68  708.69  708.69  708.69
     1.38 CFS     16.50   16.55   16.59   16.63   16.67   16.71   16.74   16.78
     1.38 ELEV   708.70  708.70  708.71  708.71  708.71  708.72  708.72  708.72
     1.45 CFS     16.81   16.84   16.87   16.89   16.92   16.94   16.96   16.98
     1.45 ELEV   708.73  708.73  708.73  708.73  708.73  708.74  708.74  708.74
     1.51 CFS     17.00   17.01   17.02   17.03   17.04   17.05   17.05   17.05
     1.51 ELEV   708.74  708.74  708.74  708.74  708.74  708.75  708.75  708.75
     1.58 CFS     17.06   17.05   17.05   17.05   17.04   17.03   17.02   17.01
     1.58 ELEV   708.75  708.75  708.75  708.75  708.74  708.74  708.74  708.74
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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
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     1.64 CFS     17.00   16.98   16.97   16.95   16.93   16.90   16.88   16.86
     1.64 ELEV   708.74  708.74  708.74  708.74  708.74  708.73  708.73  708.73
     1.70 CFS     16.83   16.80   16.77   16.74   16.71   16.68   16.64   16.61
     1.70 ELEV   708.73  708.72  708.72  708.72  708.72  708.71  708.71  708.71
     1.77 CFS     16.57   16.53   16.49   16.45   16.41   16.37   16.32   16.28
     1.77 ELEV   708.70  708.70  708.70  708.69  708.69  708.69  708.68  708.68
     1.83 CFS     16.23   16.18   16.13   16.09   16.04   15.98   15.93   15.88
     1.83 ELEV   708.67  708.67  708.67  708.66  708.66  708.65  708.65  708.64
     1.90 CFS     15.83   15.77   15.72   15.66   15.61   15.55   15.49   15.44
     1.90 ELEV   708.64  708.64  708.63  708.63  708.62  708.62  708.61  708.61
     1.96 CFS     15.38   15.32   15.26   15.20   15.14   15.08   15.02   14.96
     1.96 ELEV   708.60  708.60  708.59  708.59  708.58  708.58  708.57  708.57
     2.02 CFS     14.90   14.83   14.77   14.71   14.65   14.58   14.52   14.45
     2.02 ELEV   708.56  708.55  708.55  708.54  708.54  708.53  708.53  708.52
     2.09 CFS     14.39   14.33   14.26   14.20   14.13   14.07   14.00   13.94
     2.09 ELEV   708.52  708.51  708.51  708.50  708.49  708.49  708.48  708.48
     2.15 CFS     13.87   13.81   13.74   13.68   13.61   13.55   13.48   13.41
     2.15 ELEV   708.47  708.47  708.46  708.45  708.45  708.44  708.44  708.43
     2.22 CFS     13.35   13.28   13.22   13.15   13.09   13.02   12.96   12.89
     2.22 ELEV   708.43  708.42  708.42  708.41  708.40  708.40  708.39  708.39
     2.28 CFS     12.82   12.76   12.69   12.63   12.56   12.50   12.43   12.37
     2.28 ELEV   708.38  708.38  708.37  708.36  708.36  708.35  708.35  708.34
     2.34 CFS     12.30   12.24   12.17   12.11   12.05   11.98   11.92   11.85
     2.34 ELEV   708.34  708.33  708.33  708.32  708.31  708.31  708.30  708.30
     2.41 CFS     11.79   11.73   11.66   11.60   11.54   11.47   11.41   11.35
     2.41 ELEV   708.29  708.29  708.28  708.28  708.27  708.26  708.26  708.25
     2.47 CFS     11.29   11.22   11.16   11.10   11.04   10.98   10.92   10.86
     2.47 ELEV   708.25  708.24  708.24  708.23  708.23  708.22  708.22  708.21
     2.54 CFS     10.79   10.73   10.67   10.61   10.55   10.49   10.43   10.38
     2.54 ELEV   708.21  708.20  708.20  708.19  708.19  708.18  708.18  708.17
     2.60 CFS     10.32   10.26   10.20   10.14   10.08   10.02    9.97    9.91
     2.60 ELEV   708.17  708.16  708.16  708.15  708.15  708.14  708.14  708.13
     2.66 CFS      9.85    9.80    9.74    9.68    9.63    9.57    9.51    9.46
     2.66 ELEV   708.13  708.12  708.12  708.11  708.11  708.10  708.10  708.09
     2.73 CFS      9.40    9.35    9.29    9.24    9.19    9.13    9.08    9.02
     2.73 ELEV   708.09  708.08  708.08  708.07  708.07  708.06  708.06  708.05
     2.79 CFS      8.97    8.92    8.87    8.81    8.76    8.71    8.66    8.61
     2.79 ELEV   708.05  708.04  708.04  708.04  708.03  708.03  708.02  708.02
     2.86 CFS      8.55    8.50    8.45    8.40    8.36    8.32    8.28    8.24
     2.86 ELEV   708.01  708.01  708.00  708.00  708.00  707.99  707.99  707.98
     2.92 CFS      8.21    8.17    8.13    8.09    8.05    8.01    7.97    7.94
     2.92 ELEV   707.98  707.97  707.97  707.96  707.96  707.95  707.95  707.94
     2.98 CFS      7.90    7.86    7.82    7.79    7.75    7.71    7.67    7.64
     2.98 ELEV   707.94  707.94  707.93  707.93  707.92  707.92  707.91  707.91
     3.05 CFS      7.60    7.56    7.53    7.49    7.45    7.42    7.38    7.35
     3.05 ELEV   707.90  707.90  707.90  707.89  707.89  707.88  707.88  707.87
     3.11 CFS      7.31    7.28    7.24    7.21    7.17    7.14    7.10    7.07
     3.11 ELEV   707.87  707.87  707.86  707.86  707.85  707.85  707.85  707.84
     3.18 CFS      7.03    7.00    6.96
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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
12:30:03                    PASS   5   JOB NO.   1                      PAGE  36

     3.18 ELEV   707.84  707.83  707.83

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .19 WATERSHED INCHES;      34 CFS-HRS;       2.8 ACRE-FEET.

    DURATION(HRS)   2      3
    FLOW(CFS)       9      7 TRUNCATED

 --- STRUCTURE  6, ALTERNATE  0, STORM  5, HYDROGRAPH ADDED TO READHD FILE ---


OPERATION RUNOFF    XSECTION  99

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .33                          86.1                       (RUNOFF)
         .86                          36.3                       (RUNOFF)
        1.04                          25.9                       (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .49 WATERSHED INCHES;      48 CFS-HRS;       4.0 ACRE-FEET.


OPERATION ADDHYD    XSECTION  90

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .33                          89.1                       (NULL)
         .87                          46.0                       (NULL)
        1.04                          38.6                       (NULL)
        1.58                          17.1 *                     (NULL)
                                           * FIRST POINT OF FLAT PEAK

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .29 WATERSHED INCHES;      81 CFS-HRS;       6.7 ACRE-FEET.


OPERATION RESVOR    STRUCTURE  7

                  HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM = 5
     HRS      MAIN TIME INCREMENT =  .008 hr,      DRAINAGE AREA =    .54 SQ.MI.
      .11 CFS       .00     .01     .01     .02     .02     .03     .04     .05
      .11 ELEV   700.00  700.00  700.00  700.00  700.01  700.01  700.01  700.01
      .18 CFS       .06     .07     .09     .10     .12     .14     .17     .19
      .18 ELEV   700.01  700.02  700.02  700.03  700.03  700.04  700.04  700.05
      .24 CFS       .22     .25     .28     .31     .34     .38     .41     .45
      .24 ELEV   700.05  700.06  700.07  700.08  700.09  700.09  700.10  700.11
      .30 CFS       .49     .53     .57     .61     .65     .69     .73     .78
      .30 ELEV   700.12  700.13  700.14  700.15  700.16  700.17  700.18  700.19
      .37 CFS       .82     .86     .91     .95     .99    1.04    1.08    1.12
      .37 ELEV   700.21  700.22  700.23  700.24  700.25  700.26  700.27  700.28
      .43 CFS      1.16    1.20    1.25    1.29    1.33    1.37    1.41    1.45
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TR20 ------------------------------------------------------------------- SCS -
001        CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
12:30:03                    PASS   5   JOB NO.   1                     PAGE  37

      .43 ELEV   700.29  700.30  700.31  700.32  700.33  700.34  700.35  700.36
      .50 CFS      1.49    1.53    1.57    1.60    1.64    1.68    1.72    1.75
      .50 ELEV   700.37  700.38  700.39  700.40  700.41  700.42  700.43  700.44
      .56 CFS      1.79    1.82    1.86    1.89    1.92    1.95    1.98    2.01
      .56 ELEV   700.45  700.46  700.46  700.47  700.48  700.49  700.50  700.50
      .62 CFS      2.04    2.07    2.10    2.13    2.15    2.18    2.21    2.23
      .62 ELEV   700.51  700.52  700.52  700.53  700.54  700.55  700.55  700.56
      .69 CFS      2.26    2.28    2.31    2.33    2.36    2.38    2.41    2.43
      .69 ELEV   700.56  700.57  700.58  700.58  700.59  700.60  700.60  700.61
      .75 CFS      2.45    2.48    2.50    2.52    2.55    2.57    2.59    2.62
      .75 ELEV   700.61  700.62  700.63  700.63  700.64  700.64  700.65  700.65
      .82 CFS      2.64    2.66    2.68    2.71    2.73    2.75    2.77    2.80
      .82 ELEV   700.66  700.67  700.67  700.68  700.68  700.69  700.69  700.70
      .88 CFS      2.82    2.84    2.86    2.89    2.91    2.93    2.95    2.97
      .88 ELEV   700.70  700.71  700.72  700.72  700.73  700.73  700.74  700.74
      .94 CFS      2.99    3.01    3.03    3.05    3.07    3.09    3.11    3.13
      .94 ELEV   700.75  700.75  700.76  700.76  700.77  700.77  700.78  700.78
     1.01 CFS      3.14    3.16    3.18    3.20    3.22    3.23    3.25    3.27
     1.01 ELEV   700.79  700.79  700.79  700.80  700.80  700.81  700.81  700.82
     1.07 CFS      3.29    3.30    3.32    3.34    3.35    3.36    3.38    3.39
     1.07 ELEV   700.82  700.83  700.83  700.83  700.84  700.84  700.84  700.85
     1.14 CFS      3.40    3.41    3.43    3.44    3.45    3.46    3.46    3.47
     1.14 ELEV   700.85  700.85  700.86  700.86  700.86  700.86  700.87  700.87
     1.20 CFS      3.48    3.49    3.50    3.51    3.51    3.52    3.53    3.53
     1.20 ELEV   700.87  700.87  700.87  700.88  700.88  700.88  700.88  700.88
     1.26 CFS      3.54    3.55    3.55    3.56    3.56    3.57    3.57    3.58
     1.26 ELEV   700.89  700.89  700.89  700.89  700.89  700.89  700.89  700.90
     1.33 CFS      3.59    3.59    3.60    3.60    3.61    3.61    3.62    3.62
     1.33 ELEV   700.90  700.90  700.90  700.90  700.90  700.90  700.90  700.91
     1.39 CFS      3.63    3.63    3.63    3.64    3.64    3.65    3.65    3.66
     1.39 ELEV   700.91  700.91  700.91  700.91  700.91  700.91  700.91  700.91
     1.46 CFS      3.66    3.67    3.67    3.68    3.68    3.68    3.69    3.69
     1.46 ELEV   700.92  700.92  700.92  700.92  700.92  700.92  700.92  700.92
     1.52 CFS      3.70    3.70    3.71    3.71    3.71    3.72    3.72    3.73
     1.52 ELEV   700.92  700.93  700.93  700.93  700.93  700.93  700.93  700.93
     1.58 CFS      3.73    3.74    3.74    3.74    3.75    3.75    3.76    3.76
     1.58 ELEV   700.93  700.93  700.93  700.94  700.94  700.94  700.94  700.94
     1.65 CFS      3.76    3.77    3.77    3.78    3.78    3.79    3.79    3.79
     1.65 ELEV   700.94  700.94  700.94  700.94  700.95  700.95  700.95  700.95
     1.71 CFS      3.80    3.80    3.81    3.81    3.81    3.82    3.82    3.83
     1.71 ELEV   700.95  700.95  700.95  700.95  700.95  700.95  700.96  700.96
     1.78 CFS      3.83    3.83    3.84    3.84    3.84    3.85    3.85    3.86
     1.78 ELEV   700.96  700.96  700.96  700.96  700.96  700.96  700.96  700.96
     1.84 CFS      3.86    3.86    3.87    3.87    3.88    3.88    3.88    3.89
     1.84 ELEV   700.97  700.97  700.97  700.97  700.97  700.97  700.97  700.97
     1.90 CFS      3.89    3.89    3.90    3.90    3.90    3.91    3.91    3.92
     1.90 ELEV   700.97  700.97  700.97  700.98  700.98  700.98  700.98  700.98
     1.97 CFS      3.92    3.92    3.93    3.93    3.93    3.94    3.94    3.94
     1.97 ELEV   700.98  700.98  700.98  700.98  700.98  700.98  700.98  700.99
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TR20 ------------------------------------------------------------------- SCS -
001        CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
12:30:03                    PASS   5   JOB NO.   1                     PAGE  38

     2.03 CFS      3.95    3.95    3.95    3.96    3.96    3.96    3.97    3.97
     2.03 ELEV   700.99  700.99  700.99  700.99  700.99  700.99  700.99  700.99
     2.10 CFS      3.97    3.98    3.98    3.98    3.98    3.99    3.99    3.99
     2.10 ELEV   700.99  700.99  700.99  701.00  701.00  701.00  701.00  701.00
     2.16 CFS      4.00    4.00    4.00    4.01    4.01    4.02    4.02    4.02
     2.16 ELEV   701.00  701.00  701.00  701.00  701.00  701.00  701.00  701.00
     2.22 CFS      4.03    4.03    4.03    4.04    4.04    4.04    4.05    4.05
     2.22 ELEV   701.00  701.00  701.00  701.00  701.01  701.01  701.01  701.01
     2.29 CFS      4.05    4.06    4.06    4.06    4.07    4.07    4.07    4.08
     2.29 ELEV   701.01  701.01  701.01  701.01  701.01  701.01  701.01  701.01
     2.35 CFS      4.08    4.08    4.09    4.09    4.09    4.10    4.10    4.10
     2.35 ELEV   701.01  701.01  701.01  701.01  701.01  701.01  701.01  701.01
     2.42 CFS      4.11    4.11    4.11    4.11    4.12    4.12    4.12    4.13
     2.42 ELEV   701.01  701.01  701.01  701.01  701.01  701.02  701.02  701.02
     2.48 CFS      4.13    4.13    4.13    4.14    4.14    4.14    4.14    4.15
     2.48 ELEV   701.02  701.02  701.02  701.02  701.02  701.02  701.02  701.02
     2.54 CFS      4.15    4.15    4.16    4.16    4.16    4.16    4.17    4.17
     2.54 ELEV   701.02  701.02  701.02  701.02  701.02  701.02  701.02  701.02
     2.61 CFS      4.17    4.17    4.17    4.18    4.18    4.18    4.18    4.19
     2.61 ELEV   701.02  701.02  701.02  701.02  701.02  701.02  701.02  701.02
     2.67 CFS      4.19    4.19    4.19    4.19    4.20    4.20    4.20    4.20
     2.67 ELEV   701.02  701.02  701.02  701.02  701.02  701.02  701.03  701.03
     2.74 CFS      4.21    4.21    4.21    4.21    4.21    4.21    4.22    4.22
     2.74 ELEV   701.03  701.03  701.03  701.03  701.03  701.03  701.03  701.03
     2.80 CFS      4.22    4.22    4.22    4.23    4.23    4.23    4.23    4.23
     2.80 ELEV   701.03  701.03  701.03  701.03  701.03  701.03  701.03  701.03
     2.86 CFS      4.23    4.24    4.24    4.24    4.24    4.24    4.24    4.25
     2.86 ELEV   701.03  701.03  701.03  701.03  701.03  701.03  701.03  701.03
     2.93 CFS      4.25    4.25    4.25    4.25    4.25    4.25    4.26    4.26
     2.93 ELEV   701.03  701.03  701.03  701.03  701.03  701.03  701.03  701.03
     2.99 CFS      4.26    4.26    4.26    4.26    4.26    4.27    4.27    4.27
     2.99 ELEV   701.03  701.03  701.03  701.03  701.03  701.03  701.03  701.03
     3.06 CFS      4.27    4.27    4.27    4.27    4.28    4.28    4.28    4.28
     3.06 ELEV   701.03  701.03  701.03  701.03  701.03  701.03  701.03  701.03
     3.12 CFS      4.28    4.28    4.28    4.28    4.28    4.29    4.29    4.29
     3.12 ELEV   701.03  701.04  701.04  701.04  701.04  701.04  701.04  701.04
     3.18 CFS      4.29    4.29
     3.18 ELEV   701.04  701.04

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                    .03 WATERSHED INCHES;      10 CFS-HRS;        .8 ACRE-FEET.

 --- STRUCTURE  7, ALTERNATE  0, STORM  5, HYDROGRAPH ADDED TO READHD FILE ---


OPERATION RUNOFF    XSECTION  49

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .32                          1.6                          (RUNOFF)
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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
12:30:03                    PASS   5   JOB NO.   1                      PAGE  39


    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .58 WATERSHED INCHES;       1 CFS-HRS;        .1 ACRE-FEET.


OPERATION ADDHYD    XSECTION  50

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        3.19                         4.3                          (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .03 WATERSHED INCHES;      11 CFS-HRS;        .9 ACRE-FEET.


OPERATION RESVOR    STRUCTURE 39

                  HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM = 5
     HRS      MAIN TIME INCREMENT =  .008 hr,      DRAINAGE AREA =    .62 SQ.MI.
      .10 CFS       .00     .01     .01     .01     .02     .02     .03     .04
      .10 ELEV   693.00  693.00  693.00  693.00  693.00  693.00  693.00  693.01
      .17 CFS       .05     .06     .07     .08     .10     .12     .14     .16
      .17 ELEV   693.01  693.01  693.01  693.01  693.01  693.02  693.02  693.02
      .23 CFS       .18     .20     .23     .25     .28     .31     .34     .37
      .23 ELEV   693.03  693.03  693.03  693.04  693.04  693.04  693.05  693.05
      .30 CFS       .41     .44     .47     .51     .54     .58     .62     .65
      .30 ELEV   693.06  693.06  693.07  693.07  693.08  693.08  693.09  693.09
      .36 CFS       .69     .73     .76     .80     .84     .88     .91     .95
      .36 ELEV   693.10  693.10  693.11  693.11  693.12  693.12  693.13  693.13
      .42 CFS       .98    1.02    1.05    1.09    1.12    1.16    1.19    1.22
      .42 ELEV   693.14  693.14  693.15  693.15  693.16  693.16  693.17  693.17
      .49 CFS      1.26    1.29    1.32    1.35    1.38    1.41    1.44    1.47
      .49 ELEV   693.18  693.18  693.19  693.19  693.20  693.20  693.20  693.21
      .55 CFS      1.50    1.53    1.56    1.59    1.61    1.64    1.66    1.69
      .55 ELEV   693.21  693.22  693.22  693.22  693.23  693.23  693.24  693.24
      .62 CFS      1.71    1.74    1.76    1.78    1.80    1.82    1.84    1.87
      .62 ELEV   693.24  693.25  693.25  693.25  693.26  693.26  693.26  693.26
      .68 CFS      1.89    1.90    1.92    1.94    1.96    1.98    2.00    2.01
      .68 ELEV   693.27  693.27  693.27  693.28  693.28  693.28  693.28  693.29
      .74 CFS      2.03    2.05    2.07    2.08    2.10    2.12    2.13    2.15
      .74 ELEV   693.29  693.29  693.29  693.30  693.30  693.30  693.30  693.30
      .81 CFS      2.17    2.18    2.20    2.21    2.23    2.25    2.26    2.28
      .81 ELEV   693.31  693.31  693.31  693.31  693.32  693.32  693.32  693.32
      .87 CFS      2.29    2.31    2.33    2.34    2.36    2.37    2.39    2.40
      .87 ELEV   693.33  693.33  693.33  693.33  693.33  693.34  693.34  693.34
      .94 CFS      2.42    2.43    2.45    2.46    2.47    2.49    2.50    2.51
      .94 ELEV   693.34  693.34  693.35  693.35  693.35  693.35  693.35  693.36
     1.00 CFS      2.53    2.54    2.55    2.56    2.57    2.59    2.60    2.61
     1.00 ELEV   693.36  693.36  693.36  693.36  693.36  693.37  693.37  693.37
     1.06 CFS      2.62    2.63    2.64    2.65    2.66    2.67    2.68    2.69
     1.06 ELEV   693.37  693.37  693.37  693.38  693.38  693.38  693.38  693.38
     1.13 CFS      2.70    2.71    2.72    2.72    2.73    2.74    2.74    2.75
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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
12:30:03                    PASS   5   JOB NO.   1                      PAGE  40

     1.13 ELEV   693.38  693.38  693.38  693.39  693.39  693.39  693.39  693.39
     1.19 CFS      2.75    2.76    2.76    2.77    2.77    2.77    2.78    2.78
     1.19 ELEV   693.39  693.39  693.39  693.39  693.39  693.39  693.39  693.39
     1.26 CFS      2.78    2.79    2.79    2.79    2.79    2.80    2.80    2.80
     1.26 ELEV   693.39  693.39  693.40  693.40  693.40  693.40  693.40  693.40
     1.32 CFS      2.80    2.80    2.80    2.81    2.81    2.81    2.81    2.81
     1.32 ELEV   693.40  693.40  693.40  693.40  693.40  693.40  693.40  693.40
     1.38 CFS      2.81    2.81    2.81    2.81    2.82    2.82    2.82    2.82
     1.38 ELEV   693.40  693.40  693.40  693.40  693.40  693.40  693.40  693.40
     1.45 CFS      2.82    2.82    2.82    2.82    2.82    2.82    2.82    2.82
     1.45 ELEV   693.40  693.40  693.40  693.40  693.40  693.40  693.40  693.40
     1.51 CFS      2.83    2.83    2.83    2.83    2.83    2.83    2.83    2.83
     1.51 ELEV   693.40  693.40  693.40  693.40  693.40  693.40  693.40  693.40
     1.58 CFS      2.83    2.83    2.83    2.83    2.83    2.83    2.84    2.84
     1.58 ELEV   693.40  693.40  693.40  693.40  693.40  693.40  693.40  693.40
     1.64 CFS      2.84    2.84    2.84    2.84    2.84    2.84    2.84    2.84
     1.64 ELEV   693.40  693.40  693.40  693.40  693.40  693.40  693.40  693.40
     1.70 CFS      2.84    2.84    2.84    2.84    2.84    2.85    2.85    2.85
     1.70 ELEV   693.40  693.40  693.40  693.40  693.40  693.40  693.40  693.40
     1.77 CFS      2.85    2.85    2.85    2.85    2.85    2.85    2.85    2.85
     1.77 ELEV   693.40  693.40  693.40  693.40  693.40  693.40  693.40  693.40
     1.83 CFS      2.85    2.85    2.85    2.85    2.86    2.86    2.86    2.86
     1.83 ELEV   693.40  693.40  693.40  693.40  693.40  693.40  693.40  693.40
     1.90 CFS      2.86    2.86    2.86    2.86    2.86    2.86    2.86    2.86
     1.90 ELEV   693.40  693.40  693.40  693.41  693.41  693.41  693.41  693.41
     1.96 CFS      2.86    2.86    2.87    2.87    2.87    2.87    2.87    2.87
     1.96 ELEV   693.41  693.41  693.41  693.41  693.41  693.41  693.41  693.41
     2.02 CFS      2.87    2.87    2.87    2.87    2.87    2.87    2.87    2.88
     2.02 ELEV   693.41  693.41  693.41  693.41  693.41  693.41  693.41  693.41
     2.09 CFS      2.88    2.88    2.88    2.88    2.88    2.88    2.88    2.88
     2.09 ELEV   693.41  693.41  693.41  693.41  693.41  693.41  693.41  693.41
     2.15 CFS      2.88    2.88    2.88    2.88    2.89    2.89    2.89    2.89
     2.15 ELEV   693.41  693.41  693.41  693.41  693.41  693.41  693.41  693.41
     2.22 CFS      2.89    2.89    2.89    2.89    2.89    2.89    2.89    2.89
     2.22 ELEV   693.41  693.41  693.41  693.41  693.41  693.41  693.41  693.41
     2.28 CFS      2.89    2.90    2.90    2.90    2.90    2.90    2.90    2.90
     2.28 ELEV   693.41  693.41  693.41  693.41  693.41  693.41  693.41  693.41
     2.34 CFS      2.90    2.90    2.90    2.90    2.90    2.91    2.91    2.91
     2.34 ELEV   693.41  693.41  693.41  693.41  693.41  693.41  693.41  693.41
     2.41 CFS      2.91    2.91    2.91    2.91    2.91    2.91    2.91    2.91
     2.41 ELEV   693.41  693.41  693.41  693.41  693.41  693.41  693.41  693.41
     2.47 CFS      2.91    2.92    2.92    2.92    2.92    2.92    2.92    2.92
     2.47 ELEV   693.41  693.41  693.41  693.41  693.41  693.41  693.41  693.41
     2.54 CFS      2.92    2.92    2.92    2.92    2.92    2.93    2.93    2.93
     2.54 ELEV   693.41  693.41  693.41  693.41  693.41  693.41  693.41  693.41
     2.60 CFS      2.93    2.93    2.93    2.93    2.93    2.93    2.93    2.93
     2.60 ELEV   693.41  693.41  693.41  693.41  693.42  693.42  693.42  693.42
     2.66 CFS      2.93    2.94    2.94    2.94    2.94    2.94    2.94    2.94
     2.66 ELEV   693.42  693.42  693.42  693.42  693.42  693.42  693.42  693.42
```

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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
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     2.73 CFS      2.94    2.94    2.94    2.94    2.95    2.95    2.95    2.95
     2.73 ELEV   693.42  693.42  693.42  693.42  693.42  693.42  693.42  693.42
     2.79 CFS      2.95    2.95    2.95    2.95    2.95    2.95    2.95    2.96
     2.79 ELEV   693.42  693.42  693.42  693.42  693.42  693.42  693.42  693.42
     2.86 CFS      2.96    2.96    2.96    2.96    2.96    2.96    2.96    2.96
     2.86 ELEV   693.42  693.42  693.42  693.42  693.42  693.42  693.42  693.42
     2.92 CFS      2.96    2.96    2.96    2.97    2.97    2.97    2.97    2.97
     2.92 ELEV   693.42  693.42  693.42  693.42  693.42  693.42  693.42  693.42
     2.98 CFS      2.97    2.97    2.97    2.97    2.97    2.97    2.98    2.98
     2.98 ELEV   693.42  693.42  693.42  693.42  693.42  693.42  693.42  693.42
     3.05 CFS      2.98    2.98    2.98    2.98    2.98    2.98    2.98    2.98
     3.05 ELEV   693.42  693.42  693.42  693.42  693.42  693.42  693.42  693.42
     3.11 CFS      2.98    2.99    2.99    2.99    2.99    2.99    2.99    2.99
     3.11 ELEV   693.42  693.42  693.42  693.42  693.42  693.42  693.42  693.42
     3.18 CFS      2.99    2.99    2.99
     3.18 ELEV   693.42  693.42  693.42

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                    .02 WATERSHED INCHES;       7 CFS-HRS;        .6 ACRE-FEET.

    DURATION(HRS)   2      2
    FLOW(CFS)       3      3 TRUNCATED

 --- STRUCTURE 39, ALTERNATE  0, STORM  5, HYDROGRAPH ADDED TO READHD FILE ---


EXECUTIVE CONTROL  ENDCMP    COMPUTATIONS COMPLETED FOR PASS   5


EXECUTIVE CONTROL  INCREM    MAIN TIME INCREMENT =   .100 HOURS


EXECUTIVE CONTROL  COMPUT    FROM XSECTION  91  TO STRUCTURE 39           2-HR
    STARTING TIME =   .00       RAIN DEPTH =  1.79       RAIN DURATION =  2.00
    ANT. RUNOFF COND. = 2       MAIN TIME INCREMENT =   .100 HOURS
    ALTERNATE NO. = 0           STORM NO. = 6            RAIN TABLE NO. = 1


OPERATION RUNOFF    XSECTION  91

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        1.30                        10.5                        (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                    .28 WATERSHED INCHES;      17 CFS-HRS;       1.4 ACRE-FEET.
```



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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
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OPERATION RUNOFF    XSECTION  92

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        1.32                        22.1                        (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                    .44 WATERSHED INCHES;      37 CFS-HRS;       3.0 ACRE-FEET.


OPERATION ADDHYD    XSECTION  93

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        1.31                        32.6                        (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                    .37 WATERSHED INCHES;      53 CFS-HRS;       4.4 ACRE-FEET.


OPERATION RUNOFF    XSECTION  94

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        2.00                         .7                         (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                    .08 WATERSHED INCHES;       1 CFS-HRS;        .1 ACRE-FEET.


OPERATION RESVOR    STRUCTURE 11

                    HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM = 6
     HRS      MAIN TIME INCREMENT =  .100 hr,      DRAINAGE AREA =    .02 SQ.MI.
      .70 CFS       .00     .02     .05     .10     .17     .26     .35     .44
      .70 ELEV   737.50  737.52  737.55  737.60  737.67  737.76  737.85  737.94
     1.50 CFS       .50     .51     .53     .55     .56     .58     .60     .61
     1.50 ELEV   738.00  738.03  738.06  738.09  738.13  738.16  738.19  738.22
     2.30 CFS       .62     .62     .61     .59     .57     .54     .50     .31
     2.30 ELEV   738.23  738.23  738.22  738.18  738.13  738.07  738.00  737.81
     3.10 CFS       .20     .14     .10     .08     .06     .04     .03     .02
     3.10 ELEV   737.70  737.64  737.60  737.58  737.56  737.54  737.53  737.52
     3.90 CFS       .02     .01     .01     .01     .00
     3.90 ELEV   737.52  737.51  737.51  737.51  737.50

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                    .08 WATERSHED INCHES;       1 CFS-HRS;        .1 ACRE-FEET.

    DURATION(HRS)   2      2
    FLOW(CFS)       3      0

 --- STRUCTURE 11, ALTERNATE  0, STORM  6, HYDROGRAPH ADDED TO READHD FILE ---
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TR20 ---------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
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OPERATION RUNOFF    XSECTION  96

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .30                          11.1                       (RUNOFF)
        1.99                           1.4                       (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  1.56 WATERSHED INCHES;       8 CFS-HRS;        .7 ACRE-FEET.


OPERATION ADDHYD    XSECTION  97

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .32                          11.5                       (NULL)
        1.32                          34.9                       (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                   .39 WATERSHED INCHES;      63 CFS-HRS;       5.2 ACRE-FEET.


OPERATION RESVOR    STRUCTURE  6

                   HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM = 6
     HRS      MAIN TIME INCREMENT =  .100 hr,      DRAINAGE AREA =    .28 SQ.MI.
      .00 CFS       .00     .09     .56    1.52    2.70    3.92    5.16    6.42
      .00 ELEV   707.00  707.01  707.07  707.18  707.32  707.47  707.61  707.76
      .80 CFS      7.73    9.37   11.33   13.32   15.22   17.02   18.70   20.27
      .80 ELEV   707.92  708.08  708.25  708.42  708.59  708.74  708.89  709.02
     1.60 CFS     22.09   23.59   24.73   25.48   26.01   26.34   26.27   25.85
     1.60 ELEV   709.12  709.20  709.26  709.30  709.33  709.35  709.35  709.33
     2.40 CFS     25.21   24.36   23.31   22.09   20.74   19.52   18.47   17.40
     2.40 ELEV   709.29  709.24  709.18  709.12  709.04  708.96  708.87  708.78
     3.20 CFS     16.33   15.28   14.26   13.29   12.36   11.48   10.66    9.88
     3.20 ELEV   708.68  708.59  708.51  708.42  708.34  708.27  708.19  708.13
     4.00 CFS      9.16    8.48    7.96    7.49    7.04    6.62    6.22    5.84
     4.00 ELEV   708.07  708.01  707.95  707.89  707.84  707.79  707.74  707.70
     4.80 CFS      5.49    5.16    4.85    4.55    4.28    4.02    3.77    3.54
     4.80 ELEV   707.65  707.61  707.58  707.54  707.51  707.48  707.45  707.42
     5.60 CFS      3.33    3.13    2.94    2.76    2.59    2.44    2.29    2.15
     5.60 ELEV   707.40  707.37  707.35  707.33  707.31  707.29  707.27  707.26
     6.40 CFS      2.02    1.90    1.78    1.67    1.57    1.48    1.39    1.30
     6.40 ELEV   707.24  707.23  707.21  707.20  707.19  707.18  707.17  707.16
     7.20 CFS      1.22    1.15    1.08    1.01     .95     .89     .84     .79
     7.20 ELEV   707.15  707.14  707.13  707.12  707.11  707.11  707.10  707.09
     8.00 CFS       .74     .70     .65     .61     .58     .54     .51     .48
     8.00 ELEV   707.09  707.08  707.08  707.07  707.07  707.06  707.06  707.06
     8.80 CFS       .45     .42     .40     .37     .35     .33     .31     .29
     8.80 ELEV   707.05  707.05  707.05  707.04  707.04  707.04  707.04  707.03
     9.60 CFS       .27     .26     .24     .23     .21     .20     .19     .18
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TR20 ---------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
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     9.60 ELEV   707.03  707.03  707.03  707.03  707.03  707.02  707.02  707.02
    10.40 CFS       .17     .16     .15     .14     .13     .12     .11     .11
    10.40 ELEV   707.02  707.02  707.02  707.02  707.02  707.01  707.01  707.01
    11.20 CFS       .10     .09     .09     .08     .08     .07     .07     .06
    11.20 ELEV   707.01  707.01  707.01  707.01  707.01  707.01  707.01  707.01
    12.00 CFS       .06     .06     .05     .05     .05     .04     .04     .04
    12.00 ELEV   707.01  707.01  707.01  707.01  707.01  707.01  707.00  707.00
    12.80 CFS       .04     .03     .03     .03     .03     .03     .03     .02
    12.80 ELEV   707.00  707.00  707.00  707.00  707.00  707.00  707.00  707.00
    13.60 CFS       .02     .02     .02     .02     .02     .02     .02     .01
    13.60 ELEV   707.00  707.00  707.00  707.00  707.00  707.00  707.00  707.00
    14.40 CFS       .01     .01     .01     .01     .01
    14.40 ELEV   707.00  707.00  707.00  707.00  707.00

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                   .42 WATERSHED INCHES;      76 CFS-HRS;       6.3 ACRE-FEET.

    DURATION(HRS)   2      4      6      8      9
    FLOW(CFS)      15      6      2      1      0

 --- STRUCTURE  6, ALTERNATE  0, STORM  6, HYDROGRAPH ADDED TO READHD FILE ---


OPERATION RUNOFF    XSECTION  99

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .51                          73.2                       (RUNOFF)
        1.65                          26.3                       (RUNOFF)
        1.99                          19.3                       (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                   .74 WATERSHED INCHES;      73 CFS-HRS;       6.1 ACRE-FEET.


OPERATION ADDHYD    XSECTION  90

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .53                          77.4                       (NULL)
        1.68                          49.4                       (NULL)
        2.00                          45.3                       (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                   .54 WATERSHED INCHES;     149 CFS-HRS;      12.3 ACRE-FEET.


OPERATION RESVOR    STRUCTURE  7

                   HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM = 6
     HRS      MAIN TIME INCREMENT =  .100 hr,      DRAINAGE AREA =    .54 SQ.MI.
      .10 CFS       .00     .05     .24     .58    1.02    1.50    1.97    2.39
      .10 ELEV   700.00  700.01  700.06  700.14  700.26  700.38  700.49  700.60
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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
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      .90 CFS     2.77    3.12    3.43    3.70    3.94    4.21    4.51    4.81
      .90 ELEV   700.69  700.78  700.86  700.92  700.98  701.03  701.06  701.10
     1.70 CFS     5.12    5.41    5.68    5.93    6.17    6.36    6.50    6.61
     1.70 ELEV  701.14  701.18  701.21  701.24  701.27  701.30  701.31  701.33
     2.50 CFS     6.70    6.79    6.87    6.94    7.00    7.06    7.12    7.16
     2.50 ELEV  701.34  701.35  701.36  701.37  701.38  701.38  701.39  701.40
     3.30 CFS     7.21    7.24    7.27    7.30    7.32    7.34    7.36    7.37
     3.30 ELEV  701.40  701.41  701.41  701.41  701.42  701.42  701.42  701.42
     4.10 CFS     7.37    7.38    7.38    7.38    7.38    7.37    7.37    7.36
     4.10 ELEV  701.42  701.42  701.42  701.42  701.42  701.42  701.42  701.42
     4.90 CFS     7.35    7.34    7.32    7.31    7.29    7.28    7.26    7.24
     4.90 ELEV  701.42  701.42  701.42  701.41  701.41  701.41  701.41  701.41
     5.70 CFS     7.22    7.20    7.18    7.16    7.13    7.11    7.09    7.06
     5.70 ELEV  701.40  701.40  701.40  701.39  701.39  701.39  701.39  701.38
     6.50 CFS     7.04    7.01    6.99    6.96    6.93    6.91    6.88    6.85
     6.50 ELEV  701.38  701.38  701.37  701.37  701.37  701.36  701.36  701.36
     7.30 CFS     6.82    6.80    6.77    6.74    6.71    6.68    6.65    6.63
     7.30 ELEV  701.35  701.35  701.35  701.34  701.34  701.34  701.33  701.33
     8.10 CFS     6.60    6.57    6.54    6.51    6.48    6.45    6.42    6.39
     8.10 ELEV  701.32  701.32  701.32  701.31  701.31  701.31  701.30  701.30
     8.90 CFS     6.36    6.33    6.31    6.28    6.25    6.22    6.19    6.16
     8.90 ELEV  701.30  701.29  701.29  701.28  701.28  701.28  701.27  701.27
     9.70 CFS     6.13    6.10    6.07    6.05    6.02    5.99    5.96    5.93
     9.70 ELEV  701.27  701.26  701.26  701.26  701.25  701.25  701.25  701.24
    10.50 CFS     5.90    5.88    5.85    5.82    5.79    5.76    5.74    5.71
    10.50 ELEV  701.24  701.23  701.23  701.23  701.22  701.22  701.22  701.21
    11.30 CFS     5.68    5.65    5.63    5.60    5.57    5.55    5.52    5.49
    11.30 ELEV  701.21  701.21  701.20  701.20  701.20  701.19  701.19  701.19
    12.10 CFS     5.47    5.44    5.41    5.39    5.36    5.34    5.31    5.28
    12.10 ELEV  701.18  701.18  701.18  701.17  701.17  701.17  701.16  701.16
    12.90 CFS     5.26    5.23    5.21    5.18    5.16    5.13    5.11    5.08
    12.90 ELEV  701.16  701.15  701.15  701.15  701.14  701.14  701.14  701.14
    13.70 CFS     5.06    5.03    5.01    4.98    4.96    4.93    4.91    4.89
    13.70 ELEV  701.13  701.13  701.13  701.12  701.12  701.12  701.11  701.11
    14.50 CFS     4.86    4.84    4.82    4.79
    14.50 ELEV  701.11  701.10  701.10  701.10

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                    .25 WATERSHED INCHES;      87 CFS-HRS;       7.2 ACRE-FEET.

    DURATION(HRS)   2      4      6      8     10     12     13
    FLOW(CFS)       7      7      7      6      6      5      5 TRUNCATED

 --- STRUCTURE  7, ALTERNATE  0, STORM  6, HYDROGRAPH ADDED TO READHD FILE ---


OPERATION RUNOFF    XSECTION  49
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TR20 ------------------------------------------------------------------------ SCS -
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    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .49                          1.3                        (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                    .85 WATERSHED INCHES;       1 CFS-HRS;        .1 ACRE-FEET.


OPERATION ADDHYD    XSECTION  50

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        4.30                          7.4 *                      (NULL)
                                        * FIRST POINT OF FLAT PEAK

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                    .25 WATERSHED INCHES;      88 CFS-HRS;       7.3 ACRE-FEET.


OPERATION RESVOR    STRUCTURE 39

                    HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM = 6
     HRS      MAIN TIME INCREMENT =  .100 hr,      DRAINAGE AREA =    .62 SQ.MI.
      .10 CFS       .00     .05     .23     .53     .90    1.29    1.66    1.99
      .10 ELEV   693.00  693.01  693.03  693.08  693.13  693.18  693.24  693.28
      .90 CFS      2.27    2.52    2.74    2.92    3.07    3.21    3.35    3.49
      .90 ELEV   693.32  693.36  693.39  693.41  693.44  693.46  693.47  693.49
     1.70 CFS      3.63    3.76    3.88    3.98    4.08    4.16    4.21    4.24
     1.70 ELEV   693.51  693.53  693.55  693.56  693.58  693.59  693.60  693.60
     2.50 CFS      4.26    4.28    4.30    4.33    4.35    4.37    4.40    4.42
     2.50 ELEV   693.60  693.61  693.61  693.61  693.62  693.62  693.62  693.63
     3.30 CFS      4.44    4.47    4.49    4.52    4.54    4.56    4.59    4.61
     3.30 ELEV   693.63  693.63  693.64  693.64  693.64  693.65  693.65  693.65
     4.10 CFS      4.64    4.66    4.68    4.71    4.73    4.75    4.78    4.80
     4.10 ELEV   693.66  693.66  693.66  693.67  693.67  693.67  693.68  693.68
     4.90 CFS      4.82    4.84    4.86    4.88    4.91    4.93    4.95    4.97
     4.90 ELEV   693.68  693.69  693.69  693.69  693.69  693.70  693.70  693.70
     5.70 CFS      4.99    5.00    5.02    5.04    5.06    5.08    5.10    5.11
     5.70 ELEV   693.71  693.71  693.71  693.71  693.72  693.72  693.72  693.72
     6.50 CFS      5.13    5.15    5.16    5.18    5.19    5.21    5.22    5.24
     6.50 ELEV   693.73  693.73  693.73  693.73  693.74  693.74  693.74  693.74
     7.30 CFS      5.25    5.26    5.28    5.29    5.30    5.31    5.33    5.34
     7.30 ELEV   693.74  693.75  693.75  693.75  693.75  693.75  693.75  693.76
     8.10 CFS      5.35    5.36    5.37    5.38    5.39    5.40    5.41    5.42
     8.10 ELEV   693.76  693.76  693.76  693.76  693.76  693.76  693.77  693.77
     8.90 CFS      5.42    5.43    5.44    5.45    5.45    5.46    5.47    5.47
     8.90 ELEV   693.77  693.77  693.77  693.77  693.77  693.77  693.77  693.78
     9.70 CFS      5.48    5.48    5.49    5.49    5.50    5.50    5.51    5.51
     9.70 ELEV   693.78  693.78  693.78  693.78  693.78  693.78  693.78  693.78
    10.50 CFS      5.51    5.52    5.52    5.52    5.53    5.53    5.53    5.53
    10.50 ELEV   693.78  693.78  693.78  693.78  693.78  693.78  693.78  693.78
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TR20 ------------------------------------------------------------------------ SCS -
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    11.30 CFS      5.53    5.53    5.54    5.54    5.54    5.54    5.54    5.54
    11.30 ELEV   693.78  693.78  693.78  693.78  693.78  693.78  693.78  693.78
    12.10 CFS      5.54    5.54    5.53    5.53    5.53    5.53    5.53    5.53
    12.10 ELEV   693.78  693.78  693.78  693.78  693.78  693.78  693.78  693.78
    12.90 CFS      5.52    5.52    5.52    5.52    5.51    5.51    5.51    5.50
    12.90 ELEV   693.78  693.78  693.78  693.78  693.78  693.78  693.78  693.78
    13.70 CFS      5.50    5.50    5.49    5.49    5.48    5.48    5.47    5.47
    13.70 ELEV   693.78  693.78  693.78  693.78  693.78  693.78  693.78  693.77
    14.50 CFS      5.46    5.46    5.45    5.45
    14.50 ELEV   693.77  693.77  693.77  693.77

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                    .18 WATERSHED INCHES;      70 CFS-HRS;       5.8 ACRE-FEET.

    DURATION(HRS)   2      4
    FLOW(CFS)       6      5 TRUNCATED

 --- STRUCTURE 39, ALTERNATE  0, STORM  6, HYDROGRAPH ADDED TO READHD FILE ---


EXECUTIVE CONTROL  ENDCMP    COMPUTATIONS COMPLETED FOR PASS   6


EXECUTIVE CONTROL  COMPUT    FROM XSECTION  91  TO STRUCTURE 39           3-HR
    STARTING TIME =   .00       RAIN DEPTH =  1.94       RAIN DURATION =  3.00
    ANT. RUNOFF COND. = 2       MAIN TIME INCREMENT =   .100 HOURS
    ALTERNATE NO. = 0           STORM NO. = 7            RAIN TABLE NO. = 1


OPERATION RUNOFF    XSECTION  91

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        1.58                         10.1                       (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                    .35 WATERSHED INCHES;      21 CFS-HRS;       1.7 ACRE-FEET.


OPERATION RUNOFF    XSECTION  92

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        1.57                         20.7                       (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                    .53 WATERSHED INCHES;      44 CFS-HRS;       3.6 ACRE-FEET.
```



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TR20 ------------------------------------------------------------------------ SCS -
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OPERATION ADDHYD    XSECTION  93

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        1.57                         30.7                       (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                    .45 WATERSHED INCHES;      65 CFS-HRS;       5.4 ACRE-FEET.


OPERATION RUNOFF    XSECTION  94

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        2.70                          .7                        (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                    .12 WATERSHED INCHES;       2 CFS-HRS;        .1 ACRE-FEET.


OPERATION RESVOR    STRUCTURE 11

                    HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM = 7
     HRS      MAIN TIME INCREMENT =  .100 hr,      DRAINAGE AREA =    .02 SQ.MI.
      .80 CFS       .00     .01     .03     .06     .11     .18     .26     .35
      .80 ELEV   737.50  737.51  737.53  737.56  737.61  737.68  737.76  737.85
     1.60 CFS       .43     .50     .52     .53     .55     .56     .57     .58
     1.60 ELEV   737.93  738.01  738.03  738.06  738.09  738.12  738.14  738.16
     2.40 CFS       .59     .60     .61     .62     .63     .63     .64     .64
     2.40 ELEV   738.18  738.20  738.22  738.24  738.25  738.27  738.27  738.28
     3.20 CFS       .64     .63     .62     .60     .58     .55     .52     .41
     3.20 ELEV   738.27  738.26  738.24  738.20  738.16  738.10  738.04  737.91
     4.00 CFS       .26     .17     .12     .09     .06     .05     .04     .03
     4.00 ELEV   737.76  737.67  737.62  737.59  737.56  737.55  737.54  737.53
     4.80 CFS       .02     .02     .01     .01     .01     .00
     4.80 ELEV   737.52  737.52  737.51  737.51  737.51  737.50

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                    .12 WATERSHED INCHES;       2 CFS-HRS;        .1 ACRE-FEET.

    DURATION(HRS)   2      2
    FLOW(CFS)       1      0

 --- STRUCTURE 11, ALTERNATE  0, STORM  7, HYDROGRAPH ADDED TO READHD FILE ---


OPERATION RUNOFF    XSECTION  96
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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
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    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .34                          9.3                        (RUNOFF)
        2.45                          1.4                        (RUNOFF)
        3.00                          1.2                        (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  1.71 WATERSHED INCHES;       9 CFS-HRS;        .8 ACRE-FEET.


OPERATION ADDHYD    XSECTION  97

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .35                          9.5                        (NULL)
        1.52                         33.2                        (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                   .47 WATERSHED INCHES;      76 CFS-HRS;       6.3 ACRE-FEET.


OPERATION RESVOR    STRUCTURE  6

                    HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM = 7
     HRS      MAIN TIME INCREMENT =  .100 hr,      DRAINAGE AREA =    .28 SQ.MI.
      .00 CFS       .00     .07     .32     .92    1.81    2.72    3.64    4.62
      .00 ELEV   707.00  707.01  707.04  707.11  707.22  707.32  707.43  707.55
      .80 CFS      5.72    6.90    8.18    9.86   11.68   13.54   15.39   17.15
      .80 ELEV   707.68  707.82  707.97  708.13  708.28  708.44  708.60  708.75
     1.60 CFS     18.71   20.08   21.68   22.97   23.96   24.67   25.16   25.46
     1.60 ELEV   708.89  709.00  709.09  709.16  709.22  709.26  709.29  709.30
     2.40 CFS     25.62   25.68   25.67   25.52   25.23   24.88   24.57   24.18
     2.40 ELEV   709.31  709.32  709.32  709.31  709.29  709.27  709.25  709.23
     3.20 CFS     23.55   22.73   21.82   20.83   19.82   18.99   18.09   17.14
     3.20 ELEV   709.20  709.15  709.10  709.05  708.98  708.91  708.84  708.75
     4.00 CFS     16.16   15.17   14.20   13.26   12.36   11.50   10.69    9.92
     4.00 ELEV   708.67  708.58  708.50  708.42  708.34  708.27  708.20  708.13
     4.80 CFS      9.20    8.53    8.00    7.53    7.08    6.66    6.26    5.88
     4.80 ELEV   708.07  708.01  707.95  707.90  707.84  707.79  707.75  707.70
     5.60 CFS      5.53    5.19    4.88    4.58    4.31    4.05    3.80    3.57
     5.60 ELEV   707.66  707.62  707.58  707.55  707.51  707.48  707.45  707.42
     6.40 CFS      3.35    3.15    2.96    2.78    2.61    2.45    2.30    2.16
     6.40 ELEV   707.40  707.38  707.35  707.33  707.31  707.29  707.27  707.26
     7.20 CFS      2.03    1.91    1.79    1.69    1.58    1.49    1.40    1.31
     7.20 ELEV   707.24  707.23  707.21  707.20  707.19  707.18  707.17  707.16
     8.00 CFS      1.23    1.16    1.09    1.02     .96     .90     .85     .80
     8.00 ELEV   707.15  707.14  707.13  707.12  707.11  707.11  707.10  707.09
     8.80 CFS       .75     .70     .66     .62     .58     .55     .51     .48
     8.80 ELEV   707.09  707.08  707.08  707.07  707.07  707.07  707.06  707.06
     9.60 CFS       .45     .43     .40     .38     .35     .33     .31     .29
     9.60 ELEV   707.05  707.05  707.05  707.04  707.04  707.04  707.04  707.03
    10.40 CFS       .27     .26     .24     .23     .21     .20     .19     .18
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TR20 ------------------------------------------------------------------- SCS -
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    10.40 ELEV   707.03  707.03  707.03  707.03  707.03  707.02  707.02  707.02
    11.20 CFS       .17     .16     .15     .14     .13     .12     .11     .11
    11.20 ELEV   707.02  707.02  707.02  707.02  707.02  707.01  707.01  707.01
    12.00 CFS       .10     .09     .09     .08     .08     .07     .07     .07
    12.00 ELEV   707.01  707.01  707.01  707.01  707.01  707.01  707.01  707.01
    12.80 CFS       .06     .06     .05     .05     .05     .04     .04     .04
    12.80 ELEV   707.01  707.01  707.01  707.01  707.01  707.01  707.01  707.00
    13.60 CFS       .04     .03     .03     .03     .03     .03     .03     .02
    13.60 ELEV   707.00  707.00  707.00  707.00  707.00  707.00  707.00  707.00
    14.40 CFS       .02     .02     .02     .02     .02     .02     .02     .01
    14.40 ELEV   707.00  707.00  707.00  707.00  707.00  707.00  707.00  707.00
    15.20 CFS       .01     .01     .01     .01     .01
    15.20 ELEV   707.00  707.00  707.00  707.00  707.00

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                   .51 WATERSHED INCHES;      90 CFS-HRS;       7.5 ACRE-FEET.

    DURATION(HRS)   2      4      6      8      9
    FLOW(CFS)      19      8      3      1      0

 --- STRUCTURE  6, ALTERNATE  0, STORM  7, HYDROGRAPH ADDED TO READHD FILE ---


OPERATION RUNOFF    XSECTION  99

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .72                         57.4                        (RUNOFF)
        2.46                         19.3                        (RUNOFF)
        3.00                         17.1                        (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                   .86 WATERSHED INCHES;      84 CFS-HRS;       7.0 ACRE-FEET.


OPERATION ADDHYD    XSECTION  90

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .76                         63.0                        (NULL)
        1.37                         49.8                        (NULL)
        2.46                         45.0                        (NULL)
        3.00                         41.7                        (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                   .63 WATERSHED INCHES;     175 CFS-HRS;      14.4 ACRE-FEET.


OPERATION RESVOR    STRUCTURE  7

                    HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM = 7
     HRS      MAIN TIME INCREMENT =  .100 hr,      DRAINAGE AREA =    .54 SQ.MI.
      .10 CFS       .00     .01     .11     .32     .62     .97    1.35    1.75
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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
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      .10 ELEV   700.00  700.00  700.03  700.08  700.15  700.24  700.34  700.44
      .90 CFS      2.14    2.50    2.83    3.14    3.43    3.72    3.99    4.30
      .90 ELEV   700.53  700.62  700.71  700.79  700.86  700.93  701.00  701.04
     1.70 CFS      4.58    4.84    5.09    5.34    5.60    5.85    6.11    6.37
     1.70 ELEV   701.07  701.10  701.14  701.17  701.20  701.23  701.26  701.30
     2.50 CFS      6.63    6.88    7.11    7.31    7.50    7.70    7.89    8.05
     2.50 ELEV   701.33  701.36  701.39  701.41  701.44  701.46  701.49  701.51
     3.30 CFS      8.15    8.23    8.30    8.36    8.42    8.47    8.51    8.55
     3.30 ELEV   701.52  701.53  701.54  701.55  701.55  701.56  701.56  701.57
     4.10 CFS      8.59    8.62    8.64    8.66    8.68    8.69    8.70    8.70
     4.10 ELEV   701.57  701.58  701.58  701.58  701.58  701.59  701.59  701.59
     4.90 CFS      8.70    8.70    8.70    8.69    8.68    8.67    8.66    8.64
     4.90 ELEV   701.59  701.59  701.59  701.59  701.59  701.58  701.58  701.58
     5.70 CFS      8.63    8.61    8.59    8.57    8.55    8.53    8.50    8.48
     5.70 ELEV   701.58  701.58  701.57  701.57  701.57  701.57  701.56  701.56
     6.50 CFS      8.45    8.43    8.40    8.37    8.34    8.31    8.28    8.25
     6.50 ELEV   701.56  701.55  701.55  701.55  701.54  701.54  701.54  701.53
     7.30 CFS      8.22    8.19    8.16    8.13    8.09    8.06    8.03    8.00
     7.30 ELEV   701.53  701.52  701.52  701.52  701.51  701.51  701.50  701.50
     8.10 CFS      7.96    7.93    7.90    7.86    7.83    7.79    7.76    7.73
     8.10 ELEV   701.50  701.49  701.49  701.48  701.48  701.47  701.47  701.47
     8.90 CFS      7.69    7.66    7.62    7.59    7.55    7.52    7.49    7.45
     8.90 ELEV   701.46  701.46  701.45  701.45  701.44  701.44  701.44  701.43
     9.70 CFS      7.42    7.38    7.35    7.31    7.28    7.25    7.21    7.18
     9.70 ELEV   701.43  701.42  701.42  701.41  701.41  701.41  701.40  701.40
    10.50 CFS      7.15    7.11    7.08    7.04    7.01    6.98    6.94    6.91
    10.50 ELEV   701.39  701.39  701.38  701.38  701.38  701.37  701.37  701.36
    11.30 CFS      6.88    6.85    6.81    6.78    6.75    6.71    6.68    6.65
    11.30 ELEV   701.36  701.36  701.35  701.35  701.34  701.34  701.34  701.33
    12.10 CFS      6.62    6.59    6.55    6.52    6.49    6.46    6.43    6.40
    12.10 ELEV   701.33  701.32  701.32  701.32  701.31  701.31  701.30  701.30
    12.90 CFS      6.37    6.34    6.31    6.27    6.24    6.21    6.18    6.15
    12.90 ELEV   701.30  701.29  701.29  701.28  701.28  701.28  701.27  701.27
    13.70 CFS      6.12    6.09    6.06    6.03    6.01    5.98    5.95    5.92
    13.70 ELEV   701.27  701.26  701.26  701.25  701.25  701.25  701.24  701.24
    14.50 CFS      5.89    5.86    5.83    5.80    5.78    5.75    5.72    5.69
    14.50 ELEV   701.24  701.23  701.23  701.23  701.22  701.22  701.21  701.21
    15.30 CFS      5.66    5.64    5.61    5.58
    15.30 ELEV   701.21  701.20  701.20  701.20

   RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                .30 WATERSHED INCHES;     105 CFS-HRS;       8.7 ACRE-FEET.

   DURATION(HRS)   2      4      6      8     10     12     14
   FLOW(CFS)       9      8      8      7      6      6      6 TRUNCATED

 --- STRUCTURE  7, ALTERNATE  0, STORM  7, HYDROGRAPH ADDED TO READHD FILE ---
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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
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OPERATION RUNOFF    XSECTION  49

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .70                          1.0                        (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .98 WATERSHED INCHES;       1 CFS-HRS;        .1 ACRE-FEET.


OPERATION ADDHYD    XSECTION  50

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        4.88                          8.7                        (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .30 WATERSHED INCHES;     106 CFS-HRS;       8.8 ACRE-FEET.


OPERATION RESVOR    STRUCTURE 39

                  HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM = 7
     HRS      MAIN TIME INCREMENT =  .100 hr,      DRAINAGE AREA =    .62 SQ.MI.
      .10 CFS       .00     .02     .11     .31     .58     .87    1.18    1.49
      .10 ELEV   693.00  693.00  693.02  693.04  693.08  693.12  693.17  693.21
      .90 CFS      1.79    2.06    2.31    2.53    2.73    2.92    3.09    3.25
      .90 ELEV   693.25  693.29  693.33  693.36  693.39  693.41  693.44  693.46
     1.70 CFS      3.38    3.50    3.61    3.71    3.82    3.93    4.04    4.16
     1.70 ELEV   693.48  693.50  693.51  693.53  693.54  693.56  693.57  693.59
     2.50 CFS      4.27    4.38    4.49    4.58    4.66    4.75    4.84    4.91
     2.50 ELEV   693.60  693.62  693.64  693.65  693.66  693.67  693.69  693.70
     3.30 CFS      4.96    5.00    5.03    5.06    5.09    5.12    5.14    5.17
     3.30 ELEV   693.70  693.71  693.71  693.72  693.72  693.72  693.73  693.73
     4.10 CFS      5.20    5.23    5.26    5.29    5.32    5.35    5.38    5.41
     4.10 ELEV   693.74  693.74  693.75  693.75  693.75  693.76  693.76  693.77
     4.90 CFS      5.44    5.46    5.49    5.52    5.55    5.57    5.60    5.63
     4.90 ELEV   693.77  693.77  693.78  693.78  693.79  693.79  693.79  693.80
     5.70 CFS      5.65    5.68    5.70    5.73    5.75    5.78    5.80    5.82
     5.70 ELEV   693.80  693.80  693.81  693.81  693.81  693.82  693.82  693.82
     6.50 CFS      5.85    5.87    5.89    5.91    5.93    5.95    5.97    5.99
     6.50 ELEV   693.83  693.83  693.83  693.84  693.84  693.84  693.85  693.85
     7.30 CFS      6.01    6.03    6.05    6.07    6.09    6.10    6.12    6.14
     7.30 ELEV   693.85  693.85  693.86  693.86  693.86  693.86  693.87  693.87
     8.10 CFS      6.15    6.17    6.18    6.20    6.21    6.23    6.24    6.25
     8.10 ELEV   693.87  693.87  693.88  693.88  693.88  693.88  693.88  693.89
     8.90 CFS      6.26    6.28    6.29    6.30    6.31    6.32    6.33    6.34
     8.90 ELEV   693.89  693.89  693.89  693.89  693.89  693.90  693.90  693.90
     9.70 CFS      6.35    6.36    6.37    6.38    6.39    6.39    6.40    6.41
     9.70 ELEV   693.90  693.90  693.90  693.90  693.90  693.91  693.91  693.91
    10.50 CFS      6.41    6.42    6.43    6.43    6.44    6.44    6.45    6.45
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TR20 ------------------------------------------------------------------------ SCS -
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    10.50 ELEV   693.91  693.91  693.91  693.91  693.91  693.91  693.91  693.91
    11.30 CFS      6.45    6.46    6.46    6.46    6.47    6.47    6.47    6.47
    11.30 ELEV   693.91  693.91  693.92  693.92  693.92  693.92  693.92  693.92
    12.10 CFS      6.47    6.47    6.47    6.48    6.48    6.48    6.48    6.47
    12.10 ELEV   693.92  693.92  693.92  693.92  693.92  693.92  693.92  693.92
    12.90 CFS      6.47    6.47    6.47    6.47    6.47    6.47    6.46    6.46
    12.90 ELEV   693.92  693.92  693.92  693.92  693.92  693.92  693.92  693.92
    13.70 CFS      6.46    6.46    6.45    6.45    6.45    6.44    6.44    6.43
    13.70 ELEV   693.91  693.91  693.91  693.91  693.91  693.91  693.91  693.91
    14.50 CFS      6.43    6.42    6.42    6.41    6.41    6.40    6.40    6.39
    14.50 ELEV   693.91  693.91  693.91  693.91  693.91  693.91  693.91  693.91
    15.30 CFS      6.38    6.38    6.37    6.36
    15.30 ELEV   693.90  693.90  693.90  693.90

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                    .21 WATERSHED INCHES;      84 CFS-HRS;       7.0 ACRE-FEET.

 --- STRUCTURE 39, ALTERNATE  0, STORM  7, HYDROGRAPH ADDED TO READHD FILE ---


EXECUTIVE CONTROL  ENDCMP    COMPUTATIONS COMPLETED FOR PASS   7


EXECUTIVE CONTROL  COMPUT    FROM XSECTION  91  TO STRUCTURE 39           6-HR
    STARTING TIME =   .00       RAIN DEPTH =  2.28       RAIN DURATION =  6.00
    ANT. RUNOFF COND. = 2       MAIN TIME INCREMENT =   .100 HOURS
    ALTERNATE NO. = 0           STORM NO. = 8            RAIN TABLE NO. = 1


OPERATION RUNOFF    XSECTION  91

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        2.15                          8.9                       (RUNOFF)
        5.12                          4.6                       (RUNOFF)
        6.18                          3.3                       (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                    .53 WATERSHED INCHES;      31 CFS-HRS;       2.6 ACRE-FEET.


OPERATION RUNOFF    XSECTION  92

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        2.10                         17.8                       (RUNOFF)
        5.09                          8.0                       (RUNOFF)
        6.17                          5.7                       (RUNOFF)
```



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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
12:30:03                    PASS   8   JOB NO.   1                      PAGE  54

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                    .74 WATERSHED INCHES;      62 CFS-HRS;       5.1 ACRE-FEET.


OPERATION ADDHYD    XSECTION  93

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        2.12                         26.6                       (NULL)
        5.11                         12.6                       (NULL)
        6.18                          9.0                       (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                    .65 WATERSHED INCHES;      93 CFS-HRS;       7.7 ACRE-FEET.


OPERATION RUNOFF    XSECTION  94

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        3.00                          .8                       (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                    .22 WATERSHED INCHES;       3 CFS-HRS;        .2 ACRE-FEET.


OPERATION RESVOR    STRUCTURE 11

                    HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM = 8
     HRS      MAIN TIME INCREMENT =   .100 hr,      DRAINAGE AREA =    .02 SQ.MI.
     1.20 CFS      .00     .01     .03     .05     .09     .14     .21     .28
     1.20 ELEV   737.50  737.51  737.53  737.55  737.59  737.64  737.71  737.78
     2.00 CFS      .35     .43     .49     .51     .52     .54     .56     .57
     2.00 ELEV   737.85  737.93  737.99  738.02  738.05  738.08  738.11  738.15
     2.80 CFS      .59     .61     .62     .64     .65     .66     .67     .67
     2.80 ELEV   738.18  738.21  738.25  738.28  738.30  738.32  738.33  738.33
     3.60 CFS      .66     .66     .65     .64     .63     .62     .62     .61
     3.60 ELEV   738.33  738.32  738.30  738.29  738.27  738.25  738.23  738.21
     4.40 CFS      .60     .59     .59     .59     .58     .58     .58     .58
     4.40 ELEV   738.20  738.19  738.18  738.17  738.16  738.16  738.16  738.16
     5.20 CFS      .58     .58     .58     .57     .57     .56     .55     .54
     5.20 ELEV   738.16  738.16  738.15  738.15  738.14  738.12  738.10  738.07
     6.00 CFS      .52     .51     .50     .48     .44     .40     .35     .30
     6.00 ELEV   738.05  738.03  738.01  737.98  737.94  737.90  737.85  737.80
     6.80 CFS      .25     .19     .15     .11     .09     .07     .05     .04
     6.80 ELEV   737.75  737.69  737.65  737.61  737.59  737.57  737.55  737.54
     7.60 CFS      .03     .02     .02     .01     .01     .01     .00
     7.60 ELEV   737.53  737.52  737.52  737.51  737.51  737.51  737.50

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                    .22 WATERSHED INCHES;       3 CFS-HRS;        .2 ACRE-FEET.
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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
12:30:03                    PASS   8   JOB NO.   1                       PAGE  55


    DURATION(HRS)   2      4
    FLOW(CFS)       1      0

 --- STRUCTURE 11, ALTERNATE  0, STORM  8, HYDROGRAPH ADDED TO READHD FILE ---


OPERATION RUNOFF    XSECTION  96

    PEAK TIME(HRS)              PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        .57                            6.4                       (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  2.05 WATERSHED INCHES;      11 CFS-HRS;        .9 ACRE-FEET.


OPERATION ADDHYD    XSECTION  97

    PEAK TIME(HRS)              PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        2.10                           29.1                      (NULL)
        5.06                           14.0                      (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                   .66 WATERSHED INCHES;     107 CFS-HRS;       8.8 ACRE-FEET.


OPERATION RESVOR    STRUCTURE  6

                  HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM = 8
     HRS      MAIN TIME INCREMENT =  .100 hr,      DRAINAGE AREA =    .28 SQ.MI.
      .00 CFS      .00     .05     .19     .39     .70    1.23    1.89    2.54
      .00 ELEV   707.00  707.01  707.02  707.05  707.08  707.15  707.22  707.30
      .80 CFS     3.16    3.78    4.47    5.25    6.15    7.15    8.24    9.69
      .80 ELEV   707.38  707.45  707.53  707.63  707.73  707.85  707.98  708.11
     1.60 CFS    11.22   12.73   14.21   15.65   17.01   18.27   19.43   20.62
     1.60 ELEV   708.24  708.37  708.50  708.63  708.74  708.85  708.95  709.03
     2.40 CFS    21.84   22.87   23.73   24.43   24.97   25.33   25.55   25.65
     2.40 ELEV   709.10  709.16  709.21  709.25  709.28  709.30  709.31  709.31
     3.20 CFS    25.59   25.39   25.10   24.71   24.25   23.72   23.16   22.58
     3.20 ELEV   709.31  709.30  709.28  709.26  709.24  709.21  709.18  709.14
     4.00 CFS    22.00   21.44   20.91   20.41   19.97   19.67   19.39   19.13
     4.00 ELEV   709.11  709.08  709.05  709.02  709.00  708.97  708.95  708.92
     4.80 CFS    18.88   18.66   18.46   18.27   18.08   17.84   17.57   17.29
     4.80 ELEV   708.90  708.88  708.87  708.85  708.83  708.81  708.79  708.77
     5.60 CFS    16.98   16.64   16.29   15.98   15.70   15.39   15.02   14.60
     5.60 ELEV   708.74  708.71  708.68  708.65  708.63  708.60  708.57  708.53
     6.40 CFS    14.18   13.72   13.21   12.65   12.05   11.41   10.75   10.09
     6.40 ELEV   708.50  708.46  708.41  708.37  708.31  708.26  708.20  708.15
     7.20 CFS     9.45    8.82    8.26    7.80    7.36    6.94    6.54    6.16
     7.20 ELEV   708.09  708.04  707.98  707.93  707.88  707.83  707.78  707.73
     8.00 CFS     5.80    5.45    5.13    4.82    4.53    4.26    4.00    3.76
```



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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
12:30:03                    PASS   8   JOB NO.   1                       PAGE  56

     8.00 ELEV   707.69  707.65  707.61  707.57  707.54  707.51  707.48  707.45
     8.80 CFS      3.53    3.32    3.12    2.93    2.75    2.59    2.43    2.28
     8.80 ELEV   707.42  707.40  707.37  707.35  707.33  707.31  707.29  707.27
     9.60 CFS      2.14    2.01    1.89    1.78    1.67    1.57    1.47    1.38
     9.60 ELEV   707.26  707.24  707.23  707.21  707.20  707.19  707.18  707.16
    10.40 CFS      1.30    1.22    1.15    1.08    1.01     .95     .89     .84
    10.40 ELEV   707.15  707.15  707.14  707.13  707.12  707.11  707.11  707.10
    11.20 CFS       .79     .74     .70     .65     .61     .58     .54     .51
    11.20 ELEV   707.09  707.09  707.08  707.08  707.07  707.07  707.06  707.06
    12.00 CFS       .48     .45     .42     .40     .37     .35     .33     .31
    12.00 ELEV   707.06  707.05  707.05  707.05  707.04  707.04  707.04  707.04
    12.80 CFS       .29     .27     .26     .24     .23     .21     .20     .19
    12.80 ELEV   707.03  707.03  707.03  707.03  707.03  707.03  707.02  707.02
    13.60 CFS       .18     .16     .15     .15     .14     .13     .12     .11
    13.60 ELEV   707.02  707.02  707.02  707.02  707.02  707.02  707.01  707.01
    14.40 CFS       .11     .10     .09     .09     .08     .08     .07     .07
    14.40 ELEV   707.01  707.01  707.01  707.01  707.01  707.01  707.01  707.01
    15.20 CFS       .06     .06     .06     .05     .05     .05     .04     .04
    15.20 ELEV   707.01  707.01  707.01  707.01  707.01  707.01  707.01  707.00
    16.00 CFS       .04     .04     .03     .03     .03     .03     .03     .03
    16.00 ELEV   707.00  707.00  707.00  707.00  707.00  707.00  707.00  707.00
    16.80 CFS       .02     .02     .02     .02     .02     .02     .02     .02
    16.80 ELEV   707.00  707.00  707.00  707.00  707.00  707.00  707.00  707.00
    17.60 CFS       .01     .01     .01     .01     .01     .01
    17.60 ELEV   707.00  707.00  707.00  707.00  707.00  707.00

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                   .71 WATERSHED INCHES;     126 CFS-HRS;      10.4 ACRE-FEET.

    DURATION(HRS)   2      4      6      8     10     12
    FLOW(CFS)      20     16      8      3      1      0

 --- STRUCTURE  6, ALTERNATE  0, STORM  8, HYDROGRAPH ADDED TO READHD FILE ---


OPERATION RUNOFF    XSECTION  99

    PEAK TIME(HRS)              PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        1.22                           38.2                      (RUNOFF)
        2.65                           22.5                      (RUNOFF)
        5.05                           12.3                      (RUNOFF)
        5.96                           12.5                      (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  1.13 WATERSHED INCHES;     111 CFS-HRS;       9.2 ACRE-FEET.


OPERATION ADDHYD    XSECTION  90
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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
12:30:03                    PASS   8   JOB NO.   1                      PAGE  57


    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        1.49                         47.6                       (NULL)
        1.81                         44.8                       (NULL)
        2.10                         44.8                       (NULL)
        2.68                         46.7                       (NULL)
        5.95                         28.3                       (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .86 WATERSHED INCHES;     237 CFS-HRS;      19.6 ACRE-FEET.


OPERATION RESVOR    STRUCTURE  7

                    HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM = 8
     HRS      MAIN TIME INCREMENT =  .100 hr,      DRAINAGE AREA =    .54 SQ.MI.
      .10 CFS      .00    .01    .01    .06    .18    .38    .60    .85
      .10 ELEV  700.00 700.00 700.00 700.01 700.05 700.09 700.15 700.21
      .90 CFS     1.10   1.36   1.62   1.90   2.18   2.46   2.74   3.02
      .90 ELEV  700.27 700.34 700.41 700.47 700.54 700.61 700.69 700.76
     1.70 CFS     3.29   3.54   3.80   4.05   4.35   4.65   4.93   5.21
     1.70 ELEV  700.82 700.89 700.95 701.01 701.04 701.08 701.12 701.15
     2.50 CFS     5.48   5.76   6.04   6.32   6.58   6.83   7.06   7.28
     2.50 ELEV  701.19 701.22 701.26 701.29 701.32 701.35 701.38 701.41
     3.30 CFS     7.47   7.66   7.85   8.03   8.21   8.38   8.55   8.72
     3.30 ELEV  701.43 701.46 701.48 701.50 701.53 701.55 701.57 701.59
     4.10 CFS     8.88   9.04   9.20   9.36   9.51   9.66   9.81   9.96
     4.10 ELEV  701.61 701.63 701.65 701.67 701.69 701.71 701.73 701.74
     4.90 CFS    10.10  10.24  10.39  10.52  10.63  10.73  10.82  10.90
     4.90 ELEV  701.76 701.78 701.80 701.82 701.83 701.84 701.85 701.86
     5.70 CFS    10.99  11.07  11.18  11.29  11.40  11.47  11.50  11.53
     5.70 ELEV  701.87 701.88 701.90 701.91 701.92 701.93 701.94 701.94
     6.50 CFS    11.54  11.55  11.56  11.56  11.56  11.56  11.56  11.55
     6.50 ELEV  701.94 701.94 701.94 701.95 701.95 701.95 701.94 701.94
     7.30 CFS    11.54  11.52  11.50  11.48  11.46  11.44  11.42  11.39
     7.30 ELEV  701.94 701.94 701.94 701.94 701.93 701.93 701.93 701.92
     8.10 CFS    11.36  11.33  11.30  11.27  11.23  11.20  11.16  11.13
     8.10 ELEV  701.92 701.92 701.91 701.91 701.90 701.90 701.90 701.89
     8.90 CFS    11.09  11.05  11.01  10.97  10.93  10.89  10.85  10.81
     8.90 ELEV  701.89 701.88 701.88 701.87 701.87 701.86 701.86 701.85
     9.70 CFS    10.76  10.72  10.68  10.63  10.59  10.54  10.50  10.45
     9.70 ELEV  701.85 701.84 701.83 701.83 701.82 701.82 701.81 701.81
    10.50 CFS    10.41  10.36  10.32  10.27  10.23  10.18  10.14  10.09
    10.50 ELEV  701.80 701.80 701.79 701.78 701.78 701.77 701.77 701.76
    11.30 CFS    10.05  10.00   9.96   9.91   9.86   9.82   9.77   9.73
    11.30 ELEV  701.76 701.75 701.74 701.74 701.73 701.73 701.72 701.72
    12.10 CFS     9.68   9.64   9.59   9.55   9.50   9.46   9.41   9.37
    12.10 ELEV  701.71 701.70 701.70 701.69 701.69 701.68 701.68 701.67
    12.90 CFS     9.32   9.28   9.24   9.19   9.15   9.10   9.06   9.02
    12.90 ELEV  701.67 701.66 701.65 701.65 701.64 701.64 701.63 701.63
    13.70 CFS     8.97   8.93   8.89   8.84   8.80   8.76   8.72   8.68
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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
12:30:03                    PASS   8   JOB NO.   1                      PAGE  58

    13.70 ELEV  701.62 701.62 701.61 701.61 701.60 701.59 701.59 701.58
    14.50 CFS     8.63   8.59   8.55   8.51   8.47   8.43   8.39   8.35
    14.50 ELEV  701.58 701.57 701.57 701.56 701.56 701.55 701.55 701.54
    15.30 CFS     8.30   8.26   8.22   8.18   8.14   8.10   8.07   8.03
    15.30 ELEV  701.54 701.53 701.53 701.52 701.52 701.51 701.51 701.50
    16.10 CFS     7.99   7.95   7.91   7.87   7.83   7.79   7.76   7.72
    16.10 ELEV  701.50 701.49 701.49 701.48 701.48 701.47 701.47 701.46
    16.90 CFS     7.68   7.64   7.61   7.57   7.53   7.50   7.46   7.42
    16.90 ELEV  701.46 701.46 701.45 701.45 701.44 701.44 701.43 701.43
    17.70 CFS     7.39   7.35   7.31   7.28   7.24
    17.70 ELEV  701.42 701.42 701.41 701.41 701.41

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .44 WATERSHED INCHES;     154 CFS-HRS;      12.7 ACRE-FEET.

    DURATION(HRS)  2     4     6     8     10    12    14
    FLOW(CFS)     11    11    10    10     9     8     7 TRUNCATED

 --- STRUCTURE  7, ALTERNATE  0, STORM  8, HYDROGRAPH ADDED TO READHD FILE ---


OPERATION RUNOFF    XSECTION  49

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        .60                          .7                         (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                 1.26 WATERSHED INCHES;       2 CFS-HRS;        .2 ACRE-FEET.


OPERATION ADDHYD    XSECTION  50

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        6.88                        11.6                       (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .44 WATERSHED INCHES;     155 CFS-HRS;      12.8 ACRE-FEET.


OPERATION RESVOR    STRUCTURE 39

                    HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM = 8
     HRS      MAIN TIME INCREMENT =  .100 hr,      DRAINAGE AREA =    .62 SQ.MI.
      .10 CFS      .00    .01    .03    .07    .19    .37    .57    .78
      .10 ELEV  693.00 693.00 693.00 693.01 693.03 693.05 693.08 693.11
      .90 CFS      .99   1.19   1.40   1.60   1.81   2.02   2.22   2.42
      .90 ELEV  693.14 693.17 693.20 693.23 693.26 693.29 693.31 693.34
     1.70 CFS     2.60   2.77   2.94   3.09   3.24   3.38   3.52   3.65
     1.70 ELEV  693.37 693.39 693.42 693.44 693.46 693.48 693.50 693.52
     2.50 CFS     3.77   3.90   4.02   4.15   4.27   4.38   4.48   4.58
     2.50 ELEV  693.53 693.55 693.57 693.59 693.60 693.62 693.63 693.65
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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
12:30:03                    PASS   8   JOB NO.   1                      PAGE  59

     3.30 CFS      4.67    4.75    4.83    4.92    5.00    5.08    5.17    5.26
     3.30 ELEV   693.66  693.67  693.68  693.70  693.71  693.72  693.73  693.74
     4.10 CFS      5.34    5.43    5.52    5.61    5.70    5.79    5.88    5.98
     4.10 ELEV   693.76  693.77  693.78  693.79  693.81  693.82  693.83  693.85
     4.90 CFS      6.07    6.16    6.26    6.35    6.43    6.50    6.57    6.64
     4.90 ELEV   693.86  693.87  693.89  693.90  693.91  693.92  693.93  693.94
     5.70 CFS      6.70    6.77    6.85    6.94    7.03    7.09    7.13    7.16
     5.70 ELEV   693.95  693.96  693.97  693.98  694.00  694.01  694.01  694.02
     6.50 CFS      7.19    7.21    7.24    7.27    7.30    7.32    7.35    7.38
     6.50 ELEV   694.02  694.03  694.03  694.04  694.04  694.05  694.05  694.06
     7.30 CFS      7.40    7.43    7.45    7.48    7.50    7.53    7.55    7.58
     7.30 ELEV   694.06  694.07  694.07  694.08  694.08  694.09  694.09  694.09
     8.10 CFS      7.60    7.62    7.65    7.67    7.69    7.72    7.74    7.76
     8.10 ELEV   694.10  694.10  694.11  694.11  694.11  694.12  694.12  694.13
     8.90 CFS      7.78    7.80    7.82    7.84    7.86    7.88    7.90    7.92
     8.90 ELEV   694.13  694.13  694.14  694.14  694.15  694.15  694.15  694.16
     9.70 CFS      7.93    7.95    7.97    7.99    8.00    8.02    8.03    8.05
     9.70 ELEV   694.16  694.16  694.17  694.17  694.17  694.17  694.18  694.18
    10.50 CFS      8.07    8.08    8.09    8.11    8.12    8.13    8.15    8.16
    10.50 ELEV   694.18  694.19  694.19  694.19  694.19  694.20  694.20  694.20
    11.30 CFS      8.17    8.18    8.19    8.21    8.22    8.23    8.24    8.25
    11.30 ELEV   694.20  694.20  694.21  694.21  694.21  694.21  694.21  694.22
    12.10 CFS      8.25    8.26    8.27    8.28    8.29    8.30    8.30    8.31
    12.10 ELEV   694.22  694.22  694.22  694.22  694.22  694.22  694.23  694.23
    12.90 CFS      8.32    8.32    8.33    8.33    8.34    8.34    8.35    8.35
    12.90 ELEV   694.23  694.23  694.23  694.23  694.23  694.23  694.23  694.23
    13.70 CFS      8.36    8.36    8.36    8.37    8.37    8.37    8.38    8.38
    13.70 ELEV   694.24  694.24  694.24  694.24  694.24  694.24  694.24  694.24
    14.50 CFS      8.38    8.38    8.38    8.38    8.38    8.38    8.38    8.38
    14.50 ELEV   694.24  694.24  694.24  694.24  694.24  694.24  694.24  694.24
    15.30 CFS      8.38    8.38    8.38    8.38    8.38    8.38    8.38    8.37
    15.30 ELEV   694.24  694.24  694.24  694.24  694.24  694.24  694.24  694.24
    16.10 CFS      8.37    8.37    8.37    8.36    8.36    8.36    8.35    8.35
    16.10 ELEV   694.24  694.24  694.24  694.24  694.24  694.24  694.23  694.23
    16.90 CFS      8.34    8.34    8.34    8.33    8.33    8.32    8.32    8.31
    16.90 ELEV   694.23  694.23  694.23  694.23  694.23  694.23  694.23  694.23
    17.70 CFS      8.30    8.30    8.29    8.29    8.28
    17.70 ELEV   694.23  694.22  694.22  694.22  694.22

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .30 WATERSHED INCHES;     121 CFS-HRS;      10.0 ACRE-FEET.

 --- STRUCTURE 39, ALTERNATE  0, STORM  8, HYDROGRAPH ADDED TO READHD FILE ---

EXECUTIVE CONTROL  ENDCMP    COMPUTATIONS COMPLETED FOR PASS   8
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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
12:30:03                    PASS   9   JOB NO.   1                      PAGE  60


EXECUTIVE CONTROL  INCREM    MAIN TIME INCREMENT =   .500 HOURS


EXECUTIVE CONTROL  COMPUT    FROM XSECTION  91  TO STRUCTURE 39          12-HR
    STARTING TIME =   .00       RAIN DEPTH =  2.64       RAIN DURATION = 12.00
    ANT. RUNOFF COND. = 2       MAIN TIME INCREMENT =   .500 HOURS
    ALTERNATE NO. = 0           STORM NO. = 9            RAIN TABLE NO. = 2


OPERATION RUNOFF    XSECTION  91

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        5.89                          9.4                       (RUNOFF)
       11.91                          2.5                       (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .73 WATERSHED INCHES;      44 CFS-HRS;       3.6 ACRE-FEET.


OPERATION RUNOFF    XSECTION  92

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        5.87                         17.7                       (RUNOFF)
       11.76                          4.0                       (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .99 WATERSHED INCHES;      82 CFS-HRS;       6.8 ACRE-FEET.


OPERATION ADDHYD    XSECTION  93

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        5.88                         27.1                       (NULL)
       11.86                          6.5                       (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .88 WATERSHED INCHES;     126 CFS-HRS;      10.4 ACRE-FEET.


OPERATION RUNOFF    XSECTION  94

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        6.50                          .9                       (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .35 WATERSHED INCHES;       5 CFS-HRS;        .4 ACRE-FEET.
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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
12:30:03                    PASS   9   JOB NO.   1                      PAGE  61


OPERATION RESVOR    STRUCTURE 11

                    HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM = 9
     HRS      MAIN TIME INCREMENT =  .500 hr,      DRAINAGE AREA =    .02 SQ.MI.
     4.00 CFS       .00     .02     .16     .48     .60     .72     .80     .82
     4.00 ELEV   737.50  737.52  737.66  737.98  738.20  738.44  738.59  738.65
     8.00 CFS       .81     .76     .70     .64     .58     .52     .43     .35
     8.00 ELEV   738.62  738.52  738.40  738.29  738.15  738.03  737.93  737.85
    12.00 CFS       .33     .31     .14     .02     .01     .00
    12.00 ELEV   737.83  737.81  737.64  737.52  737.51  737.50

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                    .35 WATERSHED INCHES;       5 CFS-HRS;        .4 ACRE-FEET.

    DURATION(HRS)   2      4      5
    FLOW(CFS)       1      1      0

 --- STRUCTURE 11, ALTERNATE  0, STORM  9, HYDROGRAPH ADDED TO READHD FILE ---


OPERATION RUNOFF    XSECTION  96

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        4.62                          2.8                        (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                   2.41 WATERSHED INCHES;      13 CFS-HRS;       1.1 ACRE-FEET.


OPERATION ADDHYD    XSECTION  97

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        5.84                         29.6                        (NULL)
       11.85                          7.3                        (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                    .89 WATERSHED INCHES;     143 CFS-HRS;      11.9 ACRE-FEET.


OPERATION RESVOR    STRUCTURE  6

                    HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM = 9
     HRS      MAIN TIME INCREMENT =  .500 hr,      DRAINAGE AREA =    .28 SQ.MI.
      .00 CFS       .00     .01     .10     .26     .43     .67    1.04    1.71
      .00 ELEV   707.00  707.00  707.01  707.03  707.05  707.08  707.12  707.20
     4.00 CFS      3.27    6.39   11.67   18.09   24.46   27.77   27.91   26.44
     4.00 ELEV   707.39  707.76  708.28  708.84  709.25  709.43  709.44  709.36
     8.00 CFS     24.18   21.57   19.38   17.70   15.86   14.21   12.81   11.41
     8.00 ELEV   709.23  709.09  708.95  708.80  708.64  708.50  708.38  708.26
    12.00 CFS     10.31    9.22    7.57    5.82    4.33    3.18    2.32    1.70
    12.00 ELEV   708.16  708.07  707.90  707.69  707.52  707.38  707.28  707.20
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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
12:30:03                    PASS   9   JOB NO.   1                      PAGE  62

    16.00 CFS      1.24     .90     .66     .48     .35     .26     .19     .14
    16.00 ELEV   707.15  707.11  707.08  707.06  707.04  707.03  707.02  707.02
    20.00 CFS       .10     .07     .05     .04     .03     .02     .01     .01
    20.00 ELEV   707.01  707.01  707.01  707.00  707.00  707.00  707.00  707.00

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                    .94 WATERSHED INCHES;     168 CFS-HRS;      13.9 ACRE-FEET.

    DURATION(HRS)  2      4      6      8     10     12     14     15
    FLOW(CFS)      24     18     12      8      3      2      1      0

 --- STRUCTURE  6, ALTERNATE  0, STORM  9, HYDROGRAPH ADDED TO READHD FILE ---


OPERATION RUNOFF    XSECTION  99

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        4.91                         32.8                        (RUNOFF)
        8.76                         11.1                        (RUNOFF)
       10.26                          7.7                        (RUNOFF)
       11.86                          7.7                        (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                   1.44 WATERSHED INCHES;     142 CFS-HRS;      11.7 ACRE-FEET.


OPERATION ADDHYD    XSECTION  90

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        6.00                         50.1                        (NULL)
       11.80                         18.4                        (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                   1.12 WATERSHED INCHES;     310 CFS-HRS;      25.6 ACRE-FEET.


OPERATION RESVOR    STRUCTURE  7

                    HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM = 9
     HRS      MAIN TIME INCREMENT =  .500 hr,      DRAINAGE AREA =    .54 SQ.MI.
     1.00 CFS       .00     .01     .03     .12     .29     .60    1.17    2.11
     1.00 ELEV   700.00  700.00  700.01  700.03  700.07  700.15  700.29  700.53
     5.00 CFS      3.30    4.74    6.34    7.80    9.08   10.19   11.10   11.86
     5.00 ELEV   700.82  701.09  701.29  701.47  701.63  701.77  701.89  701.98
     9.00 CFS     12.37   12.76   13.05   13.30   13.49   13.61   13.74   13.79
     9.00 ELEV   702.06  702.13  702.17  702.22  702.25  702.27  702.29  702.30
    13.00 CFS     13.70   13.57   13.43   13.26   13.08   12.88   12.68   12.48
    13.00 ELEV   702.28  702.26  702.24  702.21  702.18  702.15  702.11  702.08
    17.00 CFS     12.28   12.08   11.82   11.54   11.27   11.00   10.74   10.48
    17.00 ELEV   702.05  702.01  701.98  701.94  701.91  701.88  701.84  701.81
    21.00 CFS     10.23    9.98    9.74    9.51    9.28    9.05
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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
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    21.00 ELEV   701.78  701.75  701.72  701.69  701.66  701.63

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .61 WATERSHED INCHES;     212 CFS-HRS;      17.5 ACRE-FEET.

    DURATION(HRS)   2      4      6      8     10     12     14     16
    FLOW(CFS)      14     13     13     12     12     11     10      9 TRUNCATED

 --- STRUCTURE  7, ALTERNATE  0, STORM  9, HYDROGRAPH ADDED TO READHD FILE ---


OPERATION RUNOFF    XSECTION  49

    PEAK TIME(HRS)              PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        5.00                          .5                        (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                 1.59 WATERSHED INCHES;       2 CFS-HRS;        .2 ACRE-FEET.


OPERATION ADDHYD    XSECTION  50

    PEAK TIME(HRS)              PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
       12.10                         13.9                       (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .61 WATERSHED INCHES;     215 CFS-HRS;      17.7 ACRE-FEET.


OPERATION RESVOR    STRUCTURE 39

                   HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM = 9
     HRS      MAIN TIME INCREMENT =  .500 hr,      DRAINAGE AREA =    .62 SQ.MI.
     1.00 CFS       .00     .01     .06     .14     .30     .57    1.03    1.73
     1.00 ELEV   693.00  693.00  693.01  693.02  693.04  693.08  693.15  693.25
     5.00 CFS      2.57    3.43    4.22    4.89    5.49    6.04    6.55    7.02
     5.00 ELEV   693.36  693.49  693.60  693.69  693.78  693.86  693.93  693.99
     9.00 CFS      7.37    7.69    7.97    8.26    8.52    8.76    9.01    9.22
     9.00 ELEV   694.06  694.11  694.17  694.22  694.27  694.31  694.35  694.39
    13.00 CFS      9.37    9.50    9.62    9.74    9.84    9.94   10.03   10.11
    13.00 ELEV   694.42  694.44  694.46  694.49  694.51  694.52  694.54  694.55
    17.00 CFS     10.18   10.24   10.29   10.34   10.37   10.39   10.41   10.42
    17.00 ELEV   694.57  694.58  694.59  694.59  694.60  694.61  694.61  694.61
    21.00 CFS     10.41   10.40   10.39   10.36   10.33   10.30
    21.00 ELEV   694.61  694.61  694.60  694.60  694.59  694.59

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .41 WATERSHED INCHES;     164 CFS-HRS;      13.6 ACRE-FEET.

 --- STRUCTURE 39, ALTERNATE  0, STORM  9, HYDROGRAPH ADDED TO READHD FILE ---
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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
12:30:03                    PASS  10   JOB NO.   1                      PAGE  64


EXECUTIVE CONTROL  ENDCMP    COMPUTATIONS COMPLETED FOR PASS   9


EXECUTIVE CONTROL  COMPUT    FROM XSECTION  91  TO STRUCTURE 39          18-HR
    STARTING TIME =   .00       RAIN DEPTH =  2.79       RAIN DURATION = 18.00
    ANT. RUNOFF COND. = 2       MAIN TIME INCREMENT =   .500 HOURS
    ALTERNATE NO. = 0           STORM NO. =10            RAIN TABLE NO. = 2


OPERATION RUNOFF    XSECTION  91

    PEAK TIME(HRS)              PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        8.37                          7.4                       (RUNOFF)
       15.79                          2.3                       (RUNOFF)
       17.98                          2.1                       (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .83 WATERSHED INCHES;      49 CFS-HRS;       4.1 ACRE-FEET.


OPERATION RUNOFF    XSECTION  92

    PEAK TIME(HRS)              PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        8.35                         13.8                       (RUNOFF)
       18.03                          3.2                       (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                 1.09 WATERSHED INCHES;      91 CFS-HRS;       7.5 ACRE-FEET.


OPERATION ADDHYD    XSECTION  93

    PEAK TIME(HRS)              PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        8.36                         21.2                       (NULL)
       15.76                          6.0                       (NULL)
       18.01                          5.3                       (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .98 WATERSHED INCHES;     140 CFS-HRS;      11.6 ACRE-FEET.


OPERATION RUNOFF    XSECTION  94

    PEAK TIME(HRS)              PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        9.00                          .7                        (RUNOFF)
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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
12:30:03                    PASS  10   JOB NO.   1                       PAGE  65


    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .41 WATERSHED INCHES;       5 CFS-HRS;        .4 ACRE-FEET.


OPERATION RESVOR    STRUCTURE 11

                    HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM =10
     HRS      MAIN TIME INCREMENT =  .500 hr,      DRAINAGE AREA =    .02 SQ.MI.
     6.00 CFS       .00     .01     .12     .28     .50     .56     .63     .68
     6.00 ELEV   737.50  737.51  737.62  737.78  738.00  738.12  738.26  738.35
    10.00 CFS       .69     .69     .67     .65     .61     .57     .52     .47
    10.00 ELEV   738.38  738.37  738.34  738.29  738.22  738.13  738.04  737.97
    14.00 CFS       .42     .36     .32     .32     .32     .32     .25     .21
    14.00 ELEV   737.92  737.86  737.82  737.82  737.82  737.82  737.75  737.71
    18.00 CFS       .27     .25     .10     .02     .00
    18.00 ELEV   737.77  737.75  737.60  737.52  737.50

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .41 WATERSHED INCHES;       5 CFS-HRS;        .4 ACRE-FEET.

    DURATION(HRS)   2      4      5
    FLOW(CFS)       1      1      0

 --- STRUCTURE 11, ALTERNATE  0, STORM 10, HYDROGRAPH ADDED TO READHD FILE ---


OPERATION RUNOFF    XSECTION  96

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        6.87                         2.0                        (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                 2.57 WATERSHED INCHES;      14 CFS-HRS;       1.1 ACRE-FEET.


OPERATION ADDHYD    XSECTION  97

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        8.25                        23.2                        (NULL)
       15.76                         6.6                        (NULL)
       17.98                         5.9                        (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .99 WATERSHED INCHES;     159 CFS-HRS;      13.2 ACRE-FEET.


OPERATION RESVOR    STRUCTURE  6

                    HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM =10
     HRS      MAIN TIME INCREMENT =  .500 hr,      DRAINAGE AREA =    .28 SQ.MI.
      .00 CFS       .00     .01     .04     .12     .23     .31     .41     .52
      .00 ELEV   707.00  707.00  707.00  707.01  707.03  707.04  707.05  707.06
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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
12:30:03                    PASS  10   JOB NO.   1                       PAGE  66

     4.00 CFS       .73    1.05    1.54    2.41    3.92    6.24    9.54   13.76
     4.00 ELEV   707.09  707.12  707.18  707.29  707.47  707.74  708.10  708.46
     8.00 CFS     17.69   20.90   22.93   23.11   22.14   20.75   19.45   18.27
     8.00 ELEV   708.80  709.05  709.16  709.17  709.12  709.04  708.95  708.85
    12.00 CFS     16.95   15.52   14.17   13.12   12.13   11.00    9.93    9.13
    12.00 ELEV   708.74  708.61  708.50  708.41  708.32  708.22  708.13  708.06
    16.00 CFS      8.59    8.13    7.49    6.85    6.64    6.33    5.38    4.15
    16.00 ELEV   708.02  707.97  707.89  707.82  707.79  707.75  707.64  707.49
    20.00 CFS      3.09    2.27    1.66    1.21     .88     .64     .47     .34
    20.00 ELEV   707.37  707.27  707.20  707.14  707.11  707.08  707.06  707.04
    24.00 CFS       .25     .18     .13     .10     .07     .05     .04     .03
    24.00 ELEV   707.03  707.02  707.02  707.01  707.01  707.01  707.00  707.00
    28.00 CFS       .02     .01     .01
    28.00 ELEV   707.00  707.00  707.00

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                 1.04 WATERSHED INCHES;     187 CFS-HRS;      15.4 ACRE-FEET.

    DURATION(HRS)   2      4      6      8     10     12     14     16
    FLOW(CFS)      21     17     13     10      7      6      3      2

    DURATION(HRS)  18     20
    FLOW(CFS)       1      0

 --- STRUCTURE  6, ALTERNATE  0, STORM 10, HYDROGRAPH ADDED TO READHD FILE ---


OPERATION RUNOFF    XSECTION  99

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        7.75                        24.4                        (RUNOFF)
       13.25                         7.7                        (RUNOFF)
       15.75                         5.5                        (RUNOFF)
       17.75                         5.9                        (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                 1.58 WATERSHED INCHES;     156 CFS-HRS;      12.9 ACRE-FEET.


OPERATION ADDHYD    XSECTION  90

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        8.08                        41.5                        (NULL)
        8.92                        41.5                        (NULL)
       17.70                        12.3                        (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                 1.23 WATERSHED INCHES;     340 CFS-HRS;      28.1 ACRE-FEET.
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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
12:30:03                    PASS  10   JOB NO.   1                      PAGE  67


OPERATION RESVOR    STRUCTURE  7

                    HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM =10
     HRS      MAIN TIME INCREMENT =  .500 hr,      DRAINAGE AREA =    .54 SQ.MI.
     1.50 CFS       .00     .01     .02     .05     .11     .22     .39     .63
     1.50 ELEV   700.00  700.00  700.00  700.01  700.03  700.05  700.10  700.16
     5.50 CFS       .97    1.46    2.15    2.99    3.95    5.23    6.48    7.64
     5.50 ELEV   700.24  700.37  700.54  700.75  700.99  701.15  701.31  701.46
     9.50 CFS      8.72    9.65   10.49   11.21   11.84   12.26   12.56   12.83
     9.50 ELEV   701.59  701.71  701.81  701.90  701.98  702.04  702.09  702.14
    13.50 CFS     13.08   13.27   13.39   13.50   13.59   13.66   13.69   13.68
    13.50 ELEV   702.18  702.21  702.23  702.25  702.26  702.28  702.28  702.28
    17.50 CFS     13.68   13.72   13.67   13.54   13.39   13.22   13.03   12.84
    17.50 ELEV   702.28  702.29  702.28  702.26  702.23  702.20  702.17  702.14
    21.50 CFS     12.64   12.44   12.24   12.03   11.77   11.49   11.22   10.95
    21.50 ELEV   702.11  702.07  702.04  702.01  701.97  701.94  701.90  701.87
    25.50 CFS     10.69   10.43   10.18    9.93    9.69    9.46    9.23    9.01
    25.50 ELEV   701.84  701.80  701.77  701.74  701.71  701.68  701.65  701.63

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                    .72 WATERSHED INCHES;     253 CFS-HRS;      20.9 ACRE-FEET.

    DURATION(HRS)   2      4      6      8     10     12     14     16
    FLOW(CFS)      14     13     13     13     12     12     11     10

    DURATION(HRS)  18
    FLOW(CFS)       9 TRUNCATED

 --- STRUCTURE  7, ALTERNATE  0, STORM 10, HYDROGRAPH ADDED TO READHD FILE ---


OPERATION RUNOFF    XSECTION  49

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                    .72 WATERSHED INCHES;      36 CFS-HRS;      20.9 ACRE-FEET.


OPERATION ADDHYD    XSECTION  50

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
       17.86                          13.8                        (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                    .73 WATERSHED INCHES;     255 CFS-HRS;      21.1 ACRE-FEET.


OPERATION RESVOR    STRUCTURE 39

                    HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM =10
     HRS      MAIN TIME INCREMENT =  .500 hr,      DRAINAGE AREA =    .62 SQ.MI.
     1.50 CFS       .00     .01     .03     .07     .13     .24     .40     .60
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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
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     1.50 ELEV   693.00  693.00  693.00  693.01  693.02  693.03  693.06  693.08
     5.50 CFS       .87    1.24    1.74    2.33    2.96    3.62    4.23    4.80
     5.50 ELEV   693.12  693.17  693.25  693.33  693.42  693.51  693.60  693.68
     9.50 CFS      5.34    5.84    6.33    6.80    7.20    7.50    7.79    8.07
     9.50 ELEV   693.76  693.83  693.90  693.96  694.02  694.08  694.13  694.18
    13.50 CFS      8.35    8.61    8.85    9.08    9.30    9.53    9.72    9.89
    13.50 ELEV   694.23  694.28  694.32  694.37  694.41  694.45  694.48  694.51
    17.50 CFS     10.08   10.28   10.43   10.53   10.62   10.70   10.78   10.84
    17.50 ELEV   694.55  694.58  694.61  694.63  694.65  694.66  694.67  694.69
    21.50 CFS     10.90   10.95   11.00   11.03   11.06   11.08   11.09   11.09
    21.50 ELEV   694.70  694.71  694.71  694.72  694.73  694.73  694.73  694.73
    25.50 CFS     11.08   11.06   11.04   11.01   10.97   10.93   10.88   10.82
    25.50 ELEV   694.73  694.73  694.72  694.72  694.71  694.70  694.69  694.68

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                    .51 WATERSHED INCHES;     203 CFS-HRS;      16.8 ACRE-FEET.

    DURATION(HRS)   2      4      6      8     10     11
    FLOW(CFS)      11     11     11     11     11     11 TRUNCATED

 --- STRUCTURE 39, ALTERNATE  0, STORM 10, HYDROGRAPH ADDED TO READHD FILE ---


EXECUTIVE CONTROL  ENDCMP    COMPUTATIONS COMPLETED FOR PASS  10
```

SUMMARY TABLE 1

SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.
A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:
F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED HYDROGRAPH

XSECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RUNOFF AMOUNT (IN)	PEAK DISCHARGE ELEVATION (FT)	PEAK DISCHARGE TIME (HR)	PEAK DISCHARGE RATE (CFS)	PEAK DISCHARGE RATE (CSM)
RAINFALL OF .36 inches AND .10 hr DURATION, BEGINS AT .0 hrs.							
RAINTABLE NUMBER 1, ARC 2							
MAIN TIME INCREMENT .008 HOURS							
ALTERNATE 0 STORM 1							
XSECTION 91	RUNOFF	.09	.00	---	.00	0	.0
XSECTION 92	RUNOFF	.13	.00	---	.00	0	.0
XSECTION 93	ADDHYD	.22	.00	---	.00	0	.0
XSECTION 94	RUNOFF	.02	.00	---	.00	0	.0
STRUCTURE 11	RESVOR	.02	.00	---	.00	0	.0
XSECTION 95	ADDHYD	.24	.00	---	.00	0	.0
XSECTION 96	RUNOFF	.01	.19	---	.13	7	700.0
XSECTION 97	ADDHYD	.25	.01	---	.13	7	28.0
XSECTION 10	RUNOFF	.03	.01	---	.00	0	.0
XSECTION 98	ADDHYD	.28	.01	---	.14	7	25.0
STRUCTURE 6	RESVOR	.28	.01	707.07	.32R	1R	3.6
XSECTION 99	RUNOFF	.15	.00	---	.16T	2T	13.3
XSECTION 90	ADDHYD	.43	.00	---	.17T	2T	4.7
XSECTION 17	RUNOFF	.11	.01	---	.25T	2T	18.2
XSECTION 13	ADDHYD	.54	.00	---	.19T	3T	5.6
STRUCTURE 7	RESVOR	.54	.00	---	.00	0	.0
XSECTION 49	RUNOFF	.00	.00	---	.00	0	********
XSECTION 50	ADDHYD	.54	.00	---	.00	0	.0
XSECTION 24	RUNOFF	.01	.02	---	.15T	1T	100.0
XSECTION 17	ADDHYD	.56	.00	---	.15T	1T	1.8
XSECTION 19	RUNOFF	.06	.02	---	.21T	3T	50.0
XSECTION 15	ADDHYD	.62	.00	---	.19T	4T	6.5
STRUCTURE 39	RESVOR	.62	.00	---	.00	0	.0
RAINFALL OF .67 inches AND .20 hr DURATION, BEGINS AT .0 hrs.							
ALTERNATE 0 STORM 2							

SUMMARY TABLE 1

SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.
A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:
F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED HYDROGRAPH

XSECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RUNOFF AMOUNT (IN)	PEAK DISCHARGE ELEVATION (FT)	PEAK DISCHARGE TIME (HR)	PEAK DISCHARGE RATE (CFS)	PEAK DISCHARGE RATE (CSM)
ALTERNATE 0 STORM 2							
XSECTION 91	RUNOFF	.09	.00	---	.00	0	.0
XSECTION 92	RUNOFF	.13	.01	---	.73F	1F	7.7
XSECTION 93	ADDHYD	.22	.01	---	.73F	1F	4.5
XSECTION 94	RUNOFF	.02	.00	---	.00	0	.0
STRUCTURE 11	RESVOR	.02	.00	---	.00	0	.0
XSECTION 95	ADDHYD	.24	.01	---	.73F	1F	4.2
XSECTION 96	RUNOFF	.01	.47	---	.15	14	1400.0
XSECTION 97	ADDHYD	.25	.02	---	.15	14	56.0
XSECTION 10	RUNOFF	.03	.07	---	.19	7	233.3
XSECTION 98	ADDHYD	.28	.03	---	.16	21	75.0
STRUCTURE 6	RESVOR	.28	.02	707.25	.38F	2F	7.1
XSECTION 99	RUNOFF	.15	.07	---	.19	42	280.0
XSECTION 90	ADDHYD	.43	.04	---	.19	43	100.0
XSECTION 17	RUNOFF	.11	.09	---	.28	24	218.2
XSECTION 13	ADDHYD	.54	.05	---	.21	61	113.0
STRUCTURE 7	RESVOR	.54	.00	700.15	2.89R	1R	1.9
XSECTION 49	RUNOFF	.00	.11	---	.18R	1R	********
XSECTION 50	ADDHYD	.54	.01	---	.20T	1T	1.9
XSECTION 24	RUNOFF	.01	.13	---	.18	7	700.0
XSECTION 17	ADDHYD	.56	.01	---	.18	8	14.3
XSECTION 19	RUNOFF	.06	.13	---	.24	22	366.7
XSECTION 15	ADDHYD	.62	.02	---	.22	28	45.2
STRUCTURE 39	RESVOR	.62	.00	693.08	3.19R	1R	1.6

TR20 ---------- SCS -
001 CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE VERSION
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SUMMARY TABLE 1

SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.
A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:
F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED HYDROGRAPH

XSECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RUNOFF AMOUNT (IN)	PEAK DISCHARGE ELEVATION (FT)	PEAK DISCHARGE TIME (HR)	PEAK DISCHARGE RATE (CFS)	PEAK DISCHARGE RATE (CSM)
RAINFALL OF .82 inches AND .30 hr DURATION, BEGINS AT .0 hrs.							
ALTERNATE 0 STORM 3							
XSECTION 91	RUNOFF	.09	.01	---	.70R	1R	11.1
XSECTION 92	RUNOFF	.13	.04	---	.76F	4F	30.8
XSECTION 93	ADDHYD	.22	.02	---	.75T	4T	18.2
XSECTION 94	RUNOFF	.02	.00	---	.00	0	.0
STRUCTURE 11	RESVOR	.02	.00	---	.00	0	.0
XSECTION 95	ADDHYD	.24	.02	---	.75T	4T	16.7
XSECTION 96	RUNOFF	.01	.62	---	.16	16	1600.0
XSECTION 97	ADDHYD	.25	.04	---	.16	16	64.0
XSECTION 10	RUNOFF	.03	.13	---	.20	10	333.3
XSECTION 98	ADDHYD	.28	.05	---	.17	25	89.3
STRUCTURE 6	RESVOR	.28	.04	707.40	.98F	3F	10.7
XSECTION 99	RUNOFF	.15	.13	---	.20	59	393.3
XSECTION 90	ADDHYD	.43	.07	---	.20	60	139.5
XSECTION 17	RUNOFF	.11	.16	---	.31	37	336.4
XSECTION 13	ADDHYD	.54	.09	---	.26	89	164.8
STRUCTURE 7	RESVOR	.54	.01	700.28	3.16R	1R	1.9
XSECTION 49	RUNOFF	.00	.18	---	.19T	1T********	
XSECTION 50	ADDHYD	.54	.01	---	.26T	1T	1.9
XSECTION 24	RUNOFF	.01	.21	---	.18	9	900.0
XSECTION 17	ADDHYD	.56	.01	---	.19T	10T	17.9
XSECTION 19	RUNOFF	.06	.21	---	.27	30	500.0
XSECTION 15	ADDHYD	.62	.03	---	.26	39	62.9
STRUCTURE 39	RESVOR	.62	.01	693.13	3.19R	1R	1.6

TR20 ---------- SCS -
001 CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE VERSION
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SUMMARY TABLE 1

SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.
A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:
F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED HYDROGRAPH

XSECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RUNOFF AMOUNT (IN)	PEAK DISCHARGE ELEVATION (FT)	PEAK DISCHARGE TIME (HR)	PEAK DISCHARGE RATE (CFS)	PEAK DISCHARGE RATE (CSM)
RAINFALL OF 1.12 inches AND .50 hr DURATION, BEGINS AT .0 hrs.							
ALTERNATE 0 STORM 4							
XSECTION 91	RUNOFF	.09	.05	---	.84T	4T	44.4
XSECTION 92	RUNOFF	.13	.12	---	.89	12	92.3
XSECTION 93	ADDHYD	.22	.09	---	.87	16	72.7
XSECTION 94	RUNOFF	.02	.09	---	.00	0	.0
STRUCTURE 11	RESVOR	.02	.00	---	.98	0	.0
XSECTION 95	ADDHYD	.24	.09	---	.87	16	66.7
XSECTION 96	RUNOFF	.01	.91	---	.18	17	1700.0
XSECTION 97	ADDHYD	.25	.11	---	.18	17	68.0
XSECTION 10	RUNOFF	.03	.29	---	.25	15	500.0
XSECTION 98	ADDHYD	.28	.13	---	.22	30	107.1
STRUCTURE 6	RESVOR	.28	.10	708.02	1.26F	9F	32.1
XSECTION 99	RUNOFF	.15	.29	---	.25	84	560.0
XSECTION 90	ADDHYD	.43	.17	---	.25	87	202.3
XSECTION 17	RUNOFF	.11	.32	---	.36	54	490.9
XSECTION 13	ADDHYD	.54	.20	---	.29	130	240.7
STRUCTURE 7	RESVOR	.54	.02	700.61	3.19R	2R	3.7
XSECTION 49	RUNOFF	.00	.36	---	.23T	2T********	
XSECTION 50	ADDHYD	.54	.02	---	3.19R	2R	3.7
XSECTION 24	RUNOFF	.01	.40	---	.23	12	1200.0
XSECTION 17	ADDHYD	.56	.03	---	.23T	14T	25.0
XSECTION 19	RUNOFF	.06	.40	---	.31	41	683.3
XSECTION 15	ADDHYD	.62	.07	---	.29	53	85.5
STRUCTURE 39	RESVOR	.62	.01	693.27	3.19R	2R	3.2

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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
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SUMMARY TABLE 1

SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.
A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:
F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED HYDROGRAPH

RAINFALL OF 1.43 inches AND 1.00 hr DURATION, BEGINS AT .0 hrs.

ALTERNATE 0 STORM 5

XSECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RUNOFF AMOUNT (IN)	PEAK DISCHARGE ELEVATION (FT)	PEAK DISCHARGE TIME (HR)	PEAK DISCHARGE RATE (CFS)	PEAK DISCHARGE RATE (CSM)
XSECTION 91	RUNOFF	.09	.14	---	1.11	9	100.0
XSECTION 92	RUNOFF	.13	.25	---	1.13	19	146.2
XSECTION 93	ADDHYD	.22	.21	---	1.12	28	127.3
XSECTION 94	RUNOFF	.02	.21	---	.00	0	.0
STRUCTURE 11	RESVOR	.02	.02	---	1.26	0	.0
XSECTION 95	ADDHYD	.24	.19	---	1.13	28	116.7
XSECTION 96	RUNOFF	.01	1.21	---	.21	14	1400.0
XSECTION 97	ADDHYD	.25	.22	---	1.06	30	120.0
XSECTION 10	RUNOFF	.03	.49	---	.33	15	500.0
XSECTION 98	ADDHYD	.28	.25	---	1.05	34	121.4
STRUCTURE 6	RESVOR	.28	.19	708.75	1.58F	17F	60.7
XSECTION 99	RUNOFF	.15	.49	---	.33	86	573.3
XSECTION 90	ADDHYD	.43	.29	---	.33	89	207.0
XSECTION 17	RUNOFF	.11	.53	---	.45	59	536.4
XSECTION 13	ADDHYD	.54	.34	---	.38	141	261.1
STRUCTURE 7	RESVOR	.54	.03	701.04	3.19R	4R	7.4
XSECTION 49	RUNOFF	.00	.58	---	.32T	2T	********
XSECTION 50	ADDHYD	.54	.03	---	3.19R	4R	7.4
XSECTION 24	RUNOFF	.01	.63	---	.31	11	1100.0
XSECTION 17	ADDHYD	.56	.05	---	.32T	13T	23.2
XSECTION 19	RUNOFF	.06	.63	---	.39	42	700.0
XSECTION 15	ADDHYD	.62	.10	---	.37	54	87.1
STRUCTURE 39	RESVOR	.62	.02	693.42	3.19R	3R	4.8


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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
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SUMMARY TABLE 1

SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.
A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:
F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED HYDROGRAPH

RAINFALL OF 1.79 inches AND 2.00 hr DURATION, BEGINS AT .0 hrs.
MAIN TIME INCREMENT .100 HOURS

ALTERNATE 0 STORM 6

XSECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RUNOFF AMOUNT (IN)	PEAK DISCHARGE ELEVATION (FT)	PEAK DISCHARGE TIME (HR)	PEAK DISCHARGE RATE (CFS)	PEAK DISCHARGE RATE (CSM)
XSECTION 91	RUNOFF	.09	.28	---	1.30	11	122.2
XSECTION 92	RUNOFF	.13	.44	---	1.32	22	169.2
XSECTION 93	ADDHYD	.22	.37	---	1.31	33	150.0
XSECTION 94	RUNOFF	.02	.08	---	2.00R	1R	50.0
STRUCTURE 11	RESVOR	.02	.08	738.23	2.40R	1R	50.0
XSECTION 95	ADDHYD	.24	.35	---	1.32	33	137.5
XSECTION 96	RUNOFF	.01	1.56	---	.30	11	1100.0
XSECTION 97	ADDHYD	.25	.39	---	1.32	35	140.0
XSECTION 10	RUNOFF	.03	.74	---	.51	13	433.3
XSECTION 98	ADDHYD	.28	.42	---	1.31	39	139.3
STRUCTURE 6	RESVOR	.28	.42	709.35	2.13	26	92.9
XSECTION 99	RUNOFF	.15	.74	---	.51	73	486.7
XSECTION 90	ADDHYD	.43	.54	---	.53	77	179.1
XSECTION 17	RUNOFF	.11	.80	---	.63	53	481.8
XSECTION 13	ADDHYD	.54	.59	---	.57	128	237.0
STRUCTURE 7	RESVOR	.54	.25	701.42	4.30F	7F	13.0
XSECTION 49	RUNOFF	.00	.85	---	.49T	1T	********
XSECTION 50	ADDHYD	.54	.25	---	4.30F	7F	13.0
XSECTION 24	RUNOFF	.01	.92	---	.48	9	900.0
XSECTION 17	ADDHYD	.56	.27	---	.52T	11T	19.6
XSECTION 19	RUNOFF	.06	.92	---	.56	36	600.0
XSECTION 15	ADDHYD	.62	.33	---	.55T	47T	75.8

SUMMARY TABLE 1

SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.
A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:
F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED HYDROGRAPH

XSECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RUNOFF AMOUNT (IN)	PEAK DISCHARGE ELEVATION (FT)	PEAK DISCHARGE TIME (HR)	PEAK DISCHARGE RATE (CFS)	PEAK DISCHARGE RATE (CSM)
ALTERNATE 0 STORM 6							
STRUCTURE 39	RESVOR	.62	.18	693.78	11.80T	6T	9.7
RAINFALL OF 1.94 inches AND 3.00 hr DURATION, BEGINS AT .0 hrs.							
ALTERNATE 0 STORM 7							
XSECTION 91	RUNOFF	.09	.35	---	1.58	10	111.1
XSECTION 92	RUNOFF	.13	.53	---	1.57	21	161.5
XSECTION 93	ADDHYD	.22	.45	---	1.57	31	140.9
XSECTION 94	RUNOFF	.02	.12	---	2.70R	1R	50.0
STRUCTURE 11	RESVOR	.02	.12	738.28	3.10R	1R	50.0
XSECTION 95	ADDHYD	.24	.43	---	1.59	31	129.2
XSECTION 96	RUNOFF	.01	1.71	---	.34	9	900.0
XSECTION 97	ADDHYD	.25	.47	---	1.52	33	132.0
XSECTION 10	RUNOFF	.03	.86	---	.72	10	333.3
XSECTION 98	ADDHYD	.28	.51	---	1.43	39	139.3
STRUCTURE 6	RESVOR	.28	.51	709.32	2.54	26	92.9
XSECTION 99	RUNOFF	.15	.86	---	.72	57	380.0
XSECTION 90	ADDHYD	.43	.63	---	.76	63	146.5
XSECTION 17	RUNOFF	.11	.92	---	.80	44	400.0
XSECTION 13	ADDHYD	.54	.69	---	.77	107	198.1
STRUCTURE 7	RESVOR	.54	.30	701.59	4.88T	9T	16.7
XSECTION 49	RUNOFF	.00	.98	---	.70R	1R*******	
XSECTION 50	ADDHYD	.54	.30	---	4.88T	9T	16.7
XSECTION 24	RUNOFF	.01	1.04	---	.65	7	700.0
XSECTION 17	ADDHYD	.56	.32	---	3.01T	10T	17.9
XSECTION 19	RUNOFF	.06	1.04	---	.74	28	466.7
XSECTION 15	ADDHYD	.62	.39	---	.75T	38T	61.3
STRUCTURE 39	RESVOR	.62	.21	693.92	12.60T	6T	9.7

SUMMARY TABLE 1

SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.
A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:
F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED HYDROGRAPH

XSECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RUNOFF AMOUNT (IN)	PEAK DISCHARGE ELEVATION (FT)	PEAK DISCHARGE TIME (HR)	PEAK DISCHARGE RATE (CFS)	PEAK DISCHARGE RATE (CSM)
RAINFALL OF 2.28 inches AND 6.00 hr DURATION, BEGINS AT .0 hrs.							
ALTERNATE 0 STORM 8							
XSECTION 91	RUNOFF	.09	.53	---	2.15	9	100.0
XSECTION 92	RUNOFF	.13	.74	---	2.10	18	138.5
XSECTION 93	ADDHYD	.22	.65	---	2.12	27	122.7
XSECTION 94	RUNOFF	.02	.22	---	3.00R	1R	50.0
STRUCTURE 11	RESVOR	.02	.22	738.33	3.50R	1R	50.0
XSECTION 95	ADDHYD	.24	.61	---	2.14	27	112.5
XSECTION 96	RUNOFF	.01	2.05	---	.57	6	600.0
XSECTION 97	ADDHYD	.25	.66	---	2.10	29	116.0
XSECTION 10	RUNOFF	.03	1.13	---	1.22	7	233.3
XSECTION 98	ADDHYD	.28	.71	---	2.07	34	121.4
STRUCTURE 6	RESVOR	.28	.71	709.31	3.11	26	92.9
XSECTION 99	RUNOFF	.15	1.13	---	1.22	38	253.3
XSECTION 90	ADDHYD	.43	.86	---	1.49	48	111.6
XSECTION 17	RUNOFF	.11	1.19	---	1.32	30	272.7
XSECTION 13	ADDHYD	.54	.93	---	1.48	77	142.6
STRUCTURE 7	RESVOR	.54	.44	701.95	6.88T	12T	22.2
XSECTION 49	RUNOFF	.00	1.26	---	.60R	1R*******	
XSECTION 50	ADDHYD	.54	.44	---	6.88T	12T	22.2
XSECTION 24	RUNOFF	.01	1.33	---	.60	5	500.0
XSECTION 17	ADDHYD	.56	.47	---	5.98T	13T	23.2
XSECTION 19	RUNOFF	.06	1.34	---	.73	19	316.7
XSECTION 15	ADDHYD	.62	.55	---	1.46T	26T	41.9
STRUCTURE 39	RESVOR	.62	.30	694.24	15.10T	8T	12.9

```
TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
12:30:03                    SUMMARY, JOB NO.   1                        PAGE  77
```

SUMMARY TABLE 1

SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.
A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:
F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED HYDROGRAPH

XSECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RUNOFF AMOUNT (IN)	PEAK DISCHARGE ELEVATION (FT)	PEAK DISCHARGE TIME (HR)	PEAK DISCHARGE RATE (CFS)	PEAK DISCHARGE RATE (CSM)
RAINFALL OF 2.64 inches AND 12.00 hr DURATION, BEGINS AT .0 hrs.							
RAINTABLE NUMBER 2, ARC 2							
MAIN TIME INCREMENT .500 HOURS							
ALTERNATE 0 STORM 9							
XSECTION 91	RUNOFF	.09	.73	---	5.89	9	100.0
XSECTION 92	RUNOFF	.13	.99	---	5.87	18	138.5
XSECTION 93	ADDHYD	.22	.88	---	5.88	27	122.7
XSECTION 94	RUNOFF	.02	.35	---	6.50R	1R	50.0
STRUCTURE 11	RESVOR	.02	.35	738.65	7.50R	1R	50.0
XSECTION 95	ADDHYD	.24	.84	---	5.90	28	116.7
XSECTION 96	RUNOFF	.01	2.41	---	4.62T	3T	300.0
XSECTION 97	ADDHYD	.25	.89	---	5.84	30	120.0
XSECTION 10	RUNOFF	.03	1.44	---	4.91	6	200.0
XSECTION 98	ADDHYD	.28	.94	---	5.74	35	125.0
STRUCTURE 6	RESVOR	.28	.94	709.45	6.79	28	100.0
XSECTION 99	RUNOFF	.15	1.44	---	4.91	33	220.0
XSECTION 90	ADDHYD	.43	1.12	---	6.00	50	116.3
XSECTION 17	RUNOFF	.11	1.51	---	5.21	25	227.3
XSECTION 13	ADDHYD	.54	1.20	---	5.53	72	133.3
STRUCTURE 7	RESVOR	.54	.61	702.30	12.41T	14T	25.9
XSECTION 49	RUNOFF	.00	1.59	---	5.00R	1R********	
XSECTION 50	ADDHYD	.54	.61	---	12.10T	14T	25.9
XSECTION 24	RUNOFF	.01	1.67	---	4.80	4	400.0
XSECTION 17	ADDHYD	.56	.64	---	11.91T	15T	26.8


```
TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
12:30:03                    SUMMARY, JOB NO.   1                        PAGE  78
```

SUMMARY TABLE 1

SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.
A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:
F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED HYDROGRAPH

XSECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RUNOFF AMOUNT (IN)	PEAK DISCHARGE ELEVATION (FT)	PEAK DISCHARGE TIME (HR)	PEAK DISCHARGE RATE (CFS)	PEAK DISCHARGE RATE (CSM)
ALTERNATE 0 STORM 9							
XSECTION 19	RUNOFF	.06	1.67	---	5.03	15	250.0
XSECTION 15	ADDHYD	.62	.74	---	5.35T	23T	37.1
STRUCTURE 39	RESVOR	.62	.41	694.61	20.50T	10T	16.1
RAINFALL OF 2.79 inches AND 18.00 hr DURATION, BEGINS AT .0 hrs.							
ALTERNATE 0 STORM 10							
XSECTION 91	RUNOFF	.09	.83	---	8.37	7	77.8
XSECTION 92	RUNOFF	.13	1.09	---	8.35	14	107.7
XSECTION 93	ADDHYD	.22	.98	---	8.36	21	95.5
XSECTION 94	RUNOFF	.02	.41	---	9.00R	1R	50.0
STRUCTURE 11	RESVOR	.02	.41	738.38	10.00R	1R	50.0
XSECTION 95	ADDHYD	.24	.93	---	8.37	22	91.7
XSECTION 96	RUNOFF	.01	2.57	---	6.87T	2T	200.0
XSECTION 97	ADDHYD	.25	.99	---	8.25	23	92.0
XSECTION 10	RUNOFF	.03	1.58	---	7.75	4	133.3
XSECTION 98	ADDHYD	.28	1.04	---	8.13	27	96.4
STRUCTURE 6	RESVOR	.28	1.04	709.18	9.33	23	82.1
XSECTION 99	RUNOFF	.15	1.58	---	7.75	24	160.0
XSECTION 90	ADDHYD	.43	1.23	---	8.08	42	97.7
XSECTION 17	RUNOFF	.11	1.63	---	7.76	19	172.7
XSECTION 13	ADDHYD	.54	1.31	---	7.96	60	111.1
STRUCTURE 7	RESVOR	.54	.72	702.29	17.97T	14T	25.9
XSECTION 49	RUNOFF	.00	.72	---	.00	0 ********	
XSECTION 50	ADDHYD	.54	.73	---	17.86T	14T	25.9
XSECTION 24	RUNOFF	.01	1.82	---	7.25	3	300.0
XSECTION 17	ADDHYD	.56	.76	---	15.86T	14T	25.0
XSECTION 19	RUNOFF	.06	1.79	---	7.71	11	183.3
XSECTION 15	ADDHYD	.62	.86	---	7.95T	19T	30.6
STRUCTURE 39	RESVOR	.62	.51	694.73	24.74T	11T	17.7

```
TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
12:30:03                    SUMMARY, JOB NO.   1                       PAGE  79
```

SUMMARY TABLE 3

STORM DISCHARGES (CFS) AT XSECTIONS AND STRUCTURES FOR ALL ALTERNATES
QUESTION MARK (?) AFTER: OUTFLOW PEAK - RISING TRUNCATED HYDROGRAPH.

XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS..... 1	2	3	4	5
STRUCTURE 39	.62					
ALTERNATE 0		0	1?	1?	2?	3?
STRUCTURE 11	.02					
ALTERNATE 0		0	0	0	0	0
STRUCTURE 7	.54					
ALTERNATE 0		0	1?	1?	2?	4?
STRUCTURE 6	.28					
ALTERNATE 0		1?	2	3	9	17
XSECTION 10	.03					
ALTERNATE 0		0	7	10	15	15
XSECTION 13	.54					
ALTERNATE 0		3	61	89	130	141
XSECTION 15	.62					
ALTERNATE 0		4	28	39	53	54
XSECTION 17	.56					
ALTERNATE 0		1	8	10	14	13
XSECTION 19	.06					
ALTERNATE 0		3	22	30	41	42
XSECTION 24	.01					
ALTERNATE 0		1	7	9	12	11
XSECTION 49	.00					
ALTERNATE 0		0	1?	1	2	2
XSECTION 50	.54					
ALTERNATE 0		0	1	1	2?	4?
XSECTION 90	.43					

ALTERNATE 0		2	43	60	87	89
XSECTION 91	.09					

```
TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
12:30:03                    SUMMARY, JOB NO.   1                       PAGE  80
```

SUMMARY TABLE 3

STORM DISCHARGES (CFS) AT XSECTIONS AND STRUCTURES FOR ALL ALTERNATES
QUESTION MARK (?) AFTER: OUTFLOW PEAK - RISING TRUNCATED HYDROGRAPH.

XSECTION/ STRUCTURE ID		DRAINAGE AREA (SQ MI)	STORM NUMBERS..... 1	2	3	4	5
XSECTION 91		.09					
	ALTERNATE 0		0	0	1?	4	9
XSECTION 92		.13					
	ALTERNATE 0		0	1	4	12	19
XSECTION 93		.22					
	ALTERNATE 0		0	1	4	16	28
XSECTION 94		.02					
	ALTERNATE 0		0	0	0	0	0
XSECTION 95		.24					
	ALTERNATE 0		0	1	4	16	28
XSECTION 96		.01					
	ALTERNATE 0		7	14	16	17	14
XSECTION 97		.25					
	ALTERNATE 0		7	14	16	17	30
XSECTION 98		.28					
	ALTERNATE 0		7	21	25	30	34
XSECTION 99		.15					
	ALTERNATE 0		2	42	59	84	86

SUMMARY TABLE 3

STORM DISCHARGES (CFS) AT XSECTIONS AND STRUCTURES FOR ALL ALTERNATES
QUESTION MARK (?) AFTER: OUTFLOW PEAK - RISING TRUNCATED HYDROGRAPH.

XSECTION/ STRUCTURE ID		DRAINAGE AREA (SQ MI)	STORM NUMBERS..... 6	7	8	9	10
STRUCTURE 39		.62					
	ALTERNATE 0		6	6	8	10	11

STRUCTURE 11		.02					
	ALTERNATE 0		1?	1?	1?	1?	1?
STRUCTURE 7		.54					
	ALTERNATE 0		7	9	12	14	14
STRUCTURE 6		.28					
	ALTERNATE 0		26	26	26	28	23
XSECTION 10		.03					
	ALTERNATE 0		13	10	7	6	4

```
TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
12:30:03                    SUMMARY, JOB NO.   1                       PAGE  81
```

SUMMARY TABLE 3

STORM DISCHARGES (CFS) AT XSECTIONS AND STRUCTURES FOR ALL ALTERNATES
QUESTION MARK (?) AFTER: OUTFLOW PEAK - RISING TRUNCATED HYDROGRAPH.

XSECTION/ STRUCTURE ID		DRAINAGE AREA (SQ MI)	STORM NUMBERS..... 6	7	8	9	10
XSECTION 13		.54					
ALTERNATE	0		128	107	77	72	60
XSECTION 15		.62					
ALTERNATE	0		47	38	26	23	19
XSECTION 17		.56					
ALTERNATE	0		11	10	13	15	14
XSECTION 19		.06					
ALTERNATE	0		36	28	19	15	11
XSECTION 24		.01					
ALTERNATE	0		9	7	5	4	3
XSECTION 49		.00					
ALTERNATE	0		1	1?	1?	1?	0
XSECTION 50		.54					
ALTERNATE	0		7	9	12	14	14
XSECTION 90		.43					
ALTERNATE	0		77	63	48	50	42
XSECTION 91		.09					
ALTERNATE	0		11	10	9	9	7
XSECTION 92		.13					
ALTERNATE	0		22	21	18	18	14
XSECTION 93		.22					
ALTERNATE	0		33	31	27	27	21
XSECTION 94		.02					
ALTERNATE	0		1?	1?	1?	1?	1?
XSECTION 95		.24					

ALTERNATE	0		33	31	27	28	22

```
TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
12:30:03                    SUMMARY, JOB NO.   1                      PAGE  82
```

SUMMARY TABLE 3

STORM DISCHARGES (CFS) AT XSECTIONS AND STRUCTURES FOR ALL ALTERNATES
QUESTION MARK (?) AFTER: OUTFLOW PEAK - RISING TRUNCATED HYDROGRAPH.

XSECTION/ STRUCTURE ID		DRAINAGE AREA (SQ MI)	STORM NUMBERS..... 6	7	8	9	10
XSECTION 96		.01					
ALTERNATE	0		11	9	6	3	2
XSECTION 97		.25					
ALTERNATE	0		35	33	29	30	23
XSECTION 98		.28					
ALTERNATE	0		39	39	34	35	27
XSECTION 99		.15					
ALTERNATE	0		73	57	38	33	24


```
TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST


END OF  1 JOBS IN THIS RUN




                    SCS  TR-20,  VERSION 2.04TEST
                           001       FILES

     INPUT  = C:\TR20\PR2A.DAT                        , GIVEN DATA FILE
     OUTPUT = C:\TR20\PR2A.OUT                        , DATED 04/19/**,12:30:03

              FILES GENERATED - DATED 04/19/**,12:30:03

    FILE C:\TR20\PR2A.TRD CONTAINS READHD INFORMATION

    FILE C:\TR20\PR2A.TMG CONTAINS MESSAGE + WARNING INFORMATION


           TOTAL NUMBER OF WARNINGS = 102,  MESSAGES =  97

                       JOB ENDED AT 12:30:04
                   *** TR-20 RUN COMPLETED ***
```

CRITICAL DURATION
2-YEAR STORM EVENT


```
******************80-80 LIST OF INPUT DATA FOR TR-20 HYDROLOGY******************

JOB TR-20 001                          PASS=     SUMMARY
TITLE     CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE
TITLE     PROPERTY NORTH OF THE EAST-WEST TOLLWAY (JRB 11/1/95 FILE: 8935-i1X.DA
 5 RAINFL 1              0.05
 8          0.00         0.16         0.33         0.43         0.52
 8          0.60         0.66         0.71         0.75         0.79
 8          0.82         0.84         0.86         0.88         0.90
 8          0.92         0.94         0.96         0.97         0.98
 8          1.00         1.00         1.00         1.00         1.00
 9 ENDTBL
 5 RAINFL 2              0.05
 8          0.00         0.03         0.08         0.12         0.16
 8          0.22         0.29         0.39         0.51         0.62
 8          0.70         0.76         0.81         0.85         0.88
 8          0.91         0.93         0.95         0.97         0.98
 8          1.00         1.00         1.00         1.00         1.00
 9 ENDTBL
 5 RAINFL 3              0.05
 8          0.00         0.03         0.06         0.09         0.12
 8          0.15         0.19         0.23         0.27         0.32
 8          0.38         0.45         0.57         0.70         0.79
 8          0.85         0.89         0.92         0.95         0.97
 8          1.00         1.00         1.00         1.00         1.00
 9 ENDTBL
 5 RAINFL 4              0.05
 8          0.00         0.02         0.05         0.08         0.10
 8          0.13         0.16         0.19         0.22         0.25
 8          0.28         0.32         0.35         0.39         0.45
 8          0.51         0.59         0.72         0.84         0.92
 8          1.00         1.00         1.00         1.00         1.00
 9 ENDTBL
 3 STRUCT      06
 8                       707.0        0.00         0.00           POND-B6 - AEAST
 8                       708.0        8.40         1.11           36" DIA. RCP
 8                       709.0        20.0         2.32           INLET CONTROL
 8                       710.0        38.0         3.63
 8                       711.0        55.0         5.02
 8                       712.0        66.0         6.52           12' WEIR; C=3.0
 8                       712.5       114.0         7.32
 9 ENDTBL
 3 STRUCT      11
 8                       737.5         0.0          0.0
 8                       738.          0.5         .005           DRYBASIN
 8                       739.          1.0         .040
 8                       740.          3.0         .098
 8                       741.          5.0         .176
 8                       742.          7.0         .288
 8                       743.          9.0         .446
 8                       744.         33.9         .566
 9 ENDTBL
 3 STRUCT      07
 8                       700.          0.0          0.0           POND-D7
 8                       701.          4.0         8.59           REINDEER LAKE
 8                       702.          12.        22.08           INCLUDES PONDS F
 8                       703.          18.        36.22           21" DIA RCP
 8                       704.          22.        51.08           INLET CONTROL
```

**********80-80 LIST OF INPUT DATA (CONTINUED)**********

```
 8                     705.         26.        66.65
 8                     705.5        46.        74.81          20' WEIR; C=2.6
 8                     706.         82.        82.97
 8                     706.5       128.        92.99
 9 ENDTBL
 3 STRUCT      39
 8                     693.         0.0         0.0           POND-C2
 8                     694.        7.06        6.73           REVISED STAGE-D
 8                     695.        12.57       13.95           FOR PHASE 1 IM
 8                     696.        16.03       21.66
 8                     696.74      18.12       27.74
 8                     697.        25.03       29.88
 8                     698.        87.74       38.61
 8                     699.        138.39      47.99
 8                     700.        163.48      58.17
 8                     700.25      187.22      60.82
 8                     701.        329.76      68.76
 8                     701.5       460.91      74.05
 9 ENDTBL
 6 RUNOFF 1 091       1 0.0923      75.00       0.84       1         1
 6 RUNOFF 1 092       2 0.1292      80.00       1.00       1         1
 6 ADDHYD 4 093   1 2 3                                    1
 6 RUNOFF 1 094       4 0.0203      65.00       0.91       1         1
 6 RESVOR 2    11 4   5                                      1 1 1 1 1
 6 ADDHYD 4 095   3 5 6
 6 RUNOFF 1 096       1 0.0084      98.00       0.16       1         1
 6 ADDHYD 4 097   6 1 7                                    1
 6 RUNOFF 1 010       4 0.0265      87.00       0.15
 6 ADDHYD 4 098   7 4 1
 6 RESVOR 2     6 1   5                                      1 1 1 1 1
 6 RUNOFF 1 099       7 0.1526      87.00       0.15       1         1
 6 ADDHYD 4 090   5 7 2                                    1
 6 RUNOFF 1 017       7 0.1120      88.00       0.30
 6 ADDHYD 4 013   2 7 1
 6 RESVOR 2     7 1   2                                      1 1 1 1 1
 6 RUNOFF 1 049       7 0.0023      89.00       0.15       1         1
 6 ADDHYD 4 050   2 7 1                                    1
 6 RUNOFF 1 024       7 0.0149      90.00       0.15
 6 ADDHYD 4 017   1 7 2
 6 RUNOFF 1 019       6 0.0618      90.00       0.25
 6 ADDHYD 4 015   2 6 7
 6 RESVOR 2    39 7   1                                      1 1 1 1 1
   ENDATA
 7 INCREM 6            1.00
 7 COMPUT 7 091      39 0.00        3.04        24.0       3 2      11   24-HR
   ENDCMP 1
 7 COMPUT 7 091      39 0.00        3.30        48.0       4 2      12   48-HR
   ENDCMP 1
 7 INCREM 6            1.00
 7 COMPUT 7 091      39 0.00        3.55        72.0       4 2      13   72-HR
   ENDCMP 1
 7 COMPUT 7 091      39 0.00        3.93        120.0      4 2      14   120-HR
   ENDCMP 1
 7 COMPUT 7 091      39 0.00        4.95        240.0      4 2      15   240-HR
   ENDCMP 1
   ENDJOB 2
```


**********80-80 LIST OF INPUT DATA (CONTINUED)**********

**********END OF 80-80 LIST**********

```
TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROPERTY NORTH OF THE EAST-WEST TOLLWAY (JRB 11/1/95 FILE: 8932.04TEST
12:30:24                    PASS   1   JOB NO.   1                      PAGE   1


EXECUTIVE CONTROL  INCREM    MAIN TIME INCREMENT =  1.000 HOURS


EXECUTIVE CONTROL  COMPUT    FROM XSECTION  91  TO STRUCTURE 39          24-HR
    STARTING TIME =   .00       RAIN DEPTH =  3.04       RAIN DURATION = 24.00
    ANT. RUNOFF COND. = 2       MAIN TIME INCREMENT =  1.000 HOURS
    ALTERNATE NO. = 0           STORM NO. =11            RAIN TABLE NO. = 3


OPERATION RUNOFF    XSECTION  91

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
       15.86                          8.8                       (RUNOFF)
       23.76                          3.0                       (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                    .99 WATERSHED INCHES;      59 CFS-HRS;       4.9 ACRE-FEET.


OPERATION RUNOFF    XSECTION  92

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
       15.87                         15.5                       (RUNOFF)
       23.76                          4.6                       (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                   1.28 WATERSHED INCHES;     107 CFS-HRS;       8.8 ACRE-FEET.


OPERATION ADDHYD    XSECTION  93

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
       15.86                         24.3                       (NULL)
       23.76                          7.6                       (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                   1.16 WATERSHED INCHES;     166 CFS-HRS;      13.7 ACRE-FEET.


OPERATION RUNOFF    XSECTION  94

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
       16.25                          1.1                       (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                    .52 WATERSHED INCHES;       7 CFS-HRS;        .6 ACRE-FEET.
```



```
TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROPERTY NORTH OF THE EAST-WEST TOLLWAY (JRB 11/1/95 FILE: 8932.04TEST
12:30:24                    PASS   1   JOB NO.   1                      PAGE   2


OPERATION RESVOR    STRUCTURE 11

                    HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM =11
     HRS      MAIN TIME INCREMENT = 1.000 hr,      DRAINAGE AREA =    .02 SQ.MI.
    11.00 CFS       .00     .01     .10     .40     .63     .86     .97     .90
    11.00 ELEV   737.50  737.51  737.60  737.90  738.25  738.71  738.95  738.80
    19.00 CFS       .73     .57     .45     .39     .33     .40     .18    -.03
    19.00 ELEV   738.46  738.14  737.95  737.89  737.83  737.90  737.68  737.47
    27.00 CFS       .03    -.02
    27.00 ELEV   737.53  737.48

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                    .53 WATERSHED INCHES;       7 CFS-HRS;        .6 ACRE-FEET.

    DURATION(HRS)   2      4      6
    FLOW(CFS)       1      1      0

 --- STRUCTURE 11, ALTERNATE  0, STORM 11, HYDROGRAPH ADDED TO READHD FILE ---


OPERATION RUNOFF    XSECTION  96

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
       14.71                          1.8                       (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                   2.77 WATERSHED INCHES;      15 CFS-HRS;       1.2 ACRE-FEET.


OPERATION ADDHYD    XSECTION  97

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
       15.82                         26.4                       (NULL)
       23.75                          8.5                       (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                   1.17 WATERSHED INCHES;     188 CFS-HRS;      15.5 ACRE-FEET.


OPERATION RESVOR    STRUCTURE  6

                    HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM =11
     HRS      MAIN TIME INCREMENT = 1.000 hr,      DRAINAGE AREA =    .28 SQ.MI.
      .00 CFS       .00     .01     .07     .16     .24     .34     .43     .60
      .00 ELEV   707.00  707.00  707.01  707.02  707.03  707.04  707.05  707.07
     8.00 CFS       .96    1.49    2.29    3.49    5.11    7.28   12.19   19.41
     8.00 ELEV   707.11  707.18  707.27  707.42  707.61  707.87  708.33  708.95
    16.00 CFS     26.20   26.64   22.84   18.36   14.69   11.99   10.27    8.89
    16.00 ELEV   709.34  709.37  709.16  708.86  708.54  708.31  708.16  708.04
    24.00 CFS      8.53    7.10    4.17    2.21    1.16     .60     .32     .17
    24.00 ELEV   708.01  707.84  707.50  707.26  707.14  707.07  707.04  707.02
```

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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
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    32.00 CFS       .09     .05     .02     .01
    32.00 ELEV   707.01  707.01  707.00  707.00

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  1.22 WATERSHED INCHES;     218 CFS-HRS;      18.0 ACRE-FEET.

    DURATION(HRS)   2      4      6      8     10     12     14     16
    FLOW(CFS)      23     18     12     10      9      7      4      2

    DURATION(HRS)  18     20     22     23
    FLOW(CFS)       1      1      1      0

 --- STRUCTURE  6, ALTERNATE  0, STORM 11, HYDROGRAPH ADDED TO READHD FILE ---


OPERATION RUNOFF    XSECTION  99

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
       14.87                         25.1                       (RUNOFF)
       20.52                          6.7                       (RUNOFF)
       23.54                          7.3                       (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  1.77 WATERSHED INCHES;     174 CFS-HRS;      14.4 ACRE-FEET.


OPERATION ADDHYD    XSECTION  90

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
       15.52                         45.0                       (NULL)
       23.32                         15.2                       (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  1.42 WATERSHED INCHES;     392 CFS-HRS;      32.4 ACRE-FEET.


OPERATION RESVOR    STRUCTURE  7

                    HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM =11
     HRS      MAIN TIME INCREMENT = 1.000 hr,      DRAINAGE AREA =     .54 SQ.MI.
     2.00 CFS       .00     .01     .02     .07     .15     .28     .50     .78
     2.00 ELEV   700.00  700.00  700.01  700.02  700.04  700.07  700.13  700.20
    10.00 CFS      1.17    1.70    2.34    3.14    4.57    7.05    9.63   11.81
    10.00 ELEV   700.29  700.42  700.59  700.78  701.07  701.38  701.70  701.98
    18.00 CFS     13.11   14.00   14.54   14.88   15.08   15.20   15.35   15.29
    18.00 ELEV   702.19  702.33  702.42  702.48  702.51  702.53  702.56  702.55
    26.00 CFS     14.96   14.55   14.11   13.65   13.20   12.75   12.31   11.85
    26.00 ELEV   702.49  702.43  702.35  702.28  702.20  702.13  702.05  701.98
    34.00 CFS     11.29   10.75
    34.00 ELEV   701.91  701.84
```



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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROPERTY NORTH OF THE EAST-WEST TOLLWAY (JRB 11/1/95 FILE: 8932.04TEST
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    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .82 WATERSHED INCHES;     285 CFS-HRS;      23.5 ACRE-FEET.

    DURATION(HRS)   2      4      6      8     10     12     14     16
    FLOW(CFS)      15     15     15     14     14     13     12     12

    DURATION(HRS)  18     19
    FLOW(CFS)      11     11 TRUNCATED

 --- STRUCTURE  7, ALTERNATE  0, STORM 11, HYDROGRAPH ADDED TO READHD FILE ---


OPERATION RUNOFF    XSECTION  49

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .82 WATERSHED INCHES;      24 CFS-HRS;      23.5 ACRE-FEET.


OPERATION ADDHYD    XSECTION  50

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
       23.98                         15.5                       (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .82 WATERSHED INCHES;     288 CFS-HRS;      23.8 ACRE-FEET.


OPERATION RESVOR    STRUCTURE 39

                    HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM =11
     HRS      MAIN TIME INCREMENT = 1.000 hr,      DRAINAGE AREA =     .62 SQ.MI.
     3.00 CFS       .00     .03     .09     .17     .30     .49     .72    1.02
     3.00 ELEV   693.00  693.00  693.01  693.02  693.04  693.07  693.10  693.14
    11.00 CFS      1.41    1.88    2.44    3.34    4.64    5.97    7.11    7.89
    11.00 ELEV   693.20  693.27  693.35  693.47  693.66  693.85  694.01  694.15
    19.00 CFS      8.59    9.19    9.74   10.24   10.71   11.20   11.56   11.77
    19.00 ELEV   694.28  694.39  694.49  694.58  694.66  694.75  694.82  694.86
    27.00 CFS     11.96   12.10   12.21   12.28   12.33   12.34   12.32   12.28
    27.00 ELEV   694.89  694.91  694.93  694.95  694.96  694.96  694.96  694.95
    35.00 CFS     12.20
    35.00 ELEV   694.93

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .56 WATERSHED INCHES;     224 CFS-HRS;      18.5 ACRE-FEET.

 --- STRUCTURE 39, ALTERNATE  0, STORM 11, HYDROGRAPH ADDED TO READHD FILE ---
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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROPERTY NORTH OF THE EAST-WEST TOLLWAY (JRB 11/1/95 FILE: 8932.04TEST
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EXECUTIVE CONTROL  ENDCMP    COMPUTATIONS COMPLETED FOR PASS   1


EXECUTIVE CONTROL  COMPUT    FROM XSECTION  91  TO STRUCTURE 39          48-HR
    STARTING TIME =   .00       RAIN DEPTH =  3.30       RAIN DURATION = 48.00
    ANT. RUNOFF COND. = 2       MAIN TIME INCREMENT =  1.000 HOURS
    ALTERNATE NO. = 0           STORM NO. =12            RAIN TABLE NO. = 4


OPERATION RUNOFF    XSECTION  91

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
       42.52                          6.0                       (RUNOFF)
       47.46                          4.4                       (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  1.16 WATERSHED INCHES;      69 CFS-HRS;       5.7 ACRE-FEET.


OPERATION RUNOFF    XSECTION  92

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
       42.51                          9.8                       (RUNOFF)
       47.50                          7.7                       (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  1.47 WATERSHED INCHES;     123 CFS-HRS;      10.1 ACRE-FEET.


OPERATION ADDHYD    XSECTION  93

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
       42.51                         15.8                       (NULL)
       47.50                         12.5                       (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  1.34 WATERSHED INCHES;     191 CFS-HRS;      15.8 ACRE-FEET.


OPERATION RUNOFF    XSECTION  94

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
       43.00                          .8                       (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                   .64 WATERSHED INCHES;       8 CFS-HRS;        .7 ACRE-FEET.
```



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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROPERTY NORTH OF THE EAST-WEST TOLLWAY (JRB 11/1/95 FILE: 8932.04TEST
12:30:24                    PASS   2   JOB NO.   1                      PAGE   6


OPERATION RESVOR    STRUCTURE 11

                    HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM =12
     HRS      MAIN TIME INCREMENT = 1.000 hr,      DRAINAGE AREA =    .02 SQ.MI.
    28.00 CFS       .00     .01     .03     .04     .08     .11     .12     .17
    28.00 ELEV   737.50  737.51  737.53  737.54  737.58  737.61  737.62  737.67
    36.00 CFS       .18     .27     .33     .46     .59     .68     .75     .81
    36.00 ELEV   737.68  737.77  737.83  737.96  738.17  738.36  738.50  738.62
    44.00 CFS       .78     .70     .66     .67     .68     .46    -.17     .11
    44.00 ELEV   738.56  738.40  738.32  738.33  738.37  737.96  737.33  737.61
    52.00 CFS      -.07     .04    -.02
    52.00 ELEV   737.43  737.54  737.48

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                   .65 WATERSHED INCHES;       8 CFS-HRS;        .7 ACRE-FEET.

    DURATION(HRS)   2      4      6      8      9
    FLOW(CFS)       1      1      1      1      0

 --- STRUCTURE 11, ALTERNATE  0, STORM 12, HYDROGRAPH ADDED TO READHD FILE ---


OPERATION RUNOFF    XSECTION  96

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
       40.00                          1.0                       (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  3.09 WATERSHED INCHES;      17 CFS-HRS;       1.4 ACRE-FEET.


OPERATION ADDHYD    XSECTION  97

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
       26.06                          2.2                       (NULL)
       42.53                         17.5                       (NULL)
       47.50                         13.9                       (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  1.35 WATERSHED INCHES;     217 CFS-HRS;      18.0 ACRE-FEET.


OPERATION RESVOR    STRUCTURE  6

                    HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM =12
     HRS      MAIN TIME INCREMENT = 1.000 hr,      DRAINAGE AREA =    .28 SQ.MI.
     2.00 CFS       .00     .03     .06     .09     .12     .14     .14     .13
     2.00 ELEV   707.00  707.00  707.01  707.01  707.01  707.02  707.02  707.02
    10.00 CFS       .16     .21     .23     .27     .31     .36     .45     .54
    10.00 ELEV   707.02  707.02  707.03  707.03  707.04  707.04  707.05  707.06
    18.00 CFS       .65     .77     .91    1.07    1.20    1.36    1.50    1.78
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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROPERTY NORTH OF THE EAST-WEST TOLLWAY (JRB 11/1/95 FILE: 8932.04TEST
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    18.00 ELEV   707.08  707.09  707.11  707.13  707.14  707.16  707.18  707.21
    26.00 CFS      2.18    2.38    2.40    2.45    2.73    3.11    3.77    4.72
    26.00 ELEV   707.26  707.28  707.29  707.29  707.33  707.37  707.45  707.56
    34.00 CFS      5.46    6.04    6.50    7.42    8.77   10.98   14.29   16.89
    34.00 ELEV   707.65  707.72  707.77  707.88  708.03  708.22  708.51  708.73
    42.00 CFS     18.21   18.93   18.16   16.26   14.97   14.50   14.39   11.12
    42.00 ELEV   708.85  708.91  708.84  708.68  708.57  708.53  708.52  708.23
    50.00 CFS      6.09    3.22    1.69     .88     .46     .24
    50.00 ELEV   707.72  707.38  707.20  707.10  707.06  707.03

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  1.41 WATERSHED INCHES;     252 CFS-HRS;      20.8 ACRE-FEET.

    DURATION(HRS)   4      8     12     16     20     24     28     32
    FLOW(CFS)      16     14      7      5      3      2      1      1

    DURATION(HRS)  36     37
    FLOW(CFS)       1      0

 --- STRUCTURE  6, ALTERNATE  0, STORM 12, HYDROGRAPH ADDED TO READHD FILE ---


OPERATION RUNOFF    XSECTION  99

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
       39.50                         14.1                       (RUNOFF)
       46.66                          9.5                       (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  2.02 WATERSHED INCHES;     199 CFS-HRS;      16.4 ACRE-FEET.


OPERATION ADDHYD    XSECTION  90

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
       26.04                          5.0                       (NULL)
       42.62                         32.9                       (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  1.63 WATERSHED INCHES;     451 CFS-HRS;      37.2 ACRE-FEET.


OPERATION RESVOR    STRUCTURE  7

                   HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM =12
     HRS      MAIN TIME INCREMENT = 1.000 hr,      DRAINAGE AREA =    .54 SQ.MI.
       5.00 CFS       .00     .01     .01     .02     .03     .05     .08     .12
       5.00 ELEV   700.00  700.00  700.00  700.00  700.01  700.01  700.02  700.03
      13.00 CFS       .17     .23     .30     .39     .48     .58     .69     .80
      13.00 ELEV   700.04  700.06  700.08  700.10  700.12  700.15  700.17  700.20
      21.00 CFS       .93    1.06    1.20    1.34    1.51    1.72    1.92    2.09
```



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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
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    21.00 ELEV   700.23  700.26  700.30  700.33  700.38  700.43  700.48  700.52
    29.00 CFS      2.29    2.51    2.75    3.07    3.47    3.90    4.45    5.02
    29.00 ELEV   700.57  700.63  700.69  700.77  700.87  700.98  701.06  701.13
    37.00 CFS      5.70    6.50    7.59    9.01   10.49   11.97   13.03   13.91
    37.00 ELEV   701.21  701.31  701.45  701.63  701.81  702.00  702.17  702.32
    45.00 CFS     14.59   15.19   15.75   16.28   16.44   16.17   15.78   15.32
    45.00 ELEV   702.43  702.53  702.63  702.71  702.74  702.70  702.63  702.55
    53.00 CFS     14.83   14.35   13.86
    53.00 ELEV   702.47  702.39  702.31

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                   .81 WATERSHED INCHES;     283 CFS-HRS;      23.4 ACRE-FEET.

    DURATION(HRS)   2      4      6      8     10     12
    FLOW(CFS)      16     16     15     15     14     14 TRUNCATED

 --- STRUCTURE  7, ALTERNATE  0, STORM 12, HYDROGRAPH ADDED TO READHD FILE ---


OPERATION RUNOFF    XSECTION  49

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                   .81 WATERSHED INCHES;      47 CFS-HRS;      23.4 ACRE-FEET.


OPERATION ADDHYD    XSECTION  50

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
       48.56                         16.5                       (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                   .82 WATERSHED INCHES;     286 CFS-HRS;      23.7 ACRE-FEET.


OPERATION RESVOR    STRUCTURE 39

                   HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM =12
     HRS      MAIN TIME INCREMENT = 1.000 hr,      DRAINAGE AREA =    .62 SQ.MI.
       6.00 CFS       .00     .01     .02     .03     .06     .10     .14     .19
       6.00 ELEV   693.00  693.00  693.00  693.00  693.01  693.01  693.02  693.03
      14.00 CFS       .25     .32     .39     .47     .56     .65     .75     .86
      14.00 ELEV   693.04  693.04  693.06  693.07  693.08  693.09  693.11  693.12
      22.00 CFS       .97    1.09    1.21    1.35    1.53    1.69    1.83    2.00
      22.00 ELEV   693.14  693.15  693.17  693.19  693.22  693.24  693.26  693.28
      30.00 CFS      2.19    2.39    2.65    2.97    3.30    3.65    4.02    4.46
      30.00 ELEV   693.31  693.34  693.38  693.42  693.47  693.52  693.57  693.63
      38.00 CFS      4.98    5.67    6.54    7.35    8.05    8.78    9.46   10.06
      38.00 ELEV   693.71  693.80  693.93  694.05  694.18  694.31  694.43  694.54
      46.00 CFS     10.67   11.28   11.89   12.32   12.56   12.69   12.79   12.88
      46.00 ELEV   694.66  694.77  694.88  694.95  695.00  695.03  695.06  695.09
      54.00 CFS     12.94   12.98
```

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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROPERTY NORTH OF THE EAST-WEST TOLLWAY (JRB 11/1/95 FILE: 8932.04TEST
12:30:24                    PASS   2   JOB NO.   1                      PAGE   9

    54.00 ELEV   695.11  695.12

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                    .55 WATERSHED INCHES;     219 CFS-HRS;      18.1 ACRE-FEET.

    DURATION(HRS)   2      4      6
    FLOW(CFS)      13     13     13 TRUNCATED

 --- STRUCTURE 39, ALTERNATE  0, STORM 12, HYDROGRAPH ADDED TO READHD FILE ---


EXECUTIVE CONTROL  ENDCMP    COMPUTATIONS COMPLETED FOR PASS   2


EXECUTIVE CONTROL  INCREM    MAIN TIME INCREMENT =  1.000 HOURS


EXECUTIVE CONTROL  COMPUT    FROM XSECTION  91  TO STRUCTURE 39           72-HR
    STARTING TIME =   .00       RAIN DEPTH =  3.55       RAIN DURATION = 72.00
    ANT. RUNOFF COND. = 2       MAIN TIME INCREMENT =  1.000 HOURS
    ALTERNATE NO. = 0           STORM NO. =13            RAIN TABLE NO. = 4


OPERATION RUNOFF    XSECTION  91

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
       63.53                          4.4                       (RUNOFF)
       71.50                          3.6                       (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                   1.34 WATERSHED INCHES;      80 CFS-HRS;       6.6 ACRE-FEET.


OPERATION RUNOFF    XSECTION  92

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
       38.76                          1.1                       (RUNOFF)
       63.52                          7.2                       (RUNOFF)
       71.50                          5.6                       (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                   1.67 WATERSHED INCHES;     139 CFS-HRS;      11.5 ACRE-FEET.


OPERATION ADDHYD    XSECTION  93
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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROPERTY NORTH OF THE EAST-WEST TOLLWAY (JRB 11/1/95 FILE: 8932.04TEST
12:30:24                    PASS   3   JOB NO.   1                      PAGE  10


    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
       63.52                         11.6                       (NULL)
       71.50                          9.3                       (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                   1.53 WATERSHED INCHES;     219 CFS-HRS;      18.1 ACRE-FEET.


OPERATION RUNOFF    XSECTION  94

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
       64.00                          .7                        (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                    .78 WATERSHED INCHES;      10 CFS-HRS;        .8 ACRE-FEET.


OPERATION RESVOR    STRUCTURE 11

                    HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM =13
     HRS      MAIN TIME INCREMENT = 1.000 hr,       DRAINAGE AREA =    .02 SQ.MI.
    40.00 CFS       .00     .01     .02     .02     .03     .04     .04     .04
    40.00 ELEV   737.50  737.51  737.52  737.52  737.53  737.54  737.54  737.54
    48.00 CFS       .09     .11     .10     .12     .15     .15     .15     .23
    48.00 ELEV   737.59  737.61  737.60  737.62  737.65  737.65  737.65  737.73
    56.00 CFS       .27     .26     .32     .51     .55     .56     .59     .62
    56.00 ELEV   737.77  737.76  737.82  738.01  738.09  738.13  738.18  738.25
    64.00 CFS       .64     .65     .59     .52     .50     .50     .51     .52
    64.00 ELEV   738.29  738.29  738.19  738.05  738.00  738.00  738.03  738.05
    72.00 CFS       .53     .22    -.04     .03    -.02
    72.00 ELEV   738.06  737.72  737.46  737.53  737.48

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                    .78 WATERSHED INCHES;      10 CFS-HRS;        .8 ACRE-FEET.

    DURATION(HRS)   2      4      6      8     10     12
    FLOW(CFS)       1      1      1      1      1      0

 --- STRUCTURE 11, ALTERNATE  0, STORM 13, HYDROGRAPH ADDED TO READHD FILE ---


OPERATION RUNOFF    XSECTION  96

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
       60.00                          .7                        (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                   3.32 WATERSHED INCHES;      18 CFS-HRS;       1.5 ACRE-FEET.
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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROPERTY NORTH OF THE EAST-WEST TOLLWAY (JRB 11/1/95 FILE: 8932.04TEST
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OPERATION ADDHYD    XSECTION  97

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
       63.57                         12.8                        (NULL)
       71.50                         10.3                        (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  1.53 WATERSHED INCHES;     247 CFS-HRS;      20.4 ACRE-FEET.


OPERATION RESVOR    STRUCTURE  6

                    HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM =13
     HRS      MAIN TIME INCREMENT = 1.000 hr,      DRAINAGE AREA =    .28 SQ.MI.
     3.00 CFS       .00     .02     .05     .06     .07     .08     .10     .11
     3.00 ELEV   707.00  707.00  707.01  707.01  707.01  707.01  707.01  707.01
    11.00 CFS       .11     .10     .10     .10     .12     .16     .18     .19
    11.00 ELEV  707.01  707.01  707.01  707.01  707.01  707.02  707.02  707.02
    19.00 CFS       .22     .26     .28     .31     .38     .45     .49     .55
    19.00 ELEV  707.03  707.03  707.03  707.04  707.04  707.05  707.06  707.07
    27.00 CFS       .65     .72     .77     .86     .96    1.02    1.09    1.18
    27.00 ELEV  707.08  707.09  707.09  707.10  707.11  707.12  707.13  707.14
    35.00 CFS      1.26    1.30    1.48    1.77    1.95    2.01    1.98    1.93
    35.00 ELEV  707.15  707.16  707.18  707.21  707.23  707.24  707.24  707.23
    43.00 CFS      1.90    2.04    2.33    2.55    2.76    3.28    3.94    4.33
    43.00 ELEV  707.23  707.24  707.28  707.30  707.33  707.39  707.47  707.52
    51.00 CFS      4.61    4.88    5.10    5.23    5.79    6.68    7.26    8.05
    51.00 ELEV  707.55  707.58  707.61  707.62  707.69  707.80  707.86  707.96
    59.00 CFS     10.19   12.41   13.50   14.00   14.26   14.41   14.26   13.13
    59.00 ELEV  708.15  708.35  708.44  708.48  708.51  708.52  708.51  708.41
    67.00 CFS     11.66   10.87   10.56   10.52   10.55   10.58    8.20    4.79
    67.00 ELEV  708.28  708.21  708.19  708.18  708.19  708.19  707.98  707.57
    75.00 CFS      2.54    1.33     .70     .37     .19     .10     .05     .03
    75.00 ELEV  707.30  707.16  707.08  707.04  707.02  707.01  707.01  707.00
    83.00 CFS       .01
    83.00 ELEV  707.00

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  1.60 WATERSHED INCHES;     285 CFS-HRS;      23.6 ACRE-FEET.

    DURATION(HRS)   6     12     18     24     30     36     42     48
    FLOW(CFS)      12     11      6      4      2      2      1      1

    DURATION(HRS)  52
    FLOW(CFS)       0

 --- STRUCTURE  6, ALTERNATE  0, STORM 13, HYDROGRAPH ADDED TO READHD FILE ---
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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROPERTY NORTH OF THE EAST-WEST TOLLWAY (JRB 11/1/95 FILE: 8932.04TEST
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OPERATION RUNOFF    XSECTION  99

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
       38.50                          2.2                        (RUNOFF)
       59.00                         10.3 *                      (RUNOFF)
       62.65                          9.9                        (RUNOFF)
       69.00                          6.9 *                      (RUNOFF)
                                        * FIRST POINT OF FLAT PEAK

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  2.23 WATERSHED INCHES;     220 CFS-HRS;      18.2 ACRE-FEET.


OPERATION ADDHYD    XSECTION  90

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
       38.84                          4.1                        (NULL)
       63.55                         24.6                        (NULL)
       71.50                         18.6                        (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  1.82 WATERSHED INCHES;     505 CFS-HRS;      41.8 ACRE-FEET.


OPERATION RESVOR    STRUCTURE  7

                    HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM =13
     HRS      MAIN TIME INCREMENT = 1.000 hr,      DRAINAGE AREA =    .54 SQ.MI.
     6.00 CFS       .00     .01     .01     .01     .02     .02     .03     .04
     6.00 ELEV   700.00  700.00  700.00  700.00  700.00  700.01  700.01  700.01
    14.00 CFS       .04     .06     .09     .13     .16     .20     .25     .29
    14.00 ELEV  700.01  700.02  700.02  700.03  700.04  700.05  700.06  700.07
    22.00 CFS       .35     .41     .48     .54     .61     .69     .77     .85
    22.00 ELEV  700.09  700.10  700.12  700.14  700.15  700.17  700.19  700.21
    30.00 CFS       .94    1.03    1.12    1.21    1.31    1.40    1.50    1.62
    30.00 ELEV  700.23  700.26  700.28  700.30  700.33  700.35  700.37  700.40
    38.00 CFS      1.76    1.91    2.05    2.17    2.28    2.38    2.51    2.66
    38.00 ELEV  700.44  700.48  700.51  700.54  700.57  700.60  700.63  700.67
    46.00 CFS      2.82    3.01    3.27    3.55    3.83    4.17    4.55    4.93
    46.00 ELEV  700.71  700.75  700.82  700.89  700.96  701.02  701.07  701.12
    54.00 CFS      5.30    5.74    6.27    6.81    7.52    8.45    9.45   10.48
    54.00 ELEV  701.16  701.22  701.28  701.35  701.44  701.56  701.68  701.81
    62.00 CFS     11.48   12.32   12.99   13.57   14.01   14.37   14.67   14.94
    62.00 ELEV  701.94  702.05  702.16  702.26  702.34  702.39  702.44  702.49
    70.00 CFS     15.21   15.46   15.71   15.70   15.38   14.98   14.53   14.06
    70.00 ELEV  702.53  702.58  702.62  702.62  702.56  702.50  702.42  702.34
    78.00 CFS     13.60   13.14   12.69   12.26   11.77   11.21
    78.00 ELEV  702.27  702.19  702.12  702.04  701.97  701.90
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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROPERTY NORTH OF THE EAST-WEST TOLLWAY (JRB 11/1/95 FILE: 8932.04TEST
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    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  1.21 WATERSHED INCHES;     422 CFS-HRS;      34.9 ACRE-FEET.

    DURATION(HRS)   2      4      6      8     10     12     14     16
    FLOW(CFS)      15     15     15     15     14     14     13     13

    DURATION(HRS)  18     20
    FLOW(CFS)      12     11 TRUNCATED

 --- STRUCTURE  7, ALTERNATE  0, STORM 13, HYDROGRAPH ADDED TO READHD FILE ---


OPERATION RUNOFF    XSECTION  49

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  1.21 WATERSHED INCHES;      70 CFS-HRS;      34.9 ACRE-FEET.


OPERATION ADDHYD    XSECTION  50

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
       72.18                         15.8                        (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  1.21 WATERSHED INCHES;     426 CFS-HRS;      35.2 ACRE-FEET.


OPERATION RESVOR    STRUCTURE 39

                    HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM =13
     HRS      MAIN TIME INCREMENT = 1.000 hr,      DRAINAGE AREA =     .62 SQ.MI.
     8.00 CFS       .00     .01     .01     .02     .03     .04     .05     .08
     8.00 ELEV   693.00  693.00  693.00  693.00  693.00  693.01  693.01  693.01
    16.00 CFS       .11     .14     .18     .22     .26     .31     .36     .42
    16.00 ELEV   693.02  693.02  693.02  693.03  693.04  693.04  693.05  693.06
    24.00 CFS       .48     .54     .60     .67     .74     .82     .89     .97
    24.00 ELEV   693.07  693.08  693.09  693.10  693.11  693.12  693.13  693.14
    32.00 CFS      1.06    1.14    1.23    1.32    1.41    1.52    1.64    1.77
    32.00 ELEV   693.15  693.16  693.17  693.19  693.20  693.21  693.23  693.25
    40.00 CFS      1.89    2.00    2.10    2.21    2.34    2.48    2.63    2.80
    40.00 ELEV   693.27  693.28  693.30  693.31  693.33  693.35  693.37  693.40
    48.00 CFS      3.01    3.24    3.47    3.71    3.97    4.24    4.51    4.84
    48.00 ELEV   693.43  693.46  693.49  693.53  693.56  693.60  693.64  693.69
    56.00 CFS      5.22    5.61    6.11    6.74    7.31    7.82    8.36    8.91
    56.00 ELEV   693.74  693.79  693.87  693.95  694.05  694.14  694.24  694.33
    64.00 CFS      9.47   10.00   10.48   10.93   11.38   11.81   12.24   12.62
    64.00 ELEV   694.44  694.53  694.62  694.70  694.78  694.86  694.94  695.02
    72.00 CFS     12.87   13.04   13.13   13.20   13.26   13.30   13.32   13.32
    72.00 ELEV   695.09  695.14  695.16  695.18  695.20  695.21  695.22  695.22
    80.00 CFS     13.30   13.27   13.23   13.17
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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROPERTY NORTH OF THE EAST-WEST TOLLWAY (JRB 11/1/95 FILE: 8932.04TEST
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    80.00 ELEV   695.21  695.20  695.19  695.17

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .91 WATERSHED INCHES;     365 CFS-HRS;      30.2 ACRE-FEET.

 --- STRUCTURE 39, ALTERNATE  0, STORM 13, HYDROGRAPH ADDED TO READHD FILE ---


EXECUTIVE CONTROL  ENDCMP    COMPUTATIONS COMPLETED FOR PASS   3


EXECUTIVE CONTROL  COMPUT    FROM XSECTION  91  TO STRUCTURE 39          120-HR
    STARTING TIME =   .00       RAIN DEPTH =  3.93       RAIN DURATION =120.00
    ANT. RUNOFF COND. = 2       MAIN TIME INCREMENT =  1.000 HOURS
    ALTERNATE NO. = 0           STORM NO. =14            RAIN TABLE NO. = 4


OPERATION RUNOFF    XSECTION  91

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
      106.50                         3.1                         (RUNOFF)
      118.29                         2.3                         (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                 1.61 WATERSHED INCHES;      96 CFS-HRS;       7.9 ACRE-FEET.


OPERATION RUNOFF    XSECTION  92

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
      107.50                         4.9                         (RUNOFF)
      119.50                         3.9                         (RUNOFF)
      102.00                         5.0                         (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                 1.98 WATERSHED INCHES;     165 CFS-HRS;      13.7 ACRE-FEET.


OPERATION ADDHYD    XSECTION  93

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
      106.50                         8.0                         (NULL)
      119.50                         6.4                         (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                 1.83 WATERSHED INCHES;     261 CFS-HRS;      21.6 ACRE-FEET.
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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROPERTY NORTH OF THE EAST-WEST TOLLWAY (JRB 11/1/95 FILE: 8932.04TEST
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OPERATION RUNOFF    XSECTION  94

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  1.83 WATERSHED INCHES;      75 CFS-HRS;      21.6 ACRE-FEET.


OPERATION RESVOR    STRUCTURE 11

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                   .99 WATERSHED INCHES;      13 CFS-HRS;       1.1 ACRE-FEET.


OPERATION RUNOFF    XSECTION  96

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  1.76 WATERSHED INCHES;     127 CFS-HRS;      22.7 ACRE-FEET.


OPERATION ADDHYD    XSECTION  97

    PEAK TIME(HRS)            PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
      106.12                          9.0                        (NULL)
      118.13                          6.5                        (NULL)
      104.00                          9.0                        (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  1.82 WATERSHED INCHES;     294 CFS-HRS;      24.3 ACRE-FEET.


OPERATION RESVOR    STRUCTURE  6

                   HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM =14
     HRS      MAIN TIME INCREMENT = 1.000 hr,      DRAINAGE AREA =    .28 SQ.MI.
     4.00 CFS       .00     .01     .01     .02     .04     .05     .05     .05
     4.00 ELEV   707.00  707.00  707.00  707.00  707.00  707.01  707.01  707.01
    12.00 CFS       .06     .06     .07     .08     .08     .08     .08     .08
    12.00 ELEV   707.01  707.01  707.01  707.01  707.01  707.01  707.01  707.01
    20.00 CFS       .08     .08     .08     .08     .08     .10     .12     .14
    20.00 ELEV   707.01  707.01  707.01  707.01  707.01  707.01  707.01  707.02
    28.00 CFS       .15     .15     .15     .18     .22     .25     .27     .27
    28.00 ELEV   707.02  707.02  707.02  707.02  707.03  707.03  707.03  707.03
    36.00 CFS       .28     .32     .38     .42     .44     .45     .46     .50
    36.00 ELEV   707.03  707.04  707.04  707.05  707.05  707.05  707.05  707.06
    44.00 CFS       .58     .63     .65     .67     .67     .71     .78     .82
    44.00 ELEV   707.07  707.07  707.08  707.08  707.08  707.08  707.09  707.10
    52.00 CFS       .85     .86     .87     .90     .96    1.00    1.02    1.03
    52.00 ELEV   707.10  707.10  707.10  707.11  707.11  707.12  707.12  707.12
    60.00 CFS      1.05    1.17    1.37    1.50    1.57    1.60    1.62    1.58
    60.00 ELEV   707.12  707.14  707.16  707.18  707.19  707.19  707.19  707.19
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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
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    68.00 CFS      1.51    1.46    1.43    1.42    1.41    1.54    1.76    1.91
    68.00 ELEV   707.18  707.17  707.17  707.17  707.17  707.18  707.21  707.23
    76.00 CFS      1.98    2.02    2.06    2.35    2.82    3.13    3.29    3.38
    76.00 ELEV   707.24  707.24  707.24  707.28  707.34  707.37  707.39  707.40
    84.00 CFS      3.43    3.52    3.66    3.76    3.80    3.83    3.85    4.21
    84.00 ELEV   707.41  707.42  707.44  707.45  707.45  707.46  707.46  707.50
    92.00 CFS      4.81    5.20    5.41    5.52    5.60    6.50    8.01    9.11
    92.00 ELEV   707.57  707.62  707.64  707.66  707.67  707.77  707.95  708.06
   100.00 CFS      9.68    9.92   10.03   10.08   10.10   10.12   10.13   10.14
   100.00 ELEV   708.11  708.13  708.14  708.14  708.15  708.15  708.15  708.15
   108.00 CFS     10.11    9.40    8.28    7.73    7.43    7.27    7.19    7.18
   108.00 ELEV   708.15  708.09  707.99  707.92  707.88  707.87  707.86  707.86
   116.00 CFS      7.24    7.27    7.29    7.31    7.31    5.90    3.43    1.82
   116.00 ELEV   707.86  707.87  707.87  707.87  707.87  707.70  707.41  707.22
   124.00 CFS       .95     .50     .26     .14     .07     .04     .02     .01
   124.00 ELEV   707.11  707.06  707.03  707.02  707.01  707.00  707.00  707.00

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  1.90 WATERSHED INCHES;     339 CFS-HRS;      28.0 ACRE-FEET.

    DURATION(HRS)   8     16     24     32     40     48     56     64
    FLOW(CFS)      10      7      6      4      3      2      1      1

    DURATION(HRS)  72     80     82
    FLOW(CFS)       1      1      0

 --- STRUCTURE  6, ALTERNATE  0, STORM 14, HYDROGRAPH ADDED TO READHD FILE ---


OPERATION RUNOFF    XSECTION  99

    PEAK TIME(HRS)            PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
      100.60                         7.1                        (RUNOFF)
      105.00                         6.8 *                      (RUNOFF)
      118.03                         4.7                        (RUNOFF)
                                        * FIRST POINT OF FLAT PEAK

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  2.60 WATERSHED INCHES;     256 CFS-HRS;      21.2 ACRE-FEET.


OPERATION ADDHYD    XSECTION  90

    PEAK TIME(HRS)            PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
       65.55                         3.2                        (NULL)
      101.81                        17.2                        (NULL)
      106.51                        17.0                        (NULL)
      119.50                        12.8                        (NULL)
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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROPERTY NORTH OF THE EAST-WEST TOLLWAY (JRB 11/1/95 FILE: 8932.04TEST
12:30:24                     PASS   4   JOB NO.   1                       PAGE  17


    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  2.15 WATERSHED INCHES;     595 CFS-HRS;      49.2 ACRE-FEET.


OPERATION RESVOR    STRUCTURE  7

                    HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM =14
     HRS      MAIN TIME INCREMENT = 1.000 hr,      DRAINAGE AREA =    .54 SQ.MI.
     9.00 CFS       .00     .01     .01     .01     .01     .01     .02     .02
     9.00 ELEV   700.00  700.00  700.00  700.00  700.00  700.00  700.00  700.00
    17.00 CFS       .02     .03     .03     .04     .05     .06     .07     .07
    17.00 ELEV   700.01  700.01  700.01  700.01  700.01  700.01  700.02  700.02
    25.00 CFS       .09     .12     .14     .17     .19     .21     .24     .28
    25.00 ELEV   700.02  700.03  700.04  700.04  700.05  700.05  700.06  700.07
    33.00 CFS       .32     .35     .39     .42     .46     .51     .55     .60
    33.00 ELEV   700.08  700.09  700.10  700.11  700.12  700.13  700.14  700.15
    41.00 CFS       .64     .68     .73     .78     .83     .88     .93     .98
    41.00 ELEV   700.16  700.17  700.18  700.19  700.21  700.22  700.23  700.25
    49.00 CFS      1.03    1.09    1.14    1.20    1.25    1.30    1.35    1.41
    49.00 ELEV   700.26  700.27  700.29  700.30  700.31  700.33  700.34  700.35
    57.00 CFS      1.47    1.52    1.58    1.63    1.70    1.79    1.88    1.97
    57.00 ELEV   700.37  700.38  700.39  700.41  700.42  700.45  700.47  700.49
    65.00 CFS      2.06    2.15    2.22    2.28    2.33    2.38    2.43    2.48
    65.00 ELEV   700.52  700.54  700.56  700.57  700.58  700.60  700.61  700.62
    73.00 CFS      2.54    2.63    2.71    2.80    2.89    2.98    3.11    3.27
    73.00 ELEV   700.64  700.66  700.68  700.70  700.72  700.74  700.78  700.82
    81.00 CFS      3.45    3.63    3.80    3.97    4.19    4.41    4.62    4.83
    81.00 ELEV   700.86  700.91  700.95  700.99  701.02  701.05  701.08  701.10
    89.00 CFS      5.03    5.23    5.48    5.78    6.09    6.40    6.70    7.01
    89.00 ELEV   701.13  701.15  701.18  701.22  701.26  701.30  701.34  701.38
    97.00 CFS      7.44    8.02    8.64    9.27    9.89   10.49   11.05   11.57
    97.00 ELEV   701.43  701.50  701.58  701.66  701.74  701.81  701.88  701.95
   105.00 CFS     12.05   12.39   12.72   13.04   13.26   13.39   13.48   13.56
   105.00 ELEV   702.01  702.07  702.12  702.17  702.21  702.23  702.25  702.26
   113.00 CFS     13.62   13.68   13.74   13.79   13.85   13.91   13.96   14.02
   113.00 ELEV   702.27  702.28  702.29  702.30  702.31  702.32  702.33  702.34
   121.00 CFS     13.90   13.58   13.20   12.80   12.38   11.96   11.39   10.85
   121.00 ELEV   702.32  702.26  702.20  702.13  702.06  701.99  701.92  701.86
   129.00 CFS     10.34    9.84    9.37
   129.00 ELEV   701.79  701.73  701.67

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  1.64 WATERSHED INCHES;     573 CFS-HRS;      47.3 ACRE-FEET.

    DURATION(HRS)   3      6      9     12     15     18     21     24
    FLOW(CFS)      14     14     14     13     13     12     12     11

    DURATION(HRS)  27     30
    FLOW(CFS)      10      9 TRUNCATED
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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROPERTY NORTH OF THE EAST-WEST TOLLWAY (JRB 11/1/95 FILE: 8932.04TEST
12:30:24                     PASS   4   JOB NO.   1                       PAGE  18


 --- STRUCTURE  7, ALTERNATE  0, STORM 14, HYDROGRAPH ADDED TO READHD FILE ---


OPERATION RUNOFF    XSECTION  49

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  1.64 WATERSHED INCHES;     115 CFS-HRS;      47.3 ACRE-FEET.


OPERATION ADDHYD    XSECTION  50

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
      119.72                         14.1                         (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  1.64 WATERSHED INCHES;     577 CFS-HRS;      47.7 ACRE-FEET.


OPERATION RESVOR    STRUCTURE 39

                    HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM =14
     HRS      MAIN TIME INCREMENT = 1.000 hr,      DRAINAGE AREA =    .62 SQ.MI.
    13.00 CFS       .00     .01     .02     .02     .03     .03     .04     .05
    13.00 ELEV   693.00  693.00  693.00  693.00  693.00  693.00  693.01  693.01
    21.00 CFS       .06     .07     .08     .09     .11     .13     .16     .18
    21.00 ELEV   693.01  693.01  693.01  693.01  693.02  693.02  693.02  693.03
    29.00 CFS       .21     .23     .26     .30     .33     .37     .40     .44
    29.00 ELEV   693.03  693.03  693.04  693.04  693.05  693.05  693.06  693.06
    37.00 CFS       .48     .52     .56     .60     .65     .69     .73     .78
    37.00 ELEV   693.07  693.07  693.08  693.09  693.09  693.10  693.10  693.11
    45.00 CFS       .83     .88     .93     .98    1.03    1.09    1.14    1.19
    45.00 ELEV   693.12  693.12  693.13  693.14  693.15  693.15  693.16  693.17
    53.00 CFS      1.25    1.30    1.36    1.41    1.47    1.53    1.59    1.64
    53.00 ELEV   693.18  693.18  693.19  693.20  693.21  693.22  693.22  693.23
    61.00 CFS      1.71    1.79    1.88    1.96    2.04    2.12    2.20    2.27
    61.00 ELEV   693.24  693.25  693.27  693.28  693.29  693.30  693.31  693.32
    69.00 CFS      2.33    2.40    2.46    2.52    2.59    2.68    2.76    2.85
    69.00 ELEV   693.33  693.34  693.35  693.36  693.37  693.38  693.39  693.40
    77.00 CFS      2.93    3.02    3.13    3.27    3.41    3.56    3.70    3.85
    77.00 ELEV   693.42  693.43  693.44  693.46  693.48  693.50  693.52  693.55
    85.00 CFS      4.01    4.17    4.34    4.51    4.68    4.86    5.07    5.31
    85.00 ELEV   693.57  693.59  693.61  693.64  693.66  693.69  693.72  693.75
    93.00 CFS      5.55    5.80    6.05    6.31    6.65    7.06    7.38    7.71
    93.00 ELEV   693.79  693.82  693.86  693.89  693.94  694.00  694.06  694.12
   101.00 CFS      8.06    8.43    8.80    9.18    9.56    9.95   10.34   10.71
   101.00 ELEV   694.18  694.25  694.32  694.38  694.45  694.52  694.59  694.66
   109.00 CFS     11.05   11.34   11.62   11.89   12.15   12.39   12.60   12.74
   109.00 ELEV   694.72  694.78  694.83  694.88  694.92  694.97  695.01  695.05
   117.00 CFS     12.87   12.99   13.12   13.24   13.31   13.33   13.33   13.32
   117.00 ELEV   695.09  695.12  695.16  695.19  695.22  695.22  695.22  695.22
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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROPERTY NORTH OF THE EAST-WEST TOLLWAY (JRB 11/1/95 FILE: 8932.04TEST
12:30:24                    PASS   4   JOB NO.   1                      PAGE  19

   125.00 CFS     13.29   13.25   13.20   13.12   13.03   12.92   12.80
   125.00 ELEV   695.21  695.20  695.18  695.16  695.13  695.10  695.07

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  1.36 WATERSHED INCHES;     543 CFS-HRS;      44.8 ACRE-FEET.

    DURATION(HRS)   2      4      6      8     10     12     14     16
    FLOW(CFS)      13     13     13     13     13     13     13     13

    DURATION(HRS)  17
    FLOW(CFS)      13 TRUNCATED

 --- STRUCTURE 39, ALTERNATE  0, STORM 14, HYDROGRAPH ADDED TO READHD FILE ---


EXECUTIVE CONTROL  ENDCMP    COMPUTATIONS COMPLETED FOR PASS   4


EXECUTIVE CONTROL  COMPUT    FROM XSECTION  91  TO STRUCTURE 39          240-HR
    STARTING TIME =   .00       RAIN DEPTH =  4.95       RAIN DURATION =240.00
    ANT. RUNOFF COND. = 2       MAIN TIME INCREMENT =  1.000 HOURS
    ALTERNATE NO. = 0           STORM NO. =15            RAIN TABLE NO. = 4


OPERATION RUNOFF    XSECTION  91

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
      214.50                          2.2                       (RUNOFF)
      237.98                          1.6                       (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  2.40 WATERSHED INCHES;     143 CFS-HRS;      11.8 ACRE-FEET.


OPERATION RUNOFF    XSECTION  92

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
      213.00                          3.4 *                     (RUNOFF)
      238.04                          2.4                       (RUNOFF)
      196.00                          3.4                       (RUNOFF)
                                        * FIRST POINT OF FLAT PEAK

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  2.84 WATERSHED INCHES;     237 CFS-HRS;      19.6 ACRE-FEET.
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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROPERTY NORTH OF THE EAST-WEST TOLLWAY (JRB 11/1/95 FILE: 8932.04TEST
12:30:24                    PASS   5   JOB NO.   1                      PAGE  20


OPERATION ADDHYD    XSECTION  93

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
      130.00                          1.0 *                     (NULL)
      213.00                          5.5 *                     (NULL)
      238.02                          3.9                       (NULL)
      204.00                          5.6                       (NULL)
                                        * FIRST POINT OF FLAT PEAK

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  2.66 WATERSHED INCHES;     380 CFS-HRS;      31.4 ACRE-FEET.


OPERATION RUNOFF    XSECTION  94

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  2.66 WATERSHED INCHES;     171 CFS-HRS;      31.4 ACRE-FEET.


OPERATION RESVOR    STRUCTURE 11

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  1.61 WATERSHED INCHES;      21 CFS-HRS;       1.7 ACRE-FEET.


OPERATION RUNOFF    XSECTION  96

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  2.57 WATERSHED INCHES;     231 CFS-HRS;      33.1 ACRE-FEET.


OPERATION ADDHYD    XSECTION  97

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
      130.00                          1.1 *                     (NULL)
      214.05                          6.2                       (NULL)
      238.10                          4.2                       (NULL)
      196.00                          6.2                       (NULL)
                                        * FIRST POINT OF FLAT PEAK

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  2.63 WATERSHED INCHES;     425 CFS-HRS;      35.1 ACRE-FEET.


OPERATION RESVOR    STRUCTURE  6
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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROPERTY NORTH OF THE EAST-WEST TOLLWAY (JRB 11/1/95 FILE: 8932.04TEST
12:30:24                    PASS   5   JOB NO.   1                      PAGE  21


                HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM =15
     HRS      MAIN TIME INCREMENT = 1.000 hr,      DRAINAGE AREA =    .28 SQ.MI.
    3.00 CFS       .00     .01     .01     .01     .01     .01     .01     .01
    3.00 ELEV   707.00  707.00  707.00  707.00  707.00  707.00  707.00  707.00
   11.00 CFS       .01     .01     .02     .03     .03     .04     .04     .04
   11.00 ELEV   707.00  707.00  707.00  707.00  707.00  707.00  707.00  707.00
   19.00 CFS       .04     .04     .04     .04     .04     .04     .05     .05
   19.00 ELEV   707.00  707.00  707.00  707.00  707.00  707.00  707.01  707.01
   27.00 CFS       .06     .06     .06     .06     .06     .06     .06     .06
   27.00 ELEV   707.01  707.01  707.01  707.01  707.01  707.01  707.01  707.01
   35.00 CFS       .06     .06     .06     .06     .06     .06     .06     .06
   35.00 ELEV   707.01  707.01  707.01  707.01  707.01  707.01  707.01  707.01
   43.00 CFS       .06     .06     .06     .06     .06     .07     .09     .13
   43.00 ELEV   707.01  707.01  707.01  707.01  707.01  707.01  707.01  707.02
   51.00 CFS       .15     .16     .17     .17     .17     .18     .18     .18
   51.00 ELEV   707.02  707.02  707.02  707.02  707.02  707.02  707.02  707.02
   59.00 CFS       .18     .18     .20     .25     .29     .31     .32     .32
   59.00 ELEV   707.02  707.02  707.02  707.03  707.03  707.04  707.04  707.04
   67.00 CFS       .32     .33     .33     .33     .33     .33     .36     .41
   67.00 ELEV   707.04  707.04  707.04  707.04  707.04  707.04  707.04  707.05
   75.00 CFS       .45     .47     .48     .49     .49     .49     .49     .49
   75.00 ELEV   707.05  707.06  707.06  707.06  707.06  707.06  707.06  707.06
   83.00 CFS       .49     .49     .52     .57     .60     .62     .62     .63
   83.00 ELEV   707.06  707.06  707.06  707.07  707.07  707.07  707.07  707.07
   91.00 CFS       .63     .63     .63     .63     .63     .63     .66     .70
   91.00 ELEV   707.08  707.08  707.08  707.08  707.08  707.08  707.08  707.08
   99.00 CFS       .73     .74     .75     .76     .76     .76     .76     .76
   99.00 ELEV   707.09  707.09  707.09  707.09  707.09  707.09  707.09  707.09
  107.00 CFS       .76     .76     .78     .82     .85     .86     .87     .87
  107.00 ELEV   707.09  707.09  707.09  707.10  707.10  707.10  707.10  707.10
  115.00 CFS       .88     .88     .88     .88     .88     .88     .97    1.12
  115.00 ELEV   707.10  707.10  707.10  707.10  707.10  707.10  707.12  707.13
  123.00 CFS      1.21    1.27    1.30    1.31    1.32    1.32    1.32    1.33
  123.00 ELEV   707.14  707.15  707.15  707.16  707.16  707.16  707.16  707.16
  131.00 CFS      1.33    1.33    1.28    1.20    1.15    1.13    1.11    1.11
  131.00 ELEV   707.16  707.16  707.15  707.14  707.14  707.13  707.13  707.13
  139.00 CFS      1.10    1.10    1.10    1.10    1.10    1.10    1.19    1.35
  139.00 ELEV   707.13  707.13  707.13  707.13  707.13  707.13  707.14  707.16
  147.00 CFS      1.46    1.52    1.55    1.57    1.57    1.58    1.58    1.58
  147.00 ELEV   707.17  707.18  707.18  707.19  707.19  707.19  707.19  707.19
  155.00 CFS      1.58    1.59    1.79    2.12    2.34    2.46    2.52    2.56
  155.00 ELEV   707.19  707.19  707.21  707.25  707.28  707.29  707.30  707.30
  163.00 CFS      2.57    2.58    2.59    2.59    2.59    2.59    2.63    2.71
  163.00 ELEV   707.31  707.31  707.31  707.31  707.31  707.31  707.31  707.32
  171.00 CFS      2.76    2.78    2.80    2.80    2.81    2.81    2.81    2.81
  171.00 ELEV   707.33  707.33  707.33  707.33  707.33  707.33  707.33  707.33
  179.00 CFS      2.81    2.82    3.05    3.45    3.72    3.87    3.94    3.98
  179.00 ELEV   707.33  707.34  707.36  707.41  707.44  707.46  707.47  707.47
  187.00 CFS      4.00    4.01    4.02    4.02    4.02    4.04    4.62    5.62
  187.00 ELEV   707.48  707.48  707.48  707.48  707.48  707.48  707.55  707.67
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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROPERTY NORTH OF THE EAST-WEST TOLLWAY (JRB 11/1/95 FILE: 8932.04TEST
12:30:24                    PASS   5   JOB NO.   1                      PAGE  22

   195.00 CFS      6.30    6.66    6.85    6.95    7.00    7.03    7.05    7.05
   195.00 ELEV   707.75  707.79  707.82  707.83  707.83  707.84  707.84  707.84
   203.00 CFS      7.06    7.06    7.04    7.00    6.98    6.96    6.96    6.95
   203.00 ELEV   707.84  707.84  707.84  707.83  707.83  707.83  707.83  707.83
   211.00 CFS      6.95    6.95    6.95    6.95    6.95    6.94    6.53    5.82
   211.00 ELEV   707.83  707.83  707.83  707.83  707.83  707.83  707.78  707.69
   219.00 CFS      5.35    5.09    4.96    4.89    4.85    4.83    4.82    4.81
   219.00 ELEV   707.64  707.61  707.59  707.58  707.58  707.57  707.57  707.57
   227.00 CFS      4.81    4.81    4.83    4.87    4.85    4.80    4.77    4.76
   227.00 ELEV   707.57  707.57  707.58  707.58  707.58  707.57  707.57  707.57
   235.00 CFS      4.75    4.75    4.74    4.74    4.74    4.61    3.66    2.17
   235.00 ELEV   707.57  707.57  707.56  707.56  707.56  707.55  707.44  707.26
   243.00 CFS      1.16     .61     .32     .17     .09     .05     .02     .01
   243.00 ELEV   707.14  707.07  707.04  707.02  707.01  707.01  707.00  707.00
   251.00 CFS      .01     .00
   251.00 ELEV   707.00  707.00

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  2.72 WATERSHED INCHES;     485 CFS-HRS;      40.1 ACRE-FEET.

    DURATION(HRS)  24     48     72     96     120    144    160
    FLOW(CFS)       6      4      3      1      1      1      0

 --- STRUCTURE  6, ALTERNATE  0, STORM 15, HYDROGRAPH ADDED TO READHD FILE ---


OPERATION RUNOFF    XSECTION  99

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
      130.00                          1.1 *                      (RUNOFF)
      214.50                          4.5                        (RUNOFF)
      238.50                          3.5                        (RUNOFF)
      202.00                          4.7                        (RUNOFF)
                                          * FIRST POINT OF FLAT PEAK

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  3.53 WATERSHED INCHES;     348 CFS-HRS;      28.7 ACRE-FEET.


OPERATION ADDHYD    XSECTION  90

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
      130.92                          2.5                        (NULL)
      203.50                         11.8                        (NULL)
      230.18                          7.9                        (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  3.01 WATERSHED INCHES;     833 CFS-HRS;      68.8 ACRE-FEET.
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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROPERTY NORTH OF THE EAST-WEST TOLLWAY (JRB 11/1/95 FILE: 8932.04TEST
12:30:24                     PASS   5   JOB NO.   1                      PAGE  23


OPERATION RESVOR    STRUCTURE  7

                    HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM =15
     HRS      MAIN TIME INCREMENT = 1.000 hr,      DRAINAGE AREA =    .54 SQ.MI.
   15.00 CFS       .00     .01     .01     .01     .01     .01     .01     .01
   15.00 ELEV   700.00  700.00  700.00  700.00  700.00  700.00  700.00  700.00
   23.00 CFS       .01     .01     .02     .02     .03     .03     .04     .04
   23.00 ELEV   700.00  700.00  700.00  700.01  700.01  700.01  700.01  700.01
   31.00 CFS       .05     .05     .06     .06     .07     .07     .08     .09
   31.00 ELEV   700.01  700.01  700.01  700.02  700.02  700.02  700.02  700.02
   39.00 CFS       .10     .11     .11     .12     .13     .14     .15     .15
   39.00 ELEV   700.02  700.03  700.03  700.03  700.03  700.03  700.04  700.04
   47.00 CFS       .16     .17     .18     .20     .22     .25     .27     .29
   47.00 ELEV   700.04  700.04  700.05  700.05  700.06  700.06  700.07  700.07
   55.00 CFS       .31     .33     .35     .36     .38     .40     .42     .44
   55.00 ELEV   700.08  700.08  700.09  700.09  700.09  700.10  700.10  700.11
   63.00 CFS       .47     .50     .52     .55     .57     .59     .62     .64
   63.00 ELEV   700.12  700.12  700.13  700.14  700.14  700.15  700.15  700.16
   71.00 CFS       .66     .68     .70     .73     .76     .79     .82     .84
   71.00 ELEV   700.16  700.17  700.18  700.18  700.19  700.20  700.20  700.21
   79.00 CFS       .87     .89     .92     .94     .96     .99    1.01    1.04
   79.00 ELEV   700.22  700.22  700.23  700.24  700.24  700.25  700.25  700.26
   87.00 CFS      1.07    1.09    1.12    1.15    1.17    1.20    1.22    1.24
   87.00 ELEV   700.27  700.27  700.28  700.29  700.29  700.30  700.30  700.31
   95.00 CFS      1.26    1.29    1.31    1.33    1.36    1.39    1.41    1.44
   95.00 ELEV   700.32  700.32  700.33  700.33  700.34  700.35  700.35  700.36
  103.00 CFS      1.46    1.48    1.50    1.53    1.55    1.57    1.59    1.61
  103.00 ELEV   700.36  700.37  700.38  700.38  700.39  700.39  700.40  700.40
  111.00 CFS      1.63    1.66    1.68    1.70    1.73    1.75    1.77    1.79
  111.00 ELEV   700.41  700.41  700.42  700.43  700.43  700.44  700.44  700.45
  119.00 CFS      1.80    1.82    1.86    1.90    1.95    2.00    2.04    2.09
  119.00 ELEV   700.45  700.46  700.46  700.48  700.49  700.50  700.51  700.52
  127.00 CFS      2.14    2.18    2.23    2.27    2.31    2.34    2.37    2.39
  127.00 ELEV   700.53  700.55  700.56  700.57  700.58  700.59  700.59  700.60
  135.00 CFS      2.40    2.41    2.43    2.43    2.44    2.45    2.46    2.47
  135.00 ELEV   700.60  700.60  700.61  700.61  700.61  700.61  700.62  700.62
  143.00 CFS      2.48    2.49    2.51    2.54    2.58    2.62    2.66    2.71
  143.00 ELEV   700.62  700.62  700.63  700.64  700.65  700.66  700.67  700.68
  151.00 CFS      2.74    2.78    2.82    2.86    2.89    2.93    2.99    3.08
  151.00 ELEV   700.69  700.70  700.70  700.71  700.72  700.73  700.75  700.77
  159.00 CFS      3.17    3.27    3.37    3.47    3.57    3.66    3.75    3.83
  159.00 ELEV   700.79  700.82  700.84  700.87  700.89  700.91  700.94  700.96
  167.00 CFS      3.91    3.99    4.09    4.19    4.29    4.39    4.48    4.57
  167.00 ELEV   700.98  701.00  701.01  701.02  701.04  701.05  701.06  701.07
  175.00 CFS      4.66    4.74    4.82    4.89    4.96    5.03    5.14    5.28
  175.00 ELEV   701.08  701.09  701.10  701.11  701.12  701.13  701.14  701.16
  183.00 CFS      5.44    5.59    5.75    5.89    6.04    6.17    6.31    6.43
  183.00 ELEV   701.18  701.20  701.22  701.24  701.25  701.27  701.29  701.30
  191.00 CFS      6.55    6.68    6.89    7.20    7.53    7.88    8.22    8.55
```



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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROPERTY NORTH OF THE EAST-WEST TOLLWAY (JRB 11/1/95 FILE: 8932.04TEST
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  191.00 ELEV   701.32  701.33  701.36  701.40  701.44  701.48  701.53  701.57
  199.00 CFS      8.87    9.17    9.47    9.74   10.01   10.26   10.49   10.70
  199.00 ELEV   701.61  701.65  701.68  701.72  701.75  701.78  701.81  701.84
  207.00 CFS     10.90   11.08   11.26   11.43   11.59   11.74   11.88   12.02
  207.00 ELEV   701.86  701.89  701.91  701.93  701.95  701.97  701.99  702.00
  215.00 CFS     12.11   12.20   12.23   12.20   12.15   12.10   12.04   11.96
  215.00 ELEV   702.02  702.03  702.04  702.03  702.03  702.02  702.01  702.00
  223.00 CFS     11.88   11.79   11.71   11.64   11.56   11.49   11.43   11.37
  223.00 ELEV   701.98  701.97  701.96  701.95  701.95  701.94  701.93  701.92
  231.00 CFS     11.31   11.26   11.21   11.15   11.10   11.05   11.01   10.96
  231.00 ELEV   701.91  701.91  701.90  701.89  701.89  701.88  701.88  701.87
  239.00 CFS     10.92   10.81   10.54   10.18    9.77    9.35    8.92    8.50
  239.00 ELEV   701.87  701.85  701.82  701.77  701.72  701.67  701.61  701.56
  247.00 CFS      8.10    7.72    7.35    7.00    6.67    6.35    6.04    5.75
  247.00 ELEV   701.51  701.46  701.42  701.38  701.33  701.29  701.26  701.22

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  2.74 WATERSHED INCHES;     957 CFS-HRS;      79.1 ACRE-FEET.

    DURATION(HRS)   6     12     18     24     30     36     42     48
    FLOW(CFS)      12     12     11     11     11     10      9      9

    DURATION(HRS)  54     60     66     71
    FLOW(CFS)       7      7      6      6 TRUNCATED

 --- STRUCTURE  7, ALTERNATE  0, STORM 15, HYDROGRAPH ADDED TO READHD FILE ---


OPERATION RUNOFF    XSECTION  49

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  2.74 WATERSHED INCHES;     216 CFS-HRS;      79.1 ACRE-FEET.


OPERATION ADDHYD    XSECTION  50

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
      216.82                          12.3                        (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  2.74 WATERSHED INCHES;     962 CFS-HRS;      79.5 ACRE-FEET.


OPERATION RESVOR    STRUCTURE 39

                    HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM =15
     HRS      MAIN TIME INCREMENT = 1.000 hr,      DRAINAGE AREA =    .62 SQ.MI.
   23.00 CFS       .00     .01     .01     .02     .03     .04     .04     .05
   23.00 ELEV   693.00  693.00  693.00  693.00  693.00  693.01  693.01  693.01
   31.00 CFS       .06     .07     .07     .08     .09     .09     .10     .11
   31.00 ELEV   693.01  693.01  693.01  693.01  693.01  693.01  693.01  693.02
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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
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39.00	CFS	.12	.13	.14	.15	.16	.16	.17	.18
39.00	ELEV	693.02	693.02	693.02	693.02	693.02	693.02	693.02	693.03
47.00	CFS	.19	.20	.21	.23	.25	.27	.29	.31
47.00	ELEV	693.03	693.03	693.03	693.03	693.04	693.04	693.04	693.04
55.00	CFS	.34	.36	.38	.40	.42	.44	.46	.48
55.00	ELEV	693.05	693.05	693.05	693.06	693.06	693.06	693.06	693.07
63.00	CFS	.51	.53	.56	.58	.61	.63	.66	.68
63.00	ELEV	693.07	693.08	693.08	693.08	693.09	693.09	693.09	693.10
71.00	CFS	.71	.73	.76	.79	.82	.84	.87	.90
71.00	ELEV	693.10	693.10	693.11	693.11	693.12	693.12	693.12	693.13
79.00	CFS	.93	.96	.98	1.01	1.04	1.06	1.09	1.12
79.00	ELEV	693.13	693.14	693.14	693.14	693.15	693.15	693.15	693.16
87.00	CFS	1.15	1.18	1.21	1.24	1.26	1.29	1.32	1.35
87.00	ELEV	693.16	693.17	693.17	693.17	693.18	693.18	693.19	693.19
95.00	CFS	1.37	1.40	1.43	1.46	1.48	1.51	1.54	1.57
95.00	ELEV	693.19	693.20	693.20	693.21	693.21	693.21	693.22	693.22
103.00	CFS	1.60	1.62	1.65	1.67	1.70	1.73	1.75	1.78
103.00	ELEV	693.23	693.23	693.23	693.24	693.24	693.24	693.25	693.25
111.00	CFS	1.80	1.83	1.86	1.88	1.91	1.93	1.96	1.98
111.00	ELEV	693.26	693.26	693.26	693.27	693.27	693.27	693.28	693.28
119.00	CFS	2.01	2.03	2.06	2.10	2.14	2.18	2.22	2.27
119.00	ELEV	693.28	693.29	693.29	693.30	693.30	693.31	693.31	693.32
127.00	CFS	2.31	2.35	2.39	2.44	2.48	2.52	2.56	2.58
127.00	ELEV	693.33	693.33	693.34	693.35	693.35	693.36	693.36	693.37
135.00	CFS	2.61	2.64	2.66	2.69	2.71	2.73	2.75	2.77
135.00	ELEV	693.37	693.37	693.38	693.38	693.38	693.39	693.39	693.39
143.00	CFS	2.79	2.80	2.83	2.86	2.90	2.93	2.97	3.00
143.00	ELEV	693.39	693.40	693.40	693.41	693.41	693.42	693.42	693.43
151.00	CFS	3.04	3.07	3.11	3.14	3.18	3.22	3.27	3.34
151.00	ELEV	693.43	693.44	693.44	693.45	693.45	693.46	693.46	693.47
159.00	CFS	3.41	3.49	3.57	3.64	3.73	3.81	3.89	3.97
159.00	ELEV	693.48	693.49	693.51	693.52	693.53	693.54	693.55	693.56
167.00	CFS	4.05	4.14	4.22	4.31	4.40	4.48	4.57	4.66
167.00	ELEV	693.57	693.59	693.60	693.61	693.62	693.64	693.65	693.66
175.00	CFS	4.75	4.84	4.93	5.02	5.10	5.19	5.29	5.41
175.00	ELEV	693.67	693.69	693.70	693.71	693.72	693.73	693.75	693.77
183.00	CFS	5.53	5.66	5.79	5.92	6.05	6.18	6.31	6.45
183.00	ELEV	693.78	693.80	693.82	693.84	693.86	693.88	693.89	693.91
191.00	CFS	6.58	6.71	6.88	7.10	7.27	7.45	7.64	7.85
191.00	ELEV	693.93	693.95	693.98	694.01	694.04	694.07	694.11	694.14
199.00	CFS	8.06	8.27	8.49	8.72	8.94	9.17	9.40	9.62
199.00	ELEV	694.18	694.22	694.26	694.30	694.34	694.38	694.42	694.46
207.00	CFS	9.84	10.05	10.27	10.48	10.69	10.90	11.10	11.30
207.00	ELEV	694.50	694.54	694.58	694.62	694.66	694.70	694.73	694.77
215.00	CFS	11.49	11.68	11.83	11.96	12.07	12.17	12.26	12.35
215.00	ELEV	694.80	694.84	694.87	694.89	694.91	694.93	694.94	694.96
223.00	CFS	12.42	12.48	12.54	12.58	12.60	12.62	12.62	12.62
223.00	ELEV	694.97	694.98	694.99	695.00	695.01	695.01	695.01	695.01
231.00	CFS	12.62	12.62	12.62	12.61	12.60	12.59	12.58	12.57


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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
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231.00	ELEV	695.01	695.01	695.01	695.01	695.01	695.01	695.00	695.00
239.00	CFS	12.55	12.52	12.45	12.32	12.18	12.02	11.84	11.65
239.00	ELEV	695.00	694.99	694.98	694.96	694.93	694.90	694.87	694.83
247.00	CFS	11.45	11.23	11.00	10.77	10.53	10.28	10.03	9.78
247.00	ELEV	694.80	694.76	694.72	694.67	694.63	694.59	694.54	694.49

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 RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
               2.56 WATERSHED INCHES;    1024 CFS-HRS;      84.6 ACRE-FEET.

 DURATION(HRS)  6     12     18     24     30     36     42     48
 FLOW(CFS)      13     13     12     12     12     11     10     10

 DURATION(HRS)  49
 FLOW(CFS)      10 TRUNCATED

--- STRUCTURE 39, ALTERNATE  0, STORM 15, HYDROGRAPH ADDED TO READHD FILE ---


EXECUTIVE CONTROL  ENDCMP    COMPUTATIONS COMPLETED FOR PASS   5
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TR20 ---------- SCS -
001 CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE VERSION
04/19/** PROPERTY NORTH OF THE EAST-WEST TOLLWAY (JRB 11/1/95 FILE: 8932.04TEST
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SUMMARY TABLE 1

SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.
A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:
F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED HYDROGRAPH

XSECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RUNOFF AMOUNT (IN)	PEAK DISCHARGE ELEVATION (FT)	PEAK DISCHARGE TIME (HR)	PEAK DISCHARGE RATE (CFS)	PEAK DISCHARGE RATE (CSM)
RAINFALL OF 3.04 inches AND 24.00 hr DURATION, BEGINS AT .0 hrs.							
RAINTABLE NUMBER 3, ARC 2							
MAIN TIME INCREMENT 1.000 HOURS							
ALTERNATE 0 STORM 11							
XSECTION 91	RUNOFF	.09	.99	---	15.86	9	100.0
XSECTION 92	RUNOFF	.13	1.28	---	15.87	16	123.1
XSECTION 93	ADDHYD	.22	1.16	---	15.86	24	109.1
XSECTION 94	RUNOFF	.02	.52	---	16.25T	1T	50.0
STRUCTURE 11	RESVOR	.02	.53	738.95	17.00R	1R	50.0
XSECTION 95	ADDHYD	.24	1.11	---	15.89	25	104.2
XSECTION 96	RUNOFF	.01	2.77	---	14.71T	2T	200.0
XSECTION 97	ADDHYD	.25	1.17	---	15.82	26	104.0
XSECTION 10	RUNOFF	.03	1.77	---	14.87	4	133.3
XSECTION 98	ADDHYD	.28	1.22	---	15.65	30	107.1
STRUCTURE 6	RESVOR	.28	1.22	709.39	16.60	27	96.4
XSECTION 99	RUNOFF	.15	1.77	---	14.87	25	166.7
XSECTION 90	ADDHYD	.43	1.42	---	15.52	45	104.7
XSECTION 17	RUNOFF	.11	1.85	---	14.88	19	172.7
XSECTION 13	ADDHYD	.54	1.51	---	15.26	64	118.5
STRUCTURE 7	RESVOR	.54	.82	702.56	24.20T	15T	27.8
XSECTION 49	RUNOFF	.00	.82	---	.00	0	********
XSECTION 50	ADDHYD	.54	.82	---	23.98T	15T	27.8
XSECTION 24	RUNOFF	.01	2.00	---	14.82	3	300.0
XSECTION 17	ADDHYD	.56	.85	---	23.68T	16T	28.6
XSECTION 19	RUNOFF	.06	2.01	---	14.84	11	183.3
XSECTION 15	ADDHYD	.62	.97	---	15.28T	21T	33.9
STRUCTURE 39	RESVOR	.62	.56	694.96	32.00T	12T	19.4

TR20 ---------- SCS -
001 CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE VERSION
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SUMMARY TABLE 1

SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.
A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:
F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED HYDROGRAPH

XSECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RUNOFF AMOUNT (IN)	PEAK DISCHARGE ELEVATION (FT)	PEAK DISCHARGE TIME (HR)	PEAK DISCHARGE RATE (CFS)	PEAK DISCHARGE RATE (CSM)
RAINFALL OF 3.30 inches AND 48.00 hr DURATION, BEGINS AT .0 hrs.							
RAINTABLE NUMBER 4, ARC 2							
ALTERNATE 0 STORM 12							
XSECTION 91	RUNOFF	.09	1.16	---	42.52	6	66.7
XSECTION 92	RUNOFF	.13	1.47	---	42.51	10	76.9
XSECTION 93	ADDHYD	.22	1.34	---	42.51	16	72.7
XSECTION 94	RUNOFF	.02	.64	---	43.00R	1R	50.0
STRUCTURE 11	RESVOR	.02	.65	738.62	43.00R	1R	50.0
XSECTION 95	ADDHYD	.24	1.29	---	42.53	17	70.8
XSECTION 96	RUNOFF	.01	3.09	---	40.00R	1R	100.0
XSECTION 97	ADDHYD	.25	1.35	---	42.53	18	72.0
XSECTION 10	RUNOFF	.03	2.02	---	39.50	2	66.7
XSECTION 98	ADDHYD	.28	1.41	---	42.53	20	71.4
STRUCTURE 6	RESVOR	.28	1.41	708.91	42.98	19	67.9
XSECTION 99	RUNOFF	.15	2.02	---	39.50	14	93.3
XSECTION 90	ADDHYD	.43	1.63	---	42.62	33	76.7
XSECTION 17	RUNOFF	.11	2.11	---	39.85	11	100.0
XSECTION 13	ADDHYD	.54	1.73	---	42.58	44	81.5
STRUCTURE 7	RESVOR	.54	.81	702.74	48.88T	16T	29.6
XSECTION 49	RUNOFF	.00	.81	---	.00	0	********
XSECTION 50	ADDHYD	.54	.82	---	48.56T	16T	29.6
XSECTION 24	RUNOFF	.01	2.28	---	42.50	1	100.0
XSECTION 17	ADDHYD	.56	.85	---	47.86T	17T	30.4
XSECTION 19	RUNOFF	.06	2.29	---	39.61	6	100.0
XSECTION 15	ADDHYD	.62	1.00	---	47.60T	22T	35.5

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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROPERTY NORTH OF THE EAST-WEST TOLLWAY (JRB 11/1/95 FILE: 8932.04TEST
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SUMMARY TABLE 1

SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.
A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:
F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED HYDROGRAPH

XSECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RUNOFF AMOUNT (IN)	PEAK DISCHARGE ELEVATION (FT)	PEAK DISCHARGE TIME (HR)	PEAK DISCHARGE RATE (CFS)	PEAK DISCHARGE RATE (CSM)
ALTERNATE 0 STORM 12							
STRUCTURE 39	RESVOR	.62	.55	695.12	55.00R	13R	21.0
RAINFALL OF 3.55 inches AND 72.00 hr DURATION, BEGINS AT .0 hrs.							
ALTERNATE 0 STORM 13							
XSECTION 91	RUNOFF	.09	1.34	---	63.53	4	44.4
XSECTION 92	RUNOFF	.13	1.67	---	63.52	7	53.8
XSECTION 93	ADDHYD	.22	1.53	---	63.52	12	54.5
XSECTION 94	RUNOFF	.02	.78	---	64.00R	1R	50.0
STRUCTURE 11	RESVOR	.02	.78	738.29	65.00R	1R	50.0
XSECTION 95	ADDHYD	.24	1.47	---	63.63	12	50.0
XSECTION 96	RUNOFF	.01	3.32	---	60.00R	1R	100.0
XSECTION 97	ADDHYD	.25	1.53	---	63.57	13	52.0
XSECTION 10	RUNOFF	.03	2.23	---	59.00	2	66.7
XSECTION 98	ADDHYD	.28	1.60	---	63.53	15	53.6
STRUCTURE 6	RESVOR	.28	1.60	708.52	63.99	14	50.0
XSECTION 99	RUNOFF	.15	2.23	---	59.00F	10F	66.7
XSECTION 90	ADDHYD	.43	1.82	---	63.55	25	58.1
XSECTION 17	RUNOFF	.11	2.34	---	59.57	8	72.7
XSECTION 13	ADDHYD	.54	1.93	---	63.54	32	59.3
STRUCTURE 7	RESVOR	.54	1.21	702.62	72.46T	16T	29.6
XSECTION 49	RUNOFF	.00	1.21	---	.00	0	********
XSECTION 50	ADDHYD	.54	1.21	---	72.18T	16T	29.6
XSECTION 24	RUNOFF	.01	2.51	---	59.00F	1F	100.0
XSECTION 17	ADDHYD	.56	1.25	---	71.73T	17T	30.4
XSECTION 19	RUNOFF	.06	2.52	---	59.00F	4F	66.7
XSECTION 15	ADDHYD	.62	1.37	---	71.56T	20T	32.3
STRUCTURE 39	RESVOR	.62	.91	695.22	79.00T	13T	21.0


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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROPERTY NORTH OF THE EAST-WEST TOLLWAY (JRB 11/1/95 FILE: 8932.04TEST
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SUMMARY TABLE 1

SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.
A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:
F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED HYDROGRAPH

XSECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RUNOFF AMOUNT (IN)	PEAK DISCHARGE ELEVATION (FT)	PEAK DISCHARGE TIME (HR)	PEAK DISCHARGE RATE (CFS)	PEAK DISCHARGE RATE (CSM)
RAINFALL OF 3.93 inches AND 120.00 hr DURATION, BEGINS AT .0 hrs.							
ALTERNATE 0 STORM 14							
XSECTION 91	RUNOFF	.09	1.61	---	106.50T	3T	33.3
XSECTION 92	RUNOFF	.13	1.98	---	107.50	5	38.5
XSECTION 93	ADDHYD	.22	1.83	---	106.50	8	36.4
XSECTION 94	RUNOFF	.02	1.83	---	.00	0	.0
STRUCTURE 11	RESVOR	.02	.99	---	119.50	0	.0
XSECTION 95	ADDHYD	.24	1.76	---	106.12	9	37.5
XSECTION 96	RUNOFF	.01	1.76	---	.00	0	.0
XSECTION 97	ADDHYD	.25	1.82	---	106.12	9	36.0
XSECTION 10	RUNOFF	.03	2.60	---	105.00F	1F	33.3
XSECTION 98	ADDHYD	.28	1.90	---	106.12	10	35.7
STRUCTURE 6	RESVOR	.28	1.90	708.15	106.64	10	35.7
XSECTION 99	RUNOFF	.15	2.60	---	100.60	7	46.7
XSECTION 90	ADDHYD	.43	2.15	---	101.81	17	39.5
XSECTION 17	RUNOFF	.11	2.65	---	106.51	5	45.5
XSECTION 13	ADDHYD	.54	2.25	---	101.68	22	40.7
STRUCTURE 7	RESVOR	.54	1.64	702.34	119.82T	14T	25.9
XSECTION 49	RUNOFF	.00	1.64	---	.00	0	********
XSECTION 50	ADDHYD	.54	1.64	---	119.72T	14T	25.9
XSECTION 24	RUNOFF	.01	2.89	---	99.00R	1R	100.0
XSECTION 17	ADDHYD	.56	1.68	---	119.57T	15T	26.8
XSECTION 19	RUNOFF	.06	2.83	---	100.56	3	50.0
XSECTION 15	ADDHYD	.62	1.79	---	107.73T	17T	27.4
STRUCTURE 39	RESVOR	.62	1.36	695.22	122.66T	13T	21.0

TR20 ---------- SCS -
001 CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE VERSION
04/19/** PROPERTY NORTH OF THE EAST-WEST TOLLWAY (JRB 11/1/95 FILE: 8932.04TEST
12:30:24 SUMMARY, JOB NO. 1 PAGE 31

SUMMARY TABLE 1

SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.
A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:
F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED HYDROGRAPH

XSECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RUNOFF AMOUNT (IN)	PEAK DISCHARGE ELEVATION (FT)	TIME (HR)	RATE (CFS)	RATE (CSM)
RAINFALL OF 4.95 inches AND 240.00 hr DURATION, BEGINS AT .0 hrs.							
ALTERNATE 0 STORM 15							
XSECTION 91	RUNOFF	.09	2.40	---	214.50T	2T	22.2
XSECTION 92	RUNOFF	.13	2.84	---	213.00F	3F	23.1
XSECTION 93	ADDHYD	.22	2.66	---	213.00F	6F	27.3
XSECTION 94	RUNOFF	.02	2.66	---	.00	0	.0
STRUCTURE 11	RESVOR	.02	1.61	---	213.00	0	.0
XSECTION 95	ADDHYD	.24	2.57	---	214.05	6	25.0
XSECTION 96	RUNOFF	.01	2.57	---	.00	0	.0
XSECTION 97	ADDHYD	.25	2.63	---	214.05	6	24.0
XSECTION 10	RUNOFF	.03	3.53	---	202.00R	1R	33.3
XSECTION 98	ADDHYD	.28	2.72	---	202.00F	7F	25.0
STRUCTURE 6	RESVOR	.28	2.72	707.84	203.54	7	25.0
XSECTION 99	RUNOFF	.15	3.53	---	202.00	5	33.3
XSECTION 90	ADDHYD	.43	3.01	---	203.50	12	27.9
XSECTION 17	RUNOFF	.11	3.65	---	201.00	4	36.4
XSECTION 13	ADDHYD	.54	3.14	---	203.50	15	27.8
STRUCTURE 7	RESVOR	.54	2.74	702.04	217.05T	12T	22.2
XSECTION 49	RUNOFF	.00	2.74	---	.00	0	********
XSECTION 50	ADDHYD	.54	2.74	---	216.82T	12T	22.2
XSECTION 24	RUNOFF	.01	2.74	---	.00	0	.0
XSECTION 17	ADDHYD	.56	2.76	---	215.84T	13T	23.2
XSECTION 19	RUNOFF	.06	3.86	---	198.00	2	33.3
XSECTION 15	ADDHYD	.62	2.87	---	215.57T	15T	24.2
STRUCTURE 39	RESVOR	.62	2.56	695.01	230.00F	13F	21.0

TR20 ---------- SCS -
001 CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE VERSION
04/19/** PROPERTY NORTH OF THE EAST-WEST TOLLWAY (JRB 11/1/95 FILE: 8932.04TEST
12:30:24 SUMMARY, JOB NO. 1 PAGE 32

SUMMARY TABLE 3

STORM DISCHARGES (CFS) AT XSECTIONS AND STRUCTURES FOR ALL ALTERNATES
QUESTION MARK (?) AFTER: OUTFLOW PEAK - RISING TRUNCATED HYDROGRAPH.

XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS..... 11	12	13	14	15
STRUCTURE 39	.62					
ALTERNATE 0		12	13?	13	13	13
STRUCTURE 11	.02					
ALTERNATE 0		1?	1?	1?	0	0
STRUCTURE 7	.54					
ALTERNATE 0		15	16	16	14	12
STRUCTURE 6	.28					
ALTERNATE 0		27	19	14	10	7
XSECTION 10	.03					
ALTERNATE 0		4	2	2	1	1?
XSECTION 13	.54					
ALTERNATE 0		64	44	32	22	15
XSECTION 15	.62					
ALTERNATE 0		21	22	20	17	15
XSECTION 17	.56					
ALTERNATE 0		16	17	17	15	13
XSECTION 19	.06					
ALTERNATE 0		11	6	4	3	2
XSECTION 24	.01					
ALTERNATE 0		3	1	1	1?	0
XSECTION 49	.00					
ALTERNATE 0		0	0	0	0	0
XSECTION 50	.54					
ALTERNATE 0		15	16	16	14	12
XSECTION 90	.43					

ALTERNATE	0		45	33	25	17	12
XSECTION	91	.09					

SUMMARY TABLE 3

STORM DISCHARGES (CFS) AT XSECTIONS AND STRUCTURES FOR ALL ALTERNATES
QUESTION MARK (?) AFTER: OUTFLOW PEAK - RISING TRUNCATED HYDROGRAPH.

XSECTION/ STRUCTURE ID		DRAINAGE AREA (SQ MI)	STORM NUMBERS..... 11	12	13	14	15
XSECTION	91	.09					
ALTERNATE	0		9	6	4	3	2
XSECTION	92	.13					
ALTERNATE	0		16	10	7	5	3
XSECTION	93	.22					
ALTERNATE	0		24	16	12	8	6
XSECTION	94	.02					
ALTERNATE	0		1	1?	1?	0	0
XSECTION	95	.24					
ALTERNATE	0		25	17	12	9	6
XSECTION	96	.01					
ALTERNATE	0		2	1?	1?	0	0
XSECTION	97	.25					
ALTERNATE	0		26	18	13	9	6
XSECTION	98	.28					
ALTERNATE	0		30	20	15	10	7
XSECTION	99	.15					
ALTERNATE	0		25	14	10	7	5

```
TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROPERTY NORTH OF THE EAST-WEST TOLLWAY (JRB 11/1/95 FILE: 8932.04TEST



END OF  1 JOBS IN THIS RUN









                    SCS  TR-20,  VERSION 2.04TEST
                           001       FILES

     INPUT  = C:\TR20\PR2B.DAT                       , GIVEN DATA FILE
     OUTPUT = C:\TR20\PR2B.OUT                       , DATED 04/19/**,12:30:24

              FILES GENERATED - DATED 04/19/**,12:30:24

    FILE C:\TR20\PR2B.TRD CONTAINS READHD INFORMATION

    FILE C:\TR20\PR2B.TMG CONTAINS MESSAGE + WARNING INFORMATION


           TOTAL NUMBER OF WARNINGS =  97,  MESSAGES =  50

                       JOB ENDED AT 12:30:24
                    *** TR-20 RUN COMPLETED ***
```

PCBMP's
(Tab 6)

RIVERVIEW WEST

City of Warrenville
DuPage County, Illinois

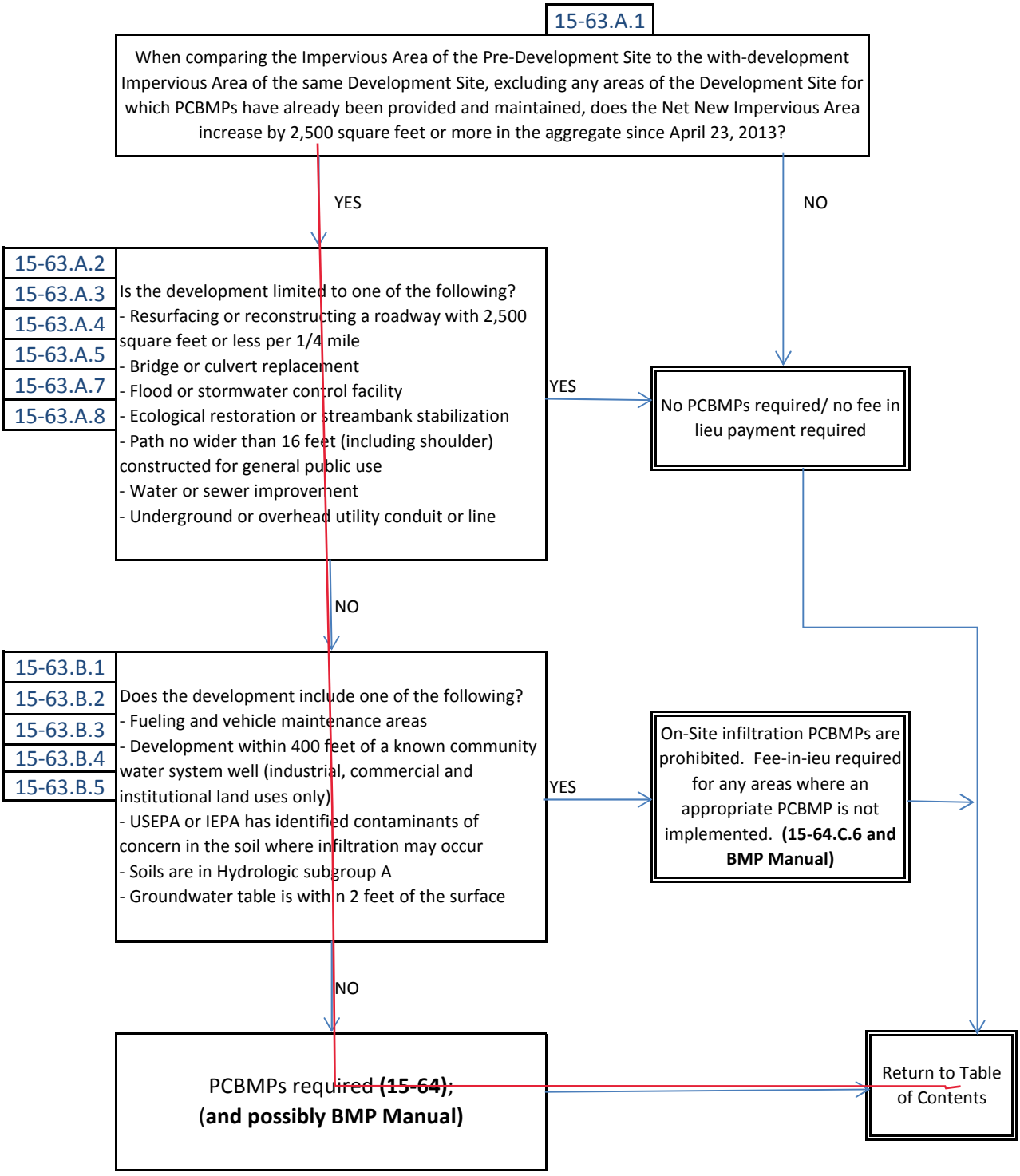
Prepared by:

Bollinger, Lach & Associates, Inc.
333 Pierce Road, Suite 200
Itasca, IL 60143
Contact: Kevin Kenniff
p: 630.438.6400
f: 630.438.6444

April 19, 2019

Post Construction Best Management Practices (PCBMPs)

9/23/2015



TAB 6 - NARRATIVE

Post-Construction Best Management Practices are required for the proposed development. The existing and proposed impervious areas of the proposed site are as follows:

Proposed Site:
Lot 1:
Impervious Areas = 3.29 Acres
Lot 2:
Impervious Areas = 7.87 Acres
Lot 3:
Impervious Areas = 2.13Acres
Torch Parkway ROW:
Impervious Areas = 1.99 Acres
Outlot "A":
Impervious Area = 0.09 Acres

Total Proposed Impervious Area = 15.37 Acres

The net new impervious area is 15.37 acres. Infiltration of 1.25 inches of rainfall is required over the impervious area. This results in a required infiltration volume of 1.60 acre-feet.

The proposed plans will provide 1.41 acre-feet of BMP volume. The proposed infiltration volume will be provided in several facilities within the development, such as a bioinfiltration basin, bioswales and permeable pavers. Additional volume retention is provided in the existing retention facilities that are being modified.

There are two (2) existing wet-bottom detention facilities which will be reconfigured in the proposed condition. In addition, the existing wet detention basins located onsite will be enhanced in the proposed condition by installing native seeding on the side slopes of the ponds. The native plantings will further promote infiltration of runoff and filter stormwater pollutants. The side slopes in these areas will have a maximum of a 4:1 slope to reduce the potential of side slope erosion. The lower 18" of the detention ponds will be planted with a tough shoreline seed mixture. The detention pond will provide settlement of suspended solids and will provide 15.64 acre-feet of runoff volume retention during the 2-year storm event.

Please refer to the Plantings noted on the erosion control plans for seeding specifications.

Best Management Practice (BMP) Summary				
Project:	Riverview West Development		Created by:	MK
Location:	Warrenville, IL		Checked by:	KEK
Date:	3/21/2018			
Proposed Land Coverage:				
	Area (sq ft)	Area (ac)		
Proposed Impervious Area:	669,517	15.37		
BMP Overview:				
Required:	New Impervious Area (ac)	Infiltration Rainfall (in)	Infiltration Volume (cu ft)	Infiltration Volume (ac-ft)
Per DuPage County Ordinance	15.37	1.25	69,741	**1.60**
Provided:	Volume Calculations		Infiltration Volume (cu ft)	Infiltration Volume (ac-ft)
Bioinfiltration Basin	See attached spreadsheets		17,248	0.40
Bioswale	See attached spreadsheets		31,117	0.71
Permeable Pavers	See attached spreadsheets		12,892	0.30
			Total Infiltration Volume Provided:	**1.41**

Bioinfiltration Basin (Volume Calculations)				
Surface Storage				
Elevation	Area	Average Area	Incremental Storage	Cummulative Storage
(ft)	(ft^2)	(ft^2)	(ft^3)	(ft^3)
693.5	1234			0
		1402	701	
694	1570			701
		1947	1947	
695	2324			2648
		2766	2766	
696.00	3208			5414
		3713	3713	
697.00	4218			9127
		4783	4783	
698.00	5347			13910
		5971	2329	
698.39	6595			16238
			Total (ft^3) =	16238
Media Storage				
Media Type	Porosity	Area (ft^2)	Depth (in)	Storage (ft^3)
CA-7 Aggregate	0.36	1402	24	1009
			Total (ft^3) =	1009
			Total Storage (Surface Storage + Media Storage) (cu ft) =	**17248**

Bioswale Volume Calculations - Parking Islands					
Media Type	Porosity	Area (ft^2)	Depth (in)	Depth (ft)	Storage (ft^3)
Surface Water	1	8685	9	0.75	6514
CA-7 Aggregate	0.36	8685	30	2.50	7817
				Total	14330
Total Volume Control Storage (ft^3) =					**14330**
Total Volume Control Storage (ac-ft) =					**0.33**

Bioswale Volume Calculations - Southeast Side Site					
Media Type	Porosity	Area (ft^2)	Depth (in)	Depth (ft)	Storage (ft^3)
Surface Water	1	3957	12	1.00	3957
CA-7 Aggregate	0.36	3957	30	2.50	3561
				Total	7518
Total Volume Control Storage (ft^3) =					**7518**
Total Volume Control Storage (ac-ft) =					**0.17**

Bioswale Volume Calculations - South of Commercial Property					
Media Type	Porosity	Area (ft^2)	Depth (in)	Depth (ft)	Storage (ft^3)
Surface Water	1	4878	12	1.00	4878
CA-7 Aggregate	0.36	4878	30	2.50	4390
				Total	9268
Total Volume Control Storage (ft^3) =					**9268**
Total Volume Control Storage (ac-ft) =					**0.21**

Total	**31117**
Total	**0.71**

Permeable Pavement Volume Calculations					
Media Type	Porosity	Area (ft^2)	Depth (in)	Depth (ft)	Storage (ft^3)
CA-7 Aggregate	0.36	17906	24	2.00	12892
				Total	12892
Total Volume Control Storage (ft^3) =					**12892**
Total Volume Control Storage (ac-ft) =					**0.30**

CRITICAL DURATION
2-YEAR STORM EVENT


```
******************80-80 LIST OF INPUT DATA FOR TR-20 HYDROLOGY******************

JOB TR-20 001                          PASS=     SUMMARY
TITLE     CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE
TITLE     PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DAT)
 5 RAINFL 1              0.05
 8          0.00         0.16         0.33         0.43         0.52
 8          0.60         0.66         0.71         0.75         0.79
 8          0.82         0.84         0.86         0.88         0.90
 8          0.92         0.94         0.96         0.97         0.98
 8          1.00         1.00         1.00         1.00         1.00
 9 ENDTBL
 5 RAINFL 2              0.05
 8          0.00         0.03         0.08         0.12         0.16
 8          0.22         0.29         0.39         0.51         0.62
 8          0.70         0.76         0.81         0.85         0.88
 8          0.91         0.93         0.95         0.97         0.98
 8          1.00         1.00         1.00         1.00         1.00
 9 ENDTBL
 5 RAINFL 3              0.05
 8          0.00         0.03         0.06         0.09         0.12
 8          0.15         0.19         0.23         0.27         0.32
 8          0.38         0.45         0.57         0.70         0.79
 8          0.85         0.89         0.92         0.95         0.97
 8          1.00         1.00         1.00         1.00         1.00
 9 ENDTBL
 5 RAINFL 4              0.05
 8          0.00         0.02         0.05         0.08         0.10
 8          0.13         0.16         0.19         0.22         0.25
 8          0.28         0.32         0.35         0.39         0.45
 8          0.51         0.59         0.72         0.84         0.92
 8          1.00         1.00         1.00         1.00         1.00
 9 ENDTBL
 3 STRUCT      06
 8                       707.0        0.00         0.00           POND-B6 - AEAST
 8                       708.0        8.40         1.11           36" DIA. RCP
 8                       709.0        20.0         2.32           INLET CONTROL
 8                       710.0        38.0         3.63
 8                       711.0        55.0         5.02
 8                       712.0        66.0         6.52           12' WEIR; C=3.0
 8                       712.5        114.0        7.32
 9 ENDTBL
 3 STRUCT      11
 8                       737.5         0.0          0.0
 8                       738.          0.5         .005           DRYBASIN
 8                       739.          1.0         .040
 8                       740.          3.0         .098
 8                       741.          5.0         .176
 8                       742.          7.0         .288
 8                       743.          9.0         .446
 8                       744.         33.9         .566
 9 ENDTBL
 3 STRUCT      07
 8                       700.          0.0          0.0           POND-D7
 8                       701.          4.0         8.59           REINDEER LAKE
 8                       702.          12.        22.08           INCLUDES PONDS F
 8                       703.          18.        36.22           21" DIA RCP
 8                       704.          22.        51.08           INLET CONTROL
```

**********80-80 LIST OF INPUT DATA (CONTINUED)**********

```
 8                     705.         26.        66.65
 8                     705.5        46.        74.81          20' WEIR; C=2.6
 8                     706.         82.        82.97
 8                     706.5       128.        92.99
 9 ENDTBL
 3 STRUCT      39
 8                     693.          0.0         0.0           POND-C2
 8                     694.        7.06         6.73          REVISED STAGE-D
 8                     695.       12.57        13.95           FOR PHASE 1 IM
 8                     696.       16.03       21.66
 8                     696.74     18.12       27.74
 8                     697.       25.03       29.88
 8                     698.       87.74       38.61
 8                     699.       138.39      47.99
 8                     700.       163.48      58.17
 8                     700.25     187.22      60.82
 8                     701.       329.76      68.76
 8                     701.5      460.91      74.05
 9 ENDTBL
 6 RUNOFF 1 091       1 0.0923      75.00       0.84       1         1
 6 RUNOFF 1 092       2 0.1292      80.00       1.00       1         1
 6 ADDHYD 4 093   1 2 3                                    1
 6 RUNOFF 1 094       4 0.0203      65.00       0.91       1         1
 6 RESVOR 2    11 4   5                                      1 1 1 1 1
 6 ADDHYD 4 095   3 5 6
 6 RUNOFF 1 096       1 0.0084      98.00       0.16       1         1
 6 ADDHYD 4 097   6 1 7                                    1
 6 RUNOFF 1 010       4 0.0265      87.00       0.15
 6 ADDHYD 4 098   7 4 1
 6 RESVOR 2     6 1   5                                      1 1 1 1 1
 6 RUNOFF 1 099       7 0.1526      87.00       0.15       1         1
 6 ADDHYD 4 090   5 7 2                                    1
 6 RUNOFF 1 017       7 0.1120      88.00       0.30
 6 ADDHYD 4 013   2 7 1
 6 RESVOR 2     7 1   2                                      1 1 1 1 1
 6 RUNOFF 1 049       7 0.0023      89.00       0.15       1         1
 6 ADDHYD 4 050   2 7 1                                    1
 6 RUNOFF 1 024       7 0.0149      90.00       0.15
 6 ADDHYD 4 017   1 7 2
 6 RUNOFF 1 019       6 0.0618      90.00       0.25
 6 ADDHYD 4 015   2 6 7
 6 RESVOR 2    39 7   1                                      1 1 1 1 1
   ENDATA
 7 INCREM 6             0.008
 7 COMPUT 7 091      39 0.00        0.36        0.09       1 2      01   5-MIN
   ENDCMP 1
 7 COMPUT 7 091      39 0.00        0.67        0.17       1 2      02   10-MIN
   ENDCMP 1
 7 COMPUT 7 091      39 0.00        0.82        0.25       1 2      03   15-MIN
   ENDCMP 1
 7 COMPUT 7 091      39 0.00        1.12        0.50       1 2      04   30-MIN
   ENDCMP 1
 7 COMPUT 7 091      39 0.00        1.43        1.00       1 2      05   1-HR
   ENDCMP 1
 7 INCREM 6             0.10
 7 COMPUT 7 091      39 0.00        1.79        2.00       1 2      06   2-HR
```


**********80-80 LIST OF INPUT DATA (CONTINUED)**********

```
   ENDCMP 1
 7 COMPUT 7 091      39 0.00        1.94        3.00       1 2      07   3-HR
   ENDCMP 1
 7 COMPUT 7 091      39 0.00        2.28        6.00       1 2      08   6-HR
   ENDCMP 1
 7 INCREM 6             0.50
 7 COMPUT 7 091      39 0.00        2.64        12.0       2 2      09   12-HR
   ENDCMP 1
 7 COMPUT 7 091      39 0.00        2.79        18.0       2 2      10   18-HR
   ENDCMP 1
   ENDJOB 2
```

**********END OF 80-80 LIST**********

```
TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
12:30:03                    PASS   1   JOB NO.   1                      PAGE   1


EXECUTIVE CONTROL  INCREM    MAIN TIME INCREMENT =   .008 HOURS


EXECUTIVE CONTROL  COMPUT    FROM XSECTION  91  TO STRUCTURE 39           5-MIN
    STARTING TIME =   .00       RAIN DEPTH =   .36       RAIN DURATION =   .09
    ANT. RUNOFF COND. = 2       MAIN TIME INCREMENT =   .008 HOURS
    ALTERNATE NO. = 0           STORM NO. = 1            RAIN TABLE NO. = 1


OPERATION RUNOFF    XSECTION  91

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .00 WATERSHED INCHES;       0 CFS-HRS;        .0 ACRE-FEET.


OPERATION RUNOFF    XSECTION  92

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .00 WATERSHED INCHES;       0 CFS-HRS;        .0 ACRE-FEET.


OPERATION ADDHYD    XSECTION  93

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .00 WATERSHED INCHES;       0 CFS-HRS;        .0 ACRE-FEET.


OPERATION RUNOFF    XSECTION  94

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .00 WATERSHED INCHES;       0 CFS-HRS;        .0 ACRE-FEET.


OPERATION RESVOR    STRUCTURE 11

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .00 WATERSHED INCHES;      -1 CFS-HRS;        .0 ACRE-FEET.
            FOR XSECTION  95, OPERATION ADDHYD.


OPERATION RUNOFF    XSECTION  96

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .13                          7.2                        (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .19 WATERSHED INCHES;       1 CFS-HRS;        .1 ACRE-FEET.
```



```
TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
12:30:03                    PASS   1   JOB NO.   1                      PAGE   2


OPERATION ADDHYD    XSECTION  97

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .13                          7.2                        (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .01 WATERSHED INCHES;       1 CFS-HRS;        .1 ACRE-FEET.


OPERATION RESVOR    STRUCTURE  6

                  HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM = 1
    HRS      MAIN TIME INCREMENT =  .008 hr,       DRAINAGE AREA =    .28 SQ.MI.
     .03 CFS      .00     .01     .01     .02     .03     .04     .06     .08
     .03 ELEV   707.00  707.00  707.00  707.00  707.00  707.01  707.01  707.01
     .10 CFS      .11     .14     .17     .21     .24     .28     .31     .35
     .10 ELEV   707.01  707.02  707.02  707.02  707.03  707.03  707.04  707.04
     .16 CFS      .38     .41     .44     .46     .49     .51     .52     .54
     .16 ELEV   707.05  707.05  707.05  707.06  707.06  707.06  707.06  707.06
     .22 CFS      .55     .56     .57     .58     .58     .59     .59     .59
     .22 ELEV   707.07  707.07  707.07  707.07  707.07  707.07  707.07  707.07
     .29 CFS      .60     .60     .60     .60     .60     .60     .60     .60
     .29 ELEV   707.07  707.07  707.07  707.07  707.07  707.07  707.07  707.07
     .35 CFS      .60     .60     .59     .59     .59     .59     .59     .58
     .35 ELEV   707.07  707.07  707.07  707.07  707.07  707.07  707.07  707.07
     .42 CFS      .58     .58     .58     .57     .57     .57     .57     .56
     .42 ELEV   707.07  707.07  707.07  707.07  707.07  707.07  707.07  707.07
     .48 CFS      .56     .56     .56     .55     .55     .55     .54     .54
     .48 ELEV   707.07  707.07  707.07  707.07  707.07  707.07  707.06  707.06
     .54 CFS      .54     .54     .53     .53     .53     .53     .52     .52
     .54 ELEV   707.06  707.06  707.06  707.06  707.06  707.06  707.06  707.06
     .61 CFS      .52     .52     .51     .51     .51     .51     .50     .50
     .61 ELEV   707.06  707.06  707.06  707.06  707.06  707.06  707.06  707.06
     .67 CFS      .50     .50     .49     .49     .49     .49     .48     .48
     .67 ELEV   707.06  707.06  707.06  707.06  707.06  707.06  707.06  707.06
     .74 CFS      .48     .48     .47     .47     .47     .47     .46     .46
     .74 ELEV   707.06  707.06  707.06  707.06  707.06  707.06  707.06  707.05
     .80 CFS      .46     .46     .46     .45     .45     .45     .45     .44
     .80 ELEV   707.05  707.05  707.05  707.05  707.05  707.05  707.05  707.05
     .86 CFS      .44     .44     .44     .44     .43     .43     .43     .43
     .86 ELEV   707.05  707.05  707.05  707.05  707.05  707.05  707.05  707.05
     .93 CFS      .42     .42     .42     .42     .42     .41     .41     .41
     .93 ELEV   707.05  707.05  707.05  707.05  707.05  707.05  707.05  707.05
     .99 CFS      .41     .41     .40     .40     .40     .40     .40     .39
     .99 ELEV   707.05  707.05  707.05  707.05  707.05  707.05  707.05  707.05
    1.06 CFS      .39     .39     .39     .39     .38     .38     .38     .38
    1.06 ELEV   707.05  707.05  707.05  707.05  707.05  707.05  707.05  707.05
    1.12 CFS      .38     .37     .37     .37     .37     .37     .37     .36
    1.12 ELEV   707.04  707.04  707.04  707.04  707.04  707.04  707.04  707.04
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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
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     1.18 CFS       .36     .36     .36     .36     .35     .35     .35     .35
     1.18 ELEV   707.04  707.04  707.04  707.04  707.04  707.04  707.04  707.04
     1.25 CFS       .35     .35     .34     .34     .34     .34     .34     .34
     1.25 ELEV   707.04  707.04  707.04  707.04  707.04  707.04  707.04  707.04
     1.31 CFS       .33     .33     .33     .33     .33     .33     .32     .32
     1.31 ELEV   707.04  707.04  707.04  707.04  707.04  707.04  707.04  707.04
     1.38 CFS       .32     .32     .32     .32     .31     .31     .31     .31
     1.38 ELEV   707.04  707.04  707.04  707.04  707.04  707.04  707.04  707.04
     1.44 CFS       .31     .31     .31     .30     .30     .30     .30     .30
     1.44 ELEV   707.04  707.04  707.04  707.04  707.04  707.04  707.04  707.04
     1.50 CFS       .30     .29     .29     .29     .29     .29     .29     .29
     1.50 ELEV   707.04  707.04  707.03  707.03  707.03  707.03  707.03  707.03
     1.57 CFS       .28     .28     .28     .28     .28     .28     .28     .27
     1.57 ELEV   707.03  707.03  707.03  707.03  707.03  707.03  707.03  707.03
     1.63 CFS       .27     .27     .27     .27     .27     .27     .27     .26
     1.63 ELEV   707.03  707.03  707.03  707.03  707.03  707.03  707.03  707.03
     1.70 CFS       .26     .26     .26     .26     .26     .26     .25     .25
     1.70 ELEV   707.03  707.03  707.03  707.03  707.03  707.03  707.03  707.03
     1.76 CFS       .25     .25     .25     .25     .25     .25     .24     .24
     1.76 ELEV   707.03  707.03  707.03  707.03  707.03  707.03  707.03  707.03
     1.82 CFS       .24     .24     .24     .24     .24     .24     .24     .23
     1.82 ELEV   707.03  707.03  707.03  707.03  707.03  707.03  707.03  707.03
     1.89 CFS       .23     .23     .23     .23     .23     .23     .23     .22
     1.89 ELEV   707.03  707.03  707.03  707.03  707.03  707.03  707.03  707.03
     1.95 CFS       .22     .22     .22     .22     .22     .22     .22     .22
     1.95 ELEV   707.03  707.03  707.03  707.03  707.03  707.03  707.03  707.03
     2.02 CFS       .21     .21     .21     .21     .21     .21     .21     .21
     2.02 ELEV   707.03  707.03  707.03  707.03  707.03  707.02  707.02  707.02
     2.08 CFS       .21     .21     .20     .20     .20     .20     .20     .20
     2.08 ELEV   707.02  707.02  707.02  707.02  707.02  707.02  707.02  707.02
     2.14 CFS       .20     .20     .20     .20     .19     .19     .19     .19
     2.14 ELEV   707.02  707.02  707.02  707.02  707.02  707.02  707.02  707.02
     2.21 CFS       .19     .19     .19     .19     .19     .19     .18     .18
     2.21 ELEV   707.02  707.02  707.02  707.02  707.02  707.02  707.02  707.02
     2.27 CFS       .18     .18     .18     .18     .18     .18     .18     .18
     2.27 ELEV   707.02  707.02  707.02  707.02  707.02  707.02  707.02  707.02
     2.34 CFS       .18     .18     .17     .17     .17     .17     .17     .17
     2.34 ELEV   707.02  707.02  707.02  707.02  707.02  707.02  707.02  707.02
     2.40 CFS       .17     .17     .17     .17     .17     .16     .16     .16
     2.40 ELEV   707.02  707.02  707.02  707.02  707.02  707.02  707.02  707.02
     2.46 CFS       .16     .16     .16     .16     .16     .16     .16     .16
     2.46 ELEV   707.02  707.02  707.02  707.02  707.02  707.02  707.02  707.02
     2.53 CFS       .16     .16     .15     .15     .15     .15     .15     .15
     2.53 ELEV   707.02  707.02  707.02  707.02  707.02  707.02  707.02  707.02
     2.59 CFS       .15     .15     .15     .15     .15     .15     .15     .14
     2.59 ELEV   707.02  707.02  707.02  707.02  707.02  707.02  707.02  707.02
     2.66 CFS       .14     .14     .14     .14     .14     .14     .14     .14
     2.66 ELEV   707.02  707.02  707.02  707.02  707.02  707.02  707.02  707.02
     2.72 CFS       .14     .14     .14     .14     .14     .13     .13     .13
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TR20 ------------------------------------------------------------------- SCS -
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     2.72 ELEV   707.02  707.02  707.02  707.02  707.02  707.02  707.02  707.02
     2.78 CFS       .13     .13     .13     .13     .13     .13     .13     .13
     2.78 ELEV   707.02  707.02  707.02  707.02  707.02  707.02  707.02  707.02
     2.85 CFS       .13     .13     .13     .13     .13     .12     .12     .12
     2.85 ELEV   707.02  707.02  707.02  707.01  707.01  707.01  707.01  707.01
     2.91 CFS       .12     .12     .12     .12     .12     .12     .12     .12
     2.91 ELEV   707.01  707.01  707.01  707.01  707.01  707.01  707.01  707.01
     2.98 CFS       .12     .12     .12     .12     .12     .11     .11     .11
     2.98 ELEV   707.01  707.01  707.01  707.01  707.01  707.01  707.01  707.01
     3.04 CFS       .11     .11     .11     .11     .11     .11     .11     .11
     3.04 ELEV   707.01  707.01  707.01  707.01  707.01  707.01  707.01  707.01
     3.10 CFS       .11     .11     .11     .11     .11     .11     .11     .11
     3.10 ELEV   707.01  707.01  707.01  707.01  707.01  707.01  707.01  707.01
     3.17 CFS       .10     .10     .10     .10
     3.17 ELEV   707.01  707.01  707.01  707.01

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                    .01 WATERSHED INCHES;       1 CFS-HRS;        .1 ACRE-FEET.

    DURATION(HRS)   0
    FLOW(CFS)       0

 --- STRUCTURE  6, ALTERNATE  0, STORM  1, HYDROGRAPH ADDED TO READHD FILE ---


OPERATION RUNOFF    XSECTION  99

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .16                          1.9                        (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                    .00 WATERSHED INCHES;       0 CFS-HRS;        .0 ACRE-FEET.


OPERATION ADDHYD    XSECTION  90

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .17                          2.3                        (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                    .00 WATERSHED INCHES;       1 CFS-HRS;        .1 ACRE-FEET.


OPERATION RESVOR    STRUCTURE  7

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                    .00 WATERSHED INCHES;       0 CFS-HRS;        .0 ACRE-FEET.
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TR20 ------------------------------------------------------------------- SCS -
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OPERATION RUNOFF    XSECTION  49

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .00 WATERSHED INCHES;      67 CFS-HRS;        .0 ACRE-FEET.


OPERATION ADDHYD    XSECTION  50

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .00 WATERSHED INCHES;     399 CFS-HRS;        .0 ACRE-FEET.


OPERATION RESVOR    STRUCTURE 39

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .00 WATERSHED INCHES;       0 CFS-HRS;        .0 ACRE-FEET.


EXECUTIVE CONTROL  ENDCMP    COMPUTATIONS COMPLETED FOR PASS   1


EXECUTIVE CONTROL  COMPUT    FROM XSECTION  91  TO STRUCTURE 39           10-MIN
    STARTING TIME =   .00       RAIN DEPTH =   .67       RAIN DURATION =   .17
    ANT. RUNOFF COND. = 2       MAIN TIME INCREMENT =   .008 HOURS
    ALTERNATE NO. = 0           STORM NO. = 2            RAIN TABLE NO. = 1


OPERATION RUNOFF    XSECTION  91

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .00 WATERSHED INCHES;     324 CFS-HRS;        .0 ACRE-FEET.


OPERATION RUNOFF    XSECTION  92

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .73                          1.1 *                       (RUNOFF)
                                  * FIRST POINT OF FLAT PEAK

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .01 WATERSHED INCHES;       1 CFS-HRS;        .1 ACRE-FEET.


OPERATION ADDHYD    XSECTION  93
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TR20 ------------------------------------------------------------------- SCS -
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04/19/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
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    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .73                          1.1 *                       (NULL)
                                  * FIRST POINT OF FLAT PEAK

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .01 WATERSHED INCHES;       1 CFS-HRS;        .1 ACRE-FEET.


OPERATION RUNOFF    XSECTION  94

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .00 WATERSHED INCHES;       0 CFS-HRS;        .0 ACRE-FEET.


OPERATION RESVOR    STRUCTURE 11

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .00 WATERSHED INCHES;      -1 CFS-HRS;        .0 ACRE-FEET.


OPERATION RUNOFF    XSECTION  96

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .15                         14.3                        (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .47 WATERSHED INCHES;       3 CFS-HRS;        .2 ACRE-FEET.


OPERATION ADDHYD    XSECTION  97

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .15                         14.3                        (NULL)
         .73                          1.1 *                      (NULL)
                                  * FIRST POINT OF FLAT PEAK

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .02 WATERSHED INCHES;       3 CFS-HRS;        .3 ACRE-FEET.


OPERATION RESVOR    STRUCTURE  6

                    HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM = 2
     HRS      MAIN TIME INCREMENT =  .008 hr,       DRAINAGE AREA =    .28 SQ.MI.
      .03 CFS      .00     .01     .02     .03     .05     .07     .11     .15
      .03 ELEV   707.00  707.00  707.00  707.00  707.01  707.01  707.01  707.02
      .10 CFS      .21     .27     .34     .42     .51     .60     .70     .79
      .10 ELEV   707.02  707.03  707.04  707.05  707.06  707.07  707.08  707.09
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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
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      .16 CFS       .89     .99    1.09    1.18    1.27    1.36    1.44    1.52
      .16 ELEV   707.11  707.12  707.13  707.14  707.15  707.16  707.17  707.18
      .22 CFS      1.60    1.67    1.73    1.79    1.84    1.89    1.93    1.96
      .22 ELEV   707.19  707.20  707.21  707.21  707.22  707.22  707.23  707.23
      .29 CFS      1.99    2.02    2.04    2.05    2.07    2.08    2.09    2.09
      .29 ELEV   707.24  707.24  707.24  707.24  707.25  707.25  707.25  707.25
      .35 CFS      2.10    2.10    2.10    2.10    2.10    2.10    2.10    2.09
      .35 ELEV   707.25  707.25  707.25  707.25  707.25  707.25  707.25  707.25
      .42 CFS      2.09    2.09    2.08    2.08    2.07    2.07    2.06    2.06
      .42 ELEV   707.25  707.25  707.25  707.25  707.25  707.25  707.25  707.25
      .48 CFS      2.05    2.05    2.04    2.04    2.03    2.03    2.02    2.02
      .48 ELEV   707.24  707.24  707.24  707.24  707.24  707.24  707.24  707.24
      .54 CFS      2.01    2.01    2.00    2.00    1.99    1.99    1.98    1.98
      .54 ELEV   707.24  707.24  707.24  707.24  707.24  707.24  707.24  707.24
      .61 CFS      1.97    1.97    1.96    1.96    1.95    1.95    1.95    1.94
      .61 ELEV   707.23  707.23  707.23  707.23  707.23  707.23  707.23  707.23
      .67 CFS      1.94    1.93    1.93    1.92    1.92    1.92    1.91    1.91
      .67 ELEV   707.23  707.23  707.23  707.23  707.23  707.23  707.23  707.23
      .74 CFS      1.90    1.90    1.90    1.89    1.89    1.88    1.88    1.88
      .74 ELEV   707.23  707.23  707.23  707.23  707.22  707.22  707.22  707.22
      .80 CFS      1.87    1.87    1.87    1.86    1.86    1.85    1.85    1.85
      .80 ELEV   707.22  707.22  707.22  707.22  707.22  707.22  707.22  707.22
      .86 CFS      1.84    1.84    1.83    1.83    1.82    1.82    1.82    1.81
      .86 ELEV   707.22  707.22  707.22  707.22  707.22  707.22  707.22  707.22
      .93 CFS      1.81    1.80    1.80    1.79    1.79    1.78    1.78    1.78
      .93 ELEV   707.22  707.21  707.21  707.21  707.21  707.21  707.21  707.21
      .99 CFS      1.77    1.77    1.76    1.76    1.75    1.75    1.74    1.74
      .99 ELEV   707.21  707.21  707.21  707.21  707.21  707.21  707.21  707.21
     1.06 CFS      1.73    1.73    1.72    1.72    1.71    1.70    1.70    1.69
     1.06 ELEV   707.21  707.21  707.20  707.20  707.20  707.20  707.20  707.20
     1.12 CFS      1.69    1.68    1.68    1.67    1.67    1.66    1.65    1.65
     1.12 ELEV   707.20  707.20  707.20  707.20  707.20  707.20  707.20  707.20
     1.18 CFS      1.64    1.64    1.63    1.62    1.62    1.61    1.61    1.60
     1.18 ELEV   707.20  707.19  707.19  707.19  707.19  707.19  707.19  707.19
     1.25 CFS      1.59    1.59    1.58    1.58    1.57    1.56    1.56    1.55
     1.25 ELEV   707.19  707.19  707.19  707.19  707.19  707.19  707.19  707.18
     1.31 CFS      1.55    1.54    1.53    1.53    1.52    1.52    1.51    1.50
     1.31 ELEV   707.18  707.18  707.18  707.18  707.18  707.18  707.18  707.18
     1.38 CFS      1.50    1.49    1.49    1.48    1.47    1.47    1.46    1.46
     1.38 ELEV   707.18  707.18  707.18  707.18  707.18  707.17  707.17  707.17
     1.44 CFS      1.45    1.44    1.44    1.43    1.43    1.42    1.41    1.41
     1.44 ELEV   707.17  707.17  707.17  707.17  707.17  707.17  707.17  707.17
     1.50 CFS      1.40    1.40    1.39    1.38    1.38    1.37    1.37    1.36
     1.50 ELEV   707.17  707.17  707.17  707.16  707.16  707.16  707.16  707.16
     1.57 CFS      1.35    1.35    1.34    1.34    1.33    1.32    1.32    1.31
     1.57 ELEV   707.16  707.16  707.16  707.16  707.16  707.16  707.16  707.16
     1.63 CFS      1.31    1.30    1.29    1.29    1.28    1.28    1.27    1.27
     1.63 ELEV   707.16  707.15  707.15  707.15  707.15  707.15  707.15  707.15
     1.70 CFS      1.26    1.25    1.25    1.24    1.24    1.23    1.23    1.22
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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
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     1.70 ELEV   707.15  707.15  707.15  707.15  707.15  707.15  707.15  707.15
     1.76 CFS      1.21    1.21    1.20    1.20    1.19    1.19    1.18    1.18
     1.76 ELEV   707.14  707.14  707.14  707.14  707.14  707.14  707.14  707.14
     1.82 CFS      1.17    1.17    1.16    1.15    1.15    1.14    1.14    1.13
     1.82 ELEV   707.14  707.14  707.14  707.14  707.14  707.14  707.14  707.13
     1.89 CFS      1.13    1.12    1.12    1.11    1.11    1.10    1.10    1.09
     1.89 ELEV   707.13  707.13  707.13  707.13  707.13  707.13  707.13  707.13
     1.95 CFS      1.09    1.08    1.08    1.07    1.07    1.06    1.06    1.05
     1.95 ELEV   707.13  707.13  707.13  707.13  707.13  707.13  707.13  707.13
     2.02 CFS      1.05    1.04    1.04    1.03    1.03    1.02    1.02    1.01
     2.02 ELEV   707.12  707.12  707.12  707.12  707.12  707.12  707.12  707.12
     2.08 CFS      1.01    1.00    1.00     .99     .99     .98     .98     .97
     2.08 ELEV   707.12  707.12  707.12  707.12  707.12  707.12  707.12  707.12
     2.14 CFS       .97     .96     .96     .95     .95     .95     .94     .94
     2.14 ELEV   707.12  707.11  707.11  707.11  707.11  707.11  707.11  707.11
     2.21 CFS       .93     .93     .92     .92     .91     .91     .91     .90
     2.21 ELEV   707.11  707.11  707.11  707.11  707.11  707.11  707.11  707.11
     2.27 CFS       .90     .89     .89     .88     .88     .87     .87     .87
     2.27 ELEV   707.11  707.11  707.11  707.11  707.10  707.10  707.10  707.10
     2.34 CFS       .86     .86     .85     .85     .85     .84     .84     .83
     2.34 ELEV   707.10  707.10  707.10  707.10  707.10  707.10  707.10  707.10
     2.40 CFS       .83     .83     .82     .82     .81     .81     .81     .80
     2.40 ELEV   707.10  707.10  707.10  707.10  707.10  707.10  707.10  707.10
     2.46 CFS       .80     .79     .79     .79     .78     .78     .77     .77
     2.46 ELEV   707.09  707.09  707.09  707.09  707.09  707.09  707.09  707.09
     2.53 CFS       .77     .76     .76     .76     .75     .75     .74     .74
     2.53 ELEV   707.09  707.09  707.09  707.09  707.09  707.09  707.09  707.09
     2.59 CFS       .74     .73     .73     .73     .72     .72     .72     .71
     2.59 ELEV   707.09  707.09  707.09  707.09  707.09  707.09  707.09  707.08
     2.66 CFS       .71     .70     .70     .70     .69     .69     .69     .68
     2.66 ELEV   707.08  707.08  707.08  707.08  707.08  707.08  707.08  707.08
     2.72 CFS       .68     .68     .67     .67     .67     .66     .66     .66
     2.72 ELEV   707.08  707.08  707.08  707.08  707.08  707.08  707.08  707.08
     2.78 CFS       .65     .65     .65     .64     .64     .64     .64     .63
     2.78 ELEV   707.08  707.08  707.08  707.08  707.08  707.08  707.08  707.08
     2.85 CFS       .63     .63     .62     .62     .62     .61     .61     .61
     2.85 ELEV   707.07  707.07  707.07  707.07  707.07  707.07  707.07  707.07
     2.91 CFS       .60     .60     .60     .60     .59     .59     .59     .58
     2.91 ELEV   707.07  707.07  707.07  707.07  707.07  707.07  707.07  707.07
     2.98 CFS       .58     .58     .57     .57     .57     .57     .56     .56
     2.98 ELEV   707.07  707.07  707.07  707.07  707.07  707.07  707.07  707.07
     3.04 CFS       .56     .56     .55     .55     .55     .54     .54     .54
     3.04 ELEV   707.07  707.07  707.07  707.07  707.07  707.06  707.06  707.06
     3.10 CFS       .54     .53     .53     .53     .53     .52     .52     .52
     3.10 ELEV   707.06  707.06  707.06  707.06  707.06  707.06  707.06  707.06
     3.17 CFS       .51     .51     .51     .51
     3.17 ELEV   707.06  707.06  707.06  707.06
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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
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    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .02 WATERSHED INCHES;       4 CFS-HRS;        .3 ACRE-FEET.

    DURATION(HRS)   2      3
    FLOW(CFS)       1      1 TRUNCATED

 --- STRUCTURE  6, ALTERNATE  0, STORM  2, HYDROGRAPH ADDED TO READHD FILE ---


OPERATION RUNOFF    XSECTION  99

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .19                         41.9                        (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .07 WATERSHED INCHES;       7 CFS-HRS;        .6 ACRE-FEET.


OPERATION ADDHYD    XSECTION  90

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .19                         43.2                        (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .04 WATERSHED INCHES;      11 CFS-HRS;        .9 ACRE-FEET.


OPERATION RESVOR    STRUCTURE  7

                  HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM = 2
     HRS      MAIN TIME INCREMENT =  .008 hr,      DRAINAGE AREA =    .54 SQ.MI.
      .08 CFS       .00     .01     .01     .02     .02     .03     .04     .05
      .08 ELEV   700.00  700.00  700.00  700.00  700.01  700.01  700.01  700.01
      .14 CFS       .06     .07     .09     .10     .12     .14     .16     .17
      .14 ELEV   700.02  700.02  700.02  700.03  700.03  700.03  700.04  700.04
      .21 CFS       .19     .21     .23     .25     .27     .28     .30     .32
      .21 ELEV   700.05  700.05  700.06  700.06  700.07  700.07  700.08  700.08
      .27 CFS       .33     .35     .36     .37     .38     .40     .41     .42
      .27 ELEV   700.08  700.09  700.09  700.09  700.10  700.10  700.10  700.10
      .34 CFS       .43     .44     .44     .45     .46     .47     .47     .48
      .34 ELEV   700.11  700.11  700.11  700.11  700.11  700.12  700.12  700.12
      .40 CFS       .48     .49     .49     .50     .50     .50     .51     .51
      .40 ELEV   700.12  700.12  700.12  700.12  700.13  700.13  700.13  700.13
      .46 CFS       .51     .52     .52     .52     .53     .53     .53     .53
      .46 ELEV   700.13  700.13  700.13  700.13  700.13  700.13  700.13  700.13
      .53 CFS       .53     .54     .54     .54     .54     .54     .54     .54
      .53 ELEV   700.13  700.13  700.13  700.13  700.14  700.14  700.14  700.14
      .59 CFS       .55     .55     .55     .55     .55     .55     .55     .55
      .59 ELEV   700.14  700.14  700.14  700.14  700.14  700.14  700.14  700.14
      .66 CFS       .55     .55     .55     .56     .56     .56     .56     .56
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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
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      .66 ELEV   700.14  700.14  700.14  700.14  700.14  700.14  700.14  700.14
      .72 CFS       .56     .56     .56     .56     .56     .56     .56     .56
      .72 ELEV   700.14  700.14  700.14  700.14  700.14  700.14  700.14  700.14
      .78 CFS       .56     .56     .56     .57     .57     .57     .57     .57
      .78 ELEV   700.14  700.14  700.14  700.14  700.14  700.14  700.14  700.14
      .85 CFS       .57     .57     .57     .57     .57     .57     .57     .57
      .85 ELEV   700.14  700.14  700.14  700.14  700.14  700.14  700.14  700.14
      .91 CFS       .57     .57     .57     .57     .57     .57     .57     .57
      .91 ELEV   700.14  700.14  700.14  700.14  700.14  700.14  700.14  700.14
      .98 CFS       .57     .57     .58     .58     .58     .58     .58     .58
      .98 ELEV   700.14  700.14  700.14  700.14  700.14  700.14  700.14  700.14
     1.04 CFS       .58     .58     .58     .58     .58     .58     .58     .58
     1.04 ELEV   700.14  700.14  700.14  700.14  700.14  700.14  700.14  700.15
     1.10 CFS       .58     .58     .58     .58     .58     .58     .58     .58
     1.10 ELEV   700.15  700.15  700.15  700.15  700.15  700.15  700.15  700.15
     1.17 CFS       .58     .58     .58     .58     .58     .58     .59     .59
     1.17 ELEV   700.15  700.15  700.15  700.15  700.15  700.15  700.15  700.15
     1.23 CFS       .59     .59     .59     .59     .59     .59     .59     .59
     1.23 ELEV   700.15  700.15  700.15  700.15  700.15  700.15  700.15  700.15
     1.30 CFS       .59     .59     .59     .59     .59     .59     .59     .59
     1.30 ELEV   700.15  700.15  700.15  700.15  700.15  700.15  700.15  700.15
     1.36 CFS       .59     .59     .59     .59     .59     .59     .59     .59
     1.36 ELEV   700.15  700.15  700.15  700.15  700.15  700.15  700.15  700.15
     1.42 CFS       .59     .59     .59     .59     .59     .59     .59     .59
     1.42 ELEV   700.15  700.15  700.15  700.15  700.15  700.15  700.15  700.15
     1.49 CFS       .59     .59     .60     .60     .60     .60     .60     .60
     1.49 ELEV   700.15  700.15  700.15  700.15  700.15  700.15  700.15  700.15
     1.55 CFS       .60     .60     .60     .60     .60     .60     .60     .60
     1.55 ELEV   700.15  700.15  700.15  700.15  700.15  700.15  700.15  700.15
     1.62 CFS       .60     .60     .60     .60     .60     .60     .60     .60
     1.62 ELEV   700.15  700.15  700.15  700.15  700.15  700.15  700.15  700.15
     1.68 CFS       .60     .60     .60     .60     .60     .60     .60     .60
     1.68 ELEV   700.15  700.15  700.15  700.15  700.15  700.15  700.15  700.15
     1.74 CFS       .60     .60     .60     .60     .60     .60     .60     .60
     1.74 ELEV   700.15  700.15  700.15  700.15  700.15  700.15  700.15  700.15
     1.81 CFS       .60     .60     .60     .60     .60     .60     .60     .60
     1.81 ELEV   700.15  700.15  700.15  700.15  700.15  700.15  700.15  700.15
     1.87 CFS       .60     .60     .61     .61     .61     .61     .61     .61
     1.87 ELEV   700.15  700.15  700.15  700.15  700.15  700.15  700.15  700.15
     1.94 CFS       .61     .61     .61     .61     .61     .61     .61     .61
     1.94 ELEV   700.15  700.15  700.15  700.15  700.15  700.15  700.15  700.15
     2.00 CFS       .61     .61     .61     .61     .61     .61     .61     .61
     2.00 ELEV   700.15  700.15  700.15  700.15  700.15  700.15  700.15  700.15
     2.06 CFS       .61     .61     .61     .61     .61     .61     .61     .61
     2.06 ELEV   700.15  700.15  700.15  700.15  700.15  700.15  700.15  700.15
     2.13 CFS       .61     .61     .61     .61     .61     .61     .61     .61
     2.13 ELEV   700.15  700.15  700.15  700.15  700.15  700.15  700.15  700.15
     2.19 CFS       .61     .61     .61     .61     .61     .61     .61     .61
     2.19 ELEV   700.15  700.15  700.15  700.15  700.15  700.15  700.15  700.15
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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
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     2.26 CFS       .61     .61     .61     .61     .61     .61     .61     .61
     2.26 ELEV   700.15  700.15  700.15  700.15  700.15  700.15  700.15  700.15
     2.32 CFS       .61     .61     .61     .61     .61     .61     .61     .61
     2.32 ELEV   700.15  700.15  700.15  700.15  700.15  700.15  700.15  700.15
     2.38 CFS       .61     .61     .61     .61     .61     .61     .61     .61
     2.38 ELEV   700.15  700.15  700.15  700.15  700.15  700.15  700.15  700.15
     2.45 CFS       .61     .61     .61     .61     .61     .61     .61     .61
     2.45 ELEV   700.15  700.15  700.15  700.15  700.15  700.15  700.15  700.15
     2.51 CFS       .61     .61     .61     .61     .61     .61     .61     .61
     2.51 ELEV   700.15  700.15  700.15  700.15  700.15  700.15  700.15  700.15
     2.58 CFS       .61     .61     .61     .61     .61     .61     .61     .61
     2.58 ELEV   700.15  700.15  700.15  700.15  700.15  700.15  700.15  700.15
     2.64 CFS       .61     .61     .61     .61     .61     .61     .61     .61
     2.64 ELEV   700.15  700.15  700.15  700.15  700.15  700.15  700.15  700.15
     2.70 CFS       .61     .61     .61     .61     .61     .61     .61     .61
     2.70 ELEV   700.15  700.15  700.15  700.15  700.15  700.15  700.15  700.15
     2.77 CFS       .61     .61     .61     .61     .61     .61     .61     .61
     2.77 ELEV   700.15  700.15  700.15  700.15  700.15  700.15  700.15  700.15
     2.83 CFS       .61     .61     .61     .61     .61     .61     .61     .61
     2.83 ELEV   700.15  700.15  700.15  700.15  700.15  700.15  700.15  700.15
     2.90 CFS       .61     .61     .61     .61     .61     .61     .61     .61
     2.90 ELEV   700.15  700.15  700.15  700.15  700.15  700.15  700.15  700.15
     2.96 CFS       .61     .61     .61     .61     .61     .61     .61     .61
     2.96 ELEV   700.15  700.15  700.15  700.15  700.15  700.15  700.15  700.15
     3.02 CFS       .61     .61     .61     .61     .61     .61     .61     .61
     3.02 ELEV   700.15  700.15  700.15  700.15  700.15  700.15  700.15  700.15
     3.09 CFS       .61     .61     .61     .61     .61     .61     .61     .61
     3.09 ELEV   700.15  700.15  700.15  700.15  700.15  700.15  700.15  700.15
     3.15 CFS       .61     .61     .61     .61     .61     .61
     3.15 ELEV   700.15  700.15  700.15  700.15  700.15  700.15

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .00 WATERSHED INCHES;       2 CFS-HRS;        .1 ACRE-FEET.

    DURATION(HRS)   2      3
    FLOW(CFS)       1      1 TRUNCATED

 --- STRUCTURE  7, ALTERNATE  0, STORM  2, HYDROGRAPH ADDED TO READHD FILE ---


OPERATION RUNOFF    XSECTION  49

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .18                          .9                        (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .11 WATERSHED INCHES;       0 CFS-HRS;        .0 ACRE-FEET.
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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
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OPERATION ADDHYD    XSECTION  50

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .20                          1.0                       (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .01 WATERSHED INCHES;       2 CFS-HRS;        .2 ACRE-FEET.


OPERATION RESVOR    STRUCTURE 39

                  HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM = 2
    HRS      MAIN TIME INCREMENT =  .008 hr,       DRAINAGE AREA =    .62 SQ.MI.
     .07 CFS       .00     .01     .01     .01     .02     .02     .03     .04
     .07 ELEV   693.00  693.00  693.00  693.00  693.00  693.00  693.00  693.01
     .14 CFS       .05     .06     .08     .09     .10     .12     .14     .16
     .14 ELEV   693.01  693.01  693.01  693.01  693.01  693.02  693.02  693.02
     .20 CFS       .17     .19     .21     .23     .25     .27     .29     .31
     .20 ELEV   693.02  693.03  693.03  693.03  693.04  693.04  693.04  693.04
     .26 CFS       .32     .34     .36     .37     .39     .40     .41     .43
     .26 ELEV   693.05  693.05  693.05  693.05  693.05  693.06  693.06  693.06
     .33 CFS       .44     .45     .46     .47     .48     .48     .49     .50
     .33 ELEV   693.06  693.06  693.06  693.07  693.07  693.07  693.07  693.07
     .39 CFS       .50     .51     .51     .52     .52     .52     .53     .53
     .39 ELEV   693.07  693.07  693.07  693.07  693.07  693.07  693.07  693.08
     .46 CFS       .53     .54     .54     .54     .54     .55     .55     .55
     .46 ELEV   693.08  693.08  693.08  693.08  693.08  693.08  693.08  693.08
     .52 CFS       .55     .55     .55     .55     .55     .56     .56     .56
     .52 ELEV   693.08  693.08  693.08  693.08  693.08  693.08  693.08  693.08
     .58 CFS       .56     .56     .56     .56     .56     .56     .56     .56
     .58 ELEV   693.08  693.08  693.08  693.08  693.08  693.08  693.08  693.08
     .65 CFS       .56     .56     .56     .56     .56     .56     .56     .56
     .65 ELEV   693.08  693.08  693.08  693.08  693.08  693.08  693.08  693.08
     .71 CFS       .56     .56     .56     .56     .56     .56     .56     .56
     .71 ELEV   693.08  693.08  693.08  693.08  693.08  693.08  693.08  693.08
     .78 CFS       .56     .56     .56     .56     .56     .56     .56     .56
     .78 ELEV   693.08  693.08  693.08  693.08  693.08  693.08  693.08  693.08
     .84 CFS       .56     .56     .56     .56     .56     .56     .56     .56
     .84 ELEV   693.08  693.08  693.08  693.08  693.08  693.08  693.08  693.08
     .90 CFS       .56     .56     .56     .56     .57     .57     .57     .57
     .90 ELEV   693.08  693.08  693.08  693.08  693.08  693.08  693.08  693.08
     .97 CFS       .57     .57     .57     .57     .57     .57     .57     .57
     .97 ELEV   693.08  693.08  693.08  693.08  693.08  693.08  693.08  693.08
    1.03 CFS       .57     .57     .57     .57     .57     .57     .57     .57
    1.03 ELEV   693.08  693.08  693.08  693.08  693.08  693.08  693.08  693.08
    1.10 CFS       .57     .57     .57     .57     .57     .57     .57     .57
    1.10 ELEV   693.08  693.08  693.08  693.08  693.08  693.08  693.08  693.08
    1.16 CFS       .57     .57     .57     .57     .57     .57     .57     .57
    1.16 ELEV   693.08  693.08  693.08  693.08  693.08  693.08  693.08  693.08
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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
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     1.22 CFS       .57     .57     .57     .57     .57     .57     .57     .57
     1.22 ELEV   693.08  693.08  693.08  693.08  693.08  693.08  693.08  693.08
     1.29 CFS       .57     .57     .57     .57     .57     .57     .57     .57
     1.29 ELEV   693.08  693.08  693.08  693.08  693.08  693.08  693.08  693.08
     1.35 CFS       .57     .57     .57     .57     .57     .57     .57     .57
     1.35 ELEV   693.08  693.08  693.08  693.08  693.08  693.08  693.08  693.08
     1.42 CFS       .57     .57     .57     .57     .57     .57     .57     .57
     1.42 ELEV   693.08  693.08  693.08  693.08  693.08  693.08  693.08  693.08
     1.48 CFS       .57     .57     .57     .57     .57     .57     .57     .57
     1.48 ELEV   693.08  693.08  693.08  693.08  693.08  693.08  693.08  693.08
     1.54 CFS       .57     .57     .57     .57     .57     .57     .57     .57
     1.54 ELEV   693.08  693.08  693.08  693.08  693.08  693.08  693.08  693.08
     1.61 CFS       .57     .57     .57     .57     .57     .57     .57     .57
     1.61 ELEV   693.08  693.08  693.08  693.08  693.08  693.08  693.08  693.08
     1.67 CFS       .57     .57     .57     .57     .57     .57     .57     .57
     1.67 ELEV   693.08  693.08  693.08  693.08  693.08  693.08  693.08  693.08
     1.74 CFS       .57     .57     .57     .57     .57     .57     .57     .57
     1.74 ELEV   693.08  693.08  693.08  693.08  693.08  693.08  693.08  693.08
     1.80 CFS       .57     .57     .57     .57     .57     .57     .57     .57
     1.80 ELEV   693.08  693.08  693.08  693.08  693.08  693.08  693.08  693.08
     1.86 CFS       .57     .57     .57     .57     .57     .57     .57     .57
     1.86 ELEV   693.08  693.08  693.08  693.08  693.08  693.08  693.08  693.08
     1.93 CFS       .57     .57     .57     .57     .57     .57     .57     .57
     1.93 ELEV   693.08  693.08  693.08  693.08  693.08  693.08  693.08  693.08
     1.99 CFS       .57     .57     .57     .57     .57     .57     .57     .57
     1.99 ELEV   693.08  693.08  693.08  693.08  693.08  693.08  693.08  693.08
     2.06 CFS       .57     .57     .57     .57     .57     .57     .57     .57
     2.06 ELEV   693.08  693.08  693.08  693.08  693.08  693.08  693.08  693.08
     2.12 CFS       .57     .57     .57     .57     .57     .57     .57     .57
     2.12 ELEV   693.08  693.08  693.08  693.08  693.08  693.08  693.08  693.08
     2.18 CFS       .57     .57     .57     .57     .57     .57     .57     .57
     2.18 ELEV   693.08  693.08  693.08  693.08  693.08  693.08  693.08  693.08
     2.25 CFS       .57     .57     .57     .57     .57     .57     .57     .57
     2.25 ELEV   693.08  693.08  693.08  693.08  693.08  693.08  693.08  693.08
     2.31 CFS       .57     .57     .57     .57     .57     .57     .57     .57
     2.31 ELEV   693.08  693.08  693.08  693.08  693.08  693.08  693.08  693.08
     2.38 CFS       .57     .57     .57     .57     .57     .57     .57     .57
     2.38 ELEV   693.08  693.08  693.08  693.08  693.08  693.08  693.08  693.08
     2.44 CFS       .57     .57     .57     .57     .57     .57     .57     .57
     2.44 ELEV   693.08  693.08  693.08  693.08  693.08  693.08  693.08  693.08
     2.50 CFS       .57     .57     .57     .57     .57     .57     .57     .57
     2.50 ELEV   693.08  693.08  693.08  693.08  693.08  693.08  693.08  693.08
     2.57 CFS       .57     .57     .57     .57     .57     .57     .57     .57
     2.57 ELEV   693.08  693.08  693.08  693.08  693.08  693.08  693.08  693.08
     2.63 CFS       .57     .57     .57     .57     .57     .57     .57     .57
     2.63 ELEV   693.08  693.08  693.08  693.08  693.08  693.08  693.08  693.08
     2.70 CFS       .57     .57     .57     .57     .57     .57     .57     .57
     2.70 ELEV   693.08  693.08  693.08  693.08  693.08  693.08  693.08  693.08
     2.76 CFS       .57     .57     .57     .57     .57     .57     .57     .57
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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
12:30:03                    PASS   2   JOB NO.   1                      PAGE  14

     2.76 ELEV   693.08  693.08  693.08  693.08  693.08  693.08  693.08  693.08
     2.82 CFS       .57     .57     .57     .57     .57     .57     .57     .57
     2.82 ELEV   693.08  693.08  693.08  693.08  693.08  693.08  693.08  693.08
     2.89 CFS       .57     .57     .57     .57     .57     .57     .57     .57
     2.89 ELEV   693.08  693.08  693.08  693.08  693.08  693.08  693.08  693.08
     2.95 CFS       .57     .57     .57     .57     .57     .57     .57     .57
     2.95 ELEV   693.08  693.08  693.08  693.08  693.08  693.08  693.08  693.08
     3.02 CFS       .57     .57     .57     .57     .57     .57     .57     .57
     3.02 ELEV   693.08  693.08  693.08  693.08  693.08  693.08  693.08  693.08
     3.08 CFS       .57     .57     .57     .57     .57     .57     .57     .57
     3.08 ELEV   693.08  693.08  693.08  693.08  693.08  693.08  693.08  693.08
     3.14 CFS       .57     .57     .57     .57     .57     .57     .57
     3.14 ELEV   693.08  693.08  693.08  693.08  693.08  693.08  693.08

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .00 WATERSHED INCHES;       2 CFS-HRS;        .1 ACRE-FEET.

    DURATION(HRS)   2      3
    FLOW(CFS)       1      1 TRUNCATED

 --- STRUCTURE 39, ALTERNATE  0, STORM  2, HYDROGRAPH ADDED TO READHD FILE ---


EXECUTIVE CONTROL  ENDCMP    COMPUTATIONS COMPLETED FOR PASS   2


EXECUTIVE CONTROL  COMPUT    FROM XSECTION  91  TO STRUCTURE 39           15-MIN
    STARTING TIME =   .00       RAIN DEPTH =   .82       RAIN DURATION =   .25
    ANT. RUNOFF COND. = 2       MAIN TIME INCREMENT =   .008 HOURS
    ALTERNATE NO. = 0           STORM NO. = 3            RAIN TABLE NO. = 1


OPERATION RUNOFF    XSECTION  91

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .70                          .6                          (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .01 WATERSHED INCHES;       0 CFS-HRS;        .0 ACRE-FEET.


OPERATION RUNOFF    XSECTION  92

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .76                          3.7 *                       (RUNOFF)
                                           * FIRST POINT OF FLAT PEAK
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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
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    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .04 WATERSHED INCHES;       3 CFS-HRS;        .3 ACRE-FEET.


OPERATION ADDHYD    XSECTION  93

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .75                          4.3                        (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .02 WATERSHED INCHES;       3 CFS-HRS;        .3 ACRE-FEET.


OPERATION RUNOFF    XSECTION  94

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .00 WATERSHED INCHES;       0 CFS-HRS;        .0 ACRE-FEET.


OPERATION RESVOR    STRUCTURE 11

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .00 WATERSHED INCHES;      -1 CFS-HRS;        .0 ACRE-FEET.


OPERATION RUNOFF    XSECTION  96

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .16                         16.0                        (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .62 WATERSHED INCHES;       3 CFS-HRS;        .3 ACRE-FEET.


OPERATION ADDHYD    XSECTION  97

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .16                         16.1                        (NULL)
         .75                          4.3                        (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .04 WATERSHED INCHES;       7 CFS-HRS;        .6 ACRE-FEET.


OPERATION RESVOR    STRUCTURE  6

                   HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM = 3
     HRS      MAIN TIME INCREMENT =  .008 hr,      DRAINAGE AREA =    .28 SQ.MI.
      .03 CFS       .00     .01     .01     .03     .04     .07     .10     .14
      .03 ELEV   707.00  707.00  707.00  707.00  707.01  707.01  707.01  707.02
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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
12:30:03                    PASS   3   JOB NO.   1                       PAGE  16

      .10 CFS      .20     .26     .34     .42     .52     .62     .73     .84
      .10 ELEV   707.02  707.03  707.04  707.05  707.06  707.07  707.09  707.10
      .16 CFS      .96    1.08    1.20    1.32    1.44    1.56    1.67    1.77
      .16 ELEV   707.11  707.13  707.14  707.16  707.17  707.19  707.20  707.21
      .22 CFS     1.88    1.98    2.07    2.16    2.25    2.33    2.41    2.49
      .22 ELEV   707.22  707.24  707.25  707.26  707.27  707.28  707.29  707.30
      .29 CFS     2.56    2.63    2.70    2.76    2.81    2.86    2.91    2.95
      .29 ELEV   707.31  707.31  707.32  707.33  707.33  707.34  707.35  707.35
      .35 CFS     2.98    3.01    3.04    3.06    3.08    3.09    3.10    3.11
      .35 ELEV   707.35  707.36  707.36  707.36  707.37  707.37  707.37  707.37
      .42 CFS     3.12    3.13    3.13    3.14    3.14    3.14    3.14    3.15
      .42 ELEV   707.37  707.37  707.37  707.37  707.37  707.37  707.37  707.37
      .48 CFS     3.15    3.15    3.15    3.15    3.15    3.15    3.15    3.15
      .48 ELEV   707.37  707.37  707.37  707.38  707.38  707.38  707.38  707.38
      .54 CFS     3.16    3.16    3.16    3.16    3.16    3.17    3.17    3.17
      .54 ELEV   707.38  707.38  707.38  707.38  707.38  707.38  707.38  707.38
      .61 CFS     3.17    3.18    3.18    3.19    3.19    3.19    3.20    3.20
      .61 ELEV   707.38  707.38  707.38  707.38  707.38  707.38  707.38  707.38
      .67 CFS     3.21    3.21    3.22    3.22    3.23    3.23    3.24    3.24
      .67 ELEV   707.38  707.38  707.38  707.38  707.38  707.38  707.39  707.39
      .74 CFS     3.25    3.25    3.26    3.26    3.27    3.27    3.28    3.28
      .74 ELEV   707.39  707.39  707.39  707.39  707.39  707.39  707.39  707.39
      .80 CFS     3.29    3.29    3.30    3.30    3.31    3.31    3.31    3.32
      .80 ELEV   707.39  707.39  707.39  707.39  707.39  707.39  707.39  707.39
      .86 CFS     3.32    3.32    3.33    3.33    3.33    3.34    3.34    3.34
      .86 ELEV   707.40  707.40  707.40  707.40  707.40  707.40  707.40  707.40
      .93 CFS     3.34    3.35    3.35    3.35    3.35    3.35    3.35    3.35
      .93 ELEV   707.40  707.40  707.40  707.40  707.40  707.40  707.40  707.40
      .99 CFS     3.35    3.35    3.35    3.35    3.35    3.35    3.34    3.34
      .99 ELEV   707.40  707.40  707.40  707.40  707.40  707.40  707.40  707.40
     1.06 CFS     3.34    3.34    3.33    3.33    3.33    3.32    3.32    3.32
     1.06 ELEV   707.40  707.40  707.40  707.40  707.40  707.40  707.40  707.39
     1.12 CFS     3.31    3.31    3.30    3.30    3.29    3.29    3.28    3.27
     1.12 ELEV   707.39  707.39  707.39  707.39  707.39  707.39  707.39  707.39
     1.18 CFS     3.27    3.26    3.25    3.25    3.24    3.23    3.22    3.22
     1.18 ELEV   707.39  707.39  707.39  707.39  707.39  707.38  707.38  707.38
     1.25 CFS     3.21    3.20    3.19    3.18    3.18    3.17    3.16    3.15
     1.25 ELEV   707.38  707.38  707.38  707.38  707.38  707.38  707.38  707.37
     1.31 CFS     3.14    3.13    3.12    3.11    3.10    3.09    3.09    3.08
     1.31 ELEV   707.37  707.37  707.37  707.37  707.37  707.37  707.37  707.37
     1.38 CFS     3.07    3.06    3.05    3.04    3.03    3.02    3.01    3.00
     1.38 ELEV   707.37  707.36  707.36  707.36  707.36  707.36  707.36  707.36
     1.44 CFS     2.99    2.98    2.97    2.96    2.95    2.94    2.93    2.92
     1.44 ELEV   707.36  707.35  707.35  707.35  707.35  707.35  707.35  707.35
     1.50 CFS     2.90    2.89    2.88    2.87    2.86    2.85    2.84    2.83
     1.50 ELEV   707.35  707.34  707.34  707.34  707.34  707.34  707.34  707.34
     1.57 CFS     2.82    2.81    2.80    2.79    2.78    2.77    2.76    2.74
     1.57 ELEV   707.34  707.33  707.33  707.33  707.33  707.33  707.33  707.33
     1.63 CFS     2.73    2.72    2.71    2.70    2.69    2.68    2.67    2.66
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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
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     1.63 ELEV   707.33  707.32  707.32  707.32  707.32  707.32  707.32  707.32
     1.70 CFS      2.65    2.64    2.63    2.61    2.60    2.59    2.58    2.57
     1.70 ELEV   707.32  707.31  707.31  707.31  707.31  707.31  707.31  707.31
     1.76 CFS      2.56    2.55    2.54    2.53    2.52    2.51    2.50    2.48
     1.76 ELEV   707.30  707.30  707.30  707.30  707.30  707.30  707.30  707.30
     1.82 CFS      2.47    2.46    2.45    2.44    2.43    2.42    2.41    2.40
     1.82 ELEV   707.29  707.29  707.29  707.29  707.29  707.29  707.29  707.29
     1.89 CFS      2.39    2.38    2.37    2.36    2.35    2.34    2.33    2.32
     1.89 ELEV   707.28  707.28  707.28  707.28  707.28  707.28  707.28  707.28
     1.95 CFS      2.31    2.30    2.29    2.27    2.26    2.25    2.24    2.23
     1.95 ELEV   707.27  707.27  707.27  707.27  707.27  707.27  707.27  707.27
     2.02 CFS      2.22    2.21    2.20    2.19    2.18    2.17    2.16    2.15
     2.02 ELEV   707.26  707.26  707.26  707.26  707.26  707.26  707.26  707.26
     2.08 CFS      2.14    2.13    2.12    2.11    2.10    2.09    2.08    2.08
     2.08 ELEV   707.26  707.25  707.25  707.25  707.25  707.25  707.25  707.25
     2.14 CFS      2.07    2.06    2.05    2.04    2.03    2.02    2.01    2.00
     2.14 ELEV   707.25  707.24  707.24  707.24  707.24  707.24  707.24  707.24
     2.21 CFS      1.99    1.98    1.97    1.96    1.95    1.94    1.93    1.92
     2.21 ELEV   707.24  707.24  707.23  707.23  707.23  707.23  707.23  707.23
     2.27 CFS      1.92    1.91    1.90    1.89    1.88    1.87    1.86    1.85
     2.27 ELEV   707.23  707.23  707.23  707.22  707.22  707.22  707.22  707.22
     2.34 CFS      1.84    1.84    1.83    1.82    1.81    1.80    1.79    1.78
     2.34 ELEV   707.22  707.22  707.22  707.22  707.22  707.21  707.21  707.21
     2.40 CFS      1.77    1.77    1.76    1.75    1.74    1.73    1.72    1.72
     2.40 ELEV   707.21  707.21  707.21  707.21  707.21  707.21  707.21  707.20
     2.46 CFS      1.71    1.70    1.69    1.68    1.67    1.67    1.66    1.65
     2.46 ELEV   707.20  707.20  707.20  707.20  707.20  707.20  707.20  707.20
     2.53 CFS      1.64    1.63    1.63    1.62    1.61    1.60    1.60    1.59
     2.53 ELEV   707.20  707.19  707.19  707.19  707.19  707.19  707.19  707.19
     2.59 CFS      1.58    1.57    1.56    1.56    1.55    1.54    1.53    1.53
     2.59 ELEV   707.19  707.19  707.19  707.19  707.18  707.18  707.18  707.18
     2.66 CFS      1.52    1.51    1.50    1.50    1.49    1.48    1.48    1.47
     2.66 ELEV   707.18  707.18  707.18  707.18  707.18  707.18  707.18  707.17
     2.72 CFS      1.46    1.45    1.45    1.44    1.43    1.43    1.42    1.41
     2.72 ELEV   707.17  707.17  707.17  707.17  707.17  707.17  707.17  707.17
     2.78 CFS      1.40    1.40    1.39    1.38    1.38    1.37    1.36    1.36
     2.78 ELEV   707.17  707.17  707.17  707.16  707.16  707.16  707.16  707.16
     2.85 CFS      1.35    1.34    1.34    1.33    1.32    1.32    1.31    1.30
     2.85 ELEV   707.16  707.16  707.16  707.16  707.16  707.16  707.16  707.16
     2.91 CFS      1.30    1.29    1.29    1.28    1.27    1.27    1.26    1.25
     2.91 ELEV   707.15  707.15  707.15  707.15  707.15  707.15  707.15  707.15
     2.98 CFS      1.25    1.24    1.24    1.23    1.22    1.22    1.21    1.21
     2.98 ELEV   707.15  707.15  707.15  707.15  707.15  707.14  707.14  707.14
     3.04 CFS      1.20    1.19    1.19    1.18    1.18    1.17    1.16    1.16
     3.04 ELEV   707.14  707.14  707.14  707.14  707.14  707.14  707.14  707.14
     3.10 CFS      1.15    1.15    1.14    1.14    1.13    1.12    1.12    1.11
     3.10 ELEV   707.14  707.14  707.14  707.14  707.13  707.13  707.13  707.13
     3.17 CFS      1.11    1.10    1.10    1.09
     3.17 ELEV   707.13  707.13  707.13  707.13
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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
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    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .04 WATERSHED INCHES;       7 CFS-HRS;        .6 ACRE-FEET.

    DURATION(HRS)   2      2
    FLOW(CFS)       2      1 TRUNCATED

 --- STRUCTURE  6, ALTERNATE  0, STORM  3, HYDROGRAPH ADDED TO READHD FILE ---


OPERATION RUNOFF    XSECTION  99

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .20                          58.7                        (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .13 WATERSHED INCHES;      13 CFS-HRS;       1.1 ACRE-FEET.


OPERATION ADDHYD    XSECTION  90

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .20                          60.3                        (NULL)
         .98                           3.4 *                      (NULL)
                                           * FIRST POINT OF FLAT PEAK

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .07 WATERSHED INCHES;      21 CFS-HRS;       1.7 ACRE-FEET.


OPERATION RESVOR    STRUCTURE  7

                    HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM = 3
     HRS      MAIN TIME INCREMENT =  .008 hr,      DRAINAGE AREA =    .54 SQ.MI.
      .08 CFS       .00     .01     .01     .02     .02     .03     .04     .06
      .08 ELEV   700.00  700.00  700.00  700.00  700.01  700.01  700.01  700.01
      .14 CFS       .07     .09     .11     .13     .15     .17     .20     .22
      .14 ELEV   700.02  700.02  700.03  700.03  700.04  700.04  700.05  700.06
      .21 CFS       .25     .27     .30     .33     .35     .38     .41     .44
      .21 ELEV   700.06  700.07  700.07  700.08  700.09  700.10  700.10  700.11
      .27 CFS       .46     .49     .52     .54     .57     .59     .62     .64
      .27 ELEV   700.12  700.12  700.13  700.14  700.14  700.15  700.15  700.16
      .34 CFS       .66     .68     .70     .72     .74     .76     .77     .79
      .34 ELEV   700.17  700.17  700.18  700.18  700.19  700.19  700.19  700.20
      .40 CFS       .80     .81     .83     .84     .85     .86     .87     .87
      .40 ELEV   700.20  700.20  700.21  700.21  700.21  700.21  700.22  700.22
      .46 CFS       .88     .89     .90     .90     .91     .91     .92     .92
      .46 ELEV   700.22  700.22  700.22  700.23  700.23  700.23  700.23  700.23
      .53 CFS       .93     .93     .94     .94     .94     .95     .95     .95
      .53 ELEV   700.23  700.23  700.23  700.23  700.24  700.24  700.24  700.24
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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
12:30:03                    PASS   3   JOB NO.   1                      PAGE  19

      .59 CFS      .96    .96    .96    .96    .96    .97    .97    .97
      .59 ELEV   700.24 700.24 700.24 700.24 700.24 700.24 700.24 700.24
      .66 CFS      .97    .97    .98    .98    .98    .98    .98    .98
      .66 ELEV   700.24 700.24 700.24 700.24 700.24 700.25 700.25 700.25
      .72 CFS      .98    .99    .99    .99    .99    .99    .99    .99
      .72 ELEV   700.25 700.25 700.25 700.25 700.25 700.25 700.25 700.25
      .78 CFS      .99    .99   1.00   1.00   1.00   1.00   1.00   1.00
      .78 ELEV   700.25 700.25 700.25 700.25 700.25 700.25 700.25 700.25
      .85 CFS     1.00   1.00   1.00   1.00   1.01   1.01   1.01   1.01
      .85 ELEV   700.25 700.25 700.25 700.25 700.25 700.25 700.25 700.25
      .91 CFS     1.01   1.01   1.01   1.01   1.01   1.01   1.01   1.01
      .91 ELEV   700.25 700.25 700.25 700.25 700.25 700.25 700.25 700.25
      .98 CFS     1.01   1.02   1.02   1.02   1.02   1.02   1.02   1.02
      .98 ELEV   700.25 700.25 700.25 700.25 700.25 700.25 700.25 700.26
     1.04 CFS     1.02   1.02   1.02   1.02   1.02   1.02   1.03   1.03
     1.04 ELEV   700.26 700.26 700.26 700.26 700.26 700.26 700.26 700.26
     1.10 CFS     1.03   1.03   1.03   1.03   1.03   1.03   1.03   1.03
     1.10 ELEV   700.26 700.26 700.26 700.26 700.26 700.26 700.26 700.26
     1.17 CFS     1.03   1.03   1.03   1.03   1.03   1.04   1.04   1.04
     1.17 ELEV   700.26 700.26 700.26 700.26 700.26 700.26 700.26 700.26
     1.23 CFS     1.04   1.04   1.04   1.04   1.04   1.04   1.04   1.04
     1.23 ELEV   700.26 700.26 700.26 700.26 700.26 700.26 700.26 700.26
     1.30 CFS     1.04   1.04   1.04   1.04   1.05   1.05   1.05   1.05
     1.30 ELEV   700.26 700.26 700.26 700.26 700.26 700.26 700.26 700.26
     1.36 CFS     1.05   1.05   1.05   1.05   1.05   1.05   1.05   1.05
     1.36 ELEV   700.26 700.26 700.26 700.26 700.26 700.26 700.26 700.26
     1.42 CFS     1.05   1.05   1.05   1.05   1.06   1.06   1.06   1.06
     1.42 ELEV   700.26 700.26 700.26 700.26 700.26 700.26 700.26 700.26
     1.49 CFS     1.06   1.06   1.06   1.06   1.06   1.06   1.06   1.06
     1.49 ELEV   700.26 700.26 700.26 700.26 700.27 700.27 700.27 700.27
     1.55 CFS     1.06   1.06   1.06   1.06   1.06   1.06   1.07   1.07
     1.55 ELEV   700.27 700.27 700.27 700.27 700.27 700.27 700.27 700.27
     1.62 CFS     1.07   1.07   1.07   1.07   1.07   1.07   1.07   1.07
     1.62 ELEV   700.27 700.27 700.27 700.27 700.27 700.27 700.27 700.27
     1.68 CFS     1.07   1.07   1.07   1.07   1.07   1.07   1.07   1.07
     1.68 ELEV   700.27 700.27 700.27 700.27 700.27 700.27 700.27 700.27
     1.74 CFS     1.07   1.07   1.08   1.08   1.08   1.08   1.08   1.08
     1.74 ELEV   700.27 700.27 700.27 700.27 700.27 700.27 700.27 700.27
     1.81 CFS     1.08   1.08   1.08   1.08   1.08   1.08   1.08   1.08
     1.81 ELEV   700.27 700.27 700.27 700.27 700.27 700.27 700.27 700.27
     1.87 CFS     1.08   1.08   1.08   1.08   1.08   1.08   1.08   1.08
     1.87 ELEV   700.27 700.27 700.27 700.27 700.27 700.27 700.27 700.27
     1.94 CFS     1.08   1.08   1.09   1.09   1.09   1.09   1.09   1.09
     1.94 ELEV   700.27 700.27 700.27 700.27 700.27 700.27 700.27 700.27
     2.00 CFS     1.09   1.09   1.09   1.09   1.09   1.09   1.09   1.09
     2.00 ELEV   700.27 700.27 700.27 700.27 700.27 700.27 700.27 700.27
     2.06 CFS     1.09   1.09   1.09   1.09   1.09   1.09   1.09   1.09
     2.06 ELEV   700.27 700.27 700.27 700.27 700.27 700.27 700.27 700.27
     2.13 CFS     1.09   1.09   1.09   1.09   1.09   1.09   1.09   1.09
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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
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     2.13 ELEV   700.27 700.27 700.27 700.27 700.27 700.27 700.27 700.27
     2.19 CFS     1.10   1.10   1.10   1.10   1.10   1.10   1.10   1.10
     2.19 ELEV   700.27 700.27 700.27 700.27 700.27 700.27 700.27 700.27
     2.26 CFS     1.10   1.10   1.10   1.10   1.10   1.10   1.10   1.10
     2.26 ELEV   700.27 700.27 700.27 700.27 700.27 700.27 700.27 700.27
     2.32 CFS     1.10   1.10   1.10   1.10   1.10   1.10   1.10   1.10
     2.32 ELEV   700.27 700.27 700.27 700.27 700.28 700.28 700.28 700.28
     2.38 CFS     1.10   1.10   1.10   1.10   1.10   1.10   1.10   1.10
     2.38 ELEV   700.28 700.28 700.28 700.28 700.28 700.28 700.28 700.28
     2.45 CFS     1.10   1.10   1.10   1.10   1.10   1.10   1.10   1.10
     2.45 ELEV   700.28 700.28 700.28 700.28 700.28 700.28 700.28 700.28
     2.51 CFS     1.10   1.10   1.10   1.10   1.10   1.10   1.11   1.11
     2.51 ELEV   700.28 700.28 700.28 700.28 700.28 700.28 700.28 700.28
     2.58 CFS     1.11   1.11   1.11   1.11   1.11   1.11   1.11   1.11
     2.58 ELEV   700.28 700.28 700.28 700.28 700.28 700.28 700.28 700.28
     2.64 CFS     1.11   1.11   1.11   1.11   1.11   1.11   1.11   1.11
     2.64 ELEV   700.28 700.28 700.28 700.28 700.28 700.28 700.28 700.28
     2.70 CFS     1.11   1.11   1.11   1.11   1.11   1.11   1.11   1.11
     2.70 ELEV   700.28 700.28 700.28 700.28 700.28 700.28 700.28 700.28
     2.77 CFS     1.11   1.11   1.11   1.11   1.11   1.11   1.11   1.11
     2.77 ELEV   700.28 700.28 700.28 700.28 700.28 700.28 700.28 700.28
     2.83 CFS     1.11   1.11   1.11   1.11   1.11   1.11   1.11   1.11
     2.83 ELEV   700.28 700.28 700.28 700.28 700.28 700.28 700.28 700.28
     2.90 CFS     1.11   1.11   1.11   1.11   1.11   1.11   1.11   1.11
     2.90 ELEV   700.28 700.28 700.28 700.28 700.28 700.28 700.28 700.28
     2.96 CFS     1.11   1.11   1.11   1.11   1.11   1.11   1.11   1.11
     2.96 ELEV   700.28 700.28 700.28 700.28 700.28 700.28 700.28 700.28
     3.02 CFS     1.11   1.11   1.11   1.11   1.11   1.11   1.11   1.11
     3.02 ELEV   700.28 700.28 700.28 700.28 700.28 700.28 700.28 700.28
     3.09 CFS     1.11   1.11   1.11   1.11   1.11   1.11   1.11   1.11
     3.09 ELEV   700.28 700.28 700.28 700.28 700.28 700.28 700.28 700.28
     3.15 CFS     1.11   1.11   1.11   1.11   1.11   1.11
     3.15 ELEV   700.28 700.28 700.28 700.28 700.28 700.28

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .01 WATERSHED INCHES;       3 CFS-HRS;        .3 ACRE-FEET.

 --- STRUCTURE  7, ALTERNATE  0, STORM  3, HYDROGRAPH ADDED TO READHD FILE ---


OPERATION RUNOFF    XSECTION  49

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .19                          1.2                        (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .18 WATERSHED INCHES;       0 CFS-HRS;        .0 ACRE-FEET.
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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
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OPERATION ADDHYD    XSECTION  50

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .26                          1.4                        (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .01 WATERSHED INCHES;       3 CFS-HRS;        .3 ACRE-FEET.


OPERATION RESVOR    STRUCTURE 39

                  HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM = 3
     HRS      MAIN TIME INCREMENT =  .008 hr,      DRAINAGE AREA =    .62 SQ.MI.
      .08 CFS      .00     .01     .01     .02     .02     .03     .04     .05
      .08 ELEV   693.00  693.00  693.00  693.00  693.00  693.00  693.01  693.01
      .14 CFS      .07     .08     .10     .12     .14     .16     .18     .21
      .14 ELEV   693.01  693.01  693.01  693.02  693.02  693.02  693.03  693.03
      .21 CFS      .23     .26     .28     .31     .33     .36     .39     .41
      .21 ELEV   693.03  693.04  693.04  693.04  693.05  693.05  693.05  693.06
      .27 CFS      .44     .47     .49     .52     .54     .57     .59     .61
      .27 ELEV   693.06  693.07  693.07  693.07  693.08  693.08  693.08  693.09
      .34 CFS      .63     .65     .67     .69     .71     .72     .74     .75
      .34 ELEV   693.09  693.09  693.10  693.10  693.10  693.10  693.10  693.11
      .40 CFS      .77     .78     .79     .80     .81     .82     .83     .84
      .40 ELEV   693.11  693.11  693.11  693.11  693.12  693.12  693.12  693.12
      .46 CFS      .85     .85     .86     .86     .87     .87     .88     .88
      .46 ELEV   693.12  693.12  693.12  693.12  693.12  693.12  693.12  693.12
      .53 CFS      .88     .89     .89     .89     .90     .90     .90     .90
      .53 ELEV   693.13  693.13  693.13  693.13  693.13  693.13  693.13  693.13
      .59 CFS      .90     .91     .91     .91     .91     .91     .91     .91
      .59 ELEV   693.13  693.13  693.13  693.13  693.13  693.13  693.13  693.13
      .66 CFS      .91     .91     .92     .92     .92     .92     .92     .92
      .66 ELEV   693.13  693.13  693.13  693.13  693.13  693.13  693.13  693.13
      .72 CFS      .92     .92     .92     .92     .92     .92     .92     .92
      .72 ELEV   693.13  693.13  693.13  693.13  693.13  693.13  693.13  693.13
      .78 CFS      .92     .92     .92     .92     .92     .92     .92     .92
      .78 ELEV   693.13  693.13  693.13  693.13  693.13  693.13  693.13  693.13
      .85 CFS      .92     .92     .92     .92     .92     .92     .92     .92
      .85 ELEV   693.13  693.13  693.13  693.13  693.13  693.13  693.13  693.13
      .91 CFS      .92     .92     .92     .92     .92     .92     .92     .92
      .91 ELEV   693.13  693.13  693.13  693.13  693.13  693.13  693.13  693.13
      .98 CFS      .92     .92     .92     .92     .92     .92     .92     .92
      .98 ELEV   693.13  693.13  693.13  693.13  693.13  693.13  693.13  693.13
     1.04 CFS      .92     .92     .93     .93     .93     .93     .93     .93
     1.04 ELEV   693.13  693.13  693.13  693.13  693.13  693.13  693.13  693.13
     1.10 CFS      .93     .93     .93     .93     .93     .93     .93     .93
     1.10 ELEV   693.13  693.13  693.13  693.13  693.13  693.13  693.13  693.13
     1.17 CFS      .93     .93     .93     .93     .93     .93     .93     .93
     1.17 ELEV   693.13  693.13  693.13  693.13  693.13  693.13  693.13  693.13
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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
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     1.23 CFS      .93     .93     .93     .93     .93     .93     .93     .93
     1.23 ELEV   693.13  693.13  693.13  693.13  693.13  693.13  693.13  693.13
     1.30 CFS      .93     .93     .93     .93     .93     .93     .93     .93
     1.30 ELEV   693.13  693.13  693.13  693.13  693.13  693.13  693.13  693.13
     1.36 CFS      .93     .93     .93     .93     .93     .93     .93     .93
     1.36 ELEV   693.13  693.13  693.13  693.13  693.13  693.13  693.13  693.13
     1.42 CFS      .93     .93     .93     .93     .93     .93     .93     .93
     1.42 ELEV   693.13  693.13  693.13  693.13  693.13  693.13  693.13  693.13
     1.49 CFS      .93     .93     .93     .93     .93     .93     .93     .93
     1.49 ELEV   693.13  693.13  693.13  693.13  693.13  693.13  693.13  693.13
     1.55 CFS      .93     .93     .93     .93     .93     .93     .93     .93
     1.55 ELEV   693.13  693.13  693.13  693.13  693.13  693.13  693.13  693.13
     1.62 CFS      .93     .93     .93     .93     .93     .93     .93     .93
     1.62 ELEV   693.13  693.13  693.13  693.13  693.13  693.13  693.13  693.13
     1.68 CFS      .93     .93     .93     .93     .93     .93     .93     .93
     1.68 ELEV   693.13  693.13  693.13  693.13  693.13  693.13  693.13  693.13
     1.74 CFS      .93     .93     .93     .93     .93     .93     .93     .93
     1.74 ELEV   693.13  693.13  693.13  693.13  693.13  693.13  693.13  693.13
     1.81 CFS      .93     .93     .93     .93     .93     .93     .93     .93
     1.81 ELEV   693.13  693.13  693.13  693.13  693.13  693.13  693.13  693.13
     1.87 CFS      .93     .93     .93     .93     .93     .93     .93     .93
     1.87 ELEV   693.13  693.13  693.13  693.13  693.13  693.13  693.13  693.13
     1.94 CFS      .93     .93     .93     .94     .94     .94     .94     .94
     1.94 ELEV   693.13  693.13  693.13  693.13  693.13  693.13  693.13  693.13
     2.00 CFS      .94     .94     .94     .94     .94     .94     .94     .94
     2.00 ELEV   693.13  693.13  693.13  693.13  693.13  693.13  693.13  693.13
     2.06 CFS      .94     .94     .94     .94     .94     .94     .94     .94
     2.06 ELEV   693.13  693.13  693.13  693.13  693.13  693.13  693.13  693.13
     2.13 CFS      .94     .94     .94     .94     .94     .94     .94     .94
     2.13 ELEV   693.13  693.13  693.13  693.13  693.13  693.13  693.13  693.13
     2.19 CFS      .94     .94     .94     .94     .94     .94     .94     .94
     2.19 ELEV   693.13  693.13  693.13  693.13  693.13  693.13  693.13  693.13
     2.26 CFS      .94     .94     .94     .94     .94     .94     .94     .94
     2.26 ELEV   693.13  693.13  693.13  693.13  693.13  693.13  693.13  693.13
     2.32 CFS      .94     .94     .94     .94     .94     .94     .94     .94
     2.32 ELEV   693.13  693.13  693.13  693.13  693.13  693.13  693.13  693.13
     2.38 CFS      .94     .94     .94     .94     .94     .94     .94     .94
     2.38 ELEV   693.13  693.13  693.13  693.13  693.13  693.13  693.13  693.13
     2.45 CFS      .94     .94     .94     .94     .94     .94     .94     .94
     2.45 ELEV   693.13  693.13  693.13  693.13  693.13  693.13  693.13  693.13
     2.51 CFS      .94     .94     .94     .94     .94     .94     .94     .94
     2.51 ELEV   693.13  693.13  693.13  693.13  693.13  693.13  693.13  693.13
     2.58 CFS      .94     .94     .94     .94     .94     .94     .94     .94
     2.58 ELEV   693.13  693.13  693.13  693.13  693.13  693.13  693.13  693.13
     2.64 CFS      .94     .94     .94     .94     .94     .94     .95     .95
     2.64 ELEV   693.13  693.13  693.13  693.13  693.13  693.13  693.13  693.13
     2.70 CFS      .95     .95     .95     .95     .95     .95     .95     .95
     2.70 ELEV   693.13  693.13  693.13  693.13  693.13  693.13  693.13  693.13
     2.77 CFS      .95     .95     .95     .95     .95     .95     .95     .95
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TR20 ---------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
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     2.77 ELEV   693.13  693.13  693.13  693.13  693.13  693.13  693.13  693.13
     2.83 CFS       .95     .95     .95     .95     .95     .95     .95     .95
     2.83 ELEV   693.13  693.13  693.13  693.13  693.13  693.13  693.13  693.13
     2.90 CFS       .95     .95     .95     .95     .95     .95     .95     .95
     2.90 ELEV   693.13  693.13  693.13  693.13  693.13  693.13  693.13  693.13
     2.96 CFS       .95     .95     .95     .95     .95     .95     .95     .95
     2.96 ELEV   693.13  693.13  693.13  693.13  693.13  693.13  693.13  693.13
     3.02 CFS       .95     .95     .95     .95     .95     .95     .95     .95
     3.02 ELEV   693.13  693.13  693.13  693.13  693.13  693.13  693.13  693.13
     3.09 CFS       .95     .95     .95     .95     .95     .95     .95     .95
     3.09 ELEV   693.13  693.13  693.13  693.13  693.13  693.13  693.13  693.13
     3.15 CFS       .95     .95     .95     .95     .95     .95
     3.15 ELEV   693.13  693.13  693.13  693.13  693.13  693.13

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .01 WATERSHED INCHES;       3 CFS-HRS;        .2 ACRE-FEET.

    DURATION(HRS)   2      3
    FLOW(CFS)       1      1 TRUNCATED

 --- STRUCTURE 39, ALTERNATE  0, STORM  3, HYDROGRAPH ADDED TO READHD FILE ---


EXECUTIVE CONTROL  ENDCMP    COMPUTATIONS COMPLETED FOR PASS   3


EXECUTIVE CONTROL  COMPUT    FROM XSECTION  91  TO STRUCTURE 39           30-MIN
    STARTING TIME =   .00       RAIN DEPTH =  1.12       RAIN DURATION =   .50
    ANT. RUNOFF COND. = 2       MAIN TIME INCREMENT =   .008 HOURS
    ALTERNATE NO. = 0           STORM NO. = 4            RAIN TABLE NO. = 1


OPERATION RUNOFF    XSECTION  91

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .84                          4.4                        (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .05 WATERSHED INCHES;       3 CFS-HRS;        .3 ACRE-FEET.


OPERATION RUNOFF    XSECTION  92

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .89                         11.9                        (RUNOFF)
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TR20 ---------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
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    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .12 WATERSHED INCHES;      10 CFS-HRS;        .8 ACRE-FEET.


OPERATION ADDHYD    XSECTION  93

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .87                         16.2                        (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .09 WATERSHED INCHES;      14 CFS-HRS;       1.1 ACRE-FEET.


OPERATION RUNOFF    XSECTION  94

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .09 WATERSHED INCHES;     360 CFS-HRS;       1.1 ACRE-FEET.


OPERATION RESVOR    STRUCTURE 11

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .00 WATERSHED INCHES;       0 CFS-HRS;        .0 ACRE-FEET.


OPERATION RUNOFF    XSECTION  96

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .18                         16.8                        (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .91 WATERSHED INCHES;       5 CFS-HRS;        .4 ACRE-FEET.


OPERATION ADDHYD    XSECTION  97

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .18                         16.9                        (NULL)
         .87                         16.3                        (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .11 WATERSHED INCHES;      18 CFS-HRS;       1.5 ACRE-FEET.


OPERATION RESVOR    STRUCTURE  6

                    HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM = 4
     HRS      MAIN TIME INCREMENT =  .008 hr,      DRAINAGE AREA =    .28 SQ.MI.
      .04 CFS       .00     .01     .02     .03     .05     .07     .10     .14
      .04 ELEV   707.00  707.00  707.00  707.00  707.01  707.01  707.01  707.02
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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
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.10	CFS	.19	.25	.32	.40	.49	.59	.69	.81
.10	ELEV	707.02	707.03	707.04	707.05	707.06	707.07	707.08	707.10
.17	CFS	.93	1.06	1.20	1.34	1.48	1.62	1.76	1.90
.17	ELEV	707.11	707.13	707.14	707.16	707.18	707.19	707.21	707.23
.23	CFS	2.04	2.18	2.32	2.45	2.58	2.70	2.83	2.95
.23	ELEV	707.24	707.26	707.28	707.29	707.31	707.32	707.34	707.35
.30	CFS	3.06	3.17	3.28	3.38	3.48	3.57	3.66	3.75
.30	ELEV	707.36	707.38	707.39	707.40	707.41	707.43	707.44	707.45
.36	CFS	3.83	3.91	3.99	4.06	4.14	4.21	4.28	4.35
.36	ELEV	707.46	707.47	707.47	707.48	707.49	707.50	707.51	707.52
.42	CFS	4.41	4.48	4.55	4.62	4.69	4.76	4.82	4.89
.42	ELEV	707.53	707.53	707.54	707.55	707.56	707.57	707.57	707.58
.49	CFS	4.96	5.02	5.09	5.15	5.22	5.28	5.34	5.41
.49	ELEV	707.59	707.60	707.61	707.61	707.62	707.63	707.64	707.64
.55	CFS	5.47	5.53	5.59	5.65	5.70	5.76	5.81	5.86
.55	ELEV	707.65	707.66	707.67	707.67	707.68	707.69	707.69	707.70
.62	CFS	5.91	5.95	6.00	6.04	6.09	6.13	6.17	6.21
.62	ELEV	707.70	707.71	707.71	707.72	707.72	707.73	707.73	707.74
.68	CFS	6.25	6.29	6.34	6.38	6.42	6.46	6.50	6.54
.68	ELEV	707.74	707.75	707.75	707.76	707.76	707.77	707.77	707.78
.74	CFS	6.59	6.63	6.67	6.72	6.76	6.81	6.85	6.90
.74	ELEV	707.78	707.79	707.79	707.80	707.81	707.81	707.82	707.82
.81	CFS	6.94	6.99	7.03	7.08	7.13	7.17	7.22	7.26
.81	ELEV	707.83	707.83	707.84	707.84	707.85	707.85	707.86	707.86
.87	CFS	7.31	7.35	7.40	7.44	7.48	7.53	7.57	7.61
.87	ELEV	707.87	707.88	707.88	707.89	707.89	707.90	707.90	707.91
.94	CFS	7.65	7.70	7.74	7.78	7.81	7.85	7.89	7.93
.94	ELEV	707.91	707.92	707.92	707.93	707.93	707.93	707.94	707.94
1.00	CFS	7.96	8.00	8.03	8.07	8.10	8.13	8.16	8.19
1.00	ELEV	707.95	707.95	707.96	707.96	707.96	707.97	707.97	707.97
1.06	CFS	8.22	8.24	8.27	8.29	8.32	8.34	8.36	8.38
1.06	ELEV	707.98	707.98	707.98	707.99	707.99	707.99	708.00	708.00
1.13	CFS	8.40	8.42	8.44	8.46	8.48	8.50	8.51	8.53
1.13	ELEV	708.00	708.00	708.00	708.01	708.01	708.01	708.01	708.01
1.19	CFS	8.54	8.55	8.56	8.57	8.58	8.58	8.59	8.59
1.19	ELEV	708.01	708.01	708.01	708.01	708.02	708.02	708.02	708.02
1.26	CFS	8.59	8.60	8.60	8.59	8.59	8.59	8.58	8.58
1.26	ELEV	708.02	708.02	708.02	708.02	708.02	708.02	708.02	708.02
1.32	CFS	8.57	8.56	8.55	8.54	8.53	8.52	8.51	8.50
1.32	ELEV	708.01	708.01	708.01	708.01	708.01	708.01	708.01	708.01
1.38	CFS	8.48	8.47	8.45	8.43	8.42	8.40	8.38	8.37
1.38	ELEV	708.01	708.01	708.00	708.00	708.00	708.00	708.00	708.00
1.45	CFS	8.35	8.34	8.32	8.30	8.28	8.27	8.25	8.23
1.45	ELEV	707.99	707.99	707.99	707.99	707.99	707.98	707.98	707.98
1.51	CFS	8.21	8.19	8.17	8.15	8.13	8.11	8.08	8.06
1.51	ELEV	707.98	707.97	707.97	707.97	707.97	707.96	707.96	707.96
1.58	CFS	8.04	8.02	7.99	7.97	7.95	7.92	7.90	7.88
1.58	ELEV	707.96	707.95	707.95	707.95	707.95	707.94	707.94	707.94
1.64	CFS	7.85	7.83	7.80	7.78	7.75	7.73	7.70	7.68


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1.64	ELEV	707.93	707.93	707.93	707.93	707.92	707.92	707.92	707.91
1.70	CFS	7.65	7.63	7.60	7.57	7.55	7.52	7.50	7.47
1.70	ELEV	707.91	707.91	707.90	707.90	707.90	707.90	707.89	707.89
1.77	CFS	7.44	7.42	7.39	7.36	7.33	7.31	7.28	7.25
1.77	ELEV	707.89	707.88	707.88	707.88	707.87	707.87	707.87	707.86
1.83	CFS	7.23	7.20	7.17	7.14	7.12	7.09	7.06	7.03
1.83	ELEV	707.86	707.86	707.85	707.85	707.85	707.84	707.84	707.84
1.90	CFS	7.01	6.98	6.95	6.92	6.89	6.87	6.84	6.81
1.90	ELEV	707.83	707.83	707.83	707.82	707.82	707.82	707.81	707.81
1.96	CFS	6.78	6.76	6.73	6.70	6.67	6.64	6.62	6.59
1.96	ELEV	707.81	707.80	707.80	707.80	707.79	707.79	707.79	707.78
2.02	CFS	6.56	6.53	6.51	6.48	6.45	6.42	6.40	6.37
2.02	ELEV	707.78	707.78	707.77	707.77	707.77	707.76	707.76	707.76
2.09	CFS	6.34	6.31	6.29	6.26	6.23	6.20	6.18	6.15
2.09	ELEV	707.75	707.75	707.75	707.75	707.74	707.74	707.74	707.73
2.15	CFS	6.12	6.10	6.07	6.04	6.02	5.99	5.96	5.94
2.15	ELEV	707.73	707.73	707.72	707.72	707.72	707.71	707.71	707.71
2.22	CFS	5.91	5.88	5.86	5.83	5.80	5.78	5.75	5.72
2.22	ELEV	707.70	707.70	707.70	707.69	707.69	707.69	707.68	707.68
2.28	CFS	5.70	5.67	5.65	5.62	5.60	5.57	5.54	5.52
2.28	ELEV	707.68	707.68	707.67	707.67	707.67	707.66	707.66	707.66
2.34	CFS	5.49	5.47	5.44	5.42	5.39	5.37	5.34	5.32
2.34	ELEV	707.65	707.65	707.65	707.64	707.64	707.64	707.64	707.63
2.41	CFS	5.29	5.27	5.24	5.22	5.19	5.17	5.15	5.12
2.41	ELEV	707.63	707.63	707.62	707.62	707.62	707.62	707.61	707.61
2.47	CFS	5.10	5.07	5.05	5.03	5.00	4.98	4.96	4.93
2.47	ELEV	707.61	707.60	707.60	707.60	707.60	707.59	707.59	707.59
2.54	CFS	4.91	4.89	4.86	4.84	4.82	4.79	4.77	4.75
2.54	ELEV	707.58	707.58	707.58	707.58	707.57	707.57	707.57	707.57
2.60	CFS	4.73	4.70	4.68	4.66	4.64	4.61	4.59	4.57
2.60	ELEV	707.56	707.56	707.56	707.55	707.55	707.55	707.55	707.54
2.66	CFS	4.55	4.53	4.50	4.48	4.46	4.44	4.42	4.40
2.66	ELEV	707.54	707.54	707.54	707.53	707.53	707.53	707.53	707.52
2.73	CFS	4.38	4.35	4.33	4.31	4.29	4.27	4.25	4.23
2.73	ELEV	707.52	707.52	707.52	707.51	707.51	707.51	707.51	707.50
2.79	CFS	4.21	4.19	4.17	4.15	4.13	4.11	4.09	4.07
2.79	ELEV	707.50	707.50	707.50	707.49	707.49	707.49	707.49	707.48
2.86	CFS	4.05	4.03	4.01	3.99	3.97	3.95	3.93	3.91
2.86	ELEV	707.48	707.48	707.48	707.47	707.47	707.47	707.47	707.47
2.92	CFS	3.89	3.87	3.85	3.84	3.82	3.80	3.78	3.76
2.92	ELEV	707.46	707.46	707.46	707.46	707.45	707.45	707.45	707.45
2.98	CFS	3.74	3.72	3.71	3.69	3.67	3.65	3.63	3.62
2.98	ELEV	707.45	707.44	707.44	707.44	707.44	707.43	707.43	707.43
3.05	CFS	3.60	3.58	3.56	3.55	3.53	3.51	3.49	3.48
3.05	ELEV	707.43	707.43	707.42	707.42	707.42	707.42	707.42	707.41
3.11	CFS	3.46	3.44	3.42	3.41	3.39	3.37	3.36	3.34
3.11	ELEV	707.41	707.41	707.41	707.41	707.40	707.40	707.40	707.40
3.18	CFS	3.32	3.31	3.29					
3.18	ELEV	707.40	707.39	707.39					

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    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .10 WATERSHED INCHES;      18 CFS-HRS;       1.5 ACRE-FEET.

    DURATION(HRS)   2      3
    FLOW(CFS)       5      3 TRUNCATED

 --- STRUCTURE  6, ALTERNATE  0, STORM  4, HYDROGRAPH ADDED TO READHD FILE ---


OPERATION RUNOFF    XSECTION  99

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .25                          84.3                       (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .29 WATERSHED INCHES;      29 CFS-HRS;       2.4 ACRE-FEET.


OPERATION ADDHYD    XSECTION  90

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .25                          86.7                       (NULL)
        1.26                           8.6 *                     (NULL)
                                         * FIRST POINT OF FLAT PEAK

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .17 WATERSHED INCHES;      47 CFS-HRS;       3.9 ACRE-FEET.


OPERATION RESVOR    STRUCTURE  7

                   HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM = 4
     HRS      MAIN TIME INCREMENT =  .008 hr,      DRAINAGE AREA =    .54 SQ.MI.
      .09 CFS       .00     .01     .01     .01     .02     .03     .04     .05
      .09 ELEV   700.00  700.00  700.00  700.00  700.00  700.01  700.01  700.01
      .15 CFS       .07     .08     .10     .13     .15     .18     .21     .24
      .15 ELEV   700.02  700.02  700.03  700.03  700.04  700.04  700.05  700.06
      .22 CFS       .27     .31     .34     .38     .41     .45     .49     .53
      .22 ELEV   700.07  700.08  700.09  700.09  700.10  700.11  700.12  700.13
      .28 CFS       .57     .61     .65     .69     .73     .77     .81     .85
      .28 ELEV   700.14  700.15  700.16  700.17  700.18  700.19  700.20  700.21
      .34 CFS       .88     .92     .96     .99    1.03    1.06    1.10    1.13
      .34 ELEV   700.22  700.23  700.24  700.25  700.26  700.27  700.27  700.28
      .41 CFS      1.16    1.20    1.23    1.26    1.29    1.33    1.36    1.39
      .41 ELEV   700.29  700.30  700.31  700.32  700.32  700.33  700.34  700.35
      .47 CFS      1.42    1.45    1.48    1.50    1.53    1.56    1.59    1.61
      .47 ELEV   700.35  700.36  700.37  700.38  700.38  700.39  700.40  700.40
      .54 CFS      1.64    1.66    1.69    1.71    1.74    1.76    1.78    1.80
      .54 ELEV   700.41  700.42  700.42  700.43  700.43  700.44  700.44  700.45
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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
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      .60 CFS      1.82    1.84    1.85    1.87    1.88    1.90    1.91    1.92
      .60 ELEV   700.45  700.46  700.46  700.47  700.47  700.47  700.48  700.48
      .66 CFS      1.93    1.95    1.96    1.96    1.97    1.98    1.99    2.00
      .66 ELEV   700.48  700.49  700.49  700.49  700.49  700.50  700.50  700.50
      .73 CFS      2.00    2.01    2.02    2.02    2.03    2.03    2.04    2.04
      .73 ELEV   700.50  700.50  700.50  700.51  700.51  700.51  700.51  700.51
      .79 CFS      2.05    2.05    2.06    2.06    2.06    2.07    2.07    2.08
      .79 ELEV   700.51  700.51  700.51  700.52  700.52  700.52  700.52  700.52
      .86 CFS      2.08    2.08    2.08    2.09    2.09    2.09    2.10    2.10
      .86 ELEV   700.52  700.52  700.52  700.52  700.52  700.52  700.52  700.52
      .92 CFS      2.10    2.10    2.11    2.11    2.11    2.11    2.12    2.12
      .92 ELEV   700.53  700.53  700.53  700.53  700.53  700.53  700.53  700.53
      .98 CFS      2.12    2.12    2.12    2.13    2.13    2.13    2.13    2.14
      .98 ELEV   700.53  700.53  700.53  700.53  700.53  700.53  700.53  700.53
     1.05 CFS      2.14    2.14    2.14    2.14    2.15    2.15    2.15    2.15
     1.05 ELEV   700.53  700.53  700.54  700.54  700.54  700.54  700.54  700.54
     1.11 CFS      2.15    2.16    2.16    2.16    2.16    2.16    2.17    2.17
     1.11 ELEV   700.54  700.54  700.54  700.54  700.54  700.54  700.54  700.54
     1.18 CFS      2.17    2.17    2.17    2.18    2.18    2.18    2.18    2.18
     1.18 ELEV   700.54  700.54  700.54  700.54  700.54  700.55  700.55  700.55
     1.24 CFS      2.19    2.19    2.19    2.19    2.19    2.20    2.20    2.20
     1.24 ELEV   700.55  700.55  700.55  700.55  700.55  700.55  700.55  700.55
     1.30 CFS      2.20    2.20    2.21    2.21    2.21    2.21    2.21    2.22
     1.30 ELEV   700.55  700.55  700.55  700.55  700.55  700.55  700.55  700.55
     1.37 CFS      2.22    2.22    2.22    2.22    2.23    2.23    2.23    2.23
     1.37 ELEV   700.55  700.55  700.56  700.56  700.56  700.56  700.56  700.56
     1.43 CFS      2.23    2.24    2.24    2.24    2.24    2.24    2.24    2.25
     1.43 ELEV   700.56  700.56  700.56  700.56  700.56  700.56  700.56  700.56
     1.50 CFS      2.25    2.25    2.25    2.25    2.26    2.26    2.26    2.26
     1.50 ELEV   700.56  700.56  700.56  700.56  700.56  700.56  700.56  700.57
     1.56 CFS      2.26    2.26    2.27    2.27    2.27    2.27    2.27    2.28
     1.56 ELEV   700.57  700.57  700.57  700.57  700.57  700.57  700.57  700.57
     1.62 CFS      2.28    2.28    2.28    2.28    2.28    2.29    2.29    2.29
     1.62 ELEV   700.57  700.57  700.57  700.57  700.57  700.57  700.57  700.57
     1.69 CFS      2.29    2.29    2.29    2.30    2.30    2.30    2.30    2.30
     1.69 ELEV   700.57  700.57  700.57  700.57  700.57  700.57  700.58  700.58
     1.75 CFS      2.30    2.31    2.31    2.31    2.31    2.31    2.31    2.31
     1.75 ELEV   700.58  700.58  700.58  700.58  700.58  700.58  700.58  700.58
     1.82 CFS      2.32    2.32    2.32    2.32    2.32    2.32    2.33    2.33
     1.82 ELEV   700.58  700.58  700.58  700.58  700.58  700.58  700.58  700.58
     1.88 CFS      2.33    2.33    2.33    2.33    2.33    2.34    2.34    2.34
     1.88 ELEV   700.58  700.58  700.58  700.58  700.58  700.58  700.58  700.58
     1.94 CFS      2.34    2.34    2.34    2.34    2.34    2.35    2.35    2.35
     1.94 ELEV   700.58  700.59  700.59  700.59  700.59  700.59  700.59  700.59
     2.01 CFS      2.35    2.35    2.35    2.35    2.36    2.36    2.36    2.36
     2.01 ELEV   700.59  700.59  700.59  700.59  700.59  700.59  700.59  700.59
     2.07 CFS      2.36    2.36    2.36    2.36    2.37    2.37    2.37    2.37
     2.07 ELEV   700.59  700.59  700.59  700.59  700.59  700.59  700.59  700.59
     2.14 CFS      2.37    2.37    2.37    2.37    2.37    2.38    2.38    2.38
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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
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     2.14 ELEV   700.59  700.59  700.59  700.59  700.59  700.59  700.59  700.59
     2.20 CFS      2.38    2.38    2.38    2.38    2.38    2.38    2.39    2.39
     2.20 ELEV   700.59  700.60  700.60  700.60  700.60  700.60  700.60  700.60
     2.26 CFS      2.39    2.39    2.39    2.39    2.39    2.39    2.39    2.39
     2.26 ELEV   700.60  700.60  700.60  700.60  700.60  700.60  700.60  700.60
     2.33 CFS      2.40    2.40    2.40    2.40    2.40    2.40    2.40    2.40
     2.33 ELEV   700.60  700.60  700.60  700.60  700.60  700.60  700.60  700.60
     2.39 CFS      2.40    2.40    2.40    2.41    2.41    2.41    2.41    2.41
     2.39 ELEV   700.60  700.60  700.60  700.60  700.60  700.60  700.60  700.60
     2.46 CFS      2.41    2.41    2.41    2.41    2.41    2.41    2.42    2.42
     2.46 ELEV   700.60  700.60  700.60  700.60  700.60  700.60  700.60  700.60
     2.52 CFS      2.42    2.42    2.42    2.42    2.42    2.42    2.42    2.42
     2.52 ELEV   700.60  700.60  700.60  700.60  700.60  700.61  700.61  700.61
     2.58 CFS      2.42    2.42    2.42    2.42    2.43    2.43    2.43    2.43
     2.58 ELEV   700.61  700.61  700.61  700.61  700.61  700.61  700.61  700.61
     2.65 CFS      2.43    2.43    2.43    2.43    2.43    2.43    2.43    2.43
     2.65 ELEV   700.61  700.61  700.61  700.61  700.61  700.61  700.61  700.61
     2.71 CFS      2.43    2.43    2.43    2.44    2.44    2.44    2.44    2.44
     2.71 ELEV   700.61  700.61  700.61  700.61  700.61  700.61  700.61  700.61
     2.78 CFS      2.44    2.44    2.44    2.44    2.44    2.44    2.44    2.44
     2.78 ELEV   700.61  700.61  700.61  700.61  700.61  700.61  700.61  700.61
     2.84 CFS      2.44    2.44    2.44    2.44    2.44    2.44    2.45    2.45
     2.84 ELEV   700.61  700.61  700.61  700.61  700.61  700.61  700.61  700.61
     2.90 CFS      2.45    2.45    2.45    2.45    2.45    2.45    2.45    2.45
     2.90 ELEV   700.61  700.61  700.61  700.61  700.61  700.61  700.61  700.61
     2.97 CFS      2.45    2.45    2.45    2.45    2.45    2.45    2.45    2.45
     2.97 ELEV   700.61  700.61  700.61  700.61  700.61  700.61  700.61  700.61
     3.03 CFS      2.45    2.45    2.45    2.45    2.45    2.45    2.45    2.46
     3.03 ELEV   700.61  700.61  700.61  700.61  700.61  700.61  700.61  700.61
     3.10 CFS      2.46    2.46    2.46    2.46    2.46    2.46    2.46    2.46
     3.10 ELEV   700.61  700.61  700.61  700.61  700.61  700.61  700.61  700.61
     3.16 CFS      2.46    2.46    2.46    2.46    2.46
     3.16 ELEV   700.61  700.61  700.61  700.61  700.61

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                    .02 WATERSHED INCHES;       6 CFS-HRS;        .5 ACRE-FEET.

 --- STRUCTURE  7, ALTERNATE  0, STORM  4, HYDROGRAPH ADDED TO READHD FILE ---


OPERATION RUNOFF    XSECTION  49

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .23                          1.6                        (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                    .36 WATERSHED INCHES;       1 CFS-HRS;        .0 ACRE-FEET.
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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
12:30:03                    PASS   4   JOB NO.   1                      PAGE  30


OPERATION ADDHYD    XSECTION  50

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        3.19                         2.5                        (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                    .02 WATERSHED INCHES;       7 CFS-HRS;        .6 ACRE-FEET.


OPERATION RESVOR    STRUCTURE 39

                    HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM = 4
     HRS      MAIN TIME INCREMENT =  .008 hr,      DRAINAGE AREA =    .62 SQ.MI.
      .09 CFS      .00     .01     .01     .02     .02     .03     .04     .05
      .09 ELEV   693.00  693.00  693.00  693.00  693.00  693.00  693.01  693.01
      .15 CFS      .06     .08     .10     .12     .14     .16     .19     .21
      .15 ELEV   693.01  693.01  693.01  693.02  693.02  693.02  693.03  693.03
      .22 CFS      .24     .27     .30     .33     .37     .40     .44     .47
      .22 ELEV   693.03  693.04  693.04  693.05  693.05  693.06  693.06  693.07
      .28 CFS      .51     .54     .58     .62     .65     .69     .72     .76
      .28 ELEV   693.07  693.08  693.08  693.09  693.09  693.10  693.10  693.11
      .34 CFS      .79     .82     .86     .89     .92     .95     .98    1.01
      .34 ELEV   693.11  693.12  693.12  693.13  693.13  693.13  693.14  693.14
      .41 CFS     1.04    1.07    1.09    1.12    1.15    1.17    1.20    1.22
      .41 ELEV   693.15  693.15  693.15  693.16  693.16  693.17  693.17  693.17
      .47 CFS     1.25    1.27    1.30    1.32    1.34    1.36    1.39    1.41
      .47 ELEV   693.18  693.18  693.18  693.19  693.19  693.19  693.20  693.20
      .54 CFS     1.43    1.45    1.47    1.49    1.51    1.52    1.54    1.56
      .54 ELEV   693.20  693.21  693.21  693.21  693.21  693.22  693.22  693.22
      .60 CFS     1.57    1.59    1.60    1.62    1.63    1.64    1.65    1.66
      .60 ELEV   693.22  693.22  693.23  693.23  693.23  693.23  693.23  693.24
      .66 CFS     1.67    1.68    1.69    1.69    1.70    1.71    1.71    1.72
      .66 ELEV   693.24  693.24  693.24  693.24  693.24  693.24  693.24  693.24
      .73 CFS     1.72    1.73    1.73    1.74    1.74    1.74    1.75    1.75
      .73 ELEV   693.24  693.24  693.25  693.25  693.25  693.25  693.25  693.25
      .79 CFS     1.75    1.75    1.76    1.76    1.76    1.76    1.76    1.77
      .79 ELEV   693.25  693.25  693.25  693.25  693.25  693.25  693.25  693.25
      .86 CFS     1.77    1.77    1.77    1.77    1.77    1.77    1.77    1.77
      .86 ELEV   693.25  693.25  693.25  693.25  693.25  693.25  693.25  693.25
      .92 CFS     1.78    1.78    1.78    1.78    1.78    1.78    1.78    1.78
      .92 ELEV   693.25  693.25  693.25  693.25  693.25  693.25  693.25  693.25
      .98 CFS     1.78    1.78    1.78    1.78    1.78    1.78    1.78    1.78
      .98 ELEV   693.25  693.25  693.25  693.25  693.25  693.25  693.25  693.25
     1.05 CFS     1.78    1.78    1.78    1.78    1.78    1.79    1.79    1.79
     1.05 ELEV   693.25  693.25  693.25  693.25  693.25  693.25  693.25  693.25
     1.11 CFS     1.79    1.79    1.79    1.79    1.79    1.79    1.79    1.79
     1.11 ELEV   693.25  693.25  693.25  693.25  693.25  693.25  693.25  693.25
     1.18 CFS     1.79    1.79    1.79    1.79    1.79    1.79    1.79    1.79
     1.18 ELEV   693.25  693.25  693.25  693.25  693.25  693.25  693.25  693.25
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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
12:30:03                    PASS   4   JOB NO.   1                     PAGE  31

     1.24 CFS     1.79    1.79    1.79    1.79    1.79    1.79    1.79    1.79
     1.24 ELEV   693.25  693.25  693.25  693.25  693.25  693.25  693.25  693.25
     1.30 CFS     1.79    1.79    1.79    1.79    1.79    1.79    1.79    1.79
     1.30 ELEV   693.25  693.25  693.25  693.25  693.25  693.25  693.25  693.25
     1.37 CFS     1.80    1.80    1.80    1.80    1.80    1.80    1.80    1.80
     1.37 ELEV   693.25  693.25  693.25  693.25  693.25  693.25  693.25  693.25
     1.43 CFS     1.80    1.80    1.80    1.80    1.80    1.80    1.80    1.80
     1.43 ELEV   693.25  693.25  693.25  693.25  693.25  693.25  693.25  693.25
     1.50 CFS     1.80    1.80    1.80    1.80    1.80    1.80    1.80    1.80
     1.50 ELEV   693.25  693.26  693.26  693.26  693.26  693.26  693.26  693.26
     1.56 CFS     1.80    1.80    1.80    1.80    1.80    1.80    1.80    1.80
     1.56 ELEV   693.26  693.26  693.26  693.26  693.26  693.26  693.26  693.26
     1.62 CFS     1.81    1.81    1.81    1.81    1.81    1.81    1.81    1.81
     1.62 ELEV   693.26  693.26  693.26  693.26  693.26  693.26  693.26  693.26
     1.69 CFS     1.81    1.81    1.81    1.81    1.81    1.81    1.81    1.81
     1.69 ELEV   693.26  693.26  693.26  693.26  693.26  693.26  693.26  693.26
     1.75 CFS     1.81    1.81    1.81    1.81    1.81    1.81    1.81    1.81
     1.75 ELEV   693.26  693.26  693.26  693.26  693.26  693.26  693.26  693.26
     1.82 CFS     1.81    1.81    1.81    1.81    1.81    1.81    1.82    1.82
     1.82 ELEV   693.26  693.26  693.26  693.26  693.26  693.26  693.26  693.26
     1.88 CFS     1.82    1.82    1.82    1.82    1.82    1.82    1.82    1.82
     1.88 ELEV   693.26  693.26  693.26  693.26  693.26  693.26  693.26  693.26
     1.94 CFS     1.82    1.82    1.82    1.82    1.82    1.82    1.82    1.82
     1.94 ELEV   693.26  693.26  693.26  693.26  693.26  693.26  693.26  693.26
     2.01 CFS     1.82    1.82    1.82    1.82    1.82    1.82    1.82    1.82
     2.01 ELEV   693.26  693.26  693.26  693.26  693.26  693.26  693.26  693.26
     2.07 CFS     1.82    1.83    1.83    1.83    1.83    1.83    1.83    1.83
     2.07 ELEV   693.26  693.26  693.26  693.26  693.26  693.26  693.26  693.26
     2.14 CFS     1.83    1.83    1.83    1.83    1.83    1.83    1.83    1.83
     2.14 ELEV   693.26  693.26  693.26  693.26  693.26  693.26  693.26  693.26
     2.20 CFS     1.83    1.83    1.83    1.83    1.83    1.83    1.83    1.83
     2.20 ELEV   693.26  693.26  693.26  693.26  693.26  693.26  693.26  693.26
     2.26 CFS     1.83    1.83    1.83    1.83    1.84    1.84    1.84    1.84
     2.26 ELEV   693.26  693.26  693.26  693.26  693.26  693.26  693.26  693.26
     2.33 CFS     1.84    1.84    1.84    1.84    1.84    1.84    1.84    1.84
     2.33 ELEV   693.26  693.26  693.26  693.26  693.26  693.26  693.26  693.26
     2.39 CFS     1.84    1.84    1.84    1.84    1.84    1.84    1.84    1.84
     2.39 ELEV   693.26  693.26  693.26  693.26  693.26  693.26  693.26  693.26
     2.46 CFS     1.84    1.84    1.84    1.84    1.84    1.85    1.85    1.85
     2.46 ELEV   693.26  693.26  693.26  693.26  693.26  693.26  693.26  693.26
     2.52 CFS     1.85    1.85    1.85    1.85    1.85    1.85    1.85    1.85
     2.52 ELEV   693.26  693.26  693.26  693.26  693.26  693.26  693.26  693.26
     2.58 CFS     1.85    1.85    1.85    1.85    1.85    1.85    1.85    1.85
     2.58 ELEV   693.26  693.26  693.26  693.26  693.26  693.26  693.26  693.26
     2.65 CFS     1.85    1.85    1.85    1.85    1.85    1.85    1.86    1.86
     2.65 ELEV   693.26  693.26  693.26  693.26  693.26  693.26  693.26  693.26
     2.71 CFS     1.86    1.86    1.86    1.86    1.86    1.86    1.86    1.86
     2.71 ELEV   693.26  693.26  693.26  693.26  693.26  693.26  693.26  693.26
     2.78 CFS     1.86    1.86    1.86    1.86    1.86    1.86    1.86    1.86
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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
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     2.78 ELEV   693.26  693.26  693.26  693.26  693.26  693.26  693.26  693.26
     2.84 CFS     1.86    1.86    1.86    1.86    1.86    1.86    1.86    1.87
     2.84 ELEV   693.26  693.26  693.26  693.26  693.26  693.26  693.26  693.26
     2.90 CFS     1.87    1.87    1.87    1.87    1.87    1.87    1.87    1.87
     2.90 ELEV   693.26  693.26  693.26  693.26  693.26  693.26  693.26  693.26
     2.97 CFS     1.87    1.87    1.87    1.87    1.87    1.87    1.87    1.87
     2.97 ELEV   693.26  693.26  693.26  693.26  693.26  693.26  693.27  693.27
     3.03 CFS     1.87    1.87    1.87    1.87    1.87    1.87    1.87    1.87
     3.03 ELEV   693.27  693.27  693.27  693.27  693.27  693.27  693.27  693.27
     3.10 CFS     1.88    1.88    1.88    1.88    1.88    1.88    1.88    1.88
     3.10 ELEV   693.27  693.27  693.27  693.27  693.27  693.27  693.27  693.27
     3.16 CFS     1.88    1.88    1.88    1.88    1.88
     3.16 ELEV   693.27  693.27  693.27  693.27  693.27

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .01 WATERSHED INCHES;       5 CFS-HRS;        .4 ACRE-FEET.

    DURATION(HRS)   2      3
    FLOW(CFS)       2      2 TRUNCATED

 --- STRUCTURE 39, ALTERNATE  0, STORM  4, HYDROGRAPH ADDED TO READHD FILE ---


EXECUTIVE CONTROL  ENDCMP    COMPUTATIONS COMPLETED FOR PASS   4


EXECUTIVE CONTROL  COMPUT    FROM XSECTION  91  TO STRUCTURE 39          1-HR
    STARTING TIME =   .00       RAIN DEPTH =  1.43       RAIN DURATION =  1.00
    ANT. RUNOFF COND. = 2       MAIN TIME INCREMENT =   .008 HOURS
    ALTERNATE NO. = 0           STORM NO. = 5            RAIN TABLE NO. = 1


OPERATION RUNOFF    XSECTION  91

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        1.11                          8.7                        (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .14 WATERSHED INCHES;       8 CFS-HRS;        .7 ACRE-FEET.


OPERATION RUNOFF    XSECTION  92

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        1.13                         19.3                        (RUNOFF)
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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
12:30:03                    PASS   5   JOB NO.   1                      PAGE  33


    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .25 WATERSHED INCHES;      21 CFS-HRS;       1.7 ACRE-FEET.


OPERATION ADDHYD    XSECTION  93

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        1.12                         28.0                       (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .21 WATERSHED INCHES;      29 CFS-HRS;       2.4 ACRE-FEET.


OPERATION RUNOFF    XSECTION  94

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .21 WATERSHED INCHES;     399 CFS-HRS;       2.4 ACRE-FEET.


OPERATION RESVOR    STRUCTURE 11

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .02 WATERSHED INCHES;       0 CFS-HRS;        .0 ACRE-FEET.


OPERATION RUNOFF    XSECTION  96

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .21                         14.2                       (RUNOFF)
        1.04                          2.1                       (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                 1.21 WATERSHED INCHES;       7 CFS-HRS;        .5 ACRE-FEET.


OPERATION ADDHYD    XSECTION  97

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .22                         14.3                       (NULL)
        1.06                         29.8                       (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .22 WATERSHED INCHES;      36 CFS-HRS;       3.0 ACRE-FEET.


OPERATION RESVOR    STRUCTURE  6

                  HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM = 5
     HRS      MAIN TIME INCREMENT =  .008 hr,      DRAINAGE AREA =    .28 SQ.MI.
      .04 CFS       .00     .01     .01     .02     .03     .04     .06     .08
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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
12:30:03                    PASS   5   JOB NO.   1                      PAGE  34

      .04 ELEV   707.00  707.00  707.00  707.00  707.00  707.00  707.01  707.01
      .10 CFS       .11     .14     .18     .23     .28     .35     .42     .49
      .10 ELEV   707.01  707.02  707.02  707.03  707.03  707.04  707.05  707.06
      .17 CFS       .58     .67     .76     .86     .96    1.07    1.18    1.30
      .17 ELEV   707.07  707.08  707.09  707.10  707.11  707.13  707.14  707.15
      .23 CFS      1.42    1.54    1.66    1.78    1.90    2.03    2.16    2.28
      .23 ELEV   707.17  707.18  707.20  707.21  707.23  707.24  707.26  707.27
      .30 CFS      2.41    2.54    2.66    2.79    2.91    3.04    3.16    3.28
      .30 ELEV   707.29  707.30  707.32  707.33  707.35  707.36  707.38  707.39
      .36 CFS      3.40    3.51    3.62    3.74    3.84    3.95    4.06    4.16
      .36 ELEV   707.40  707.42  707.43  707.44  707.46  707.47  707.48  707.50
      .42 CFS      4.26    4.36    4.46    4.55    4.65    4.74    4.84    4.93
      .42 ELEV   707.51  707.52  707.53  707.54  707.55  707.56  707.58  707.59
      .49 CFS      5.02    5.11    5.20    5.29    5.38    5.47    5.56    5.65
      .49 ELEV   707.60  707.61  707.62  707.63  707.64  707.65  707.66  707.67
      .55 CFS      5.74    5.82    5.91    5.99    6.07    6.16    6.24    6.32
      .55 ELEV   707.68  707.69  707.70  707.71  707.72  707.73  707.74  707.75
      .62 CFS      6.40    6.48    6.56    6.64    6.73    6.81    6.89    6.98
      .62 ELEV   707.76  707.77  707.78  707.79  707.80  707.81  707.82  707.83
      .68 CFS      7.06    7.15    7.24    7.33    7.42    7.51    7.60    7.70
      .68 ELEV   707.84  707.85  707.86  707.87  707.88  707.89  707.90  707.92
      .74 CFS      7.79    7.89    7.99    8.09    8.19    8.29    8.40    8.53
      .74 ELEV   707.93  707.94  707.95  707.96  707.98  707.99  708.00  708.01
      .81 CFS      8.67    8.80    8.94    9.08    9.22    9.36    9.51    9.65
      .81 ELEV   708.02  708.03  708.05  708.06  708.07  708.08  708.10  708.11
      .87 CFS      9.80    9.94   10.09   10.23   10.38   10.53   10.67   10.81
      .87 ELEV   708.12  708.13  708.15  708.16  708.17  708.18  708.20  708.21
      .94 CFS     10.96   11.10   11.24   11.38   11.51   11.65   11.78   11.92
      .94 ELEV   708.22  708.23  708.24  708.26  708.27  708.28  708.29  708.30
     1.00 CFS     12.05   12.19   12.32   12.46   12.59   12.73   12.87   13.00
     1.00 ELEV   708.31  708.33  708.34  708.35  708.36  708.37  708.39  708.40
     1.06 CFS     13.13   13.27   13.39   13.52   13.64   13.76   13.88   13.99
     1.06 ELEV   708.41  708.42  708.43  708.44  708.45  708.46  708.47  708.48
     1.13 CFS     14.10   14.21   14.31   14.41   14.51   14.60   14.69   14.79
     1.13 ELEV   708.49  708.50  708.51  708.52  708.53  708.53  708.54  708.55
     1.19 CFS     14.87   14.96   15.05   15.13   15.21   15.29   15.37   15.45
     1.19 ELEV   708.56  708.57  708.57  708.58  708.59  708.59  708.60  708.61
     1.26 CFS     15.52   15.60   15.67   15.74   15.81   15.88   15.94   16.01
     1.26 ELEV   708.61  708.62  708.63  708.63  708.64  708.64  708.65  708.66
     1.32 CFS     16.07   16.13   16.19   16.24   16.30   16.35   16.40   16.45
     1.32 ELEV   708.66  708.67  708.67  708.68  708.68  708.69  708.69  708.69
     1.38 CFS     16.50   16.55   16.59   16.63   16.67   16.71   16.74   16.78
     1.38 ELEV   708.70  708.70  708.71  708.71  708.71  708.72  708.72  708.72
     1.45 CFS     16.81   16.84   16.87   16.89   16.92   16.94   16.96   16.98
     1.45 ELEV   708.73  708.73  708.73  708.73  708.73  708.74  708.74  708.74
     1.51 CFS     17.00   17.01   17.02   17.03   17.04   17.05   17.05   17.05
     1.51 ELEV   708.74  708.74  708.74  708.74  708.74  708.75  708.75  708.75
     1.58 CFS     17.06   17.05   17.05   17.05   17.04   17.03   17.02   17.01
     1.58 ELEV   708.75  708.75  708.75  708.75  708.74  708.74  708.74  708.74
```

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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
12:30:03                    PASS   5   JOB NO.   1                      PAGE  35

     1.64 CFS     17.00   16.98   16.97   16.95   16.93   16.90   16.88   16.86
     1.64 ELEV   708.74  708.74  708.74  708.74  708.74  708.73  708.73  708.73
     1.70 CFS     16.83   16.80   16.77   16.74   16.71   16.68   16.64   16.61
     1.70 ELEV   708.73  708.72  708.72  708.72  708.72  708.71  708.71  708.71
     1.77 CFS     16.57   16.53   16.49   16.45   16.41   16.37   16.32   16.28
     1.77 ELEV   708.70  708.70  708.70  708.69  708.69  708.69  708.68  708.68
     1.83 CFS     16.23   16.18   16.13   16.09   16.04   15.98   15.93   15.88
     1.83 ELEV   708.67  708.67  708.67  708.66  708.66  708.65  708.65  708.64
     1.90 CFS     15.83   15.77   15.72   15.66   15.61   15.55   15.49   15.44
     1.90 ELEV   708.64  708.64  708.63  708.63  708.62  708.62  708.61  708.61
     1.96 CFS     15.38   15.32   15.26   15.20   15.14   15.08   15.02   14.96
     1.96 ELEV   708.60  708.60  708.59  708.59  708.58  708.58  708.57  708.57
     2.02 CFS     14.90   14.83   14.77   14.71   14.65   14.58   14.52   14.45
     2.02 ELEV   708.56  708.55  708.55  708.54  708.54  708.53  708.53  708.52
     2.09 CFS     14.39   14.33   14.26   14.20   14.13   14.07   14.00   13.94
     2.09 ELEV   708.52  708.51  708.51  708.50  708.49  708.49  708.48  708.48
     2.15 CFS     13.87   13.81   13.74   13.68   13.61   13.55   13.48   13.41
     2.15 ELEV   708.47  708.47  708.46  708.45  708.45  708.44  708.44  708.43
     2.22 CFS     13.35   13.28   13.22   13.15   13.09   13.02   12.96   12.89
     2.22 ELEV   708.43  708.42  708.42  708.41  708.40  708.40  708.39  708.39
     2.28 CFS     12.82   12.76   12.69   12.63   12.56   12.50   12.43   12.37
     2.28 ELEV   708.38  708.38  708.37  708.36  708.36  708.35  708.35  708.34
     2.34 CFS     12.30   12.24   12.17   12.11   12.05   11.98   11.92   11.85
     2.34 ELEV   708.34  708.33  708.33  708.32  708.31  708.31  708.30  708.30
     2.41 CFS     11.79   11.73   11.66   11.60   11.54   11.47   11.41   11.35
     2.41 ELEV   708.29  708.29  708.28  708.28  708.27  708.26  708.26  708.25
     2.47 CFS     11.29   11.22   11.16   11.10   11.04   10.98   10.92   10.86
     2.47 ELEV   708.25  708.24  708.24  708.23  708.23  708.22  708.22  708.21
     2.54 CFS     10.79   10.73   10.67   10.61   10.55   10.49   10.43   10.38
     2.54 ELEV   708.21  708.20  708.20  708.19  708.19  708.18  708.18  708.17
     2.60 CFS     10.32   10.26   10.20   10.14   10.08   10.02    9.97    9.91
     2.60 ELEV   708.17  708.16  708.16  708.15  708.15  708.14  708.14  708.13
     2.66 CFS      9.85    9.80    9.74    9.68    9.63    9.57    9.51    9.46
     2.66 ELEV   708.13  708.12  708.12  708.11  708.11  708.10  708.10  708.09
     2.73 CFS      9.40    9.35    9.29    9.24    9.19    9.13    9.08    9.02
     2.73 ELEV   708.09  708.08  708.08  708.07  708.07  708.06  708.06  708.05
     2.79 CFS      8.97    8.92    8.87    8.81    8.76    8.71    8.66    8.61
     2.79 ELEV   708.05  708.04  708.04  708.04  708.03  708.03  708.02  708.02
     2.86 CFS      8.55    8.50    8.45    8.40    8.36    8.32    8.28    8.24
     2.86 ELEV   708.01  708.01  708.00  708.00  708.00  707.99  707.99  707.98
     2.92 CFS      8.21    8.17    8.13    8.09    8.05    8.01    7.97    7.94
     2.92 ELEV   707.98  707.97  707.97  707.96  707.96  707.95  707.95  707.94
     2.98 CFS      7.90    7.86    7.82    7.79    7.75    7.71    7.67    7.64
     2.98 ELEV   707.94  707.94  707.93  707.93  707.92  707.92  707.91  707.91
     3.05 CFS      7.60    7.56    7.53    7.49    7.45    7.42    7.38    7.35
     3.05 ELEV   707.90  707.90  707.90  707.89  707.89  707.88  707.88  707.87
     3.11 CFS      7.31    7.28    7.24    7.21    7.17    7.14    7.10    7.07
     3.11 ELEV   707.87  707.87  707.86  707.86  707.85  707.85  707.85  707.84
     3.18 CFS      7.03    7.00    6.96
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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
12:30:03                    PASS   5   JOB NO.   1                      PAGE  36

     3.18 ELEV   707.84  707.83  707.83

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .19 WATERSHED INCHES;      34 CFS-HRS;       2.8 ACRE-FEET.

    DURATION(HRS)   2      3
    FLOW(CFS)       9      7 TRUNCATED

 --- STRUCTURE  6, ALTERNATE  0, STORM  5, HYDROGRAPH ADDED TO READHD FILE ---


OPERATION RUNOFF    XSECTION  99

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .33                          86.1                       (RUNOFF)
         .86                          36.3                       (RUNOFF)
        1.04                          25.9                       (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .49 WATERSHED INCHES;      48 CFS-HRS;       4.0 ACRE-FEET.


OPERATION ADDHYD    XSECTION  90

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .33                          89.1                       (NULL)
         .87                          46.0                       (NULL)
        1.04                          38.6                       (NULL)
        1.58                          17.1 *                     (NULL)
                                           * FIRST POINT OF FLAT PEAK

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .29 WATERSHED INCHES;      81 CFS-HRS;       6.7 ACRE-FEET.


OPERATION RESVOR    STRUCTURE  7

                  HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM = 5
     HRS      MAIN TIME INCREMENT =  .008 hr,      DRAINAGE AREA =    .54 SQ.MI.
      .11 CFS       .00     .01     .01     .02     .02     .03     .04     .05
      .11 ELEV   700.00  700.00  700.00  700.00  700.01  700.01  700.01  700.01
      .18 CFS       .06     .07     .09     .10     .12     .14     .17     .19
      .18 ELEV   700.01  700.02  700.02  700.03  700.03  700.04  700.04  700.05
      .24 CFS       .22     .25     .28     .31     .34     .38     .41     .45
      .24 ELEV   700.05  700.06  700.07  700.08  700.09  700.09  700.10  700.11
      .30 CFS       .49     .53     .57     .61     .65     .69     .73     .78
      .30 ELEV   700.12  700.13  700.14  700.15  700.16  700.17  700.18  700.19
      .37 CFS       .82     .86     .91     .95     .99    1.04    1.08    1.12
      .37 ELEV   700.21  700.22  700.23  700.24  700.25  700.26  700.27  700.28
      .43 CFS      1.16    1.20    1.25    1.29    1.33    1.37    1.41    1.45
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TR20 ------------------------------------------------------------------- SCS -
001        CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
12:30:03                    PASS   5   JOB NO.   1                     PAGE  37

      .43 ELEV   700.29  700.30  700.31  700.32  700.33  700.34  700.35  700.36
      .50 CFS      1.49    1.53    1.57    1.60    1.64    1.68    1.72    1.75
      .50 ELEV   700.37  700.38  700.39  700.40  700.41  700.42  700.43  700.44
      .56 CFS      1.79    1.82    1.86    1.89    1.92    1.95    1.98    2.01
      .56 ELEV   700.45  700.46  700.46  700.47  700.48  700.49  700.50  700.50
      .62 CFS      2.04    2.07    2.10    2.13    2.15    2.18    2.21    2.23
      .62 ELEV   700.51  700.52  700.52  700.53  700.54  700.55  700.55  700.56
      .69 CFS      2.26    2.28    2.31    2.33    2.36    2.38    2.41    2.43
      .69 ELEV   700.56  700.57  700.58  700.58  700.59  700.60  700.60  700.61
      .75 CFS      2.45    2.48    2.50    2.52    2.55    2.57    2.59    2.62
      .75 ELEV   700.61  700.62  700.63  700.63  700.64  700.64  700.65  700.65
      .82 CFS      2.64    2.66    2.68    2.71    2.73    2.75    2.77    2.80
      .82 ELEV   700.66  700.67  700.67  700.68  700.68  700.69  700.69  700.70
      .88 CFS      2.82    2.84    2.86    2.89    2.91    2.93    2.95    2.97
      .88 ELEV   700.70  700.71  700.72  700.72  700.73  700.73  700.74  700.74
      .94 CFS      2.99    3.01    3.03    3.05    3.07    3.09    3.11    3.13
      .94 ELEV   700.75  700.75  700.76  700.76  700.77  700.77  700.78  700.78
     1.01 CFS      3.14    3.16    3.18    3.20    3.22    3.23    3.25    3.27
     1.01 ELEV   700.79  700.79  700.79  700.80  700.80  700.81  700.81  700.82
     1.07 CFS      3.29    3.30    3.32    3.34    3.35    3.36    3.38    3.39
     1.07 ELEV   700.82  700.83  700.83  700.83  700.84  700.84  700.84  700.85
     1.14 CFS      3.40    3.41    3.43    3.44    3.45    3.46    3.46    3.47
     1.14 ELEV   700.85  700.85  700.86  700.86  700.86  700.86  700.87  700.87
     1.20 CFS      3.48    3.49    3.50    3.51    3.51    3.52    3.53    3.53
     1.20 ELEV   700.87  700.87  700.87  700.88  700.88  700.88  700.88  700.88
     1.26 CFS      3.54    3.55    3.55    3.56    3.56    3.57    3.57    3.58
     1.26 ELEV   700.89  700.89  700.89  700.89  700.89  700.89  700.89  700.90
     1.33 CFS      3.59    3.59    3.60    3.60    3.61    3.61    3.62    3.62
     1.33 ELEV   700.90  700.90  700.90  700.90  700.90  700.90  700.90  700.91
     1.39 CFS      3.63    3.63    3.63    3.64    3.64    3.65    3.65    3.66
     1.39 ELEV   700.91  700.91  700.91  700.91  700.91  700.91  700.91  700.91
     1.46 CFS      3.66    3.67    3.67    3.68    3.68    3.68    3.69    3.69
     1.46 ELEV   700.92  700.92  700.92  700.92  700.92  700.92  700.92  700.92
     1.52 CFS      3.70    3.70    3.71    3.71    3.71    3.72    3.72    3.73
     1.52 ELEV   700.92  700.93  700.93  700.93  700.93  700.93  700.93  700.93
     1.58 CFS      3.73    3.74    3.74    3.74    3.75    3.75    3.76    3.76
     1.58 ELEV   700.93  700.93  700.93  700.94  700.94  700.94  700.94  700.94
     1.65 CFS      3.76    3.77    3.77    3.78    3.78    3.79    3.79    3.79
     1.65 ELEV   700.94  700.94  700.94  700.94  700.95  700.95  700.95  700.95
     1.71 CFS      3.80    3.80    3.81    3.81    3.81    3.82    3.82    3.83
     1.71 ELEV   700.95  700.95  700.95  700.95  700.95  700.95  700.96  700.96
     1.78 CFS      3.83    3.83    3.84    3.84    3.84    3.85    3.85    3.86
     1.78 ELEV   700.96  700.96  700.96  700.96  700.96  700.96  700.96  700.96
     1.84 CFS      3.86    3.86    3.87    3.87    3.88    3.88    3.88    3.89
     1.84 ELEV   700.97  700.97  700.97  700.97  700.97  700.97  700.97  700.97
     1.90 CFS      3.89    3.89    3.90    3.90    3.90    3.91    3.91    3.92
     1.90 ELEV   700.97  700.97  700.97  700.98  700.98  700.98  700.98  700.98
     1.97 CFS      3.92    3.92    3.93    3.93    3.93    3.94    3.94    3.94
     1.97 ELEV   700.98  700.98  700.98  700.98  700.98  700.98  700.98  700.99
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TR20 ------------------------------------------------------------------- SCS -
001        CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
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     2.03 CFS      3.95    3.95    3.95    3.96    3.96    3.96    3.97    3.97
     2.03 ELEV   700.99  700.99  700.99  700.99  700.99  700.99  700.99  700.99
     2.10 CFS      3.97    3.98    3.98    3.98    3.98    3.99    3.99    3.99
     2.10 ELEV   700.99  700.99  700.99  701.00  701.00  701.00  701.00  701.00
     2.16 CFS      4.00    4.00    4.00    4.01    4.01    4.02    4.02    4.02
     2.16 ELEV   701.00  701.00  701.00  701.00  701.00  701.00  701.00  701.00
     2.22 CFS      4.03    4.03    4.03    4.04    4.04    4.04    4.05    4.05
     2.22 ELEV   701.00  701.00  701.00  701.00  701.01  701.01  701.01  701.01
     2.29 CFS      4.05    4.06    4.06    4.06    4.07    4.07    4.07    4.08
     2.29 ELEV   701.01  701.01  701.01  701.01  701.01  701.01  701.01  701.01
     2.35 CFS      4.08    4.08    4.09    4.09    4.09    4.10    4.10    4.10
     2.35 ELEV   701.01  701.01  701.01  701.01  701.01  701.01  701.01  701.01
     2.42 CFS      4.11    4.11    4.11    4.11    4.12    4.12    4.12    4.13
     2.42 ELEV   701.01  701.01  701.01  701.01  701.01  701.02  701.02  701.02
     2.48 CFS      4.13    4.13    4.13    4.14    4.14    4.14    4.14    4.15
     2.48 ELEV   701.02  701.02  701.02  701.02  701.02  701.02  701.02  701.02
     2.54 CFS      4.15    4.15    4.16    4.16    4.16    4.16    4.17    4.17
     2.54 ELEV   701.02  701.02  701.02  701.02  701.02  701.02  701.02  701.02
     2.61 CFS      4.17    4.17    4.17    4.18    4.18    4.18    4.18    4.19
     2.61 ELEV   701.02  701.02  701.02  701.02  701.02  701.02  701.02  701.02
     2.67 CFS      4.19    4.19    4.19    4.19    4.20    4.20    4.20    4.20
     2.67 ELEV   701.02  701.02  701.02  701.02  701.02  701.02  701.03  701.03
     2.74 CFS      4.21    4.21    4.21    4.21    4.21    4.21    4.22    4.22
     2.74 ELEV   701.03  701.03  701.03  701.03  701.03  701.03  701.03  701.03
     2.80 CFS      4.22    4.22    4.22    4.23    4.23    4.23    4.23    4.23
     2.80 ELEV   701.03  701.03  701.03  701.03  701.03  701.03  701.03  701.03
     2.86 CFS      4.23    4.24    4.24    4.24    4.24    4.24    4.24    4.25
     2.86 ELEV   701.03  701.03  701.03  701.03  701.03  701.03  701.03  701.03
     2.93 CFS      4.25    4.25    4.25    4.25    4.25    4.25    4.26    4.26
     2.93 ELEV   701.03  701.03  701.03  701.03  701.03  701.03  701.03  701.03
     2.99 CFS      4.26    4.26    4.26    4.26    4.26    4.27    4.27    4.27
     2.99 ELEV   701.03  701.03  701.03  701.03  701.03  701.03  701.03  701.03
     3.06 CFS      4.27    4.27    4.27    4.27    4.28    4.28    4.28    4.28
     3.06 ELEV   701.03  701.03  701.03  701.03  701.03  701.03  701.03  701.03
     3.12 CFS      4.28    4.28    4.28    4.28    4.28    4.29    4.29    4.29
     3.12 ELEV   701.03  701.04  701.04  701.04  701.04  701.04  701.04  701.04
     3.18 CFS      4.29    4.29
     3.18 ELEV   701.04  701.04

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                    .03 WATERSHED INCHES;      10 CFS-HRS;        .8 ACRE-FEET.

 --- STRUCTURE  7, ALTERNATE  0, STORM  5, HYDROGRAPH ADDED TO READHD FILE ---


OPERATION RUNOFF    XSECTION  49

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .32                          1.6                          (RUNOFF)
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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
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    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .58 WATERSHED INCHES;       1 CFS-HRS;        .1 ACRE-FEET.


OPERATION ADDHYD    XSECTION  50

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        3.19                         4.3                          (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .03 WATERSHED INCHES;      11 CFS-HRS;        .9 ACRE-FEET.


OPERATION RESVOR    STRUCTURE 39

                  HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM = 5
     HRS      MAIN TIME INCREMENT =  .008 hr,      DRAINAGE AREA =    .62 SQ.MI.
      .10 CFS       .00     .01     .01     .01     .02     .02     .03     .04
      .10 ELEV   693.00  693.00  693.00  693.00  693.00  693.00  693.00  693.01
      .17 CFS       .05     .06     .07     .08     .10     .12     .14     .16
      .17 ELEV   693.01  693.01  693.01  693.01  693.01  693.02  693.02  693.02
      .23 CFS       .18     .20     .23     .25     .28     .31     .34     .37
      .23 ELEV   693.03  693.03  693.03  693.04  693.04  693.04  693.05  693.05
      .30 CFS       .41     .44     .47     .51     .54     .58     .62     .65
      .30 ELEV   693.06  693.06  693.07  693.07  693.08  693.08  693.09  693.09
      .36 CFS       .69     .73     .76     .80     .84     .88     .91     .95
      .36 ELEV   693.10  693.10  693.11  693.11  693.12  693.12  693.13  693.13
      .42 CFS       .98    1.02    1.05    1.09    1.12    1.16    1.19    1.22
      .42 ELEV   693.14  693.14  693.15  693.15  693.16  693.16  693.17  693.17
      .49 CFS      1.26    1.29    1.32    1.35    1.38    1.41    1.44    1.47
      .49 ELEV   693.18  693.18  693.19  693.19  693.20  693.20  693.20  693.21
      .55 CFS      1.50    1.53    1.56    1.59    1.61    1.64    1.66    1.69
      .55 ELEV   693.21  693.22  693.22  693.22  693.23  693.23  693.24  693.24
      .62 CFS      1.71    1.74    1.76    1.78    1.80    1.82    1.84    1.87
      .62 ELEV   693.24  693.25  693.25  693.25  693.26  693.26  693.26  693.26
      .68 CFS      1.89    1.90    1.92    1.94    1.96    1.98    2.00    2.01
      .68 ELEV   693.27  693.27  693.27  693.28  693.28  693.28  693.28  693.29
      .74 CFS      2.03    2.05    2.07    2.08    2.10    2.12    2.13    2.15
      .74 ELEV   693.29  693.29  693.29  693.30  693.30  693.30  693.30  693.30
      .81 CFS      2.17    2.18    2.20    2.21    2.23    2.25    2.26    2.28
      .81 ELEV   693.31  693.31  693.31  693.31  693.32  693.32  693.32  693.32
      .87 CFS      2.29    2.31    2.33    2.34    2.36    2.37    2.39    2.40
      .87 ELEV   693.33  693.33  693.33  693.33  693.33  693.34  693.34  693.34
      .94 CFS      2.42    2.43    2.45    2.46    2.47    2.49    2.50    2.51
      .94 ELEV   693.34  693.34  693.35  693.35  693.35  693.35  693.35  693.36
     1.00 CFS      2.53    2.54    2.55    2.56    2.57    2.59    2.60    2.61
     1.00 ELEV   693.36  693.36  693.36  693.36  693.36  693.37  693.37  693.37
     1.06 CFS      2.62    2.63    2.64    2.65    2.66    2.67    2.68    2.69
     1.06 ELEV   693.37  693.37  693.37  693.38  693.38  693.38  693.38  693.38
     1.13 CFS      2.70    2.71    2.72    2.72    2.73    2.74    2.74    2.75
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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
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     1.13 ELEV   693.38  693.38  693.38  693.39  693.39  693.39  693.39  693.39
     1.19 CFS      2.75    2.76    2.76    2.77    2.77    2.77    2.78    2.78
     1.19 ELEV   693.39  693.39  693.39  693.39  693.39  693.39  693.39  693.39
     1.26 CFS      2.78    2.79    2.79    2.79    2.79    2.80    2.80    2.80
     1.26 ELEV   693.39  693.39  693.40  693.40  693.40  693.40  693.40  693.40
     1.32 CFS      2.80    2.80    2.80    2.81    2.81    2.81    2.81    2.81
     1.32 ELEV   693.40  693.40  693.40  693.40  693.40  693.40  693.40  693.40
     1.38 CFS      2.81    2.81    2.81    2.81    2.82    2.82    2.82    2.82
     1.38 ELEV   693.40  693.40  693.40  693.40  693.40  693.40  693.40  693.40
     1.45 CFS      2.82    2.82    2.82    2.82    2.82    2.82    2.82    2.82
     1.45 ELEV   693.40  693.40  693.40  693.40  693.40  693.40  693.40  693.40
     1.51 CFS      2.83    2.83    2.83    2.83    2.83    2.83    2.83    2.83
     1.51 ELEV   693.40  693.40  693.40  693.40  693.40  693.40  693.40  693.40
     1.58 CFS      2.83    2.83    2.83    2.83    2.83    2.83    2.84    2.84
     1.58 ELEV   693.40  693.40  693.40  693.40  693.40  693.40  693.40  693.40
     1.64 CFS      2.84    2.84    2.84    2.84    2.84    2.84    2.84    2.84
     1.64 ELEV   693.40  693.40  693.40  693.40  693.40  693.40  693.40  693.40
     1.70 CFS      2.84    2.84    2.84    2.84    2.84    2.85    2.85    2.85
     1.70 ELEV   693.40  693.40  693.40  693.40  693.40  693.40  693.40  693.40
     1.77 CFS      2.85    2.85    2.85    2.85    2.85    2.85    2.85    2.85
     1.77 ELEV   693.40  693.40  693.40  693.40  693.40  693.40  693.40  693.40
     1.83 CFS      2.85    2.85    2.85    2.85    2.86    2.86    2.86    2.86
     1.83 ELEV   693.40  693.40  693.40  693.40  693.40  693.40  693.40  693.40
     1.90 CFS      2.86    2.86    2.86    2.86    2.86    2.86    2.86    2.86
     1.90 ELEV   693.40  693.40  693.40  693.41  693.41  693.41  693.41  693.41
     1.96 CFS      2.86    2.86    2.87    2.87    2.87    2.87    2.87    2.87
     1.96 ELEV   693.41  693.41  693.41  693.41  693.41  693.41  693.41  693.41
     2.02 CFS      2.87    2.87    2.87    2.87    2.87    2.87    2.87    2.88
     2.02 ELEV   693.41  693.41  693.41  693.41  693.41  693.41  693.41  693.41
     2.09 CFS      2.88    2.88    2.88    2.88    2.88    2.88    2.88    2.88
     2.09 ELEV   693.41  693.41  693.41  693.41  693.41  693.41  693.41  693.41
     2.15 CFS      2.88    2.88    2.88    2.88    2.89    2.89    2.89    2.89
     2.15 ELEV   693.41  693.41  693.41  693.41  693.41  693.41  693.41  693.41
     2.22 CFS      2.89    2.89    2.89    2.89    2.89    2.89    2.89    2.89
     2.22 ELEV   693.41  693.41  693.41  693.41  693.41  693.41  693.41  693.41
     2.28 CFS      2.89    2.90    2.90    2.90    2.90    2.90    2.90    2.90
     2.28 ELEV   693.41  693.41  693.41  693.41  693.41  693.41  693.41  693.41
     2.34 CFS      2.90    2.90    2.90    2.90    2.90    2.91    2.91    2.91
     2.34 ELEV   693.41  693.41  693.41  693.41  693.41  693.41  693.41  693.41
     2.41 CFS      2.91    2.91    2.91    2.91    2.91    2.91    2.91    2.91
     2.41 ELEV   693.41  693.41  693.41  693.41  693.41  693.41  693.41  693.41
     2.47 CFS      2.91    2.92    2.92    2.92    2.92    2.92    2.92    2.92
     2.47 ELEV   693.41  693.41  693.41  693.41  693.41  693.41  693.41  693.41
     2.54 CFS      2.92    2.92    2.92    2.92    2.92    2.93    2.93    2.93
     2.54 ELEV   693.41  693.41  693.41  693.41  693.41  693.41  693.41  693.41
     2.60 CFS      2.93    2.93    2.93    2.93    2.93    2.93    2.93    2.93
     2.60 ELEV   693.41  693.41  693.41  693.41  693.42  693.42  693.42  693.42
     2.66 CFS      2.93    2.94    2.94    2.94    2.94    2.94    2.94    2.94
     2.66 ELEV   693.42  693.42  693.42  693.42  693.42  693.42  693.42  693.42
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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
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     2.73 CFS      2.94    2.94    2.94    2.94    2.95    2.95    2.95    2.95
     2.73 ELEV   693.42  693.42  693.42  693.42  693.42  693.42  693.42  693.42
     2.79 CFS      2.95    2.95    2.95    2.95    2.95    2.95    2.95    2.96
     2.79 ELEV   693.42  693.42  693.42  693.42  693.42  693.42  693.42  693.42
     2.86 CFS      2.96    2.96    2.96    2.96    2.96    2.96    2.96    2.96
     2.86 ELEV   693.42  693.42  693.42  693.42  693.42  693.42  693.42  693.42
     2.92 CFS      2.96    2.96    2.96    2.97    2.97    2.97    2.97    2.97
     2.92 ELEV   693.42  693.42  693.42  693.42  693.42  693.42  693.42  693.42
     2.98 CFS      2.97    2.97    2.97    2.97    2.97    2.97    2.98    2.98
     2.98 ELEV   693.42  693.42  693.42  693.42  693.42  693.42  693.42  693.42
     3.05 CFS      2.98    2.98    2.98    2.98    2.98    2.98    2.98    2.98
     3.05 ELEV   693.42  693.42  693.42  693.42  693.42  693.42  693.42  693.42
     3.11 CFS      2.98    2.99    2.99    2.99    2.99    2.99    2.99    2.99
     3.11 ELEV   693.42  693.42  693.42  693.42  693.42  693.42  693.42  693.42
     3.18 CFS      2.99    2.99    2.99
     3.18 ELEV   693.42  693.42  693.42

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                    .02 WATERSHED INCHES;       7 CFS-HRS;        .6 ACRE-FEET.

    DURATION(HRS)   2      2
    FLOW(CFS)       3      3 TRUNCATED

 --- STRUCTURE 39, ALTERNATE  0, STORM  5, HYDROGRAPH ADDED TO READHD FILE ---


EXECUTIVE CONTROL  ENDCMP    COMPUTATIONS COMPLETED FOR PASS   5


EXECUTIVE CONTROL  INCREM    MAIN TIME INCREMENT =   .100 HOURS


EXECUTIVE CONTROL  COMPUT    FROM XSECTION  91  TO STRUCTURE 39           2-HR
    STARTING TIME =   .00       RAIN DEPTH =  1.79       RAIN DURATION =  2.00
    ANT. RUNOFF COND. = 2       MAIN TIME INCREMENT =   .100 HOURS
    ALTERNATE NO. = 0           STORM NO. = 6            RAIN TABLE NO. = 1


OPERATION RUNOFF    XSECTION  91

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        1.30                        10.5                        (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                    .28 WATERSHED INCHES;      17 CFS-HRS;       1.4 ACRE-FEET.
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TR20 ------------------------------------------------------------------- SCS -
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OPERATION RUNOFF    XSECTION  92

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        1.32                        22.1                        (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                    .44 WATERSHED INCHES;      37 CFS-HRS;       3.0 ACRE-FEET.


OPERATION ADDHYD    XSECTION  93

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        1.31                        32.6                        (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                    .37 WATERSHED INCHES;      53 CFS-HRS;       4.4 ACRE-FEET.


OPERATION RUNOFF    XSECTION  94

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        2.00                         .7                         (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                    .08 WATERSHED INCHES;       1 CFS-HRS;        .1 ACRE-FEET.


OPERATION RESVOR    STRUCTURE 11

                    HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM = 6
     HRS      MAIN TIME INCREMENT =  .100 hr,      DRAINAGE AREA =    .02 SQ.MI.
      .70 CFS       .00     .02     .05     .10     .17     .26     .35     .44
      .70 ELEV   737.50  737.52  737.55  737.60  737.67  737.76  737.85  737.94
     1.50 CFS       .50     .51     .53     .55     .56     .58     .60     .61
     1.50 ELEV   738.00  738.03  738.06  738.09  738.13  738.16  738.19  738.22
     2.30 CFS       .62     .62     .61     .59     .57     .54     .50     .31
     2.30 ELEV   738.23  738.23  738.22  738.18  738.13  738.07  738.00  737.81
     3.10 CFS       .20     .14     .10     .08     .06     .04     .03     .02
     3.10 ELEV   737.70  737.64  737.60  737.58  737.56  737.54  737.53  737.52
     3.90 CFS       .02     .01     .01     .01     .00
     3.90 ELEV   737.52  737.51  737.51  737.51  737.50

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                    .08 WATERSHED INCHES;       1 CFS-HRS;        .1 ACRE-FEET.

    DURATION(HRS)   2      2
    FLOW(CFS)       3      0

 --- STRUCTURE 11, ALTERNATE  0, STORM  6, HYDROGRAPH ADDED TO READHD FILE ---
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TR20 ---------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
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OPERATION RUNOFF    XSECTION  96

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .30                          11.1                       (RUNOFF)
        1.99                           1.4                       (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  1.56 WATERSHED INCHES;       8 CFS-HRS;        .7 ACRE-FEET.


OPERATION ADDHYD    XSECTION  97

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .32                          11.5                       (NULL)
        1.32                          34.9                       (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                   .39 WATERSHED INCHES;      63 CFS-HRS;       5.2 ACRE-FEET.


OPERATION RESVOR    STRUCTURE  6

                   HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM = 6
     HRS      MAIN TIME INCREMENT =  .100 hr,      DRAINAGE AREA =    .28 SQ.MI.
      .00 CFS       .00     .09     .56    1.52    2.70    3.92    5.16    6.42
      .00 ELEV   707.00  707.01  707.07  707.18  707.32  707.47  707.61  707.76
      .80 CFS      7.73    9.37   11.33   13.32   15.22   17.02   18.70   20.27
      .80 ELEV   707.92  708.08  708.25  708.42  708.59  708.74  708.89  709.02
     1.60 CFS     22.09   23.59   24.73   25.48   26.01   26.34   26.27   25.85
     1.60 ELEV   709.12  709.20  709.26  709.30  709.33  709.35  709.35  709.33
     2.40 CFS     25.21   24.36   23.31   22.09   20.74   19.52   18.47   17.40
     2.40 ELEV   709.29  709.24  709.18  709.12  709.04  708.96  708.87  708.78
     3.20 CFS     16.33   15.28   14.26   13.29   12.36   11.48   10.66    9.88
     3.20 ELEV   708.68  708.59  708.51  708.42  708.34  708.27  708.19  708.13
     4.00 CFS      9.16    8.48    7.96    7.49    7.04    6.62    6.22    5.84
     4.00 ELEV   708.07  708.01  707.95  707.89  707.84  707.79  707.74  707.70
     4.80 CFS      5.49    5.16    4.85    4.55    4.28    4.02    3.77    3.54
     4.80 ELEV   707.65  707.61  707.58  707.54  707.51  707.48  707.45  707.42
     5.60 CFS      3.33    3.13    2.94    2.76    2.59    2.44    2.29    2.15
     5.60 ELEV   707.40  707.37  707.35  707.33  707.31  707.29  707.27  707.26
     6.40 CFS      2.02    1.90    1.78    1.67    1.57    1.48    1.39    1.30
     6.40 ELEV   707.24  707.23  707.21  707.20  707.19  707.18  707.17  707.16
     7.20 CFS      1.22    1.15    1.08    1.01     .95     .89     .84     .79
     7.20 ELEV   707.15  707.14  707.13  707.12  707.11  707.11  707.10  707.09
     8.00 CFS       .74     .70     .65     .61     .58     .54     .51     .48
     8.00 ELEV   707.09  707.08  707.08  707.07  707.07  707.06  707.06  707.06
     8.80 CFS       .45     .42     .40     .37     .35     .33     .31     .29
     8.80 ELEV   707.05  707.05  707.05  707.04  707.04  707.04  707.04  707.03
     9.60 CFS       .27     .26     .24     .23     .21     .20     .19     .18
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TR20 ---------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
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     9.60 ELEV   707.03  707.03  707.03  707.03  707.03  707.02  707.02  707.02
    10.40 CFS       .17     .16     .15     .14     .13     .12     .11     .11
    10.40 ELEV   707.02  707.02  707.02  707.02  707.02  707.01  707.01  707.01
    11.20 CFS       .10     .09     .09     .08     .08     .07     .07     .06
    11.20 ELEV   707.01  707.01  707.01  707.01  707.01  707.01  707.01  707.01
    12.00 CFS       .06     .06     .05     .05     .05     .04     .04     .04
    12.00 ELEV   707.01  707.01  707.01  707.01  707.01  707.01  707.00  707.00
    12.80 CFS       .04     .03     .03     .03     .03     .03     .03     .02
    12.80 ELEV   707.00  707.00  707.00  707.00  707.00  707.00  707.00  707.00
    13.60 CFS       .02     .02     .02     .02     .02     .02     .02     .01
    13.60 ELEV   707.00  707.00  707.00  707.00  707.00  707.00  707.00  707.00
    14.40 CFS       .01     .01     .01     .01     .01
    14.40 ELEV   707.00  707.00  707.00  707.00  707.00

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                   .42 WATERSHED INCHES;      76 CFS-HRS;       6.3 ACRE-FEET.

    DURATION(HRS)   2      4      6      8      9
    FLOW(CFS)      15      6      2      1      0

 --- STRUCTURE  6, ALTERNATE  0, STORM  6, HYDROGRAPH ADDED TO READHD FILE ---


OPERATION RUNOFF    XSECTION  99

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .51                          73.2                       (RUNOFF)
        1.65                          26.3                       (RUNOFF)
        1.99                          19.3                       (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                   .74 WATERSHED INCHES;      73 CFS-HRS;       6.1 ACRE-FEET.


OPERATION ADDHYD    XSECTION  90

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .53                          77.4                       (NULL)
        1.68                          49.4                       (NULL)
        2.00                          45.3                       (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                   .54 WATERSHED INCHES;     149 CFS-HRS;      12.3 ACRE-FEET.


OPERATION RESVOR    STRUCTURE  7

                   HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM = 6
     HRS      MAIN TIME INCREMENT =  .100 hr,      DRAINAGE AREA =    .54 SQ.MI.
      .10 CFS       .00     .05     .24     .58    1.02    1.50    1.97    2.39
      .10 ELEV   700.00  700.01  700.06  700.14  700.26  700.38  700.49  700.60
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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
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      .90 CFS     2.77    3.12    3.43    3.70    3.94    4.21    4.51    4.81
      .90 ELEV   700.69  700.78  700.86  700.92  700.98  701.03  701.06  701.10
     1.70 CFS     5.12    5.41    5.68    5.93    6.17    6.36    6.50    6.61
     1.70 ELEV  701.14  701.18  701.21  701.24  701.27  701.30  701.31  701.33
     2.50 CFS     6.70    6.79    6.87    6.94    7.00    7.06    7.12    7.16
     2.50 ELEV  701.34  701.35  701.36  701.37  701.38  701.38  701.39  701.40
     3.30 CFS     7.21    7.24    7.27    7.30    7.32    7.34    7.36    7.37
     3.30 ELEV  701.40  701.41  701.41  701.41  701.42  701.42  701.42  701.42
     4.10 CFS     7.37    7.38    7.38    7.38    7.38    7.37    7.37    7.36
     4.10 ELEV  701.42  701.42  701.42  701.42  701.42  701.42  701.42  701.42
     4.90 CFS     7.35    7.34    7.32    7.31    7.29    7.28    7.26    7.24
     4.90 ELEV  701.42  701.42  701.42  701.41  701.41  701.41  701.41  701.41
     5.70 CFS     7.22    7.20    7.18    7.16    7.13    7.11    7.09    7.06
     5.70 ELEV  701.40  701.40  701.40  701.39  701.39  701.39  701.39  701.38
     6.50 CFS     7.04    7.01    6.99    6.96    6.93    6.91    6.88    6.85
     6.50 ELEV  701.38  701.38  701.37  701.37  701.37  701.36  701.36  701.36
     7.30 CFS     6.82    6.80    6.77    6.74    6.71    6.68    6.65    6.63
     7.30 ELEV  701.35  701.35  701.35  701.34  701.34  701.34  701.33  701.33
     8.10 CFS     6.60    6.57    6.54    6.51    6.48    6.45    6.42    6.39
     8.10 ELEV  701.32  701.32  701.32  701.31  701.31  701.31  701.30  701.30
     8.90 CFS     6.36    6.33    6.31    6.28    6.25    6.22    6.19    6.16
     8.90 ELEV  701.30  701.29  701.29  701.28  701.28  701.28  701.27  701.27
     9.70 CFS     6.13    6.10    6.07    6.05    6.02    5.99    5.96    5.93
     9.70 ELEV  701.27  701.26  701.26  701.26  701.25  701.25  701.25  701.24
    10.50 CFS     5.90    5.88    5.85    5.82    5.79    5.76    5.74    5.71
    10.50 ELEV  701.24  701.23  701.23  701.23  701.22  701.22  701.22  701.21
    11.30 CFS     5.68    5.65    5.63    5.60    5.57    5.55    5.52    5.49
    11.30 ELEV  701.21  701.21  701.20  701.20  701.20  701.19  701.19  701.19
    12.10 CFS     5.47    5.44    5.41    5.39    5.36    5.34    5.31    5.28
    12.10 ELEV  701.18  701.18  701.18  701.17  701.17  701.17  701.16  701.16
    12.90 CFS     5.26    5.23    5.21    5.18    5.16    5.13    5.11    5.08
    12.90 ELEV  701.16  701.15  701.15  701.15  701.14  701.14  701.14  701.14
    13.70 CFS     5.06    5.03    5.01    4.98    4.96    4.93    4.91    4.89
    13.70 ELEV  701.13  701.13  701.13  701.12  701.12  701.12  701.11  701.11
    14.50 CFS     4.86    4.84    4.82    4.79
    14.50 ELEV  701.11  701.10  701.10  701.10

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                    .25 WATERSHED INCHES;      87 CFS-HRS;       7.2 ACRE-FEET.

    DURATION(HRS)   2      4      6      8     10     12     13
    FLOW(CFS)       7      7      7      6      6      5      5 TRUNCATED

 --- STRUCTURE  7, ALTERNATE  0, STORM  6, HYDROGRAPH ADDED TO READHD FILE ---


OPERATION RUNOFF    XSECTION  49
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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
12:30:03                    PASS   6   JOB NO.   1                      PAGE  46


    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .49                          1.3                        (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                    .85 WATERSHED INCHES;       1 CFS-HRS;        .1 ACRE-FEET.


OPERATION ADDHYD    XSECTION  50

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        4.30                          7.4 *                      (NULL)
                                        * FIRST POINT OF FLAT PEAK

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                    .25 WATERSHED INCHES;      88 CFS-HRS;       7.3 ACRE-FEET.


OPERATION RESVOR    STRUCTURE 39

                    HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM = 6
     HRS      MAIN TIME INCREMENT =  .100 hr,      DRAINAGE AREA =    .62 SQ.MI.
      .10 CFS       .00     .05     .23     .53     .90    1.29    1.66    1.99
      .10 ELEV   693.00  693.01  693.03  693.08  693.13  693.18  693.24  693.28
      .90 CFS      2.27    2.52    2.74    2.92    3.07    3.21    3.35    3.49
      .90 ELEV   693.32  693.36  693.39  693.41  693.44  693.46  693.47  693.49
     1.70 CFS      3.63    3.76    3.88    3.98    4.08    4.16    4.21    4.24
     1.70 ELEV   693.51  693.53  693.55  693.56  693.58  693.59  693.60  693.60
     2.50 CFS      4.26    4.28    4.30    4.33    4.35    4.37    4.40    4.42
     2.50 ELEV   693.60  693.61  693.61  693.61  693.62  693.62  693.62  693.63
     3.30 CFS      4.44    4.47    4.49    4.52    4.54    4.56    4.59    4.61
     3.30 ELEV   693.63  693.63  693.64  693.64  693.64  693.65  693.65  693.65
     4.10 CFS      4.64    4.66    4.68    4.71    4.73    4.75    4.78    4.80
     4.10 ELEV   693.66  693.66  693.66  693.67  693.67  693.67  693.68  693.68
     4.90 CFS      4.82    4.84    4.86    4.88    4.91    4.93    4.95    4.97
     4.90 ELEV   693.68  693.69  693.69  693.69  693.69  693.70  693.70  693.70
     5.70 CFS      4.99    5.00    5.02    5.04    5.06    5.08    5.10    5.11
     5.70 ELEV   693.71  693.71  693.71  693.71  693.72  693.72  693.72  693.72
     6.50 CFS      5.13    5.15    5.16    5.18    5.19    5.21    5.22    5.24
     6.50 ELEV   693.73  693.73  693.73  693.73  693.74  693.74  693.74  693.74
     7.30 CFS      5.25    5.26    5.28    5.29    5.30    5.31    5.33    5.34
     7.30 ELEV   693.74  693.75  693.75  693.75  693.75  693.75  693.75  693.76
     8.10 CFS      5.35    5.36    5.37    5.38    5.39    5.40    5.41    5.42
     8.10 ELEV   693.76  693.76  693.76  693.76  693.76  693.76  693.77  693.77
     8.90 CFS      5.42    5.43    5.44    5.45    5.45    5.46    5.47    5.47
     8.90 ELEV   693.77  693.77  693.77  693.77  693.77  693.77  693.77  693.78
     9.70 CFS      5.48    5.48    5.49    5.49    5.50    5.50    5.51    5.51
     9.70 ELEV   693.78  693.78  693.78  693.78  693.78  693.78  693.78  693.78
    10.50 CFS      5.51    5.52    5.52    5.52    5.53    5.53    5.53    5.53
    10.50 ELEV   693.78  693.78  693.78  693.78  693.78  693.78  693.78  693.78
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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
12:30:03                    PASS   6   JOB NO.   1                      PAGE  47

    11.30 CFS      5.53    5.53    5.54    5.54    5.54    5.54    5.54    5.54
    11.30 ELEV   693.78  693.78  693.78  693.78  693.78  693.78  693.78  693.78
    12.10 CFS      5.54    5.54    5.53    5.53    5.53    5.53    5.53    5.53
    12.10 ELEV   693.78  693.78  693.78  693.78  693.78  693.78  693.78  693.78
    12.90 CFS      5.52    5.52    5.52    5.52    5.51    5.51    5.51    5.50
    12.90 ELEV   693.78  693.78  693.78  693.78  693.78  693.78  693.78  693.78
    13.70 CFS      5.50    5.50    5.49    5.49    5.48    5.48    5.47    5.47
    13.70 ELEV   693.78  693.78  693.78  693.78  693.78  693.78  693.78  693.77
    14.50 CFS      5.46    5.46    5.45    5.45
    14.50 ELEV   693.77  693.77  693.77  693.77

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                    .18 WATERSHED INCHES;      70 CFS-HRS;       5.8 ACRE-FEET.

    DURATION(HRS)   2      4
    FLOW(CFS)       6      5 TRUNCATED

 --- STRUCTURE 39, ALTERNATE  0, STORM  6, HYDROGRAPH ADDED TO READHD FILE ---


EXECUTIVE CONTROL  ENDCMP    COMPUTATIONS COMPLETED FOR PASS   6


EXECUTIVE CONTROL  COMPUT    FROM XSECTION  91  TO STRUCTURE 39           3-HR
    STARTING TIME =   .00       RAIN DEPTH =  1.94       RAIN DURATION =  3.00
    ANT. RUNOFF COND. = 2       MAIN TIME INCREMENT =   .100 HOURS
    ALTERNATE NO. = 0           STORM NO. = 7            RAIN TABLE NO. = 1


OPERATION RUNOFF    XSECTION  91

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        1.58                         10.1                       (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                    .35 WATERSHED INCHES;      21 CFS-HRS;       1.7 ACRE-FEET.


OPERATION RUNOFF    XSECTION  92

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        1.57                         20.7                       (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                    .53 WATERSHED INCHES;      44 CFS-HRS;       3.6 ACRE-FEET.
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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
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OPERATION ADDHYD    XSECTION  93

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        1.57                         30.7                       (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                    .45 WATERSHED INCHES;      65 CFS-HRS;       5.4 ACRE-FEET.


OPERATION RUNOFF    XSECTION  94

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        2.70                          .7                        (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                    .12 WATERSHED INCHES;       2 CFS-HRS;        .1 ACRE-FEET.


OPERATION RESVOR    STRUCTURE 11

                    HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM = 7
     HRS      MAIN TIME INCREMENT =  .100 hr,      DRAINAGE AREA =    .02 SQ.MI.
      .80 CFS       .00     .01     .03     .06     .11     .18     .26     .35
      .80 ELEV   737.50  737.51  737.53  737.56  737.61  737.68  737.76  737.85
     1.60 CFS       .43     .50     .52     .53     .55     .56     .57     .58
     1.60 ELEV   737.93  738.01  738.03  738.06  738.09  738.12  738.14  738.16
     2.40 CFS       .59     .60     .61     .62     .63     .63     .64     .64
     2.40 ELEV   738.18  738.20  738.22  738.24  738.25  738.27  738.27  738.28
     3.20 CFS       .64     .63     .62     .60     .58     .55     .52     .41
     3.20 ELEV   738.27  738.26  738.24  738.20  738.16  738.10  738.04  737.91
     4.00 CFS       .26     .17     .12     .09     .06     .05     .04     .03
     4.00 ELEV   737.76  737.67  737.62  737.59  737.56  737.55  737.54  737.53
     4.80 CFS       .02     .02     .01     .01     .01     .00
     4.80 ELEV   737.52  737.52  737.51  737.51  737.51  737.50

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                    .12 WATERSHED INCHES;       2 CFS-HRS;        .1 ACRE-FEET.

    DURATION(HRS)   2      2
    FLOW(CFS)       1      0

 --- STRUCTURE 11, ALTERNATE  0, STORM  7, HYDROGRAPH ADDED TO READHD FILE ---


OPERATION RUNOFF    XSECTION  96
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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
12:30:03                    PASS   7   JOB NO.   1                      PAGE  49


    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .34                          9.3                        (RUNOFF)
        2.45                          1.4                        (RUNOFF)
        3.00                          1.2                        (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  1.71 WATERSHED INCHES;       9 CFS-HRS;        .8 ACRE-FEET.


OPERATION ADDHYD    XSECTION  97

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .35                          9.5                        (NULL)
        1.52                         33.2                        (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                   .47 WATERSHED INCHES;      76 CFS-HRS;       6.3 ACRE-FEET.


OPERATION RESVOR    STRUCTURE  6

                    HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM = 7
     HRS      MAIN TIME INCREMENT =  .100 hr,      DRAINAGE AREA =    .28 SQ.MI.
      .00 CFS       .00     .07     .32     .92    1.81    2.72    3.64    4.62
      .00 ELEV   707.00  707.01  707.04  707.11  707.22  707.32  707.43  707.55
      .80 CFS      5.72    6.90    8.18    9.86   11.68   13.54   15.39   17.15
      .80 ELEV   707.68  707.82  707.97  708.13  708.28  708.44  708.60  708.75
     1.60 CFS     18.71   20.08   21.68   22.97   23.96   24.67   25.16   25.46
     1.60 ELEV   708.89  709.00  709.09  709.16  709.22  709.26  709.29  709.30
     2.40 CFS     25.62   25.68   25.67   25.52   25.23   24.88   24.57   24.18
     2.40 ELEV   709.31  709.32  709.32  709.31  709.29  709.27  709.25  709.23
     3.20 CFS     23.55   22.73   21.82   20.83   19.82   18.99   18.09   17.14
     3.20 ELEV   709.20  709.15  709.10  709.05  708.98  708.91  708.84  708.75
     4.00 CFS     16.16   15.17   14.20   13.26   12.36   11.50   10.69    9.92
     4.00 ELEV   708.67  708.58  708.50  708.42  708.34  708.27  708.20  708.13
     4.80 CFS      9.20    8.53    8.00    7.53    7.08    6.66    6.26    5.88
     4.80 ELEV   708.07  708.01  707.95  707.90  707.84  707.79  707.75  707.70
     5.60 CFS      5.53    5.19    4.88    4.58    4.31    4.05    3.80    3.57
     5.60 ELEV   707.66  707.62  707.58  707.55  707.51  707.48  707.45  707.42
     6.40 CFS      3.35    3.15    2.96    2.78    2.61    2.45    2.30    2.16
     6.40 ELEV   707.40  707.38  707.35  707.33  707.31  707.29  707.27  707.26
     7.20 CFS      2.03    1.91    1.79    1.69    1.58    1.49    1.40    1.31
     7.20 ELEV   707.24  707.23  707.21  707.20  707.19  707.18  707.17  707.16
     8.00 CFS      1.23    1.16    1.09    1.02     .96     .90     .85     .80
     8.00 ELEV   707.15  707.14  707.13  707.12  707.11  707.11  707.10  707.09
     8.80 CFS       .75     .70     .66     .62     .58     .55     .51     .48
     8.80 ELEV   707.09  707.08  707.08  707.07  707.07  707.07  707.06  707.06
     9.60 CFS       .45     .43     .40     .38     .35     .33     .31     .29
     9.60 ELEV   707.05  707.05  707.05  707.04  707.04  707.04  707.04  707.03
    10.40 CFS       .27     .26     .24     .23     .21     .20     .19     .18
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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
12:30:03                    PASS   7   JOB NO.   1                      PAGE  50

    10.40 ELEV   707.03  707.03  707.03  707.03  707.03  707.02  707.02  707.02
    11.20 CFS       .17     .16     .15     .14     .13     .12     .11     .11
    11.20 ELEV   707.02  707.02  707.02  707.02  707.02  707.01  707.01  707.01
    12.00 CFS       .10     .09     .09     .08     .08     .07     .07     .07
    12.00 ELEV   707.01  707.01  707.01  707.01  707.01  707.01  707.01  707.01
    12.80 CFS       .06     .06     .05     .05     .05     .04     .04     .04
    12.80 ELEV   707.01  707.01  707.01  707.01  707.01  707.01  707.01  707.00
    13.60 CFS       .04     .03     .03     .03     .03     .03     .03     .02
    13.60 ELEV   707.00  707.00  707.00  707.00  707.00  707.00  707.00  707.00
    14.40 CFS       .02     .02     .02     .02     .02     .02     .02     .01
    14.40 ELEV   707.00  707.00  707.00  707.00  707.00  707.00  707.00  707.00
    15.20 CFS       .01     .01     .01     .01     .01
    15.20 ELEV   707.00  707.00  707.00  707.00  707.00

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                   .51 WATERSHED INCHES;      90 CFS-HRS;       7.5 ACRE-FEET.

    DURATION(HRS)   2      4      6      8      9
    FLOW(CFS)      19      8      3      1      0

 --- STRUCTURE  6, ALTERNATE  0, STORM  7, HYDROGRAPH ADDED TO READHD FILE ---


OPERATION RUNOFF    XSECTION  99

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .72                         57.4                        (RUNOFF)
        2.46                         19.3                        (RUNOFF)
        3.00                         17.1                        (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                   .86 WATERSHED INCHES;      84 CFS-HRS;       7.0 ACRE-FEET.


OPERATION ADDHYD    XSECTION  90

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .76                         63.0                        (NULL)
        1.37                         49.8                        (NULL)
        2.46                         45.0                        (NULL)
        3.00                         41.7                        (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                   .63 WATERSHED INCHES;     175 CFS-HRS;      14.4 ACRE-FEET.


OPERATION RESVOR    STRUCTURE  7

                    HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM = 7
     HRS      MAIN TIME INCREMENT =  .100 hr,      DRAINAGE AREA =    .54 SQ.MI.
      .10 CFS       .00     .01     .11     .32     .62     .97    1.35    1.75
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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
12:30:03                    PASS   7   JOB NO.   1                      PAGE  51

      .10 ELEV   700.00  700.00  700.03  700.08  700.15  700.24  700.34  700.44
      .90 CFS      2.14    2.50    2.83    3.14    3.43    3.72    3.99    4.30
      .90 ELEV   700.53  700.62  700.71  700.79  700.86  700.93  701.00  701.04
     1.70 CFS      4.58    4.84    5.09    5.34    5.60    5.85    6.11    6.37
     1.70 ELEV   701.07  701.10  701.14  701.17  701.20  701.23  701.26  701.30
     2.50 CFS      6.63    6.88    7.11    7.31    7.50    7.70    7.89    8.05
     2.50 ELEV   701.33  701.36  701.39  701.41  701.44  701.46  701.49  701.51
     3.30 CFS      8.15    8.23    8.30    8.36    8.42    8.47    8.51    8.55
     3.30 ELEV   701.52  701.53  701.54  701.55  701.55  701.56  701.56  701.57
     4.10 CFS      8.59    8.62    8.64    8.66    8.68    8.69    8.70    8.70
     4.10 ELEV   701.57  701.58  701.58  701.58  701.58  701.59  701.59  701.59
     4.90 CFS      8.70    8.70    8.70    8.69    8.68    8.67    8.66    8.64
     4.90 ELEV   701.59  701.59  701.59  701.59  701.59  701.58  701.58  701.58
     5.70 CFS      8.63    8.61    8.59    8.57    8.55    8.53    8.50    8.48
     5.70 ELEV   701.58  701.58  701.57  701.57  701.57  701.57  701.56  701.56
     6.50 CFS      8.45    8.43    8.40    8.37    8.34    8.31    8.28    8.25
     6.50 ELEV   701.56  701.55  701.55  701.55  701.54  701.54  701.54  701.53
     7.30 CFS      8.22    8.19    8.16    8.13    8.09    8.06    8.03    8.00
     7.30 ELEV   701.53  701.52  701.52  701.52  701.51  701.51  701.50  701.50
     8.10 CFS      7.96    7.93    7.90    7.86    7.83    7.79    7.76    7.73
     8.10 ELEV   701.50  701.49  701.49  701.48  701.48  701.47  701.47  701.47
     8.90 CFS      7.69    7.66    7.62    7.59    7.55    7.52    7.49    7.45
     8.90 ELEV   701.46  701.46  701.45  701.45  701.44  701.44  701.44  701.43
     9.70 CFS      7.42    7.38    7.35    7.31    7.28    7.25    7.21    7.18
     9.70 ELEV   701.43  701.42  701.42  701.41  701.41  701.41  701.40  701.40
    10.50 CFS      7.15    7.11    7.08    7.04    7.01    6.98    6.94    6.91
    10.50 ELEV   701.39  701.39  701.38  701.38  701.38  701.37  701.37  701.36
    11.30 CFS      6.88    6.85    6.81    6.78    6.75    6.71    6.68    6.65
    11.30 ELEV   701.36  701.36  701.35  701.35  701.34  701.34  701.34  701.33
    12.10 CFS      6.62    6.59    6.55    6.52    6.49    6.46    6.43    6.40
    12.10 ELEV   701.33  701.32  701.32  701.32  701.31  701.31  701.30  701.30
    12.90 CFS      6.37    6.34    6.31    6.27    6.24    6.21    6.18    6.15
    12.90 ELEV   701.30  701.29  701.29  701.28  701.28  701.28  701.27  701.27
    13.70 CFS      6.12    6.09    6.06    6.03    6.01    5.98    5.95    5.92
    13.70 ELEV   701.27  701.26  701.26  701.25  701.25  701.25  701.24  701.24
    14.50 CFS      5.89    5.86    5.83    5.80    5.78    5.75    5.72    5.69
    14.50 ELEV   701.24  701.23  701.23  701.23  701.22  701.22  701.21  701.21
    15.30 CFS      5.66    5.64    5.61    5.58
    15.30 ELEV   701.21  701.20  701.20  701.20

   RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                .30 WATERSHED INCHES;     105 CFS-HRS;       8.7 ACRE-FEET.

   DURATION(HRS)   2      4      6      8     10     12     14
   FLOW(CFS)       9      8      8      7      6      6      6 TRUNCATED

 --- STRUCTURE  7, ALTERNATE  0, STORM  7, HYDROGRAPH ADDED TO READHD FILE ---
```



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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
12:30:03                    PASS   7   JOB NO.   1                      PAGE  52


OPERATION RUNOFF    XSECTION  49

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
         .70                          1.0                        (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .98 WATERSHED INCHES;       1 CFS-HRS;        .1 ACRE-FEET.


OPERATION ADDHYD    XSECTION  50

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        4.88                          8.7                        (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .30 WATERSHED INCHES;     106 CFS-HRS;       8.8 ACRE-FEET.


OPERATION RESVOR    STRUCTURE 39

                  HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM = 7
     HRS      MAIN TIME INCREMENT =  .100 hr,      DRAINAGE AREA =    .62 SQ.MI.
      .10 CFS       .00     .02     .11     .31     .58     .87    1.18    1.49
      .10 ELEV   693.00  693.00  693.02  693.04  693.08  693.12  693.17  693.21
      .90 CFS      1.79    2.06    2.31    2.53    2.73    2.92    3.09    3.25
      .90 ELEV   693.25  693.29  693.33  693.36  693.39  693.41  693.44  693.46
     1.70 CFS      3.38    3.50    3.61    3.71    3.82    3.93    4.04    4.16
     1.70 ELEV   693.48  693.50  693.51  693.53  693.54  693.56  693.57  693.59
     2.50 CFS      4.27    4.38    4.49    4.58    4.66    4.75    4.84    4.91
     2.50 ELEV   693.60  693.62  693.64  693.65  693.66  693.67  693.69  693.70
     3.30 CFS      4.96    5.00    5.03    5.06    5.09    5.12    5.14    5.17
     3.30 ELEV   693.70  693.71  693.71  693.72  693.72  693.72  693.73  693.73
     4.10 CFS      5.20    5.23    5.26    5.29    5.32    5.35    5.38    5.41
     4.10 ELEV   693.74  693.74  693.75  693.75  693.75  693.76  693.76  693.77
     4.90 CFS      5.44    5.46    5.49    5.52    5.55    5.57    5.60    5.63
     4.90 ELEV   693.77  693.77  693.78  693.78  693.79  693.79  693.79  693.80
     5.70 CFS      5.65    5.68    5.70    5.73    5.75    5.78    5.80    5.82
     5.70 ELEV   693.80  693.80  693.81  693.81  693.81  693.82  693.82  693.82
     6.50 CFS      5.85    5.87    5.89    5.91    5.93    5.95    5.97    5.99
     6.50 ELEV   693.83  693.83  693.83  693.84  693.84  693.84  693.85  693.85
     7.30 CFS      6.01    6.03    6.05    6.07    6.09    6.10    6.12    6.14
     7.30 ELEV   693.85  693.85  693.86  693.86  693.86  693.86  693.87  693.87
     8.10 CFS      6.15    6.17    6.18    6.20    6.21    6.23    6.24    6.25
     8.10 ELEV   693.87  693.87  693.88  693.88  693.88  693.88  693.88  693.89
     8.90 CFS      6.26    6.28    6.29    6.30    6.31    6.32    6.33    6.34
     8.90 ELEV   693.89  693.89  693.89  693.89  693.89  693.90  693.90  693.90
     9.70 CFS      6.35    6.36    6.37    6.38    6.39    6.39    6.40    6.41
     9.70 ELEV   693.90  693.90  693.90  693.90  693.90  693.91  693.91  693.91
    10.50 CFS      6.41    6.42    6.43    6.43    6.44    6.44    6.45    6.45
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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
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    10.50 ELEV   693.91  693.91  693.91  693.91  693.91  693.91  693.91  693.91
    11.30 CFS      6.45    6.46    6.46    6.46    6.47    6.47    6.47    6.47
    11.30 ELEV   693.91  693.91  693.92  693.92  693.92  693.92  693.92  693.92
    12.10 CFS      6.47    6.47    6.47    6.48    6.48    6.48    6.48    6.47
    12.10 ELEV   693.92  693.92  693.92  693.92  693.92  693.92  693.92  693.92
    12.90 CFS      6.47    6.47    6.47    6.47    6.47    6.47    6.46    6.46
    12.90 ELEV   693.92  693.92  693.92  693.92  693.92  693.92  693.92  693.92
    13.70 CFS      6.46    6.46    6.45    6.45    6.45    6.44    6.44    6.43
    13.70 ELEV   693.91  693.91  693.91  693.91  693.91  693.91  693.91  693.91
    14.50 CFS      6.43    6.42    6.42    6.41    6.41    6.40    6.40    6.39
    14.50 ELEV   693.91  693.91  693.91  693.91  693.91  693.91  693.91  693.91
    15.30 CFS      6.38    6.38    6.37    6.36
    15.30 ELEV   693.90  693.90  693.90  693.90

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                    .21 WATERSHED INCHES;      84 CFS-HRS;       7.0 ACRE-FEET.

 --- STRUCTURE 39, ALTERNATE  0, STORM  7, HYDROGRAPH ADDED TO READHD FILE ---


EXECUTIVE CONTROL  ENDCMP    COMPUTATIONS COMPLETED FOR PASS   7


EXECUTIVE CONTROL  COMPUT    FROM XSECTION  91  TO STRUCTURE 39           6-HR
    STARTING TIME =   .00       RAIN DEPTH =  2.28       RAIN DURATION =  6.00
    ANT. RUNOFF COND. = 2       MAIN TIME INCREMENT =   .100 HOURS
    ALTERNATE NO. = 0           STORM NO. = 8            RAIN TABLE NO. = 1


OPERATION RUNOFF    XSECTION  91

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        2.15                          8.9                       (RUNOFF)
        5.12                          4.6                       (RUNOFF)
        6.18                          3.3                       (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                    .53 WATERSHED INCHES;      31 CFS-HRS;       2.6 ACRE-FEET.


OPERATION RUNOFF    XSECTION  92

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        2.10                         17.8                       (RUNOFF)
        5.09                          8.0                       (RUNOFF)
        6.17                          5.7                       (RUNOFF)
```



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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
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    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                    .74 WATERSHED INCHES;      62 CFS-HRS;       5.1 ACRE-FEET.


OPERATION ADDHYD    XSECTION  93

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        2.12                         26.6                       (NULL)
        5.11                         12.6                       (NULL)
        6.18                          9.0                       (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                    .65 WATERSHED INCHES;      93 CFS-HRS;       7.7 ACRE-FEET.


OPERATION RUNOFF    XSECTION  94

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        3.00                          .8                       (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                    .22 WATERSHED INCHES;       3 CFS-HRS;        .2 ACRE-FEET.


OPERATION RESVOR    STRUCTURE 11

                    HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM = 8
     HRS      MAIN TIME INCREMENT =   .100 hr,      DRAINAGE AREA =    .02 SQ.MI.
     1.20 CFS      .00     .01     .03     .05     .09     .14     .21     .28
     1.20 ELEV   737.50  737.51  737.53  737.55  737.59  737.64  737.71  737.78
     2.00 CFS      .35     .43     .49     .51     .52     .54     .56     .57
     2.00 ELEV   737.85  737.93  737.99  738.02  738.05  738.08  738.11  738.15
     2.80 CFS      .59     .61     .62     .64     .65     .66     .67     .67
     2.80 ELEV   738.18  738.21  738.25  738.28  738.30  738.32  738.33  738.33
     3.60 CFS      .66     .66     .65     .64     .63     .62     .62     .61
     3.60 ELEV   738.33  738.32  738.30  738.29  738.27  738.25  738.23  738.21
     4.40 CFS      .60     .59     .59     .59     .58     .58     .58     .58
     4.40 ELEV   738.20  738.19  738.18  738.17  738.16  738.16  738.16  738.16
     5.20 CFS      .58     .58     .58     .57     .57     .56     .55     .54
     5.20 ELEV   738.16  738.16  738.15  738.15  738.14  738.12  738.10  738.07
     6.00 CFS      .52     .51     .50     .48     .44     .40     .35     .30
     6.00 ELEV   738.05  738.03  738.01  737.98  737.94  737.90  737.85  737.80
     6.80 CFS      .25     .19     .15     .11     .09     .07     .05     .04
     6.80 ELEV   737.75  737.69  737.65  737.61  737.59  737.57  737.55  737.54
     7.60 CFS      .03     .02     .02     .01     .01     .01     .00
     7.60 ELEV   737.53  737.52  737.52  737.51  737.51  737.51  737.50

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                    .22 WATERSHED INCHES;       3 CFS-HRS;        .2 ACRE-FEET.
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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
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    DURATION(HRS)   2      4
    FLOW(CFS)       1      0

 --- STRUCTURE 11, ALTERNATE  0, STORM  8, HYDROGRAPH ADDED TO READHD FILE ---


OPERATION RUNOFF    XSECTION  96

    PEAK TIME(HRS)              PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        .57                            6.4                       (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  2.05 WATERSHED INCHES;      11 CFS-HRS;        .9 ACRE-FEET.


OPERATION ADDHYD    XSECTION  97

    PEAK TIME(HRS)              PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        2.10                           29.1                      (NULL)
        5.06                           14.0                      (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                   .66 WATERSHED INCHES;     107 CFS-HRS;       8.8 ACRE-FEET.


OPERATION RESVOR    STRUCTURE  6

                  HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM = 8
     HRS      MAIN TIME INCREMENT =  .100 hr,      DRAINAGE AREA =    .28 SQ.MI.
      .00 CFS      .00     .05     .19     .39     .70    1.23    1.89    2.54
      .00 ELEV   707.00  707.01  707.02  707.05  707.08  707.15  707.22  707.30
      .80 CFS     3.16    3.78    4.47    5.25    6.15    7.15    8.24    9.69
      .80 ELEV   707.38  707.45  707.53  707.63  707.73  707.85  707.98  708.11
     1.60 CFS    11.22   12.73   14.21   15.65   17.01   18.27   19.43   20.62
     1.60 ELEV   708.24  708.37  708.50  708.63  708.74  708.85  708.95  709.03
     2.40 CFS    21.84   22.87   23.73   24.43   24.97   25.33   25.55   25.65
     2.40 ELEV   709.10  709.16  709.21  709.25  709.28  709.30  709.31  709.31
     3.20 CFS    25.59   25.39   25.10   24.71   24.25   23.72   23.16   22.58
     3.20 ELEV   709.31  709.30  709.28  709.26  709.24  709.21  709.18  709.14
     4.00 CFS    22.00   21.44   20.91   20.41   19.97   19.67   19.39   19.13
     4.00 ELEV   709.11  709.08  709.05  709.02  709.00  708.97  708.95  708.92
     4.80 CFS    18.88   18.66   18.46   18.27   18.08   17.84   17.57   17.29
     4.80 ELEV   708.90  708.88  708.87  708.85  708.83  708.81  708.79  708.77
     5.60 CFS    16.98   16.64   16.29   15.98   15.70   15.39   15.02   14.60
     5.60 ELEV   708.74  708.71  708.68  708.65  708.63  708.60  708.57  708.53
     6.40 CFS    14.18   13.72   13.21   12.65   12.05   11.41   10.75   10.09
     6.40 ELEV   708.50  708.46  708.41  708.37  708.31  708.26  708.20  708.15
     7.20 CFS     9.45    8.82    8.26    7.80    7.36    6.94    6.54    6.16
     7.20 ELEV   708.09  708.04  707.98  707.93  707.88  707.83  707.78  707.73
     8.00 CFS     5.80    5.45    5.13    4.82    4.53    4.26    4.00    3.76
```



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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
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     8.00 ELEV   707.69  707.65  707.61  707.57  707.54  707.51  707.48  707.45
     8.80 CFS      3.53    3.32    3.12    2.93    2.75    2.59    2.43    2.28
     8.80 ELEV   707.42  707.40  707.37  707.35  707.33  707.31  707.29  707.27
     9.60 CFS      2.14    2.01    1.89    1.78    1.67    1.57    1.47    1.38
     9.60 ELEV   707.26  707.24  707.23  707.21  707.20  707.19  707.18  707.16
    10.40 CFS      1.30    1.22    1.15    1.08    1.01     .95     .89     .84
    10.40 ELEV   707.15  707.15  707.14  707.13  707.12  707.11  707.11  707.10
    11.20 CFS       .79     .74     .70     .65     .61     .58     .54     .51
    11.20 ELEV   707.09  707.09  707.08  707.08  707.07  707.07  707.06  707.06
    12.00 CFS       .48     .45     .42     .40     .37     .35     .33     .31
    12.00 ELEV   707.06  707.05  707.05  707.05  707.04  707.04  707.04  707.04
    12.80 CFS       .29     .27     .26     .24     .23     .21     .20     .19
    12.80 ELEV   707.03  707.03  707.03  707.03  707.03  707.03  707.02  707.02
    13.60 CFS       .18     .16     .15     .15     .14     .13     .12     .11
    13.60 ELEV   707.02  707.02  707.02  707.02  707.02  707.02  707.01  707.01
    14.40 CFS       .11     .10     .09     .09     .08     .08     .07     .07
    14.40 ELEV   707.01  707.01  707.01  707.01  707.01  707.01  707.01  707.01
    15.20 CFS       .06     .06     .06     .05     .05     .05     .04     .04
    15.20 ELEV   707.01  707.01  707.01  707.01  707.01  707.01  707.01  707.00
    16.00 CFS       .04     .04     .03     .03     .03     .03     .03     .03
    16.00 ELEV   707.00  707.00  707.00  707.00  707.00  707.00  707.00  707.00
    16.80 CFS       .02     .02     .02     .02     .02     .02     .02     .02
    16.80 ELEV   707.00  707.00  707.00  707.00  707.00  707.00  707.00  707.00
    17.60 CFS       .01     .01     .01     .01     .01     .01
    17.60 ELEV   707.00  707.00  707.00  707.00  707.00  707.00

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                   .71 WATERSHED INCHES;     126 CFS-HRS;      10.4 ACRE-FEET.

    DURATION(HRS)   2      4      6      8     10     12
    FLOW(CFS)      20     16      8      3      1      0

 --- STRUCTURE  6, ALTERNATE  0, STORM  8, HYDROGRAPH ADDED TO READHD FILE ---


OPERATION RUNOFF    XSECTION  99

    PEAK TIME(HRS)              PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        1.22                           38.2                      (RUNOFF)
        2.65                           22.5                      (RUNOFF)
        5.05                           12.3                      (RUNOFF)
        5.96                           12.5                      (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  1.13 WATERSHED INCHES;     111 CFS-HRS;       9.2 ACRE-FEET.


OPERATION ADDHYD    XSECTION  90
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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
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    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        1.49                         47.6                       (NULL)
        1.81                         44.8                       (NULL)
        2.10                         44.8                       (NULL)
        2.68                         46.7                       (NULL)
        5.95                         28.3                       (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .86 WATERSHED INCHES;     237 CFS-HRS;      19.6 ACRE-FEET.


OPERATION RESVOR    STRUCTURE  7

                    HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM = 8
     HRS      MAIN TIME INCREMENT =  .100 hr,      DRAINAGE AREA =    .54 SQ.MI.
      .10 CFS      .00    .01    .01    .06    .18    .38    .60    .85
      .10 ELEV  700.00 700.00 700.00 700.01 700.05 700.09 700.15 700.21
      .90 CFS     1.10   1.36   1.62   1.90   2.18   2.46   2.74   3.02
      .90 ELEV  700.27 700.34 700.41 700.47 700.54 700.61 700.69 700.76
     1.70 CFS     3.29   3.54   3.80   4.05   4.35   4.65   4.93   5.21
     1.70 ELEV  700.82 700.89 700.95 701.01 701.04 701.08 701.12 701.15
     2.50 CFS     5.48   5.76   6.04   6.32   6.58   6.83   7.06   7.28
     2.50 ELEV  701.19 701.22 701.26 701.29 701.32 701.35 701.38 701.41
     3.30 CFS     7.47   7.66   7.85   8.03   8.21   8.38   8.55   8.72
     3.30 ELEV  701.43 701.46 701.48 701.50 701.53 701.55 701.57 701.59
     4.10 CFS     8.88   9.04   9.20   9.36   9.51   9.66   9.81   9.96
     4.10 ELEV  701.61 701.63 701.65 701.67 701.69 701.71 701.73 701.74
     4.90 CFS    10.10  10.24  10.39  10.52  10.63  10.73  10.82  10.90
     4.90 ELEV  701.76 701.78 701.80 701.82 701.83 701.84 701.85 701.86
     5.70 CFS    10.99  11.07  11.18  11.29  11.40  11.47  11.50  11.53
     5.70 ELEV  701.87 701.88 701.90 701.91 701.92 701.93 701.94 701.94
     6.50 CFS    11.54  11.55  11.56  11.56  11.56  11.56  11.56  11.55
     6.50 ELEV  701.94 701.94 701.94 701.95 701.95 701.95 701.94 701.94
     7.30 CFS    11.54  11.52  11.50  11.48  11.46  11.44  11.42  11.39
     7.30 ELEV  701.94 701.94 701.94 701.94 701.93 701.93 701.93 701.92
     8.10 CFS    11.36  11.33  11.30  11.27  11.23  11.20  11.16  11.13
     8.10 ELEV  701.92 701.92 701.91 701.91 701.90 701.90 701.90 701.89
     8.90 CFS    11.09  11.05  11.01  10.97  10.93  10.89  10.85  10.81
     8.90 ELEV  701.89 701.88 701.88 701.87 701.87 701.86 701.86 701.85
     9.70 CFS    10.76  10.72  10.68  10.63  10.59  10.54  10.50  10.45
     9.70 ELEV  701.85 701.84 701.83 701.83 701.82 701.82 701.81 701.81
    10.50 CFS    10.41  10.36  10.32  10.27  10.23  10.18  10.14  10.09
    10.50 ELEV  701.80 701.80 701.79 701.78 701.78 701.77 701.77 701.76
    11.30 CFS    10.05  10.00   9.96   9.91   9.86   9.82   9.77   9.73
    11.30 ELEV  701.76 701.75 701.74 701.74 701.73 701.73 701.72 701.72
    12.10 CFS     9.68   9.64   9.59   9.55   9.50   9.46   9.41   9.37
    12.10 ELEV  701.71 701.70 701.70 701.69 701.69 701.68 701.68 701.67
    12.90 CFS     9.32   9.28   9.24   9.19   9.15   9.10   9.06   9.02
    12.90 ELEV  701.67 701.66 701.65 701.65 701.64 701.64 701.63 701.63
    13.70 CFS     8.97   8.93   8.89   8.84   8.80   8.76   8.72   8.68
```



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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
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    13.70 ELEV  701.62 701.62 701.61 701.61 701.60 701.59 701.59 701.58
    14.50 CFS     8.63   8.59   8.55   8.51   8.47   8.43   8.39   8.35
    14.50 ELEV  701.58 701.57 701.57 701.56 701.56 701.55 701.55 701.54
    15.30 CFS     8.30   8.26   8.22   8.18   8.14   8.10   8.07   8.03
    15.30 ELEV  701.54 701.53 701.53 701.52 701.52 701.51 701.51 701.50
    16.10 CFS     7.99   7.95   7.91   7.87   7.83   7.79   7.76   7.72
    16.10 ELEV  701.50 701.49 701.49 701.48 701.48 701.47 701.47 701.46
    16.90 CFS     7.68   7.64   7.61   7.57   7.53   7.50   7.46   7.42
    16.90 ELEV  701.46 701.46 701.45 701.45 701.44 701.44 701.43 701.43
    17.70 CFS     7.39   7.35   7.31   7.28   7.24
    17.70 ELEV  701.42 701.42 701.41 701.41 701.41

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .44 WATERSHED INCHES;     154 CFS-HRS;      12.7 ACRE-FEET.

    DURATION(HRS)  2     4     6     8     10    12    14
    FLOW(CFS)     11    11    10    10     9     8     7 TRUNCATED

 --- STRUCTURE  7, ALTERNATE  0, STORM  8, HYDROGRAPH ADDED TO READHD FILE ---


OPERATION RUNOFF    XSECTION  49

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        .60                          .7                         (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                 1.26 WATERSHED INCHES;       2 CFS-HRS;        .2 ACRE-FEET.


OPERATION ADDHYD    XSECTION  50

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        6.88                        11.6                       (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .44 WATERSHED INCHES;     155 CFS-HRS;      12.8 ACRE-FEET.


OPERATION RESVOR    STRUCTURE 39

                    HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM = 8
     HRS      MAIN TIME INCREMENT =  .100 hr,      DRAINAGE AREA =    .62 SQ.MI.
      .10 CFS      .00    .01    .03    .07    .19    .37    .57    .78
      .10 ELEV  693.00 693.00 693.00 693.01 693.03 693.05 693.08 693.11
      .90 CFS      .99   1.19   1.40   1.60   1.81   2.02   2.22   2.42
      .90 ELEV  693.14 693.17 693.20 693.23 693.26 693.29 693.31 693.34
     1.70 CFS     2.60   2.77   2.94   3.09   3.24   3.38   3.52   3.65
     1.70 ELEV  693.37 693.39 693.42 693.44 693.46 693.48 693.50 693.52
     2.50 CFS     3.77   3.90   4.02   4.15   4.27   4.38   4.48   4.58
     2.50 ELEV  693.53 693.55 693.57 693.59 693.60 693.62 693.63 693.65
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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
12:30:03                    PASS   8   JOB NO.   1                      PAGE  59

     3.30 CFS      4.67    4.75    4.83    4.92    5.00    5.08    5.17    5.26
     3.30 ELEV   693.66  693.67  693.68  693.70  693.71  693.72  693.73  693.74
     4.10 CFS      5.34    5.43    5.52    5.61    5.70    5.79    5.88    5.98
     4.10 ELEV   693.76  693.77  693.78  693.79  693.81  693.82  693.83  693.85
     4.90 CFS      6.07    6.16    6.26    6.35    6.43    6.50    6.57    6.64
     4.90 ELEV   693.86  693.87  693.89  693.90  693.91  693.92  693.93  693.94
     5.70 CFS      6.70    6.77    6.85    6.94    7.03    7.09    7.13    7.16
     5.70 ELEV   693.95  693.96  693.97  693.98  694.00  694.01  694.01  694.02
     6.50 CFS      7.19    7.21    7.24    7.27    7.30    7.32    7.35    7.38
     6.50 ELEV   694.02  694.03  694.03  694.04  694.04  694.05  694.05  694.06
     7.30 CFS      7.40    7.43    7.45    7.48    7.50    7.53    7.55    7.58
     7.30 ELEV   694.06  694.07  694.07  694.08  694.08  694.09  694.09  694.09
     8.10 CFS      7.60    7.62    7.65    7.67    7.69    7.72    7.74    7.76
     8.10 ELEV   694.10  694.10  694.11  694.11  694.11  694.12  694.12  694.13
     8.90 CFS      7.78    7.80    7.82    7.84    7.86    7.88    7.90    7.92
     8.90 ELEV   694.13  694.13  694.14  694.14  694.15  694.15  694.15  694.16
     9.70 CFS      7.93    7.95    7.97    7.99    8.00    8.02    8.03    8.05
     9.70 ELEV   694.16  694.16  694.17  694.17  694.17  694.17  694.18  694.18
    10.50 CFS      8.07    8.08    8.09    8.11    8.12    8.13    8.15    8.16
    10.50 ELEV   694.18  694.19  694.19  694.19  694.19  694.20  694.20  694.20
    11.30 CFS      8.17    8.18    8.19    8.21    8.22    8.23    8.24    8.25
    11.30 ELEV   694.20  694.20  694.21  694.21  694.21  694.21  694.21  694.22
    12.10 CFS      8.25    8.26    8.27    8.28    8.29    8.30    8.30    8.31
    12.10 ELEV   694.22  694.22  694.22  694.22  694.22  694.22  694.23  694.23
    12.90 CFS      8.32    8.32    8.33    8.33    8.34    8.34    8.35    8.35
    12.90 ELEV   694.23  694.23  694.23  694.23  694.23  694.23  694.23  694.23
    13.70 CFS      8.36    8.36    8.36    8.37    8.37    8.37    8.38    8.38
    13.70 ELEV   694.24  694.24  694.24  694.24  694.24  694.24  694.24  694.24
    14.50 CFS      8.38    8.38    8.38    8.38    8.38    8.38    8.38    8.38
    14.50 ELEV   694.24  694.24  694.24  694.24  694.24  694.24  694.24  694.24
    15.30 CFS      8.38    8.38    8.38    8.38    8.38    8.38    8.38    8.37
    15.30 ELEV   694.24  694.24  694.24  694.24  694.24  694.24  694.24  694.24
    16.10 CFS      8.37    8.37    8.37    8.36    8.36    8.36    8.35    8.35
    16.10 ELEV   694.24  694.24  694.24  694.24  694.24  694.24  694.23  694.23
    16.90 CFS      8.34    8.34    8.34    8.33    8.33    8.32    8.32    8.31
    16.90 ELEV   694.23  694.23  694.23  694.23  694.23  694.23  694.23  694.23
    17.70 CFS      8.30    8.30    8.29    8.29    8.28
    17.70 ELEV   694.23  694.22  694.22  694.22  694.22

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .30 WATERSHED INCHES;     121 CFS-HRS;      10.0 ACRE-FEET.

 --- STRUCTURE 39, ALTERNATE  0, STORM  8, HYDROGRAPH ADDED TO READHD FILE ---

EXECUTIVE CONTROL  ENDCMP    COMPUTATIONS COMPLETED FOR PASS   8
```



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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
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12:30:03                    PASS   9   JOB NO.   1                      PAGE  60


EXECUTIVE CONTROL  INCREM    MAIN TIME INCREMENT =   .500 HOURS


EXECUTIVE CONTROL  COMPUT    FROM XSECTION  91  TO STRUCTURE 39          12-HR
    STARTING TIME =   .00       RAIN DEPTH =  2.64       RAIN DURATION = 12.00
    ANT. RUNOFF COND. = 2       MAIN TIME INCREMENT =   .500 HOURS
    ALTERNATE NO. = 0           STORM NO. = 9            RAIN TABLE NO. = 2


OPERATION RUNOFF    XSECTION  91

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        5.89                          9.4                       (RUNOFF)
       11.91                          2.5                       (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .73 WATERSHED INCHES;      44 CFS-HRS;       3.6 ACRE-FEET.


OPERATION RUNOFF    XSECTION  92

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        5.87                         17.7                       (RUNOFF)
       11.76                          4.0                       (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .99 WATERSHED INCHES;      82 CFS-HRS;       6.8 ACRE-FEET.


OPERATION ADDHYD    XSECTION  93

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        5.88                         27.1                       (NULL)
       11.86                          6.5                       (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .88 WATERSHED INCHES;     126 CFS-HRS;      10.4 ACRE-FEET.


OPERATION RUNOFF    XSECTION  94

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        6.50                          .9                       (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .35 WATERSHED INCHES;       5 CFS-HRS;        .4 ACRE-FEET.
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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
12:30:03                    PASS   9   JOB NO.   1                      PAGE  61


OPERATION RESVOR    STRUCTURE 11

                    HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM = 9
     HRS      MAIN TIME INCREMENT =  .500 hr,      DRAINAGE AREA =    .02 SQ.MI.
     4.00 CFS       .00     .02     .16     .48     .60     .72     .80     .82
     4.00 ELEV   737.50  737.52  737.66  737.98  738.20  738.44  738.59  738.65
     8.00 CFS       .81     .76     .70     .64     .58     .52     .43     .35
     8.00 ELEV   738.62  738.52  738.40  738.29  738.15  738.03  737.93  737.85
    12.00 CFS       .33     .31     .14     .02     .01     .00
    12.00 ELEV   737.83  737.81  737.64  737.52  737.51  737.50

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                    .35 WATERSHED INCHES;       5 CFS-HRS;        .4 ACRE-FEET.

    DURATION(HRS)   2      4      5
    FLOW(CFS)       1      1      0

 --- STRUCTURE 11, ALTERNATE  0, STORM  9, HYDROGRAPH ADDED TO READHD FILE ---


OPERATION RUNOFF    XSECTION  96

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        4.62                          2.8                        (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                   2.41 WATERSHED INCHES;      13 CFS-HRS;       1.1 ACRE-FEET.


OPERATION ADDHYD    XSECTION  97

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        5.84                         29.6                        (NULL)
       11.85                          7.3                        (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                    .89 WATERSHED INCHES;     143 CFS-HRS;      11.9 ACRE-FEET.


OPERATION RESVOR    STRUCTURE  6

                    HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM = 9
     HRS      MAIN TIME INCREMENT =  .500 hr,      DRAINAGE AREA =    .28 SQ.MI.
      .00 CFS       .00     .01     .10     .26     .43     .67    1.04    1.71
      .00 ELEV   707.00  707.00  707.01  707.03  707.05  707.08  707.12  707.20
     4.00 CFS      3.27    6.39   11.67   18.09   24.46   27.77   27.91   26.44
     4.00 ELEV   707.39  707.76  708.28  708.84  709.25  709.43  709.44  709.36
     8.00 CFS     24.18   21.57   19.38   17.70   15.86   14.21   12.81   11.41
     8.00 ELEV   709.23  709.09  708.95  708.80  708.64  708.50  708.38  708.26
    12.00 CFS     10.31    9.22    7.57    5.82    4.33    3.18    2.32    1.70
    12.00 ELEV   708.16  708.07  707.90  707.69  707.52  707.38  707.28  707.20
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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
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    16.00 CFS      1.24     .90     .66     .48     .35     .26     .19     .14
    16.00 ELEV   707.15  707.11  707.08  707.06  707.04  707.03  707.02  707.02
    20.00 CFS       .10     .07     .05     .04     .03     .02     .01     .01
    20.00 ELEV   707.01  707.01  707.01  707.00  707.00  707.00  707.00  707.00

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                    .94 WATERSHED INCHES;     168 CFS-HRS;      13.9 ACRE-FEET.

    DURATION(HRS)  2      4      6      8     10     12     14     15
    FLOW(CFS)      24     18     12      8      3      2      1      0

 --- STRUCTURE  6, ALTERNATE  0, STORM  9, HYDROGRAPH ADDED TO READHD FILE ---


OPERATION RUNOFF    XSECTION  99

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        4.91                         32.8                        (RUNOFF)
        8.76                         11.1                        (RUNOFF)
       10.26                          7.7                        (RUNOFF)
       11.86                          7.7                        (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                   1.44 WATERSHED INCHES;     142 CFS-HRS;      11.7 ACRE-FEET.


OPERATION ADDHYD    XSECTION  90

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        6.00                         50.1                        (NULL)
       11.80                         18.4                        (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                   1.12 WATERSHED INCHES;     310 CFS-HRS;      25.6 ACRE-FEET.


OPERATION RESVOR    STRUCTURE  7

                    HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM = 9
     HRS      MAIN TIME INCREMENT =  .500 hr,      DRAINAGE AREA =    .54 SQ.MI.
     1.00 CFS       .00     .01     .03     .12     .29     .60    1.17    2.11
     1.00 ELEV   700.00  700.00  700.01  700.03  700.07  700.15  700.29  700.53
     5.00 CFS      3.30    4.74    6.34    7.80    9.08   10.19   11.10   11.86
     5.00 ELEV   700.82  701.09  701.29  701.47  701.63  701.77  701.89  701.98
     9.00 CFS     12.37   12.76   13.05   13.30   13.49   13.61   13.74   13.79
     9.00 ELEV   702.06  702.13  702.17  702.22  702.25  702.27  702.29  702.30
    13.00 CFS     13.70   13.57   13.43   13.26   13.08   12.88   12.68   12.48
    13.00 ELEV   702.28  702.26  702.24  702.21  702.18  702.15  702.11  702.08
    17.00 CFS     12.28   12.08   11.82   11.54   11.27   11.00   10.74   10.48
    17.00 ELEV   702.05  702.01  701.98  701.94  701.91  701.88  701.84  701.81
    21.00 CFS     10.23    9.98    9.74    9.51    9.28    9.05
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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
12:30:03                    PASS   9   JOB NO.   1                      PAGE  63

    21.00 ELEV   701.78  701.75  701.72  701.69  701.66  701.63

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .61 WATERSHED INCHES;     212 CFS-HRS;      17.5 ACRE-FEET.

    DURATION(HRS)   2      4      6      8     10     12     14     16
    FLOW(CFS)      14     13     13     12     12     11     10      9 TRUNCATED

 --- STRUCTURE  7, ALTERNATE  0, STORM  9, HYDROGRAPH ADDED TO READHD FILE ---


OPERATION RUNOFF    XSECTION  49

    PEAK TIME(HRS)              PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        5.00                          .5                        (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                 1.59 WATERSHED INCHES;       2 CFS-HRS;        .2 ACRE-FEET.


OPERATION ADDHYD    XSECTION  50

    PEAK TIME(HRS)              PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
       12.10                         13.9                       (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .61 WATERSHED INCHES;     215 CFS-HRS;      17.7 ACRE-FEET.


OPERATION RESVOR    STRUCTURE 39

                   HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM = 9
     HRS      MAIN TIME INCREMENT =  .500 hr,      DRAINAGE AREA =    .62 SQ.MI.
     1.00 CFS       .00     .01     .06     .14     .30     .57    1.03    1.73
     1.00 ELEV   693.00  693.00  693.01  693.02  693.04  693.08  693.15  693.25
     5.00 CFS      2.57    3.43    4.22    4.89    5.49    6.04    6.55    7.02
     5.00 ELEV   693.36  693.49  693.60  693.69  693.78  693.86  693.93  693.99
     9.00 CFS      7.37    7.69    7.97    8.26    8.52    8.76    9.01    9.22
     9.00 ELEV   694.06  694.11  694.17  694.22  694.27  694.31  694.35  694.39
    13.00 CFS      9.37    9.50    9.62    9.74    9.84    9.94   10.03   10.11
    13.00 ELEV   694.42  694.44  694.46  694.49  694.51  694.52  694.54  694.55
    17.00 CFS     10.18   10.24   10.29   10.34   10.37   10.39   10.41   10.42
    17.00 ELEV   694.57  694.58  694.59  694.59  694.60  694.61  694.61  694.61
    21.00 CFS     10.41   10.40   10.39   10.36   10.33   10.30
    21.00 ELEV   694.61  694.61  694.60  694.60  694.59  694.59

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .41 WATERSHED INCHES;     164 CFS-HRS;      13.6 ACRE-FEET.

 --- STRUCTURE 39, ALTERNATE  0, STORM  9, HYDROGRAPH ADDED TO READHD FILE ---
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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
12:30:03                    PASS  10   JOB NO.   1                      PAGE  64


EXECUTIVE CONTROL  ENDCMP    COMPUTATIONS COMPLETED FOR PASS   9


EXECUTIVE CONTROL  COMPUT    FROM XSECTION  91  TO STRUCTURE 39          18-HR
    STARTING TIME =   .00       RAIN DEPTH =  2.79       RAIN DURATION = 18.00
    ANT. RUNOFF COND. = 2       MAIN TIME INCREMENT =   .500 HOURS
    ALTERNATE NO. = 0           STORM NO. =10            RAIN TABLE NO. = 2


OPERATION RUNOFF    XSECTION  91

    PEAK TIME(HRS)              PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        8.37                          7.4                       (RUNOFF)
       15.79                          2.3                       (RUNOFF)
       17.98                          2.1                       (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .83 WATERSHED INCHES;      49 CFS-HRS;       4.1 ACRE-FEET.


OPERATION RUNOFF    XSECTION  92

    PEAK TIME(HRS)              PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        8.35                         13.8                       (RUNOFF)
       18.03                          3.2                       (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                 1.09 WATERSHED INCHES;      91 CFS-HRS;       7.5 ACRE-FEET.


OPERATION ADDHYD    XSECTION  93

    PEAK TIME(HRS)              PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        8.36                         21.2                       (NULL)
       15.76                          6.0                       (NULL)
       18.01                          5.3                       (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .98 WATERSHED INCHES;     140 CFS-HRS;      11.6 ACRE-FEET.


OPERATION RUNOFF    XSECTION  94

    PEAK TIME(HRS)              PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        9.00                          .7                        (RUNOFF)
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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
12:30:03                    PASS  10   JOB NO.   1                       PAGE  65


    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .41 WATERSHED INCHES;       5 CFS-HRS;        .4 ACRE-FEET.


OPERATION RESVOR    STRUCTURE 11

                    HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM =10
     HRS      MAIN TIME INCREMENT =  .500 hr,      DRAINAGE AREA =    .02 SQ.MI.
     6.00 CFS       .00     .01     .12     .28     .50     .56     .63     .68
     6.00 ELEV   737.50  737.51  737.62  737.78  738.00  738.12  738.26  738.35
    10.00 CFS       .69     .69     .67     .65     .61     .57     .52     .47
    10.00 ELEV   738.38  738.37  738.34  738.29  738.22  738.13  738.04  737.97
    14.00 CFS       .42     .36     .32     .32     .32     .32     .25     .21
    14.00 ELEV   737.92  737.86  737.82  737.82  737.82  737.82  737.75  737.71
    18.00 CFS       .27     .25     .10     .02     .00
    18.00 ELEV   737.77  737.75  737.60  737.52  737.50

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .41 WATERSHED INCHES;       5 CFS-HRS;        .4 ACRE-FEET.

    DURATION(HRS)   2      4      5
    FLOW(CFS)       1      1      0

 --- STRUCTURE 11, ALTERNATE  0, STORM 10, HYDROGRAPH ADDED TO READHD FILE ---


OPERATION RUNOFF    XSECTION  96

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        6.87                         2.0                        (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                 2.57 WATERSHED INCHES;      14 CFS-HRS;       1.1 ACRE-FEET.


OPERATION ADDHYD    XSECTION  97

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        8.25                        23.2                        (NULL)
       15.76                         6.6                        (NULL)
       17.98                         5.9                        (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .99 WATERSHED INCHES;     159 CFS-HRS;      13.2 ACRE-FEET.


OPERATION RESVOR    STRUCTURE  6

                    HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM =10
     HRS      MAIN TIME INCREMENT =  .500 hr,      DRAINAGE AREA =    .28 SQ.MI.
      .00 CFS       .00     .01     .04     .12     .23     .31     .41     .52
      .00 ELEV   707.00  707.00  707.00  707.01  707.03  707.04  707.05  707.06
```



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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
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     4.00 CFS       .73    1.05    1.54    2.41    3.92    6.24    9.54   13.76
     4.00 ELEV   707.09  707.12  707.18  707.29  707.47  707.74  708.10  708.46
     8.00 CFS     17.69   20.90   22.93   23.11   22.14   20.75   19.45   18.27
     8.00 ELEV   708.80  709.05  709.16  709.17  709.12  709.04  708.95  708.85
    12.00 CFS     16.95   15.52   14.17   13.12   12.13   11.00    9.93    9.13
    12.00 ELEV   708.74  708.61  708.50  708.41  708.32  708.22  708.13  708.06
    16.00 CFS      8.59    8.13    7.49    6.85    6.64    6.33    5.38    4.15
    16.00 ELEV   708.02  707.97  707.89  707.82  707.79  707.75  707.64  707.49
    20.00 CFS      3.09    2.27    1.66    1.21     .88     .64     .47     .34
    20.00 ELEV   707.37  707.27  707.20  707.14  707.11  707.08  707.06  707.04
    24.00 CFS       .25     .18     .13     .10     .07     .05     .04     .03
    24.00 ELEV   707.03  707.02  707.02  707.01  707.01  707.01  707.00  707.00
    28.00 CFS       .02     .01     .01
    28.00 ELEV   707.00  707.00  707.00

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                 1.04 WATERSHED INCHES;     187 CFS-HRS;      15.4 ACRE-FEET.

    DURATION(HRS)   2      4      6      8     10     12     14     16
    FLOW(CFS)      21     17     13     10      7      6      3      2

    DURATION(HRS)  18     20
    FLOW(CFS)       1      0

 --- STRUCTURE  6, ALTERNATE  0, STORM 10, HYDROGRAPH ADDED TO READHD FILE ---


OPERATION RUNOFF    XSECTION  99

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        7.75                        24.4                        (RUNOFF)
       13.25                         7.7                        (RUNOFF)
       15.75                         5.5                        (RUNOFF)
       17.75                         5.9                        (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                 1.58 WATERSHED INCHES;     156 CFS-HRS;      12.9 ACRE-FEET.


OPERATION ADDHYD    XSECTION  90

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
        8.08                        41.5                        (NULL)
        8.92                        41.5                        (NULL)
       17.70                        12.3                        (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                 1.23 WATERSHED INCHES;     340 CFS-HRS;      28.1 ACRE-FEET.
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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
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OPERATION RESVOR    STRUCTURE  7

                    HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM =10
     HRS      MAIN TIME INCREMENT =  .500 hr,      DRAINAGE AREA =    .54 SQ.MI.
     1.50 CFS       .00     .01     .02     .05     .11     .22     .39     .63
     1.50 ELEV   700.00  700.00  700.00  700.01  700.03  700.05  700.10  700.16
     5.50 CFS       .97    1.46    2.15    2.99    3.95    5.23    6.48    7.64
     5.50 ELEV   700.24  700.37  700.54  700.75  700.99  701.15  701.31  701.46
     9.50 CFS      8.72    9.65   10.49   11.21   11.84   12.26   12.56   12.83
     9.50 ELEV   701.59  701.71  701.81  701.90  701.98  702.04  702.09  702.14
    13.50 CFS     13.08   13.27   13.39   13.50   13.59   13.66   13.69   13.68
    13.50 ELEV   702.18  702.21  702.23  702.25  702.26  702.28  702.28  702.28
    17.50 CFS     13.68   13.72   13.67   13.54   13.39   13.22   13.03   12.84
    17.50 ELEV   702.28  702.29  702.28  702.26  702.23  702.20  702.17  702.14
    21.50 CFS     12.64   12.44   12.24   12.03   11.77   11.49   11.22   10.95
    21.50 ELEV   702.11  702.07  702.04  702.01  701.97  701.94  701.90  701.87
    25.50 CFS     10.69   10.43   10.18    9.93    9.69    9.46    9.23    9.01
    25.50 ELEV   701.84  701.80  701.77  701.74  701.71  701.68  701.65  701.63

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                    .72 WATERSHED INCHES;     253 CFS-HRS;      20.9 ACRE-FEET.

    DURATION(HRS)   2      4      6      8     10     12     14     16
    FLOW(CFS)      14     13     13     13     12     12     11     10

    DURATION(HRS)  18
    FLOW(CFS)       9 TRUNCATED

 --- STRUCTURE  7, ALTERNATE  0, STORM 10, HYDROGRAPH ADDED TO READHD FILE ---


OPERATION RUNOFF    XSECTION  49

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                    .72 WATERSHED INCHES;      36 CFS-HRS;      20.9 ACRE-FEET.


OPERATION ADDHYD    XSECTION  50

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
       17.86                          13.8                        (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                    .73 WATERSHED INCHES;     255 CFS-HRS;      21.1 ACRE-FEET.


OPERATION RESVOR    STRUCTURE 39

                    HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM =10
     HRS      MAIN TIME INCREMENT =  .500 hr,      DRAINAGE AREA =    .62 SQ.MI.
     1.50 CFS       .00     .01     .03     .07     .13     .24     .40     .60
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TR20 ------------------------------------------------------------------- SCS -
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     1.50 ELEV   693.00  693.00  693.00  693.01  693.02  693.03  693.06  693.08
     5.50 CFS       .87    1.24    1.74    2.33    2.96    3.62    4.23    4.80
     5.50 ELEV   693.12  693.17  693.25  693.33  693.42  693.51  693.60  693.68
     9.50 CFS      5.34    5.84    6.33    6.80    7.20    7.50    7.79    8.07
     9.50 ELEV   693.76  693.83  693.90  693.96  694.02  694.08  694.13  694.18
    13.50 CFS      8.35    8.61    8.85    9.08    9.30    9.53    9.72    9.89
    13.50 ELEV   694.23  694.28  694.32  694.37  694.41  694.45  694.48  694.51
    17.50 CFS     10.08   10.28   10.43   10.53   10.62   10.70   10.78   10.84
    17.50 ELEV   694.55  694.58  694.61  694.63  694.65  694.66  694.67  694.69
    21.50 CFS     10.90   10.95   11.00   11.03   11.06   11.08   11.09   11.09
    21.50 ELEV   694.70  694.71  694.71  694.72  694.73  694.73  694.73  694.73
    25.50 CFS     11.08   11.06   11.04   11.01   10.97   10.93   10.88   10.82
    25.50 ELEV   694.73  694.73  694.72  694.72  694.71  694.70  694.69  694.68

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                    .51 WATERSHED INCHES;     203 CFS-HRS;      16.8 ACRE-FEET.

    DURATION(HRS)   2      4      6      8     10     11
    FLOW(CFS)      11     11     11     11     11     11 TRUNCATED

 --- STRUCTURE 39, ALTERNATE  0, STORM 10, HYDROGRAPH ADDED TO READHD FILE ---


EXECUTIVE CONTROL  ENDCMP    COMPUTATIONS COMPLETED FOR PASS  10
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SUMMARY TABLE 1

SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.
A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:
F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED HYDROGRAPH

XSECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RUNOFF AMOUNT (IN)	PEAK DISCHARGE ELEVATION (FT)	PEAK DISCHARGE TIME (HR)	PEAK DISCHARGE RATE (CFS)	PEAK DISCHARGE RATE (CSM)
RAINFALL OF .36 inches AND .10 hr DURATION, BEGINS AT .0 hrs.							
RAINTABLE NUMBER 1, ARC 2							
MAIN TIME INCREMENT .008 HOURS							
ALTERNATE 0 STORM 1							
XSECTION 91	RUNOFF	.09	.00	---	.00	0	.0
XSECTION 92	RUNOFF	.13	.00	---	.00	0	.0
XSECTION 93	ADDHYD	.22	.00	---	.00	0	.0
XSECTION 94	RUNOFF	.02	.00	---	.00	0	.0
STRUCTURE 11	RESVOR	.02	.00	---	.00	0	.0
XSECTION 95	ADDHYD	.24	.00	---	.00	0	.0
XSECTION 96	RUNOFF	.01	.19	---	.13	7	700.0
XSECTION 97	ADDHYD	.25	.01	---	.13	7	28.0
XSECTION 10	RUNOFF	.03	.01	---	.00	0	.0
XSECTION 98	ADDHYD	.28	.01	---	.14	7	25.0
STRUCTURE 6	RESVOR	.28	.01	707.07	.32R	1R	3.6
XSECTION 99	RUNOFF	.15	.00	---	.16T	2T	13.3
XSECTION 90	ADDHYD	.43	.00	---	.17T	2T	4.7
XSECTION 17	RUNOFF	.11	.01	---	.25T	2T	18.2
XSECTION 13	ADDHYD	.54	.00	---	.19T	3T	5.6
STRUCTURE 7	RESVOR	.54	.00	---	.00	0	.0
XSECTION 49	RUNOFF	.00	.00	---	.00	0	********
XSECTION 50	ADDHYD	.54	.00	---	.00	0	.0
XSECTION 24	RUNOFF	.01	.02	---	.15T	1T	100.0
XSECTION 17	ADDHYD	.56	.00	---	.15T	1T	1.8
XSECTION 19	RUNOFF	.06	.02	---	.21T	3T	50.0
XSECTION 15	ADDHYD	.62	.00	---	.19T	4T	6.5
STRUCTURE 39	RESVOR	.62	.00	---	.00	0	.0
RAINFALL OF .67 inches AND .20 hr DURATION, BEGINS AT .0 hrs.							
ALTERNATE 0 STORM 2							

SUMMARY TABLE 1

SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.
A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:
F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED HYDROGRAPH

XSECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RUNOFF AMOUNT (IN)	PEAK DISCHARGE ELEVATION (FT)	PEAK DISCHARGE TIME (HR)	PEAK DISCHARGE RATE (CFS)	PEAK DISCHARGE RATE (CSM)
ALTERNATE 0 STORM 2							
XSECTION 91	RUNOFF	.09	.00	---	.00	0	.0
XSECTION 92	RUNOFF	.13	.01	---	.73F	1F	7.7
XSECTION 93	ADDHYD	.22	.01	---	.73F	1F	4.5
XSECTION 94	RUNOFF	.02	.00	---	.00	0	.0
STRUCTURE 11	RESVOR	.02	.00	---	.00	0	.0
XSECTION 95	ADDHYD	.24	.01	---	.73F	1F	4.2
XSECTION 96	RUNOFF	.01	.47	---	.15	14	1400.0
XSECTION 97	ADDHYD	.25	.02	---	.15	14	56.0
XSECTION 10	RUNOFF	.03	.07	---	.19	7	233.3
XSECTION 98	ADDHYD	.28	.03	---	.16	21	75.0
STRUCTURE 6	RESVOR	.28	.02	707.25	.38F	2F	7.1
XSECTION 99	RUNOFF	.15	.07	---	.19	42	280.0
XSECTION 90	ADDHYD	.43	.04	---	.19	43	100.0
XSECTION 17	RUNOFF	.11	.09	---	.28	24	218.2
XSECTION 13	ADDHYD	.54	.05	---	.21	61	113.0
STRUCTURE 7	RESVOR	.54	.00	700.15	2.89R	1R	1.9
XSECTION 49	RUNOFF	.00	.11	---	.18R	1R	********
XSECTION 50	ADDHYD	.54	.01	---	.20T	1T	1.9
XSECTION 24	RUNOFF	.01	.13	---	.18	7	700.0
XSECTION 17	ADDHYD	.56	.01	---	.18	8	14.3
XSECTION 19	RUNOFF	.06	.13	---	.24	22	366.7
XSECTION 15	ADDHYD	.62	.02	---	.22	28	45.2
STRUCTURE 39	RESVOR	.62	.00	693.08	3.19R	1R	1.6

TR20 ---------- SCS -
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SUMMARY TABLE 1

SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.
A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:
F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED HYDROGRAPH

XSECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RUNOFF AMOUNT (IN)	PEAK DISCHARGE ELEVATION (FT)	PEAK DISCHARGE TIME (HR)	PEAK DISCHARGE RATE (CFS)	PEAK DISCHARGE RATE (CSM)
RAINFALL OF .82 inches AND .30 hr DURATION, BEGINS AT .0 hrs.							
ALTERNATE 0 STORM 3							
XSECTION 91	RUNOFF	.09	.01	---	.70R	1R	11.1
XSECTION 92	RUNOFF	.13	.04	---	.76F	4F	30.8
XSECTION 93	ADDHYD	.22	.02	---	.75T	4T	18.2
XSECTION 94	RUNOFF	.02	.00	---	.00	0	.0
STRUCTURE 11	RESVOR	.02	.00	---	.00	0	.0
XSECTION 95	ADDHYD	.24	.02	---	.75T	4T	16.7
XSECTION 96	RUNOFF	.01	.62	---	.16	16	1600.0
XSECTION 97	ADDHYD	.25	.04	---	.16	16	64.0
XSECTION 10	RUNOFF	.03	.13	---	.20	10	333.3
XSECTION 98	ADDHYD	.28	.05	---	.17	25	89.3
STRUCTURE 6	RESVOR	.28	.04	707.40	.98F	3F	10.7
XSECTION 99	RUNOFF	.15	.13	---	.20	59	393.3
XSECTION 90	ADDHYD	.43	.07	---	.20	60	139.5
XSECTION 17	RUNOFF	.11	.16	---	.31	37	336.4
XSECTION 13	ADDHYD	.54	.09	---	.26	89	164.8
STRUCTURE 7	RESVOR	.54	.01	700.28	3.16R	1R	1.9
XSECTION 49	RUNOFF	.00	.18	---	.19T	1T********	
XSECTION 50	ADDHYD	.54	.01	---	.26T	1T	1.9
XSECTION 24	RUNOFF	.01	.21	---	.18	9	900.0
XSECTION 17	ADDHYD	.56	.01	---	.19T	10T	17.9
XSECTION 19	RUNOFF	.06	.21	---	.27	30	500.0
XSECTION 15	ADDHYD	.62	.03	---	.26	39	62.9
STRUCTURE 39	RESVOR	.62	.01	693.13	3.19R	1R	1.6

TR20 ---------- SCS -
001 CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE VERSION
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SUMMARY TABLE 1

SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.
A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:
F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED HYDROGRAPH

XSECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RUNOFF AMOUNT (IN)	PEAK DISCHARGE ELEVATION (FT)	PEAK DISCHARGE TIME (HR)	PEAK DISCHARGE RATE (CFS)	PEAK DISCHARGE RATE (CSM)
RAINFALL OF 1.12 inches AND .50 hr DURATION, BEGINS AT .0 hrs.							
ALTERNATE 0 STORM 4							
XSECTION 91	RUNOFF	.09	.05	---	.84T	4T	44.4
XSECTION 92	RUNOFF	.13	.12	---	.89	12	92.3
XSECTION 93	ADDHYD	.22	.09	---	.87	16	72.7
XSECTION 94	RUNOFF	.02	.09	---	.00	0	.0
STRUCTURE 11	RESVOR	.02	.00	---	.98	0	.0
XSECTION 95	ADDHYD	.24	.09	---	.87	16	66.7
XSECTION 96	RUNOFF	.01	.91	---	.18	17	1700.0
XSECTION 97	ADDHYD	.25	.11	---	.18	17	68.0
XSECTION 10	RUNOFF	.03	.29	---	.25	15	500.0
XSECTION 98	ADDHYD	.28	.13	---	.22	30	107.1
STRUCTURE 6	RESVOR	.28	.10	708.02	1.26F	9F	32.1
XSECTION 99	RUNOFF	.15	.29	---	.25	84	560.0
XSECTION 90	ADDHYD	.43	.17	---	.25	87	202.3
XSECTION 17	RUNOFF	.11	.32	---	.36	54	490.9
XSECTION 13	ADDHYD	.54	.20	---	.29	130	240.7
STRUCTURE 7	RESVOR	.54	.02	700.61	3.19R	2R	3.7
XSECTION 49	RUNOFF	.00	.36	---	.23T	2T********	
XSECTION 50	ADDHYD	.54	.02	---	3.19R	2R	3.7
XSECTION 24	RUNOFF	.01	.40	---	.23	12	1200.0
XSECTION 17	ADDHYD	.56	.03	---	.23T	14T	25.0
XSECTION 19	RUNOFF	.06	.40	---	.31	41	683.3
XSECTION 15	ADDHYD	.62	.07	---	.29	53	85.5
STRUCTURE 39	RESVOR	.62	.01	693.27	3.19R	2R	3.2

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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
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SUMMARY TABLE 1

SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.
A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:
F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED HYDROGRAPH

RAINFALL OF 1.43 inches AND 1.00 hr DURATION, BEGINS AT .0 hrs.

ALTERNATE 0 STORM 5

XSECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RUNOFF AMOUNT (IN)	PEAK DISCHARGE ELEVATION (FT)	PEAK DISCHARGE TIME (HR)	PEAK DISCHARGE RATE (CFS)	PEAK DISCHARGE RATE (CSM)
XSECTION 91	RUNOFF	.09	.14	---	1.11	9	100.0
XSECTION 92	RUNOFF	.13	.25	---	1.13	19	146.2
XSECTION 93	ADDHYD	.22	.21	---	1.12	28	127.3
XSECTION 94	RUNOFF	.02	.21	---	.00	0	.0
STRUCTURE 11	RESVOR	.02	.02	---	1.26	0	.0
XSECTION 95	ADDHYD	.24	.19	---	1.13	28	116.7
XSECTION 96	RUNOFF	.01	1.21	---	.21	14	1400.0
XSECTION 97	ADDHYD	.25	.22	---	1.06	30	120.0
XSECTION 10	RUNOFF	.03	.49	---	.33	15	500.0
XSECTION 98	ADDHYD	.28	.25	---	1.05	34	121.4
STRUCTURE 6	RESVOR	.28	.19	708.75	1.58F	17F	60.7
XSECTION 99	RUNOFF	.15	.49	---	.33	86	573.3
XSECTION 90	ADDHYD	.43	.29	---	.33	89	207.0
XSECTION 17	RUNOFF	.11	.53	---	.45	59	536.4
XSECTION 13	ADDHYD	.54	.34	---	.38	141	261.1
STRUCTURE 7	RESVOR	.54	.03	701.04	3.19R	4R	7.4
XSECTION 49	RUNOFF	.00	.58	---	.32T	2T	********
XSECTION 50	ADDHYD	.54	.03	---	3.19R	4R	7.4
XSECTION 24	RUNOFF	.01	.63	---	.31	11	1100.0
XSECTION 17	ADDHYD	.56	.05	---	.32T	13T	23.2
XSECTION 19	RUNOFF	.06	.63	---	.39	42	700.0
XSECTION 15	ADDHYD	.62	.10	---	.37	54	87.1
STRUCTURE 39	RESVOR	.62	.02	693.42	3.19R	3R	4.8


```
TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
12:30:03                    SUMMARY, JOB NO.   1                        PAGE  74
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SUMMARY TABLE 1

SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.
A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:
F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED HYDROGRAPH

RAINFALL OF 1.79 inches AND 2.00 hr DURATION, BEGINS AT .0 hrs.
MAIN TIME INCREMENT .100 HOURS

ALTERNATE 0 STORM 6

XSECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RUNOFF AMOUNT (IN)	PEAK DISCHARGE ELEVATION (FT)	PEAK DISCHARGE TIME (HR)	PEAK DISCHARGE RATE (CFS)	PEAK DISCHARGE RATE (CSM)
XSECTION 91	RUNOFF	.09	.28	---	1.30	11	122.2
XSECTION 92	RUNOFF	.13	.44	---	1.32	22	169.2
XSECTION 93	ADDHYD	.22	.37	---	1.31	33	150.0
XSECTION 94	RUNOFF	.02	.08	---	2.00R	1R	50.0
STRUCTURE 11	RESVOR	.02	.08	738.23	2.40R	1R	50.0
XSECTION 95	ADDHYD	.24	.35	---	1.32	33	137.5
XSECTION 96	RUNOFF	.01	1.56	---	.30	11	1100.0
XSECTION 97	ADDHYD	.25	.39	---	1.32	35	140.0
XSECTION 10	RUNOFF	.03	.74	---	.51	13	433.3
XSECTION 98	ADDHYD	.28	.42	---	1.31	39	139.3
STRUCTURE 6	RESVOR	.28	.42	709.35	2.13	26	92.9
XSECTION 99	RUNOFF	.15	.74	---	.51	73	486.7
XSECTION 90	ADDHYD	.43	.54	---	.53	77	179.1
XSECTION 17	RUNOFF	.11	.80	---	.63	53	481.8
XSECTION 13	ADDHYD	.54	.59	---	.57	128	237.0
STRUCTURE 7	RESVOR	.54	.25	701.42	4.30F	7F	13.0
XSECTION 49	RUNOFF	.00	.85	---	.49T	1T	********
XSECTION 50	ADDHYD	.54	.25	---	4.30F	7F	13.0
XSECTION 24	RUNOFF	.01	.92	---	.48	9	900.0
XSECTION 17	ADDHYD	.56	.27	---	.52T	11T	19.6
XSECTION 19	RUNOFF	.06	.92	---	.56	36	600.0
XSECTION 15	ADDHYD	.62	.33	---	.55T	47T	75.8

SUMMARY TABLE 1

SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.
A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:
F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED HYDROGRAPH

XSECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RUNOFF AMOUNT (IN)	PEAK DISCHARGE ELEVATION (FT)	PEAK DISCHARGE TIME (HR)	PEAK DISCHARGE RATE (CFS)	PEAK DISCHARGE RATE (CSM)
ALTERNATE 0 STORM 6							
STRUCTURE 39	RESVOR	.62	.18	693.78	11.80T	6T	9.7
RAINFALL OF 1.94 inches AND 3.00 hr DURATION, BEGINS AT .0 hrs.							
ALTERNATE 0 STORM 7							
XSECTION 91	RUNOFF	.09	.35	---	1.58	10	111.1
XSECTION 92	RUNOFF	.13	.53	---	1.57	21	161.5
XSECTION 93	ADDHYD	.22	.45	---	1.57	31	140.9
XSECTION 94	RUNOFF	.02	.12	---	2.70R	1R	50.0
STRUCTURE 11	RESVOR	.02	.12	738.28	3.10R	1R	50.0
XSECTION 95	ADDHYD	.24	.43	---	1.59	31	129.2
XSECTION 96	RUNOFF	.01	1.71	---	.34	9	900.0
XSECTION 97	ADDHYD	.25	.47	---	1.52	33	132.0
XSECTION 10	RUNOFF	.03	.86	---	.72	10	333.3
XSECTION 98	ADDHYD	.28	.51	---	1.43	39	139.3
STRUCTURE 6	RESVOR	.28	.51	709.32	2.54	26	92.9
XSECTION 99	RUNOFF	.15	.86	---	.72	57	380.0
XSECTION 90	ADDHYD	.43	.63	---	.76	63	146.5
XSECTION 17	RUNOFF	.11	.92	---	.80	44	400.0
XSECTION 13	ADDHYD	.54	.69	---	.77	107	198.1
STRUCTURE 7	RESVOR	.54	.30	701.59	4.88T	9T	16.7
XSECTION 49	RUNOFF	.00	.98	---	.70R	1R*******	
XSECTION 50	ADDHYD	.54	.30	---	4.88T	9T	16.7
XSECTION 24	RUNOFF	.01	1.04	---	.65	7	700.0
XSECTION 17	ADDHYD	.56	.32	---	3.01T	10T	17.9
XSECTION 19	RUNOFF	.06	1.04	---	.74	28	466.7
XSECTION 15	ADDHYD	.62	.39	---	.75T	38T	61.3
STRUCTURE 39	RESVOR	.62	.21	693.92	12.60T	6T	9.7

SUMMARY TABLE 1

SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.
A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:
F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED HYDROGRAPH

XSECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RUNOFF AMOUNT (IN)	PEAK DISCHARGE ELEVATION (FT)	PEAK DISCHARGE TIME (HR)	PEAK DISCHARGE RATE (CFS)	PEAK DISCHARGE RATE (CSM)
RAINFALL OF 2.28 inches AND 6.00 hr DURATION, BEGINS AT .0 hrs.							
ALTERNATE 0 STORM 8							
XSECTION 91	RUNOFF	.09	.53	---	2.15	9	100.0
XSECTION 92	RUNOFF	.13	.74	---	2.10	18	138.5
XSECTION 93	ADDHYD	.22	.65	---	2.12	27	122.7
XSECTION 94	RUNOFF	.02	.22	---	3.00R	1R	50.0
STRUCTURE 11	RESVOR	.02	.22	738.33	3.50R	1R	50.0
XSECTION 95	ADDHYD	.24	.61	---	2.14	27	112.5
XSECTION 96	RUNOFF	.01	2.05	---	.57	6	600.0
XSECTION 97	ADDHYD	.25	.66	---	2.10	29	116.0
XSECTION 10	RUNOFF	.03	1.13	---	1.22	7	233.3
XSECTION 98	ADDHYD	.28	.71	---	2.07	34	121.4
STRUCTURE 6	RESVOR	.28	.71	709.31	3.11	26	92.9
XSECTION 99	RUNOFF	.15	1.13	---	1.22	38	253.3
XSECTION 90	ADDHYD	.43	.86	---	1.49	48	111.6
XSECTION 17	RUNOFF	.11	1.19	---	1.32	30	272.7
XSECTION 13	ADDHYD	.54	.93	---	1.48	77	142.6
STRUCTURE 7	RESVOR	.54	.44	701.95	6.88T	12T	22.2
XSECTION 49	RUNOFF	.00	1.26	---	.60R	1R*******	
XSECTION 50	ADDHYD	.54	.44	---	6.88T	12T	22.2
XSECTION 24	RUNOFF	.01	1.33	---	.60	5	500.0
XSECTION 17	ADDHYD	.56	.47	---	5.98T	13T	23.2
XSECTION 19	RUNOFF	.06	1.34	---	.73	19	316.7
XSECTION 15	ADDHYD	.62	.55	---	1.46T	26T	41.9
STRUCTURE 39	RESVOR	.62	.30	694.24	15.10T	8T	12.9

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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
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SUMMARY TABLE 1

SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.
A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:
F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED HYDROGRAPH

XSECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RUNOFF AMOUNT (IN)	PEAK DISCHARGE ELEVATION (FT)	PEAK DISCHARGE TIME (HR)	PEAK DISCHARGE RATE (CFS)	PEAK DISCHARGE RATE (CSM)
RAINFALL OF 2.64 inches AND 12.00 hr DURATION, BEGINS AT .0 hrs.							
RAINTABLE NUMBER 2, ARC 2							
MAIN TIME INCREMENT .500 HOURS							
ALTERNATE 0 STORM 9							
XSECTION 91	RUNOFF	.09	.73	---	5.89	9	100.0
XSECTION 92	RUNOFF	.13	.99	---	5.87	18	138.5
XSECTION 93	ADDHYD	.22	.88	---	5.88	27	122.7
XSECTION 94	RUNOFF	.02	.35	---	6.50R	1R	50.0
STRUCTURE 11	RESVOR	.02	.35	738.65	7.50R	1R	50.0
XSECTION 95	ADDHYD	.24	.84	---	5.90	28	116.7
XSECTION 96	RUNOFF	.01	2.41	---	4.62T	3T	300.0
XSECTION 97	ADDHYD	.25	.89	---	5.84	30	120.0
XSECTION 10	RUNOFF	.03	1.44	---	4.91	6	200.0
XSECTION 98	ADDHYD	.28	.94	---	5.74	35	125.0
STRUCTURE 6	RESVOR	.28	.94	709.45	6.79	28	100.0
XSECTION 99	RUNOFF	.15	1.44	---	4.91	33	220.0
XSECTION 90	ADDHYD	.43	1.12	---	6.00	50	116.3
XSECTION 17	RUNOFF	.11	1.51	---	5.21	25	227.3
XSECTION 13	ADDHYD	.54	1.20	---	5.53	72	133.3
STRUCTURE 7	RESVOR	.54	.61	702.30	12.41T	14T	25.9
XSECTION 49	RUNOFF	.00	1.59	---	5.00R	1R********	
XSECTION 50	ADDHYD	.54	.61	---	12.10T	14T	25.9
XSECTION 24	RUNOFF	.01	1.67	---	4.80	4	400.0
XSECTION 17	ADDHYD	.56	.64	---	11.91T	15T	26.8


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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
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SUMMARY TABLE 1

SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.
A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:
F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED HYDROGRAPH

XSECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RUNOFF AMOUNT (IN)	PEAK DISCHARGE ELEVATION (FT)	PEAK DISCHARGE TIME (HR)	PEAK DISCHARGE RATE (CFS)	PEAK DISCHARGE RATE (CSM)
ALTERNATE 0 STORM 9							
XSECTION 19	RUNOFF	.06	1.67	---	5.03	15	250.0
XSECTION 15	ADDHYD	.62	.74	---	5.35T	23T	37.1
STRUCTURE 39	RESVOR	.62	.41	694.61	20.50T	10T	16.1
RAINFALL OF 2.79 inches AND 18.00 hr DURATION, BEGINS AT .0 hrs.							
ALTERNATE 0 STORM 10							
XSECTION 91	RUNOFF	.09	.83	---	8.37	7	77.8
XSECTION 92	RUNOFF	.13	1.09	---	8.35	14	107.7
XSECTION 93	ADDHYD	.22	.98	---	8.36	21	95.5
XSECTION 94	RUNOFF	.02	.41	---	9.00R	1R	50.0
STRUCTURE 11	RESVOR	.02	.41	738.38	10.00R	1R	50.0
XSECTION 95	ADDHYD	.24	.93	---	8.37	22	91.7
XSECTION 96	RUNOFF	.01	2.57	---	6.87T	2T	200.0
XSECTION 97	ADDHYD	.25	.99	---	8.25	23	92.0
XSECTION 10	RUNOFF	.03	1.58	---	7.75	4	133.3
XSECTION 98	ADDHYD	.28	1.04	---	8.13	27	96.4
STRUCTURE 6	RESVOR	.28	1.04	709.18	9.33	23	82.1
XSECTION 99	RUNOFF	.15	1.58	---	7.75	24	160.0
XSECTION 90	ADDHYD	.43	1.23	---	8.08	42	97.7
XSECTION 17	RUNOFF	.11	1.63	---	7.76	19	172.7
XSECTION 13	ADDHYD	.54	1.31	---	7.96	60	111.1
STRUCTURE 7	RESVOR	.54	.72	702.29	17.97T	14T	25.9
XSECTION 49	RUNOFF	.00	.72	---	.00	0 ********	
XSECTION 50	ADDHYD	.54	.73	---	17.86T	14T	25.9
XSECTION 24	RUNOFF	.01	1.82	---	7.25	3	300.0
XSECTION 17	ADDHYD	.56	.76	---	15.86T	14T	25.0
XSECTION 19	RUNOFF	.06	1.79	---	7.71	11	183.3
XSECTION 15	ADDHYD	.62	.86	---	7.95T	19T	30.6
STRUCTURE 39	RESVOR	.62	.51	694.73	24.74T	11T	17.7

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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
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SUMMARY TABLE 3

STORM DISCHARGES (CFS) AT XSECTIONS AND STRUCTURES FOR ALL ALTERNATES
QUESTION MARK (?) AFTER: OUTFLOW PEAK - RISING TRUNCATED HYDROGRAPH.

XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS..... 1	2	3	4	5
STRUCTURE 39	.62					
ALTERNATE 0		0	1?	1?	2?	3?
STRUCTURE 11	.02					
ALTERNATE 0		0	0	0	0	0
STRUCTURE 7	.54					
ALTERNATE 0		0	1?	1?	2?	4?
STRUCTURE 6	.28					
ALTERNATE 0		1?	2	3	9	17
XSECTION 10	.03					
ALTERNATE 0		0	7	10	15	15
XSECTION 13	.54					
ALTERNATE 0		3	61	89	130	141
XSECTION 15	.62					
ALTERNATE 0		4	28	39	53	54
XSECTION 17	.56					
ALTERNATE 0		1	8	10	14	13
XSECTION 19	.06					
ALTERNATE 0		3	22	30	41	42
XSECTION 24	.01					
ALTERNATE 0		1	7	9	12	11
XSECTION 49	.00					
ALTERNATE 0		0	1?	1	2	2
XSECTION 50	.54					
ALTERNATE 0		0	1	1	2?	4?
XSECTION 90	.43					

ALTERNATE 0		2	43	60	87	89
XSECTION 91	.09					

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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
12:30:03                    SUMMARY, JOB NO.   1                       PAGE  80
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SUMMARY TABLE 3

STORM DISCHARGES (CFS) AT XSECTIONS AND STRUCTURES FOR ALL ALTERNATES
QUESTION MARK (?) AFTER: OUTFLOW PEAK - RISING TRUNCATED HYDROGRAPH.

XSECTION/ STRUCTURE ID		DRAINAGE AREA (SQ MI)	STORM NUMBERS..... 1	2	3	4	5
XSECTION 91		.09					
	ALTERNATE 0		0	0	1?	4	9
XSECTION 92		.13					
	ALTERNATE 0		0	1	4	12	19
XSECTION 93		.22					
	ALTERNATE 0		0	1	4	16	28
XSECTION 94		.02					
	ALTERNATE 0		0	0	0	0	0
XSECTION 95		.24					
	ALTERNATE 0		0	1	4	16	28
XSECTION 96		.01					
	ALTERNATE 0		7	14	16	17	14
XSECTION 97		.25					
	ALTERNATE 0		7	14	16	17	30
XSECTION 98		.28					
	ALTERNATE 0		7	21	25	30	34
XSECTION 99		.15					
	ALTERNATE 0		2	42	59	84	86

SUMMARY TABLE 3

STORM DISCHARGES (CFS) AT XSECTIONS AND STRUCTURES FOR ALL ALTERNATES
QUESTION MARK (?) AFTER: OUTFLOW PEAK - RISING TRUNCATED HYDROGRAPH.

XSECTION/ STRUCTURE ID		DRAINAGE AREA (SQ MI)	STORM NUMBERS..... 6	7	8	9	10
STRUCTURE 39		.62					
	ALTERNATE 0		6	6	8	10	11

STRUCTURE 11		.02					
	ALTERNATE 0		1?	1?	1?	1?	1?
STRUCTURE 7		.54					
	ALTERNATE 0		7	9	12	14	14
STRUCTURE 6		.28					
	ALTERNATE 0		26	26	26	28	23
XSECTION 10		.03					
	ALTERNATE 0		13	10	7	6	4

```
TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
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SUMMARY TABLE 3

STORM DISCHARGES (CFS) AT XSECTIONS AND STRUCTURES FOR ALL ALTERNATES
QUESTION MARK (?) AFTER: OUTFLOW PEAK - RISING TRUNCATED HYDROGRAPH.

XSECTION/ STRUCTURE ID		DRAINAGE AREA (SQ MI)	STORM NUMBERS..... 6	7	8	9	10
XSECTION 13		.54					
ALTERNATE	0		128	107	77	72	60
XSECTION 15		.62					
ALTERNATE	0		47	38	26	23	19
XSECTION 17		.56					
ALTERNATE	0		11	10	13	15	14
XSECTION 19		.06					
ALTERNATE	0		36	28	19	15	11
XSECTION 24		.01					
ALTERNATE	0		9	7	5	4	3
XSECTION 49		.00					
ALTERNATE	0		1	1?	1?	1?	0
XSECTION 50		.54					
ALTERNATE	0		7	9	12	14	14
XSECTION 90		.43					
ALTERNATE	0		77	63	48	50	42
XSECTION 91		.09					
ALTERNATE	0		11	10	9	9	7
XSECTION 92		.13					
ALTERNATE	0		22	21	18	18	14
XSECTION 93		.22					
ALTERNATE	0		33	31	27	27	21
XSECTION 94		.02					
ALTERNATE	0		1?	1?	1?	1?	1?
XSECTION 95		.24					

ALTERNATE	0		33	31	27	28	22

```
TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST
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SUMMARY TABLE 3

STORM DISCHARGES (CFS) AT XSECTIONS AND STRUCTURES FOR ALL ALTERNATES
QUESTION MARK (?) AFTER: OUTFLOW PEAK - RISING TRUNCATED HYDROGRAPH.

XSECTION/ STRUCTURE ID		DRAINAGE AREA (SQ MI)	STORM NUMBERS..... 6	7	8	9	10
XSECTION 96		.01					
ALTERNATE	0		11	9	6	3	2
XSECTION 97		.25					
ALTERNATE	0		35	33	29	30	23
XSECTION 98		.28					
ALTERNATE	0		39	39	34	35	27
XSECTION 99		.15					
ALTERNATE	0		73	57	38	33	24


```
TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROP NORTH OF THE EAST-WEST TOLL(JRB 11/1/95 FILE: 8935-i1X.DA2.04TEST


END OF  1 JOBS IN THIS RUN




                    SCS  TR-20,  VERSION 2.04TEST
                           001       FILES

     INPUT  = C:\TR20\PR2A.DAT                        , GIVEN DATA FILE
     OUTPUT = C:\TR20\PR2A.OUT                        , DATED 04/19/**,12:30:03

              FILES GENERATED - DATED 04/19/**,12:30:03

    FILE C:\TR20\PR2A.TRD CONTAINS READHD INFORMATION

    FILE C:\TR20\PR2A.TMG CONTAINS MESSAGE + WARNING INFORMATION


           TOTAL NUMBER OF WARNINGS = 102,  MESSAGES =  97

                       JOB ENDED AT 12:30:04
                   *** TR-20 RUN COMPLETED ***
```

CRITICAL DURATION
2-YEAR STORM EVENT


```
******************80-80 LIST OF INPUT DATA FOR TR-20 HYDROLOGY******************

JOB TR-20 001                          PASS=     SUMMARY
TITLE     CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE
TITLE     PROPERTY NORTH OF THE EAST-WEST TOLLWAY (JRB 11/1/95 FILE: 8935-i1X.DA
 5 RAINFL 1              0.05
 8          0.00         0.16         0.33         0.43         0.52
 8          0.60         0.66         0.71         0.75         0.79
 8          0.82         0.84         0.86         0.88         0.90
 8          0.92         0.94         0.96         0.97         0.98
 8          1.00         1.00         1.00         1.00         1.00
 9 ENDTBL
 5 RAINFL 2              0.05
 8          0.00         0.03         0.08         0.12         0.16
 8          0.22         0.29         0.39         0.51         0.62
 8          0.70         0.76         0.81         0.85         0.88
 8          0.91         0.93         0.95         0.97         0.98
 8          1.00         1.00         1.00         1.00         1.00
 9 ENDTBL
 5 RAINFL 3              0.05
 8          0.00         0.03         0.06         0.09         0.12
 8          0.15         0.19         0.23         0.27         0.32
 8          0.38         0.45         0.57         0.70         0.79
 8          0.85         0.89         0.92         0.95         0.97
 8          1.00         1.00         1.00         1.00         1.00
 9 ENDTBL
 5 RAINFL 4              0.05
 8          0.00         0.02         0.05         0.08         0.10
 8          0.13         0.16         0.19         0.22         0.25
 8          0.28         0.32         0.35         0.39         0.45
 8          0.51         0.59         0.72         0.84         0.92
 8          1.00         1.00         1.00         1.00         1.00
 9 ENDTBL
 3 STRUCT      06
 8                       707.0        0.00         0.00           POND-B6 - AEAST
 8                       708.0        8.40         1.11           36" DIA. RCP
 8                       709.0        20.0         2.32           INLET CONTROL
 8                       710.0        38.0         3.63
 8                       711.0        55.0         5.02
 8                       712.0        66.0         6.52           12' WEIR; C=3.0
 8                       712.5       114.0         7.32
 9 ENDTBL
 3 STRUCT      11
 8                       737.5         0.0          0.0
 8                       738.          0.5         .005           DRYBASIN
 8                       739.          1.0         .040
 8                       740.          3.0         .098
 8                       741.          5.0         .176
 8                       742.          7.0         .288
 8                       743.          9.0         .446
 8                       744.         33.9         .566
 9 ENDTBL
 3 STRUCT      07
 8                       700.          0.0          0.0           POND-D7
 8                       701.          4.0         8.59           REINDEER LAKE
 8                       702.          12.        22.08           INCLUDES PONDS F
 8                       703.          18.        36.22           21" DIA RCP
 8                       704.          22.        51.08           INLET CONTROL
```

**********80-80 LIST OF INPUT DATA (CONTINUED)**********

```
 8                     705.         26.        66.65
 8                     705.5        46.        74.81          20' WEIR; C=2.6
 8                     706.         82.        82.97
 8                     706.5       128.        92.99
 9 ENDTBL
 3 STRUCT      39
 8                     693.         0.0         0.0           POND-C2
 8                     694.        7.06        6.73           REVISED STAGE-D
 8                     695.        12.57       13.95           FOR PHASE 1 IM
 8                     696.        16.03       21.66
 8                     696.74      18.12       27.74
 8                     697.        25.03       29.88
 8                     698.        87.74       38.61
 8                     699.        138.39      47.99
 8                     700.        163.48      58.17
 8                     700.25      187.22      60.82
 8                     701.        329.76      68.76
 8                     701.5       460.91      74.05
 9 ENDTBL
 6 RUNOFF 1 091       1 0.0923      75.00       0.84       1         1
 6 RUNOFF 1 092       2 0.1292      80.00       1.00       1         1
 6 ADDHYD 4 093   1 2 3                                    1
 6 RUNOFF 1 094       4 0.0203      65.00       0.91       1         1
 6 RESVOR 2    11 4   5                                      1 1 1 1 1
 6 ADDHYD 4 095   3 5 6
 6 RUNOFF 1 096       1 0.0084      98.00       0.16       1         1
 6 ADDHYD 4 097   6 1 7                                    1
 6 RUNOFF 1 010       4 0.0265      87.00       0.15
 6 ADDHYD 4 098   7 4 1
 6 RESVOR 2     6 1   5                                      1 1 1 1 1
 6 RUNOFF 1 099       7 0.1526      87.00       0.15       1         1
 6 ADDHYD 4 090   5 7 2                                    1
 6 RUNOFF 1 017       7 0.1120      88.00       0.30
 6 ADDHYD 4 013   2 7 1
 6 RESVOR 2     7 1   2                                      1 1 1 1 1
 6 RUNOFF 1 049       7 0.0023      89.00       0.15       1         1
 6 ADDHYD 4 050   2 7 1                                    1
 6 RUNOFF 1 024       7 0.0149      90.00       0.15
 6 ADDHYD 4 017   1 7 2
 6 RUNOFF 1 019       6 0.0618      90.00       0.25
 6 ADDHYD 4 015   2 6 7
 6 RESVOR 2    39 7   1                                      1 1 1 1 1
   ENDATA
 7 INCREM 6            1.00
 7 COMPUT 7 091      39 0.00        3.04        24.0       3 2      11   24-HR
   ENDCMP 1
 7 COMPUT 7 091      39 0.00        3.30        48.0       4 2      12   48-HR
   ENDCMP 1
 7 INCREM 6            1.00
 7 COMPUT 7 091      39 0.00        3.55        72.0       4 2      13   72-HR
   ENDCMP 1
 7 COMPUT 7 091      39 0.00        3.93        120.0      4 2      14   120-HR
   ENDCMP 1
 7 COMPUT 7 091      39 0.00        4.95        240.0      4 2      15   240-HR
   ENDCMP 1
   ENDJOB 2
```


**********80-80 LIST OF INPUT DATA (CONTINUED)**********

**********END OF 80-80 LIST**********

```
TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROPERTY NORTH OF THE EAST-WEST TOLLWAY (JRB 11/1/95 FILE: 8932.04TEST
12:30:24                    PASS   1   JOB NO.   1                      PAGE   1


EXECUTIVE CONTROL  INCREM    MAIN TIME INCREMENT =  1.000 HOURS


EXECUTIVE CONTROL  COMPUT    FROM XSECTION  91  TO STRUCTURE 39          24-HR
    STARTING TIME =   .00       RAIN DEPTH =  3.04       RAIN DURATION = 24.00
    ANT. RUNOFF COND. = 2       MAIN TIME INCREMENT =  1.000 HOURS
    ALTERNATE NO. = 0           STORM NO. =11            RAIN TABLE NO. = 3


OPERATION RUNOFF    XSECTION  91

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
       15.86                          8.8                       (RUNOFF)
       23.76                          3.0                       (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                    .99 WATERSHED INCHES;      59 CFS-HRS;       4.9 ACRE-FEET.


OPERATION RUNOFF    XSECTION  92

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
       15.87                         15.5                       (RUNOFF)
       23.76                          4.6                       (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                   1.28 WATERSHED INCHES;     107 CFS-HRS;       8.8 ACRE-FEET.


OPERATION ADDHYD    XSECTION  93

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
       15.86                         24.3                       (NULL)
       23.76                          7.6                       (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                   1.16 WATERSHED INCHES;     166 CFS-HRS;      13.7 ACRE-FEET.


OPERATION RUNOFF    XSECTION  94

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
       16.25                          1.1                       (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                    .52 WATERSHED INCHES;       7 CFS-HRS;        .6 ACRE-FEET.
```



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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROPERTY NORTH OF THE EAST-WEST TOLLWAY (JRB 11/1/95 FILE: 8932.04TEST
12:30:24                    PASS   1   JOB NO.   1                      PAGE   2


OPERATION RESVOR    STRUCTURE 11

                    HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM =11
     HRS      MAIN TIME INCREMENT = 1.000 hr,      DRAINAGE AREA =    .02 SQ.MI.
    11.00 CFS       .00     .01     .10     .40     .63     .86     .97     .90
    11.00 ELEV   737.50  737.51  737.60  737.90  738.25  738.71  738.95  738.80
    19.00 CFS       .73     .57     .45     .39     .33     .40     .18    -.03
    19.00 ELEV   738.46  738.14  737.95  737.89  737.83  737.90  737.68  737.47
    27.00 CFS       .03    -.02
    27.00 ELEV   737.53  737.48

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                    .53 WATERSHED INCHES;       7 CFS-HRS;        .6 ACRE-FEET.

    DURATION(HRS)   2      4      6
    FLOW(CFS)       1      1      0

 --- STRUCTURE 11, ALTERNATE  0, STORM 11, HYDROGRAPH ADDED TO READHD FILE ---


OPERATION RUNOFF    XSECTION  96

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
       14.71                          1.8                       (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                   2.77 WATERSHED INCHES;      15 CFS-HRS;       1.2 ACRE-FEET.


OPERATION ADDHYD    XSECTION  97

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
       15.82                         26.4                       (NULL)
       23.75                          8.5                       (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                   1.17 WATERSHED INCHES;     188 CFS-HRS;      15.5 ACRE-FEET.


OPERATION RESVOR    STRUCTURE  6

                    HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM =11
     HRS      MAIN TIME INCREMENT = 1.000 hr,      DRAINAGE AREA =    .28 SQ.MI.
      .00 CFS       .00     .01     .07     .16     .24     .34     .43     .60
      .00 ELEV   707.00  707.00  707.01  707.02  707.03  707.04  707.05  707.07
     8.00 CFS       .96    1.49    2.29    3.49    5.11    7.28   12.19   19.41
     8.00 ELEV   707.11  707.18  707.27  707.42  707.61  707.87  708.33  708.95
    16.00 CFS     26.20   26.64   22.84   18.36   14.69   11.99   10.27    8.89
    16.00 ELEV   709.34  709.37  709.16  708.86  708.54  708.31  708.16  708.04
    24.00 CFS      8.53    7.10    4.17    2.21    1.16     .60     .32     .17
    24.00 ELEV   708.01  707.84  707.50  707.26  707.14  707.07  707.04  707.02
```

```
TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROPERTY NORTH OF THE EAST-WEST TOLLWAY (JRB 11/1/95 FILE: 8932.04TEST
12:30:24                    PASS   1   JOB NO.   1                       PAGE   3

    32.00 CFS       .09     .05     .02     .01
    32.00 ELEV   707.01  707.01  707.00  707.00

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  1.22 WATERSHED INCHES;     218 CFS-HRS;      18.0 ACRE-FEET.

    DURATION(HRS)   2      4      6      8     10     12     14     16
    FLOW(CFS)      23     18     12     10      9      7      4      2

    DURATION(HRS)  18     20     22     23
    FLOW(CFS)       1      1      1      0

 --- STRUCTURE  6, ALTERNATE  0, STORM 11, HYDROGRAPH ADDED TO READHD FILE ---


OPERATION RUNOFF    XSECTION  99

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
       14.87                         25.1                       (RUNOFF)
       20.52                          6.7                       (RUNOFF)
       23.54                          7.3                       (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  1.77 WATERSHED INCHES;     174 CFS-HRS;      14.4 ACRE-FEET.


OPERATION ADDHYD    XSECTION  90

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
       15.52                         45.0                       (NULL)
       23.32                         15.2                       (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  1.42 WATERSHED INCHES;     392 CFS-HRS;      32.4 ACRE-FEET.


OPERATION RESVOR    STRUCTURE  7

                    HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM =11
     HRS      MAIN TIME INCREMENT = 1.000 hr,      DRAINAGE AREA =     .54 SQ.MI.
     2.00 CFS       .00     .01     .02     .07     .15     .28     .50     .78
     2.00 ELEV   700.00  700.00  700.01  700.02  700.04  700.07  700.13  700.20
    10.00 CFS      1.17    1.70    2.34    3.14    4.57    7.05    9.63   11.81
    10.00 ELEV   700.29  700.42  700.59  700.78  701.07  701.38  701.70  701.98
    18.00 CFS     13.11   14.00   14.54   14.88   15.08   15.20   15.35   15.29
    18.00 ELEV   702.19  702.33  702.42  702.48  702.51  702.53  702.56  702.55
    26.00 CFS     14.96   14.55   14.11   13.65   13.20   12.75   12.31   11.85
    26.00 ELEV   702.49  702.43  702.35  702.28  702.20  702.13  702.05  701.98
    34.00 CFS     11.29   10.75
    34.00 ELEV   701.91  701.84
```



```
TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROPERTY NORTH OF THE EAST-WEST TOLLWAY (JRB 11/1/95 FILE: 8932.04TEST
12:30:24                    PASS   1   JOB NO.   1                       PAGE   4

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .82 WATERSHED INCHES;     285 CFS-HRS;      23.5 ACRE-FEET.

    DURATION(HRS)   2      4      6      8     10     12     14     16
    FLOW(CFS)      15     15     15     14     14     13     12     12

    DURATION(HRS)  18     19
    FLOW(CFS)      11     11 TRUNCATED

 --- STRUCTURE  7, ALTERNATE  0, STORM 11, HYDROGRAPH ADDED TO READHD FILE ---


OPERATION RUNOFF    XSECTION  49

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .82 WATERSHED INCHES;      24 CFS-HRS;      23.5 ACRE-FEET.


OPERATION ADDHYD    XSECTION  50

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
       23.98                         15.5                       (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .82 WATERSHED INCHES;     288 CFS-HRS;      23.8 ACRE-FEET.


OPERATION RESVOR    STRUCTURE 39

                    HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM =11
     HRS      MAIN TIME INCREMENT = 1.000 hr,      DRAINAGE AREA =     .62 SQ.MI.
     3.00 CFS       .00     .03     .09     .17     .30     .49     .72    1.02
     3.00 ELEV   693.00  693.00  693.01  693.02  693.04  693.07  693.10  693.14
    11.00 CFS      1.41    1.88    2.44    3.34    4.64    5.97    7.11    7.89
    11.00 ELEV   693.20  693.27  693.35  693.47  693.66  693.85  694.01  694.15
    19.00 CFS      8.59    9.19    9.74   10.24   10.71   11.20   11.56   11.77
    19.00 ELEV   694.28  694.39  694.49  694.58  694.66  694.75  694.82  694.86
    27.00 CFS     11.96   12.10   12.21   12.28   12.33   12.34   12.32   12.28
    27.00 ELEV   694.89  694.91  694.93  694.95  694.96  694.96  694.96  694.95
    35.00 CFS     12.20
    35.00 ELEV   694.93

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .56 WATERSHED INCHES;     224 CFS-HRS;      18.5 ACRE-FEET.

 --- STRUCTURE 39, ALTERNATE  0, STORM 11, HYDROGRAPH ADDED TO READHD FILE ---
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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROPERTY NORTH OF THE EAST-WEST TOLLWAY (JRB 11/1/95 FILE: 8932.04TEST
12:30:24                    PASS   2   JOB NO.   1                      PAGE   5


EXECUTIVE CONTROL  ENDCMP    COMPUTATIONS COMPLETED FOR PASS   1


EXECUTIVE CONTROL  COMPUT    FROM XSECTION  91  TO STRUCTURE 39          48-HR
    STARTING TIME =   .00       RAIN DEPTH =  3.30       RAIN DURATION = 48.00
    ANT. RUNOFF COND. = 2       MAIN TIME INCREMENT =  1.000 HOURS
    ALTERNATE NO. = 0           STORM NO. =12            RAIN TABLE NO. = 4


OPERATION RUNOFF    XSECTION  91

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
       42.52                          6.0                       (RUNOFF)
       47.46                          4.4                       (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  1.16 WATERSHED INCHES;      69 CFS-HRS;       5.7 ACRE-FEET.


OPERATION RUNOFF    XSECTION  92

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
       42.51                          9.8                       (RUNOFF)
       47.50                          7.7                       (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  1.47 WATERSHED INCHES;     123 CFS-HRS;      10.1 ACRE-FEET.


OPERATION ADDHYD    XSECTION  93

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
       42.51                         15.8                       (NULL)
       47.50                         12.5                       (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  1.34 WATERSHED INCHES;     191 CFS-HRS;      15.8 ACRE-FEET.


OPERATION RUNOFF    XSECTION  94

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
       43.00                          .8                       (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                   .64 WATERSHED INCHES;       8 CFS-HRS;        .7 ACRE-FEET.
```



```
TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROPERTY NORTH OF THE EAST-WEST TOLLWAY (JRB 11/1/95 FILE: 8932.04TEST
12:30:24                    PASS   2   JOB NO.   1                      PAGE   6


OPERATION RESVOR    STRUCTURE 11

                    HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM =12
     HRS      MAIN TIME INCREMENT = 1.000 hr,      DRAINAGE AREA =    .02 SQ.MI.
    28.00 CFS       .00     .01     .03     .04     .08     .11     .12     .17
    28.00 ELEV   737.50  737.51  737.53  737.54  737.58  737.61  737.62  737.67
    36.00 CFS       .18     .27     .33     .46     .59     .68     .75     .81
    36.00 ELEV   737.68  737.77  737.83  737.96  738.17  738.36  738.50  738.62
    44.00 CFS       .78     .70     .66     .67     .68     .46    -.17     .11
    44.00 ELEV   738.56  738.40  738.32  738.33  738.37  737.96  737.33  737.61
    52.00 CFS      -.07     .04    -.02
    52.00 ELEV   737.43  737.54  737.48

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                   .65 WATERSHED INCHES;       8 CFS-HRS;        .7 ACRE-FEET.

    DURATION(HRS)   2      4      6      8      9
    FLOW(CFS)       1      1      1      1      0

 --- STRUCTURE 11, ALTERNATE  0, STORM 12, HYDROGRAPH ADDED TO READHD FILE ---


OPERATION RUNOFF    XSECTION  96

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
       40.00                          1.0                       (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  3.09 WATERSHED INCHES;      17 CFS-HRS;       1.4 ACRE-FEET.


OPERATION ADDHYD    XSECTION  97

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
       26.06                          2.2                       (NULL)
       42.53                         17.5                       (NULL)
       47.50                         13.9                       (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  1.35 WATERSHED INCHES;     217 CFS-HRS;      18.0 ACRE-FEET.


OPERATION RESVOR    STRUCTURE  6

                    HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM =12
     HRS      MAIN TIME INCREMENT = 1.000 hr,      DRAINAGE AREA =    .28 SQ.MI.
     2.00 CFS       .00     .03     .06     .09     .12     .14     .14     .13
     2.00 ELEV   707.00  707.00  707.01  707.01  707.01  707.02  707.02  707.02
    10.00 CFS       .16     .21     .23     .27     .31     .36     .45     .54
    10.00 ELEV   707.02  707.02  707.03  707.03  707.04  707.04  707.05  707.06
    18.00 CFS       .65     .77     .91    1.07    1.20    1.36    1.50    1.78
```

```
TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROPERTY NORTH OF THE EAST-WEST TOLLWAY (JRB 11/1/95 FILE: 8932.04TEST
12:30:24                    PASS   2   JOB NO.   1                      PAGE   7

    18.00 ELEV   707.08  707.09  707.11  707.13  707.14  707.16  707.18  707.21
    26.00 CFS      2.18    2.38    2.40    2.45    2.73    3.11    3.77    4.72
    26.00 ELEV   707.26  707.28  707.29  707.29  707.33  707.37  707.45  707.56
    34.00 CFS      5.46    6.04    6.50    7.42    8.77   10.98   14.29   16.89
    34.00 ELEV   707.65  707.72  707.77  707.88  708.03  708.22  708.51  708.73
    42.00 CFS     18.21   18.93   18.16   16.26   14.97   14.50   14.39   11.12
    42.00 ELEV   708.85  708.91  708.84  708.68  708.57  708.53  708.52  708.23
    50.00 CFS      6.09    3.22    1.69     .88     .46     .24
    50.00 ELEV   707.72  707.38  707.20  707.10  707.06  707.03

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  1.41 WATERSHED INCHES;     252 CFS-HRS;      20.8 ACRE-FEET.

    DURATION(HRS)   4      8     12     16     20     24     28     32
    FLOW(CFS)      16     14      7      5      3      2      1      1

    DURATION(HRS)  36     37
    FLOW(CFS)       1      0

 --- STRUCTURE  6, ALTERNATE  0, STORM 12, HYDROGRAPH ADDED TO READHD FILE ---


OPERATION RUNOFF    XSECTION  99

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
       39.50                         14.1                       (RUNOFF)
       46.66                          9.5                       (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  2.02 WATERSHED INCHES;     199 CFS-HRS;      16.4 ACRE-FEET.


OPERATION ADDHYD    XSECTION  90

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
       26.04                          5.0                       (NULL)
       42.62                         32.9                       (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  1.63 WATERSHED INCHES;     451 CFS-HRS;      37.2 ACRE-FEET.


OPERATION RESVOR    STRUCTURE  7

                   HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM =12
     HRS      MAIN TIME INCREMENT = 1.000 hr,      DRAINAGE AREA =    .54 SQ.MI.
       5.00 CFS       .00     .01     .01     .02     .03     .05     .08     .12
       5.00 ELEV   700.00  700.00  700.00  700.00  700.01  700.01  700.02  700.03
      13.00 CFS       .17     .23     .30     .39     .48     .58     .69     .80
      13.00 ELEV   700.04  700.06  700.08  700.10  700.12  700.15  700.17  700.20
      21.00 CFS       .93    1.06    1.20    1.34    1.51    1.72    1.92    2.09
```



```
TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROPERTY NORTH OF THE EAST-WEST TOLLWAY (JRB 11/1/95 FILE: 8932.04TEST
12:30:24                    PASS   2   JOB NO.   1                      PAGE   8

    21.00 ELEV   700.23  700.26  700.30  700.33  700.38  700.43  700.48  700.52
    29.00 CFS      2.29    2.51    2.75    3.07    3.47    3.90    4.45    5.02
    29.00 ELEV   700.57  700.63  700.69  700.77  700.87  700.98  701.06  701.13
    37.00 CFS      5.70    6.50    7.59    9.01   10.49   11.97   13.03   13.91
    37.00 ELEV   701.21  701.31  701.45  701.63  701.81  702.00  702.17  702.32
    45.00 CFS     14.59   15.19   15.75   16.28   16.44   16.17   15.78   15.32
    45.00 ELEV   702.43  702.53  702.63  702.71  702.74  702.70  702.63  702.55
    53.00 CFS     14.83   14.35   13.86
    53.00 ELEV   702.47  702.39  702.31

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                   .81 WATERSHED INCHES;     283 CFS-HRS;      23.4 ACRE-FEET.

    DURATION(HRS)   2      4      6      8     10     12
    FLOW(CFS)      16     16     15     15     14     14 TRUNCATED

 --- STRUCTURE  7, ALTERNATE  0, STORM 12, HYDROGRAPH ADDED TO READHD FILE ---


OPERATION RUNOFF    XSECTION  49

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                   .81 WATERSHED INCHES;      47 CFS-HRS;      23.4 ACRE-FEET.


OPERATION ADDHYD    XSECTION  50

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
       48.56                         16.5                       (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                   .82 WATERSHED INCHES;     286 CFS-HRS;      23.7 ACRE-FEET.


OPERATION RESVOR    STRUCTURE 39

                   HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM =12
     HRS      MAIN TIME INCREMENT = 1.000 hr,      DRAINAGE AREA =    .62 SQ.MI.
       6.00 CFS       .00     .01     .02     .03     .06     .10     .14     .19
       6.00 ELEV   693.00  693.00  693.00  693.00  693.01  693.01  693.02  693.03
      14.00 CFS       .25     .32     .39     .47     .56     .65     .75     .86
      14.00 ELEV   693.04  693.04  693.06  693.07  693.08  693.09  693.11  693.12
      22.00 CFS       .97    1.09    1.21    1.35    1.53    1.69    1.83    2.00
      22.00 ELEV   693.14  693.15  693.17  693.19  693.22  693.24  693.26  693.28
      30.00 CFS      2.19    2.39    2.65    2.97    3.30    3.65    4.02    4.46
      30.00 ELEV   693.31  693.34  693.38  693.42  693.47  693.52  693.57  693.63
      38.00 CFS      4.98    5.67    6.54    7.35    8.05    8.78    9.46   10.06
      38.00 ELEV   693.71  693.80  693.93  694.05  694.18  694.31  694.43  694.54
      46.00 CFS     10.67   11.28   11.89   12.32   12.56   12.69   12.79   12.88
      46.00 ELEV   694.66  694.77  694.88  694.95  695.00  695.03  695.06  695.09
      54.00 CFS     12.94   12.98
```

```
TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROPERTY NORTH OF THE EAST-WEST TOLLWAY (JRB 11/1/95 FILE: 8932.04TEST
12:30:24                    PASS   2   JOB NO.   1                      PAGE   9

    54.00 ELEV   695.11  695.12

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                    .55 WATERSHED INCHES;     219 CFS-HRS;      18.1 ACRE-FEET.

    DURATION(HRS)   2      4      6
    FLOW(CFS)      13     13     13 TRUNCATED

 --- STRUCTURE 39, ALTERNATE  0, STORM 12, HYDROGRAPH ADDED TO READHD FILE ---


EXECUTIVE CONTROL  ENDCMP    COMPUTATIONS COMPLETED FOR PASS   2


EXECUTIVE CONTROL  INCREM    MAIN TIME INCREMENT =  1.000 HOURS


EXECUTIVE CONTROL  COMPUT    FROM XSECTION  91  TO STRUCTURE 39           72-HR
    STARTING TIME =   .00       RAIN DEPTH =  3.55       RAIN DURATION = 72.00
    ANT. RUNOFF COND. = 2       MAIN TIME INCREMENT =  1.000 HOURS
    ALTERNATE NO. = 0           STORM NO. =13            RAIN TABLE NO. = 4


OPERATION RUNOFF    XSECTION  91

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
       63.53                          4.4                       (RUNOFF)
       71.50                          3.6                       (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                   1.34 WATERSHED INCHES;      80 CFS-HRS;       6.6 ACRE-FEET.


OPERATION RUNOFF    XSECTION  92

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
       38.76                          1.1                       (RUNOFF)
       63.52                          7.2                       (RUNOFF)
       71.50                          5.6                       (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                   1.67 WATERSHED INCHES;     139 CFS-HRS;      11.5 ACRE-FEET.


OPERATION ADDHYD    XSECTION  93
```



```
TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROPERTY NORTH OF THE EAST-WEST TOLLWAY (JRB 11/1/95 FILE: 8932.04TEST
12:30:24                    PASS   3   JOB NO.   1                      PAGE  10


    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
       63.52                         11.6                       (NULL)
       71.50                          9.3                       (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                   1.53 WATERSHED INCHES;     219 CFS-HRS;      18.1 ACRE-FEET.


OPERATION RUNOFF    XSECTION  94

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
       64.00                          .7                        (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                    .78 WATERSHED INCHES;      10 CFS-HRS;        .8 ACRE-FEET.


OPERATION RESVOR    STRUCTURE 11

                    HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM =13
     HRS      MAIN TIME INCREMENT = 1.000 hr,       DRAINAGE AREA =    .02 SQ.MI.
    40.00 CFS       .00     .01     .02     .02     .03     .04     .04     .04
    40.00 ELEV   737.50  737.51  737.52  737.52  737.53  737.54  737.54  737.54
    48.00 CFS       .09     .11     .10     .12     .15     .15     .15     .23
    48.00 ELEV   737.59  737.61  737.60  737.62  737.65  737.65  737.65  737.73
    56.00 CFS       .27     .26     .32     .51     .55     .56     .59     .62
    56.00 ELEV   737.77  737.76  737.82  738.01  738.09  738.13  738.18  738.25
    64.00 CFS       .64     .65     .59     .52     .50     .50     .51     .52
    64.00 ELEV   738.29  738.29  738.19  738.05  738.00  738.00  738.03  738.05
    72.00 CFS       .53     .22    -.04     .03    -.02
    72.00 ELEV   738.06  737.72  737.46  737.53  737.48

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                    .78 WATERSHED INCHES;      10 CFS-HRS;        .8 ACRE-FEET.

    DURATION(HRS)   2      4      6      8     10     12
    FLOW(CFS)       1      1      1      1      1      0

 --- STRUCTURE 11, ALTERNATE  0, STORM 13, HYDROGRAPH ADDED TO READHD FILE ---


OPERATION RUNOFF    XSECTION  96

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
       60.00                          .7                        (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                   3.32 WATERSHED INCHES;      18 CFS-HRS;       1.5 ACRE-FEET.
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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROPERTY NORTH OF THE EAST-WEST TOLLWAY (JRB 11/1/95 FILE: 8932.04TEST
12:30:24                    PASS   3   JOB NO.   1                      PAGE  11


OPERATION ADDHYD    XSECTION  97

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
       63.57                         12.8                        (NULL)
       71.50                         10.3                        (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  1.53 WATERSHED INCHES;     247 CFS-HRS;      20.4 ACRE-FEET.


OPERATION RESVOR    STRUCTURE  6

                    HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM =13
     HRS      MAIN TIME INCREMENT = 1.000 hr,      DRAINAGE AREA =    .28 SQ.MI.
     3.00 CFS       .00     .02     .05     .06     .07     .08     .10     .11
     3.00 ELEV   707.00  707.00  707.01  707.01  707.01  707.01  707.01  707.01
    11.00 CFS       .11     .10     .10     .10     .12     .16     .18     .19
    11.00 ELEV  707.01  707.01  707.01  707.01  707.01  707.02  707.02  707.02
    19.00 CFS       .22     .26     .28     .31     .38     .45     .49     .55
    19.00 ELEV  707.03  707.03  707.03  707.04  707.04  707.05  707.06  707.07
    27.00 CFS       .65     .72     .77     .86     .96    1.02    1.09    1.18
    27.00 ELEV  707.08  707.09  707.09  707.10  707.11  707.12  707.13  707.14
    35.00 CFS      1.26    1.30    1.48    1.77    1.95    2.01    1.98    1.93
    35.00 ELEV  707.15  707.16  707.18  707.21  707.23  707.24  707.24  707.23
    43.00 CFS      1.90    2.04    2.33    2.55    2.76    3.28    3.94    4.33
    43.00 ELEV  707.23  707.24  707.28  707.30  707.33  707.39  707.47  707.52
    51.00 CFS      4.61    4.88    5.10    5.23    5.79    6.68    7.26    8.05
    51.00 ELEV  707.55  707.58  707.61  707.62  707.69  707.80  707.86  707.96
    59.00 CFS     10.19   12.41   13.50   14.00   14.26   14.41   14.26   13.13
    59.00 ELEV  708.15  708.35  708.44  708.48  708.51  708.52  708.51  708.41
    67.00 CFS     11.66   10.87   10.56   10.52   10.55   10.58    8.20    4.79
    67.00 ELEV  708.28  708.21  708.19  708.18  708.19  708.19  707.98  707.57
    75.00 CFS      2.54    1.33     .70     .37     .19     .10     .05     .03
    75.00 ELEV  707.30  707.16  707.08  707.04  707.02  707.01  707.01  707.00
    83.00 CFS       .01
    83.00 ELEV  707.00

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  1.60 WATERSHED INCHES;     285 CFS-HRS;      23.6 ACRE-FEET.

    DURATION(HRS)   6     12     18     24     30     36     42     48
    FLOW(CFS)      12     11      6      4      2      2      1      1

    DURATION(HRS)  52
    FLOW(CFS)       0

 --- STRUCTURE  6, ALTERNATE  0, STORM 13, HYDROGRAPH ADDED TO READHD FILE ---
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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROPERTY NORTH OF THE EAST-WEST TOLLWAY (JRB 11/1/95 FILE: 8932.04TEST
12:30:24                    PASS   3   JOB NO.   1                      PAGE  12


OPERATION RUNOFF    XSECTION  99

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
       38.50                          2.2                        (RUNOFF)
       59.00                         10.3 *                      (RUNOFF)
       62.65                          9.9                        (RUNOFF)
       69.00                          6.9 *                      (RUNOFF)
                                        * FIRST POINT OF FLAT PEAK

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  2.23 WATERSHED INCHES;     220 CFS-HRS;      18.2 ACRE-FEET.


OPERATION ADDHYD    XSECTION  90

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
       38.84                          4.1                        (NULL)
       63.55                         24.6                        (NULL)
       71.50                         18.6                        (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  1.82 WATERSHED INCHES;     505 CFS-HRS;      41.8 ACRE-FEET.


OPERATION RESVOR    STRUCTURE  7

                    HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM =13
     HRS      MAIN TIME INCREMENT = 1.000 hr,      DRAINAGE AREA =    .54 SQ.MI.
     6.00 CFS       .00     .01     .01     .01     .02     .02     .03     .04
     6.00 ELEV   700.00  700.00  700.00  700.00  700.00  700.01  700.01  700.01
    14.00 CFS       .04     .06     .09     .13     .16     .20     .25     .29
    14.00 ELEV  700.01  700.02  700.02  700.03  700.04  700.05  700.06  700.07
    22.00 CFS       .35     .41     .48     .54     .61     .69     .77     .85
    22.00 ELEV  700.09  700.10  700.12  700.14  700.15  700.17  700.19  700.21
    30.00 CFS       .94    1.03    1.12    1.21    1.31    1.40    1.50    1.62
    30.00 ELEV  700.23  700.26  700.28  700.30  700.33  700.35  700.37  700.40
    38.00 CFS      1.76    1.91    2.05    2.17    2.28    2.38    2.51    2.66
    38.00 ELEV  700.44  700.48  700.51  700.54  700.57  700.60  700.63  700.67
    46.00 CFS      2.82    3.01    3.27    3.55    3.83    4.17    4.55    4.93
    46.00 ELEV  700.71  700.75  700.82  700.89  700.96  701.02  701.07  701.12
    54.00 CFS      5.30    5.74    6.27    6.81    7.52    8.45    9.45   10.48
    54.00 ELEV  701.16  701.22  701.28  701.35  701.44  701.56  701.68  701.81
    62.00 CFS     11.48   12.32   12.99   13.57   14.01   14.37   14.67   14.94
    62.00 ELEV  701.94  702.05  702.16  702.26  702.34  702.39  702.44  702.49
    70.00 CFS     15.21   15.46   15.71   15.70   15.38   14.98   14.53   14.06
    70.00 ELEV  702.53  702.58  702.62  702.62  702.56  702.50  702.42  702.34
    78.00 CFS     13.60   13.14   12.69   12.26   11.77   11.21
    78.00 ELEV  702.27  702.19  702.12  702.04  701.97  701.90
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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROPERTY NORTH OF THE EAST-WEST TOLLWAY (JRB 11/1/95 FILE: 8932.04TEST
12:30:24                    PASS   3   JOB NO.   1                       PAGE  13


    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  1.21 WATERSHED INCHES;     422 CFS-HRS;      34.9 ACRE-FEET.

    DURATION(HRS)   2      4      6      8     10     12     14     16
    FLOW(CFS)      15     15     15     15     14     14     13     13

    DURATION(HRS)  18     20
    FLOW(CFS)      12     11 TRUNCATED

 --- STRUCTURE  7, ALTERNATE  0, STORM 13, HYDROGRAPH ADDED TO READHD FILE ---


OPERATION RUNOFF    XSECTION  49

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  1.21 WATERSHED INCHES;      70 CFS-HRS;      34.9 ACRE-FEET.


OPERATION ADDHYD    XSECTION  50

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
       72.18                         15.8                        (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  1.21 WATERSHED INCHES;     426 CFS-HRS;      35.2 ACRE-FEET.


OPERATION RESVOR    STRUCTURE 39

                    HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM =13
     HRS      MAIN TIME INCREMENT = 1.000 hr,      DRAINAGE AREA =     .62 SQ.MI.
     8.00 CFS       .00     .01     .01     .02     .03     .04     .05     .08
     8.00 ELEV   693.00  693.00  693.00  693.00  693.00  693.01  693.01  693.01
    16.00 CFS       .11     .14     .18     .22     .26     .31     .36     .42
    16.00 ELEV   693.02  693.02  693.02  693.03  693.04  693.04  693.05  693.06
    24.00 CFS       .48     .54     .60     .67     .74     .82     .89     .97
    24.00 ELEV   693.07  693.08  693.09  693.10  693.11  693.12  693.13  693.14
    32.00 CFS      1.06    1.14    1.23    1.32    1.41    1.52    1.64    1.77
    32.00 ELEV   693.15  693.16  693.17  693.19  693.20  693.21  693.23  693.25
    40.00 CFS      1.89    2.00    2.10    2.21    2.34    2.48    2.63    2.80
    40.00 ELEV   693.27  693.28  693.30  693.31  693.33  693.35  693.37  693.40
    48.00 CFS      3.01    3.24    3.47    3.71    3.97    4.24    4.51    4.84
    48.00 ELEV   693.43  693.46  693.49  693.53  693.56  693.60  693.64  693.69
    56.00 CFS      5.22    5.61    6.11    6.74    7.31    7.82    8.36    8.91
    56.00 ELEV   693.74  693.79  693.87  693.95  694.05  694.14  694.24  694.33
    64.00 CFS      9.47   10.00   10.48   10.93   11.38   11.81   12.24   12.62
    64.00 ELEV   694.44  694.53  694.62  694.70  694.78  694.86  694.94  695.02
    72.00 CFS     12.87   13.04   13.13   13.20   13.26   13.30   13.32   13.32
    72.00 ELEV   695.09  695.14  695.16  695.18  695.20  695.21  695.22  695.22
    80.00 CFS     13.30   13.27   13.23   13.17
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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROPERTY NORTH OF THE EAST-WEST TOLLWAY (JRB 11/1/95 FILE: 8932.04TEST
12:30:24                    PASS   3   JOB NO.   1                       PAGE  14

    80.00 ELEV   695.21  695.20  695.19  695.17

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  .91 WATERSHED INCHES;     365 CFS-HRS;      30.2 ACRE-FEET.

 --- STRUCTURE 39, ALTERNATE  0, STORM 13, HYDROGRAPH ADDED TO READHD FILE ---


EXECUTIVE CONTROL  ENDCMP    COMPUTATIONS COMPLETED FOR PASS   3


EXECUTIVE CONTROL  COMPUT    FROM XSECTION  91  TO STRUCTURE 39          120-HR
    STARTING TIME =   .00       RAIN DEPTH =  3.93       RAIN DURATION =120.00
    ANT. RUNOFF COND. = 2       MAIN TIME INCREMENT =  1.000 HOURS
    ALTERNATE NO. = 0           STORM NO. =14            RAIN TABLE NO. = 4


OPERATION RUNOFF    XSECTION  91

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
      106.50                         3.1                         (RUNOFF)
      118.29                         2.3                         (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                 1.61 WATERSHED INCHES;      96 CFS-HRS;       7.9 ACRE-FEET.


OPERATION RUNOFF    XSECTION  92

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
      107.50                         4.9                         (RUNOFF)
      119.50                         3.9                         (RUNOFF)
      102.00                         5.0                         (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                 1.98 WATERSHED INCHES;     165 CFS-HRS;      13.7 ACRE-FEET.


OPERATION ADDHYD    XSECTION  93

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
      106.50                         8.0                         (NULL)
      119.50                         6.4                         (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                 1.83 WATERSHED INCHES;     261 CFS-HRS;      21.6 ACRE-FEET.
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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROPERTY NORTH OF THE EAST-WEST TOLLWAY (JRB 11/1/95 FILE: 8932.04TEST
12:30:24                    PASS   4   JOB NO.   1                       PAGE  15


OPERATION RUNOFF    XSECTION  94

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  1.83 WATERSHED INCHES;      75 CFS-HRS;      21.6 ACRE-FEET.


OPERATION RESVOR    STRUCTURE 11

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                   .99 WATERSHED INCHES;      13 CFS-HRS;       1.1 ACRE-FEET.


OPERATION RUNOFF    XSECTION  96

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  1.76 WATERSHED INCHES;     127 CFS-HRS;      22.7 ACRE-FEET.


OPERATION ADDHYD    XSECTION  97

    PEAK TIME(HRS)            PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
      106.12                          9.0                        (NULL)
      118.13                          6.5                        (NULL)
      104.00                          9.0                        (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  1.82 WATERSHED INCHES;     294 CFS-HRS;      24.3 ACRE-FEET.


OPERATION RESVOR    STRUCTURE  6

                   HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM =14
     HRS      MAIN TIME INCREMENT = 1.000 hr,      DRAINAGE AREA =    .28 SQ.MI.
     4.00 CFS       .00     .01     .01     .02     .04     .05     .05     .05
     4.00 ELEV   707.00  707.00  707.00  707.00  707.00  707.01  707.01  707.01
    12.00 CFS       .06     .06     .07     .08     .08     .08     .08     .08
    12.00 ELEV   707.01  707.01  707.01  707.01  707.01  707.01  707.01  707.01
    20.00 CFS       .08     .08     .08     .08     .08     .10     .12     .14
    20.00 ELEV   707.01  707.01  707.01  707.01  707.01  707.01  707.01  707.02
    28.00 CFS       .15     .15     .15     .18     .22     .25     .27     .27
    28.00 ELEV   707.02  707.02  707.02  707.02  707.03  707.03  707.03  707.03
    36.00 CFS       .28     .32     .38     .42     .44     .45     .46     .50
    36.00 ELEV   707.03  707.04  707.04  707.05  707.05  707.05  707.05  707.06
    44.00 CFS       .58     .63     .65     .67     .67     .71     .78     .82
    44.00 ELEV   707.07  707.07  707.08  707.08  707.08  707.08  707.09  707.10
    52.00 CFS       .85     .86     .87     .90     .96    1.00    1.02    1.03
    52.00 ELEV   707.10  707.10  707.10  707.11  707.11  707.12  707.12  707.12
    60.00 CFS      1.05    1.17    1.37    1.50    1.57    1.60    1.62    1.58
    60.00 ELEV   707.12  707.14  707.16  707.18  707.19  707.19  707.19  707.19
```



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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROPERTY NORTH OF THE EAST-WEST TOLLWAY (JRB 11/1/95 FILE: 8932.04TEST
12:30:24                    PASS   4   JOB NO.   1                       PAGE  16

    68.00 CFS      1.51    1.46    1.43    1.42    1.41    1.54    1.76    1.91
    68.00 ELEV   707.18  707.17  707.17  707.17  707.17  707.18  707.21  707.23
    76.00 CFS      1.98    2.02    2.06    2.35    2.82    3.13    3.29    3.38
    76.00 ELEV   707.24  707.24  707.24  707.28  707.34  707.37  707.39  707.40
    84.00 CFS      3.43    3.52    3.66    3.76    3.80    3.83    3.85    4.21
    84.00 ELEV   707.41  707.42  707.44  707.45  707.45  707.46  707.46  707.50
    92.00 CFS      4.81    5.20    5.41    5.52    5.60    6.50    8.01    9.11
    92.00 ELEV   707.57  707.62  707.64  707.66  707.67  707.77  707.95  708.06
   100.00 CFS      9.68    9.92   10.03   10.08   10.10   10.12   10.13   10.14
   100.00 ELEV   708.11  708.13  708.14  708.14  708.15  708.15  708.15  708.15
   108.00 CFS     10.11    9.40    8.28    7.73    7.43    7.27    7.19    7.18
   108.00 ELEV   708.15  708.09  707.99  707.92  707.88  707.87  707.86  707.86
   116.00 CFS      7.24    7.27    7.29    7.31    7.31    5.90    3.43    1.82
   116.00 ELEV   707.86  707.87  707.87  707.87  707.87  707.70  707.41  707.22
   124.00 CFS       .95     .50     .26     .14     .07     .04     .02     .01
   124.00 ELEV   707.11  707.06  707.03  707.02  707.01  707.00  707.00  707.00

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  1.90 WATERSHED INCHES;     339 CFS-HRS;      28.0 ACRE-FEET.

    DURATION(HRS)   8     16     24     32     40     48     56     64
    FLOW(CFS)      10      7      6      4      3      2      1      1

    DURATION(HRS)  72     80     82
    FLOW(CFS)       1      1      0

 --- STRUCTURE  6, ALTERNATE  0, STORM 14, HYDROGRAPH ADDED TO READHD FILE ---


OPERATION RUNOFF    XSECTION  99

    PEAK TIME(HRS)            PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
      100.60                         7.1                        (RUNOFF)
      105.00                         6.8 *                      (RUNOFF)
      118.03                         4.7                        (RUNOFF)
                                        * FIRST POINT OF FLAT PEAK

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  2.60 WATERSHED INCHES;     256 CFS-HRS;      21.2 ACRE-FEET.


OPERATION ADDHYD    XSECTION  90

    PEAK TIME(HRS)            PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
       65.55                         3.2                        (NULL)
      101.81                        17.2                        (NULL)
      106.51                        17.0                        (NULL)
      119.50                        12.8                        (NULL)
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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROPERTY NORTH OF THE EAST-WEST TOLLWAY (JRB 11/1/95 FILE: 8932.04TEST
12:30:24                     PASS   4   JOB NO.   1                       PAGE  17


    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  2.15 WATERSHED INCHES;     595 CFS-HRS;      49.2 ACRE-FEET.


OPERATION RESVOR    STRUCTURE  7

                    HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM =14
     HRS      MAIN TIME INCREMENT = 1.000 hr,      DRAINAGE AREA =    .54 SQ.MI.
     9.00 CFS       .00     .01     .01     .01     .01     .01     .02     .02
     9.00 ELEV   700.00  700.00  700.00  700.00  700.00  700.00  700.00  700.00
    17.00 CFS       .02     .03     .03     .04     .05     .06     .07     .07
    17.00 ELEV   700.01  700.01  700.01  700.01  700.01  700.01  700.02  700.02
    25.00 CFS       .09     .12     .14     .17     .19     .21     .24     .28
    25.00 ELEV   700.02  700.03  700.04  700.04  700.05  700.05  700.06  700.07
    33.00 CFS       .32     .35     .39     .42     .46     .51     .55     .60
    33.00 ELEV   700.08  700.09  700.10  700.11  700.12  700.13  700.14  700.15
    41.00 CFS       .64     .68     .73     .78     .83     .88     .93     .98
    41.00 ELEV   700.16  700.17  700.18  700.19  700.21  700.22  700.23  700.25
    49.00 CFS      1.03    1.09    1.14    1.20    1.25    1.30    1.35    1.41
    49.00 ELEV   700.26  700.27  700.29  700.30  700.31  700.33  700.34  700.35
    57.00 CFS      1.47    1.52    1.58    1.63    1.70    1.79    1.88    1.97
    57.00 ELEV   700.37  700.38  700.39  700.41  700.42  700.45  700.47  700.49
    65.00 CFS      2.06    2.15    2.22    2.28    2.33    2.38    2.43    2.48
    65.00 ELEV   700.52  700.54  700.56  700.57  700.58  700.60  700.61  700.62
    73.00 CFS      2.54    2.63    2.71    2.80    2.89    2.98    3.11    3.27
    73.00 ELEV   700.64  700.66  700.68  700.70  700.72  700.74  700.78  700.82
    81.00 CFS      3.45    3.63    3.80    3.97    4.19    4.41    4.62    4.83
    81.00 ELEV   700.86  700.91  700.95  700.99  701.02  701.05  701.08  701.10
    89.00 CFS      5.03    5.23    5.48    5.78    6.09    6.40    6.70    7.01
    89.00 ELEV   701.13  701.15  701.18  701.22  701.26  701.30  701.34  701.38
    97.00 CFS      7.44    8.02    8.64    9.27    9.89   10.49   11.05   11.57
    97.00 ELEV   701.43  701.50  701.58  701.66  701.74  701.81  701.88  701.95
   105.00 CFS     12.05   12.39   12.72   13.04   13.26   13.39   13.48   13.56
   105.00 ELEV   702.01  702.07  702.12  702.17  702.21  702.23  702.25  702.26
   113.00 CFS     13.62   13.68   13.74   13.79   13.85   13.91   13.96   14.02
   113.00 ELEV   702.27  702.28  702.29  702.30  702.31  702.32  702.33  702.34
   121.00 CFS     13.90   13.58   13.20   12.80   12.38   11.96   11.39   10.85
   121.00 ELEV   702.32  702.26  702.20  702.13  702.06  701.99  701.92  701.86
   129.00 CFS     10.34    9.84    9.37
   129.00 ELEV   701.79  701.73  701.67

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  1.64 WATERSHED INCHES;     573 CFS-HRS;      47.3 ACRE-FEET.

    DURATION(HRS)   3      6      9     12     15     18     21     24
    FLOW(CFS)      14     14     14     13     13     12     12     11

    DURATION(HRS)  27     30
    FLOW(CFS)      10      9 TRUNCATED
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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROPERTY NORTH OF THE EAST-WEST TOLLWAY (JRB 11/1/95 FILE: 8932.04TEST
12:30:24                     PASS   4   JOB NO.   1                       PAGE  18


 --- STRUCTURE  7, ALTERNATE  0, STORM 14, HYDROGRAPH ADDED TO READHD FILE ---


OPERATION RUNOFF    XSECTION  49

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  1.64 WATERSHED INCHES;     115 CFS-HRS;      47.3 ACRE-FEET.


OPERATION ADDHYD    XSECTION  50

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
      119.72                         14.1                         (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  1.64 WATERSHED INCHES;     577 CFS-HRS;      47.7 ACRE-FEET.


OPERATION RESVOR    STRUCTURE 39

                    HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM =14
     HRS      MAIN TIME INCREMENT = 1.000 hr,      DRAINAGE AREA =    .62 SQ.MI.
    13.00 CFS       .00     .01     .02     .02     .03     .03     .04     .05
    13.00 ELEV   693.00  693.00  693.00  693.00  693.00  693.00  693.01  693.01
    21.00 CFS       .06     .07     .08     .09     .11     .13     .16     .18
    21.00 ELEV   693.01  693.01  693.01  693.01  693.02  693.02  693.02  693.03
    29.00 CFS       .21     .23     .26     .30     .33     .37     .40     .44
    29.00 ELEV   693.03  693.03  693.04  693.04  693.05  693.05  693.06  693.06
    37.00 CFS       .48     .52     .56     .60     .65     .69     .73     .78
    37.00 ELEV   693.07  693.07  693.08  693.09  693.09  693.10  693.10  693.11
    45.00 CFS       .83     .88     .93     .98    1.03    1.09    1.14    1.19
    45.00 ELEV   693.12  693.12  693.13  693.14  693.15  693.15  693.16  693.17
    53.00 CFS      1.25    1.30    1.36    1.41    1.47    1.53    1.59    1.64
    53.00 ELEV   693.18  693.18  693.19  693.20  693.21  693.22  693.22  693.23
    61.00 CFS      1.71    1.79    1.88    1.96    2.04    2.12    2.20    2.27
    61.00 ELEV   693.24  693.25  693.27  693.28  693.29  693.30  693.31  693.32
    69.00 CFS      2.33    2.40    2.46    2.52    2.59    2.68    2.76    2.85
    69.00 ELEV   693.33  693.34  693.35  693.36  693.37  693.38  693.39  693.40
    77.00 CFS      2.93    3.02    3.13    3.27    3.41    3.56    3.70    3.85
    77.00 ELEV   693.42  693.43  693.44  693.46  693.48  693.50  693.52  693.55
    85.00 CFS      4.01    4.17    4.34    4.51    4.68    4.86    5.07    5.31
    85.00 ELEV   693.57  693.59  693.61  693.64  693.66  693.69  693.72  693.75
    93.00 CFS      5.55    5.80    6.05    6.31    6.65    7.06    7.38    7.71
    93.00 ELEV   693.79  693.82  693.86  693.89  693.94  694.00  694.06  694.12
   101.00 CFS      8.06    8.43    8.80    9.18    9.56    9.95   10.34   10.71
   101.00 ELEV   694.18  694.25  694.32  694.38  694.45  694.52  694.59  694.66
   109.00 CFS     11.05   11.34   11.62   11.89   12.15   12.39   12.60   12.74
   109.00 ELEV   694.72  694.78  694.83  694.88  694.92  694.97  695.01  695.05
   117.00 CFS     12.87   12.99   13.12   13.24   13.31   13.33   13.33   13.32
   117.00 ELEV   695.09  695.12  695.16  695.19  695.22  695.22  695.22  695.22
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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROPERTY NORTH OF THE EAST-WEST TOLLWAY (JRB 11/1/95 FILE: 8932.04TEST
12:30:24                    PASS   4   JOB NO.   1                      PAGE  19

   125.00 CFS     13.29   13.25   13.20   13.12   13.03   12.92   12.80
   125.00 ELEV   695.21  695.20  695.18  695.16  695.13  695.10  695.07

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  1.36 WATERSHED INCHES;     543 CFS-HRS;      44.8 ACRE-FEET.

    DURATION(HRS)   2      4      6      8     10     12     14     16
    FLOW(CFS)      13     13     13     13     13     13     13     13

    DURATION(HRS)  17
    FLOW(CFS)      13 TRUNCATED

 --- STRUCTURE 39, ALTERNATE  0, STORM 14, HYDROGRAPH ADDED TO READHD FILE ---


EXECUTIVE CONTROL  ENDCMP    COMPUTATIONS COMPLETED FOR PASS   4


EXECUTIVE CONTROL  COMPUT    FROM XSECTION  91  TO STRUCTURE 39          240-HR
    STARTING TIME =   .00       RAIN DEPTH =  4.95       RAIN DURATION =240.00
    ANT. RUNOFF COND. = 2       MAIN TIME INCREMENT =  1.000 HOURS
    ALTERNATE NO. = 0           STORM NO. =15            RAIN TABLE NO. = 4


OPERATION RUNOFF    XSECTION  91

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
      214.50                          2.2                       (RUNOFF)
      237.98                          1.6                       (RUNOFF)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  2.40 WATERSHED INCHES;     143 CFS-HRS;      11.8 ACRE-FEET.


OPERATION RUNOFF    XSECTION  92

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
      213.00                          3.4 *                     (RUNOFF)
      238.04                          2.4                       (RUNOFF)
      196.00                          3.4                       (RUNOFF)
                                        * FIRST POINT OF FLAT PEAK

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  2.84 WATERSHED INCHES;     237 CFS-HRS;      19.6 ACRE-FEET.
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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROPERTY NORTH OF THE EAST-WEST TOLLWAY (JRB 11/1/95 FILE: 8932.04TEST
12:30:24                    PASS   5   JOB NO.   1                      PAGE  20


OPERATION ADDHYD    XSECTION  93

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
      130.00                          1.0 *                     (NULL)
      213.00                          5.5 *                     (NULL)
      238.02                          3.9                       (NULL)
      204.00                          5.6                       (NULL)
                                        * FIRST POINT OF FLAT PEAK

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  2.66 WATERSHED INCHES;     380 CFS-HRS;      31.4 ACRE-FEET.


OPERATION RUNOFF    XSECTION  94

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  2.66 WATERSHED INCHES;     171 CFS-HRS;      31.4 ACRE-FEET.


OPERATION RESVOR    STRUCTURE 11

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  1.61 WATERSHED INCHES;      21 CFS-HRS;       1.7 ACRE-FEET.


OPERATION RUNOFF    XSECTION  96

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  2.57 WATERSHED INCHES;     231 CFS-HRS;      33.1 ACRE-FEET.


OPERATION ADDHYD    XSECTION  97

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
      130.00                          1.1 *                     (NULL)
      214.05                          6.2                       (NULL)
      238.10                          4.2                       (NULL)
      196.00                          6.2                       (NULL)
                                        * FIRST POINT OF FLAT PEAK

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  2.63 WATERSHED INCHES;     425 CFS-HRS;      35.1 ACRE-FEET.


OPERATION RESVOR    STRUCTURE  6
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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROPERTY NORTH OF THE EAST-WEST TOLLWAY (JRB 11/1/95 FILE: 8932.04TEST
12:30:24                    PASS   5   JOB NO.   1                      PAGE  21


                HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM =15
     HRS      MAIN TIME INCREMENT = 1.000 hr,      DRAINAGE AREA =    .28 SQ.MI.
    3.00 CFS       .00     .01     .01     .01     .01     .01     .01     .01
    3.00 ELEV   707.00  707.00  707.00  707.00  707.00  707.00  707.00  707.00
   11.00 CFS       .01     .01     .02     .03     .03     .04     .04     .04
   11.00 ELEV   707.00  707.00  707.00  707.00  707.00  707.00  707.00  707.00
   19.00 CFS       .04     .04     .04     .04     .04     .04     .05     .05
   19.00 ELEV   707.00  707.00  707.00  707.00  707.00  707.00  707.01  707.01
   27.00 CFS       .06     .06     .06     .06     .06     .06     .06     .06
   27.00 ELEV   707.01  707.01  707.01  707.01  707.01  707.01  707.01  707.01
   35.00 CFS       .06     .06     .06     .06     .06     .06     .06     .06
   35.00 ELEV   707.01  707.01  707.01  707.01  707.01  707.01  707.01  707.01
   43.00 CFS       .06     .06     .06     .06     .06     .07     .09     .13
   43.00 ELEV   707.01  707.01  707.01  707.01  707.01  707.01  707.01  707.02
   51.00 CFS       .15     .16     .17     .17     .17     .18     .18     .18
   51.00 ELEV   707.02  707.02  707.02  707.02  707.02  707.02  707.02  707.02
   59.00 CFS       .18     .18     .20     .25     .29     .31     .32     .32
   59.00 ELEV   707.02  707.02  707.02  707.03  707.03  707.04  707.04  707.04
   67.00 CFS       .32     .33     .33     .33     .33     .33     .36     .41
   67.00 ELEV   707.04  707.04  707.04  707.04  707.04  707.04  707.04  707.05
   75.00 CFS       .45     .47     .48     .49     .49     .49     .49     .49
   75.00 ELEV   707.05  707.06  707.06  707.06  707.06  707.06  707.06  707.06
   83.00 CFS       .49     .49     .52     .57     .60     .62     .62     .63
   83.00 ELEV   707.06  707.06  707.06  707.07  707.07  707.07  707.07  707.07
   91.00 CFS       .63     .63     .63     .63     .63     .63     .66     .70
   91.00 ELEV   707.08  707.08  707.08  707.08  707.08  707.08  707.08  707.08
   99.00 CFS       .73     .74     .75     .76     .76     .76     .76     .76
   99.00 ELEV   707.09  707.09  707.09  707.09  707.09  707.09  707.09  707.09
  107.00 CFS       .76     .76     .78     .82     .85     .86     .87     .87
  107.00 ELEV   707.09  707.09  707.09  707.10  707.10  707.10  707.10  707.10
  115.00 CFS       .88     .88     .88     .88     .88     .88     .97    1.12
  115.00 ELEV   707.10  707.10  707.10  707.10  707.10  707.10  707.12  707.13
  123.00 CFS      1.21    1.27    1.30    1.31    1.32    1.32    1.32    1.33
  123.00 ELEV   707.14  707.15  707.15  707.16  707.16  707.16  707.16  707.16
  131.00 CFS      1.33    1.33    1.28    1.20    1.15    1.13    1.11    1.11
  131.00 ELEV   707.16  707.16  707.15  707.14  707.14  707.13  707.13  707.13
  139.00 CFS      1.10    1.10    1.10    1.10    1.10    1.10    1.19    1.35
  139.00 ELEV   707.13  707.13  707.13  707.13  707.13  707.13  707.14  707.16
  147.00 CFS      1.46    1.52    1.55    1.57    1.57    1.58    1.58    1.58
  147.00 ELEV   707.17  707.18  707.18  707.19  707.19  707.19  707.19  707.19
  155.00 CFS      1.58    1.59    1.79    2.12    2.34    2.46    2.52    2.56
  155.00 ELEV   707.19  707.19  707.21  707.25  707.28  707.29  707.30  707.30
  163.00 CFS      2.57    2.58    2.59    2.59    2.59    2.59    2.63    2.71
  163.00 ELEV   707.31  707.31  707.31  707.31  707.31  707.31  707.31  707.32
  171.00 CFS      2.76    2.78    2.80    2.80    2.81    2.81    2.81    2.81
  171.00 ELEV   707.33  707.33  707.33  707.33  707.33  707.33  707.33  707.33
  179.00 CFS      2.81    2.82    3.05    3.45    3.72    3.87    3.94    3.98
  179.00 ELEV   707.33  707.34  707.36  707.41  707.44  707.46  707.47  707.47
  187.00 CFS      4.00    4.01    4.02    4.02    4.02    4.04    4.62    5.62
  187.00 ELEV   707.48  707.48  707.48  707.48  707.48  707.48  707.55  707.67
```



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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROPERTY NORTH OF THE EAST-WEST TOLLWAY (JRB 11/1/95 FILE: 8932.04TEST
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   195.00 CFS      6.30    6.66    6.85    6.95    7.00    7.03    7.05    7.05
   195.00 ELEV   707.75  707.79  707.82  707.83  707.83  707.84  707.84  707.84
   203.00 CFS      7.06    7.06    7.04    7.00    6.98    6.96    6.96    6.95
   203.00 ELEV   707.84  707.84  707.84  707.83  707.83  707.83  707.83  707.83
   211.00 CFS      6.95    6.95    6.95    6.95    6.95    6.94    6.53    5.82
   211.00 ELEV   707.83  707.83  707.83  707.83  707.83  707.83  707.78  707.69
   219.00 CFS      5.35    5.09    4.96    4.89    4.85    4.83    4.82    4.81
   219.00 ELEV   707.64  707.61  707.59  707.58  707.58  707.57  707.57  707.57
   227.00 CFS      4.81    4.81    4.83    4.87    4.85    4.80    4.77    4.76
   227.00 ELEV   707.57  707.57  707.58  707.58  707.58  707.57  707.57  707.57
   235.00 CFS      4.75    4.75    4.74    4.74    4.74    4.61    3.66    2.17
   235.00 ELEV   707.57  707.57  707.56  707.56  707.56  707.55  707.44  707.26
   243.00 CFS      1.16     .61     .32     .17     .09     .05     .02     .01
   243.00 ELEV   707.14  707.07  707.04  707.02  707.01  707.01  707.00  707.00
   251.00 CFS      .01     .00
   251.00 ELEV   707.00  707.00

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  2.72 WATERSHED INCHES;     485 CFS-HRS;      40.1 ACRE-FEET.

    DURATION(HRS)  24     48     72     96     120    144    160
    FLOW(CFS)       6      4      3      1      1      1      0

 --- STRUCTURE  6, ALTERNATE  0, STORM 15, HYDROGRAPH ADDED TO READHD FILE ---


OPERATION RUNOFF    XSECTION  99

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
      130.00                          1.1 *                      (RUNOFF)
      214.50                          4.5                        (RUNOFF)
      238.50                          3.5                        (RUNOFF)
      202.00                          4.7                        (RUNOFF)
                                          * FIRST POINT OF FLAT PEAK

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  3.53 WATERSHED INCHES;     348 CFS-HRS;      28.7 ACRE-FEET.


OPERATION ADDHYD    XSECTION  90

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
      130.92                          2.5                        (NULL)
      203.50                         11.8                        (NULL)
      230.18                          7.9                        (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  3.01 WATERSHED INCHES;     833 CFS-HRS;      68.8 ACRE-FEET.
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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROPERTY NORTH OF THE EAST-WEST TOLLWAY (JRB 11/1/95 FILE: 8932.04TEST
12:30:24                     PASS   5   JOB NO.   1                      PAGE  23


OPERATION RESVOR    STRUCTURE  7

                    HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM =15
     HRS      MAIN TIME INCREMENT = 1.000 hr,      DRAINAGE AREA =    .54 SQ.MI.
   15.00 CFS       .00     .01     .01     .01     .01     .01     .01     .01
   15.00 ELEV   700.00  700.00  700.00  700.00  700.00  700.00  700.00  700.00
   23.00 CFS       .01     .01     .02     .02     .03     .03     .04     .04
   23.00 ELEV   700.00  700.00  700.00  700.01  700.01  700.01  700.01  700.01
   31.00 CFS       .05     .05     .06     .06     .07     .07     .08     .09
   31.00 ELEV   700.01  700.01  700.01  700.02  700.02  700.02  700.02  700.02
   39.00 CFS       .10     .11     .11     .12     .13     .14     .15     .15
   39.00 ELEV   700.02  700.03  700.03  700.03  700.03  700.03  700.04  700.04
   47.00 CFS       .16     .17     .18     .20     .22     .25     .27     .29
   47.00 ELEV   700.04  700.04  700.05  700.05  700.06  700.06  700.07  700.07
   55.00 CFS       .31     .33     .35     .36     .38     .40     .42     .44
   55.00 ELEV   700.08  700.08  700.09  700.09  700.09  700.10  700.10  700.11
   63.00 CFS       .47     .50     .52     .55     .57     .59     .62     .64
   63.00 ELEV   700.12  700.12  700.13  700.14  700.14  700.15  700.15  700.16
   71.00 CFS       .66     .68     .70     .73     .76     .79     .82     .84
   71.00 ELEV   700.16  700.17  700.18  700.18  700.19  700.20  700.20  700.21
   79.00 CFS       .87     .89     .92     .94     .96     .99    1.01    1.04
   79.00 ELEV   700.22  700.22  700.23  700.24  700.24  700.25  700.25  700.26
   87.00 CFS      1.07    1.09    1.12    1.15    1.17    1.20    1.22    1.24
   87.00 ELEV   700.27  700.27  700.28  700.29  700.29  700.30  700.30  700.31
   95.00 CFS      1.26    1.29    1.31    1.33    1.36    1.39    1.41    1.44
   95.00 ELEV   700.32  700.32  700.33  700.33  700.34  700.35  700.35  700.36
  103.00 CFS      1.46    1.48    1.50    1.53    1.55    1.57    1.59    1.61
  103.00 ELEV   700.36  700.37  700.38  700.38  700.39  700.39  700.40  700.40
  111.00 CFS      1.63    1.66    1.68    1.70    1.73    1.75    1.77    1.79
  111.00 ELEV   700.41  700.41  700.42  700.43  700.43  700.44  700.44  700.45
  119.00 CFS      1.80    1.82    1.86    1.90    1.95    2.00    2.04    2.09
  119.00 ELEV   700.45  700.46  700.46  700.48  700.49  700.50  700.51  700.52
  127.00 CFS      2.14    2.18    2.23    2.27    2.31    2.34    2.37    2.39
  127.00 ELEV   700.53  700.55  700.56  700.57  700.58  700.59  700.59  700.60
  135.00 CFS      2.40    2.41    2.43    2.43    2.44    2.45    2.46    2.47
  135.00 ELEV   700.60  700.60  700.61  700.61  700.61  700.61  700.62  700.62
  143.00 CFS      2.48    2.49    2.51    2.54    2.58    2.62    2.66    2.71
  143.00 ELEV   700.62  700.62  700.63  700.64  700.65  700.66  700.67  700.68
  151.00 CFS      2.74    2.78    2.82    2.86    2.89    2.93    2.99    3.08
  151.00 ELEV   700.69  700.70  700.70  700.71  700.72  700.73  700.75  700.77
  159.00 CFS      3.17    3.27    3.37    3.47    3.57    3.66    3.75    3.83
  159.00 ELEV   700.79  700.82  700.84  700.87  700.89  700.91  700.94  700.96
  167.00 CFS      3.91    3.99    4.09    4.19    4.29    4.39    4.48    4.57
  167.00 ELEV   700.98  701.00  701.01  701.02  701.04  701.05  701.06  701.07
  175.00 CFS      4.66    4.74    4.82    4.89    4.96    5.03    5.14    5.28
  175.00 ELEV   701.08  701.09  701.10  701.11  701.12  701.13  701.14  701.16
  183.00 CFS      5.44    5.59    5.75    5.89    6.04    6.17    6.31    6.43
  183.00 ELEV   701.18  701.20  701.22  701.24  701.25  701.27  701.29  701.30
  191.00 CFS      6.55    6.68    6.89    7.20    7.53    7.88    8.22    8.55
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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROPERTY NORTH OF THE EAST-WEST TOLLWAY (JRB 11/1/95 FILE: 8932.04TEST
12:30:24                     PASS   5   JOB NO.   1                      PAGE  24

  191.00 ELEV   701.32  701.33  701.36  701.40  701.44  701.48  701.53  701.57
  199.00 CFS      8.87    9.17    9.47    9.74   10.01   10.26   10.49   10.70
  199.00 ELEV   701.61  701.65  701.68  701.72  701.75  701.78  701.81  701.84
  207.00 CFS     10.90   11.08   11.26   11.43   11.59   11.74   11.88   12.02
  207.00 ELEV   701.86  701.89  701.91  701.93  701.95  701.97  701.99  702.00
  215.00 CFS     12.11   12.20   12.23   12.20   12.15   12.10   12.04   11.96
  215.00 ELEV   702.02  702.03  702.04  702.03  702.03  702.02  702.01  702.00
  223.00 CFS     11.88   11.79   11.71   11.64   11.56   11.49   11.43   11.37
  223.00 ELEV   701.98  701.97  701.96  701.95  701.95  701.94  701.93  701.92
  231.00 CFS     11.31   11.26   11.21   11.15   11.10   11.05   11.01   10.96
  231.00 ELEV   701.91  701.91  701.90  701.89  701.89  701.88  701.88  701.87
  239.00 CFS     10.92   10.81   10.54   10.18    9.77    9.35    8.92    8.50
  239.00 ELEV   701.87  701.85  701.82  701.77  701.72  701.67  701.61  701.56
  247.00 CFS      8.10    7.72    7.35    7.00    6.67    6.35    6.04    5.75
  247.00 ELEV   701.51  701.46  701.42  701.38  701.33  701.29  701.26  701.22

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  2.74 WATERSHED INCHES;     957 CFS-HRS;      79.1 ACRE-FEET.

    DURATION(HRS)   6     12     18     24     30     36     42     48
    FLOW(CFS)      12     12     11     11     11     10      9      9

    DURATION(HRS)  54     60     66     71
    FLOW(CFS)       7      7      6      6 TRUNCATED

 --- STRUCTURE  7, ALTERNATE  0, STORM 15, HYDROGRAPH ADDED TO READHD FILE ---


OPERATION RUNOFF    XSECTION  49

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  2.74 WATERSHED INCHES;     216 CFS-HRS;      79.1 ACRE-FEET.


OPERATION ADDHYD    XSECTION  50

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
      216.82                          12.3                        (NULL)

    RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
                  2.74 WATERSHED INCHES;     962 CFS-HRS;      79.5 ACRE-FEET.


OPERATION RESVOR    STRUCTURE 39

                    HYDROGRAPH POINTS FOR   ALTERNATE = 0,   STORM =15
     HRS      MAIN TIME INCREMENT = 1.000 hr,      DRAINAGE AREA =    .62 SQ.MI.
   23.00 CFS       .00     .01     .01     .02     .03     .04     .04     .05
   23.00 ELEV   693.00  693.00  693.00  693.00  693.00  693.01  693.01  693.01
   31.00 CFS       .06     .07     .07     .08     .09     .09     .10     .11
   31.00 ELEV   693.01  693.01  693.01  693.01  693.01  693.01  693.01  693.02
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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROPERTY NORTH OF THE EAST-WEST TOLLWAY (JRB 11/1/95 FILE: 8932.04TEST
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39.00	CFS	.12	.13	.14	.15	.16	.16	.17	.18
39.00	ELEV	693.02	693.02	693.02	693.02	693.02	693.02	693.02	693.03
47.00	CFS	.19	.20	.21	.23	.25	.27	.29	.31
47.00	ELEV	693.03	693.03	693.03	693.03	693.04	693.04	693.04	693.04
55.00	CFS	.34	.36	.38	.40	.42	.44	.46	.48
55.00	ELEV	693.05	693.05	693.05	693.06	693.06	693.06	693.06	693.07
63.00	CFS	.51	.53	.56	.58	.61	.63	.66	.68
63.00	ELEV	693.07	693.08	693.08	693.08	693.09	693.09	693.09	693.10
71.00	CFS	.71	.73	.76	.79	.82	.84	.87	.90
71.00	ELEV	693.10	693.10	693.11	693.11	693.12	693.12	693.12	693.13
79.00	CFS	.93	.96	.98	1.01	1.04	1.06	1.09	1.12
79.00	ELEV	693.13	693.14	693.14	693.14	693.15	693.15	693.15	693.16
87.00	CFS	1.15	1.18	1.21	1.24	1.26	1.29	1.32	1.35
87.00	ELEV	693.16	693.17	693.17	693.17	693.18	693.18	693.19	693.19
95.00	CFS	1.37	1.40	1.43	1.46	1.48	1.51	1.54	1.57
95.00	ELEV	693.19	693.20	693.20	693.21	693.21	693.21	693.22	693.22
103.00	CFS	1.60	1.62	1.65	1.67	1.70	1.73	1.75	1.78
103.00	ELEV	693.23	693.23	693.23	693.24	693.24	693.24	693.25	693.25
111.00	CFS	1.80	1.83	1.86	1.88	1.91	1.93	1.96	1.98
111.00	ELEV	693.26	693.26	693.26	693.27	693.27	693.27	693.28	693.28
119.00	CFS	2.01	2.03	2.06	2.10	2.14	2.18	2.22	2.27
119.00	ELEV	693.28	693.29	693.29	693.30	693.30	693.31	693.31	693.32
127.00	CFS	2.31	2.35	2.39	2.44	2.48	2.52	2.56	2.58
127.00	ELEV	693.33	693.33	693.34	693.35	693.35	693.36	693.36	693.37
135.00	CFS	2.61	2.64	2.66	2.69	2.71	2.73	2.75	2.77
135.00	ELEV	693.37	693.37	693.38	693.38	693.38	693.39	693.39	693.39
143.00	CFS	2.79	2.80	2.83	2.86	2.90	2.93	2.97	3.00
143.00	ELEV	693.39	693.40	693.40	693.41	693.41	693.42	693.42	693.43
151.00	CFS	3.04	3.07	3.11	3.14	3.18	3.22	3.27	3.34
151.00	ELEV	693.43	693.44	693.44	693.45	693.45	693.46	693.46	693.47
159.00	CFS	3.41	3.49	3.57	3.64	3.73	3.81	3.89	3.97
159.00	ELEV	693.48	693.49	693.51	693.52	693.53	693.54	693.55	693.56
167.00	CFS	4.05	4.14	4.22	4.31	4.40	4.48	4.57	4.66
167.00	ELEV	693.57	693.59	693.60	693.61	693.62	693.64	693.65	693.66
175.00	CFS	4.75	4.84	4.93	5.02	5.10	5.19	5.29	5.41
175.00	ELEV	693.67	693.69	693.70	693.71	693.72	693.73	693.75	693.77
183.00	CFS	5.53	5.66	5.79	5.92	6.05	6.18	6.31	6.45
183.00	ELEV	693.78	693.80	693.82	693.84	693.86	693.88	693.89	693.91
191.00	CFS	6.58	6.71	6.88	7.10	7.27	7.45	7.64	7.85
191.00	ELEV	693.93	693.95	693.98	694.01	694.04	694.07	694.11	694.14
199.00	CFS	8.06	8.27	8.49	8.72	8.94	9.17	9.40	9.62
199.00	ELEV	694.18	694.22	694.26	694.30	694.34	694.38	694.42	694.46
207.00	CFS	9.84	10.05	10.27	10.48	10.69	10.90	11.10	11.30
207.00	ELEV	694.50	694.54	694.58	694.62	694.66	694.70	694.73	694.77
215.00	CFS	11.49	11.68	11.83	11.96	12.07	12.17	12.26	12.35
215.00	ELEV	694.80	694.84	694.87	694.89	694.91	694.93	694.94	694.96
223.00	CFS	12.42	12.48	12.54	12.58	12.60	12.62	12.62	12.62
223.00	ELEV	694.97	694.98	694.99	695.00	695.01	695.01	695.01	695.01
231.00	CFS	12.62	12.62	12.62	12.61	12.60	12.59	12.58	12.57


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TR20 ------------------------------------------------------------------------ SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROPERTY NORTH OF THE EAST-WEST TOLLWAY (JRB 11/1/95 FILE: 8932.04TEST
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231.00	ELEV	695.01	695.01	695.01	695.01	695.01	695.01	695.00	695.00
239.00	CFS	12.55	12.52	12.45	12.32	12.18	12.02	11.84	11.65
239.00	ELEV	695.00	694.99	694.98	694.96	694.93	694.90	694.87	694.83
247.00	CFS	11.45	11.23	11.00	10.77	10.53	10.28	10.03	9.78
247.00	ELEV	694.80	694.76	694.72	694.67	694.63	694.59	694.54	694.49

```
 RUNOFF ABOVE BASEFLOW  (BASEFLOW =    .00 CFS)
               2.56 WATERSHED INCHES;    1024 CFS-HRS;      84.6 ACRE-FEET.

 DURATION(HRS)  6     12     18     24     30     36     42     48
 FLOW(CFS)      13     13     12     12     12     11     10     10

 DURATION(HRS)  49
 FLOW(CFS)      10 TRUNCATED

--- STRUCTURE 39, ALTERNATE  0, STORM 15, HYDROGRAPH ADDED TO READHD FILE ---


EXECUTIVE CONTROL  ENDCMP    COMPUTATIONS COMPLETED FOR PASS   5
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TR20 ---------- SCS -
001 CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE VERSION
04/19/** PROPERTY NORTH OF THE EAST-WEST TOLLWAY (JRB 11/1/95 FILE: 8932.04TEST
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SUMMARY TABLE 1

SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.
A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:
F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED HYDROGRAPH

XSECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RUNOFF AMOUNT (IN)	PEAK DISCHARGE ELEVATION (FT)	PEAK DISCHARGE TIME (HR)	PEAK DISCHARGE RATE (CFS)	PEAK DISCHARGE RATE (CSM)
RAINFALL OF 3.04 inches AND 24.00 hr DURATION, BEGINS AT .0 hrs.							
RAINTABLE NUMBER 3, ARC 2							
MAIN TIME INCREMENT 1.000 HOURS							
ALTERNATE 0 STORM 11							
XSECTION 91	RUNOFF	.09	.99	---	15.86	9	100.0
XSECTION 92	RUNOFF	.13	1.28	---	15.87	16	123.1
XSECTION 93	ADDHYD	.22	1.16	---	15.86	24	109.1
XSECTION 94	RUNOFF	.02	.52	---	16.25T	1T	50.0
STRUCTURE 11	RESVOR	.02	.53	738.95	17.00R	1R	50.0
XSECTION 95	ADDHYD	.24	1.11	---	15.89	25	104.2
XSECTION 96	RUNOFF	.01	2.77	---	14.71T	2T	200.0
XSECTION 97	ADDHYD	.25	1.17	---	15.82	26	104.0
XSECTION 10	RUNOFF	.03	1.77	---	14.87	4	133.3
XSECTION 98	ADDHYD	.28	1.22	---	15.65	30	107.1
STRUCTURE 6	RESVOR	.28	1.22	709.39	16.60	27	96.4
XSECTION 99	RUNOFF	.15	1.77	---	14.87	25	166.7
XSECTION 90	ADDHYD	.43	1.42	---	15.52	45	104.7
XSECTION 17	RUNOFF	.11	1.85	---	14.88	19	172.7
XSECTION 13	ADDHYD	.54	1.51	---	15.26	64	118.5
STRUCTURE 7	RESVOR	.54	.82	702.56	24.20T	15T	27.8
XSECTION 49	RUNOFF	.00	.82	---	.00	0	********
XSECTION 50	ADDHYD	.54	.82	---	23.98T	15T	27.8
XSECTION 24	RUNOFF	.01	2.00	---	14.82	3	300.0
XSECTION 17	ADDHYD	.56	.85	---	23.68T	16T	28.6
XSECTION 19	RUNOFF	.06	2.01	---	14.84	11	183.3
XSECTION 15	ADDHYD	.62	.97	---	15.28T	21T	33.9
STRUCTURE 39	RESVOR	.62	.56	694.96	32.00T	12T	19.4

TR20 ---------- SCS -
001 CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE VERSION
04/19/** PROPERTY NORTH OF THE EAST-WEST TOLLWAY (JRB 11/1/95 FILE: 8932.04TEST
12:30:24 SUMMARY, JOB NO. 1 PAGE 28

SUMMARY TABLE 1

SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.
A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:
F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED HYDROGRAPH

XSECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RUNOFF AMOUNT (IN)	PEAK DISCHARGE ELEVATION (FT)	PEAK DISCHARGE TIME (HR)	PEAK DISCHARGE RATE (CFS)	PEAK DISCHARGE RATE (CSM)
RAINFALL OF 3.30 inches AND 48.00 hr DURATION, BEGINS AT .0 hrs.							
RAINTABLE NUMBER 4, ARC 2							
ALTERNATE 0 STORM 12							
XSECTION 91	RUNOFF	.09	1.16	---	42.52	6	66.7
XSECTION 92	RUNOFF	.13	1.47	---	42.51	10	76.9
XSECTION 93	ADDHYD	.22	1.34	---	42.51	16	72.7
XSECTION 94	RUNOFF	.02	.64	---	43.00R	1R	50.0
STRUCTURE 11	RESVOR	.02	.65	738.62	43.00R	1R	50.0
XSECTION 95	ADDHYD	.24	1.29	---	42.53	17	70.8
XSECTION 96	RUNOFF	.01	3.09	---	40.00R	1R	100.0
XSECTION 97	ADDHYD	.25	1.35	---	42.53	18	72.0
XSECTION 10	RUNOFF	.03	2.02	---	39.50	2	66.7
XSECTION 98	ADDHYD	.28	1.41	---	42.53	20	71.4
STRUCTURE 6	RESVOR	.28	1.41	708.91	42.98	19	67.9
XSECTION 99	RUNOFF	.15	2.02	---	39.50	14	93.3
XSECTION 90	ADDHYD	.43	1.63	---	42.62	33	76.7
XSECTION 17	RUNOFF	.11	2.11	---	39.85	11	100.0
XSECTION 13	ADDHYD	.54	1.73	---	42.58	44	81.5
STRUCTURE 7	RESVOR	.54	.81	702.74	48.88T	16T	29.6
XSECTION 49	RUNOFF	.00	.81	---	.00	0	********
XSECTION 50	ADDHYD	.54	.82	---	48.56T	16T	29.6
XSECTION 24	RUNOFF	.01	2.28	---	42.50	1	100.0
XSECTION 17	ADDHYD	.56	.85	---	47.86T	17T	30.4
XSECTION 19	RUNOFF	.06	2.29	---	39.61	6	100.0
XSECTION 15	ADDHYD	.62	1.00	---	47.60T	22T	35.5

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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROPERTY NORTH OF THE EAST-WEST TOLLWAY (JRB 11/1/95 FILE: 8932.04TEST
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SUMMARY TABLE 1

SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.
A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:
F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED HYDROGRAPH

XSECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RUNOFF AMOUNT (IN)	PEAK DISCHARGE ELEVATION (FT)	PEAK DISCHARGE TIME (HR)	PEAK DISCHARGE RATE (CFS)	PEAK DISCHARGE RATE (CSM)
ALTERNATE 0 STORM 12							
STRUCTURE 39	RESVOR	.62	.55	695.12	55.00R	13R	21.0
RAINFALL OF 3.55 inches AND 72.00 hr DURATION, BEGINS AT .0 hrs.							
ALTERNATE 0 STORM 13							
XSECTION 91	RUNOFF	.09	1.34	---	63.53	4	44.4
XSECTION 92	RUNOFF	.13	1.67	---	63.52	7	53.8
XSECTION 93	ADDHYD	.22	1.53	---	63.52	12	54.5
XSECTION 94	RUNOFF	.02	.78	---	64.00R	1R	50.0
STRUCTURE 11	RESVOR	.02	.78	738.29	65.00R	1R	50.0
XSECTION 95	ADDHYD	.24	1.47	---	63.63	12	50.0
XSECTION 96	RUNOFF	.01	3.32	---	60.00R	1R	100.0
XSECTION 97	ADDHYD	.25	1.53	---	63.57	13	52.0
XSECTION 10	RUNOFF	.03	2.23	---	59.00	2	66.7
XSECTION 98	ADDHYD	.28	1.60	---	63.53	15	53.6
STRUCTURE 6	RESVOR	.28	1.60	708.52	63.99	14	50.0
XSECTION 99	RUNOFF	.15	2.23	---	59.00F	10F	66.7
XSECTION 90	ADDHYD	.43	1.82	---	63.55	25	58.1
XSECTION 17	RUNOFF	.11	2.34	---	59.57	8	72.7
XSECTION 13	ADDHYD	.54	1.93	---	63.54	32	59.3
STRUCTURE 7	RESVOR	.54	1.21	702.62	72.46T	16T	29.6
XSECTION 49	RUNOFF	.00	1.21	---	.00	0	********
XSECTION 50	ADDHYD	.54	1.21	---	72.18T	16T	29.6
XSECTION 24	RUNOFF	.01	2.51	---	59.00F	1F	100.0
XSECTION 17	ADDHYD	.56	1.25	---	71.73T	17T	30.4
XSECTION 19	RUNOFF	.06	2.52	---	59.00F	4F	66.7
XSECTION 15	ADDHYD	.62	1.37	---	71.56T	20T	32.3
STRUCTURE 39	RESVOR	.62	.91	695.22	79.00T	13T	21.0


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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
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A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:
F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED HYDROGRAPH

XSECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RUNOFF AMOUNT (IN)	PEAK DISCHARGE ELEVATION (FT)	PEAK DISCHARGE TIME (HR)	PEAK DISCHARGE RATE (CFS)	PEAK DISCHARGE RATE (CSM)
RAINFALL OF 3.93 inches AND 120.00 hr DURATION, BEGINS AT .0 hrs.							
ALTERNATE 0 STORM 14							
XSECTION 91	RUNOFF	.09	1.61	---	106.50T	3T	33.3
XSECTION 92	RUNOFF	.13	1.98	---	107.50	5	38.5
XSECTION 93	ADDHYD	.22	1.83	---	106.50	8	36.4
XSECTION 94	RUNOFF	.02	1.83	---	.00	0	.0
STRUCTURE 11	RESVOR	.02	.99	---	119.50	0	.0
XSECTION 95	ADDHYD	.24	1.76	---	106.12	9	37.5
XSECTION 96	RUNOFF	.01	1.76	---	.00	0	.0
XSECTION 97	ADDHYD	.25	1.82	---	106.12	9	36.0
XSECTION 10	RUNOFF	.03	2.60	---	105.00F	1F	33.3
XSECTION 98	ADDHYD	.28	1.90	---	106.12	10	35.7
STRUCTURE 6	RESVOR	.28	1.90	708.15	106.64	10	35.7
XSECTION 99	RUNOFF	.15	2.60	---	100.60	7	46.7
XSECTION 90	ADDHYD	.43	2.15	---	101.81	17	39.5
XSECTION 17	RUNOFF	.11	2.65	---	106.51	5	45.5
XSECTION 13	ADDHYD	.54	2.25	---	101.68	22	40.7
STRUCTURE 7	RESVOR	.54	1.64	702.34	119.82T	14T	25.9
XSECTION 49	RUNOFF	.00	1.64	---	.00	0	********
XSECTION 50	ADDHYD	.54	1.64	---	119.72T	14T	25.9
XSECTION 24	RUNOFF	.01	2.89	---	99.00R	1R	100.0
XSECTION 17	ADDHYD	.56	1.68	---	119.57T	15T	26.8
XSECTION 19	RUNOFF	.06	2.83	---	100.56	3	50.0
XSECTION 15	ADDHYD	.62	1.79	---	107.73T	17T	27.4
STRUCTURE 39	RESVOR	.62	1.36	695.22	122.66T	13T	21.0

TR20 ---------- SCS -
001 CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE VERSION
04/19/** PROPERTY NORTH OF THE EAST-WEST TOLLWAY (JRB 11/1/95 FILE: 8932.04TEST
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SUMMARY TABLE 1

SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.
A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:
F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED HYDROGRAPH

XSECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RUNOFF AMOUNT (IN)	PEAK DISCHARGE ELEVATION (FT)	TIME (HR)	RATE (CFS)	RATE (CSM)
RAINFALL OF 4.95 inches AND 240.00 hr DURATION, BEGINS AT .0 hrs.							
ALTERNATE 0 STORM 15							
XSECTION 91	RUNOFF	.09	2.40	---	214.50T	2T	22.2
XSECTION 92	RUNOFF	.13	2.84	---	213.00F	3F	23.1
XSECTION 93	ADDHYD	.22	2.66	---	213.00F	6F	27.3
XSECTION 94	RUNOFF	.02	2.66	---	.00	0	.0
STRUCTURE 11	RESVOR	.02	1.61	---	213.00	0	.0
XSECTION 95	ADDHYD	.24	2.57	---	214.05	6	25.0
XSECTION 96	RUNOFF	.01	2.57	---	.00	0	.0
XSECTION 97	ADDHYD	.25	2.63	---	214.05	6	24.0
XSECTION 10	RUNOFF	.03	3.53	---	202.00R	1R	33.3
XSECTION 98	ADDHYD	.28	2.72	---	202.00F	7F	25.0
STRUCTURE 6	RESVOR	.28	2.72	707.84	203.54	7	25.0
XSECTION 99	RUNOFF	.15	3.53	---	202.00	5	33.3
XSECTION 90	ADDHYD	.43	3.01	---	203.50	12	27.9
XSECTION 17	RUNOFF	.11	3.65	---	201.00	4	36.4
XSECTION 13	ADDHYD	.54	3.14	---	203.50	15	27.8
STRUCTURE 7	RESVOR	.54	2.74	702.04	217.05T	12T	22.2
XSECTION 49	RUNOFF	.00	2.74	---	.00	0	********
XSECTION 50	ADDHYD	.54	2.74	---	216.82T	12T	22.2
XSECTION 24	RUNOFF	.01	2.74	---	.00	0	.0
XSECTION 17	ADDHYD	.56	2.76	---	215.84T	13T	23.2
XSECTION 19	RUNOFF	.06	3.86	---	198.00	2	33.3
XSECTION 15	ADDHYD	.62	2.87	---	215.57T	15T	24.2
STRUCTURE 39	RESVOR	.62	2.56	695.01	230.00F	13F	21.0

TR20 ---------- SCS -
001 CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE VERSION
04/19/** PROPERTY NORTH OF THE EAST-WEST TOLLWAY (JRB 11/1/95 FILE: 8932.04TEST
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SUMMARY TABLE 3

STORM DISCHARGES (CFS) AT XSECTIONS AND STRUCTURES FOR ALL ALTERNATES
QUESTION MARK (?) AFTER: OUTFLOW PEAK - RISING TRUNCATED HYDROGRAPH.

XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS..... 11	12	13	14	15
STRUCTURE 39	.62					
ALTERNATE 0		12	13?	13	13	13
STRUCTURE 11	.02					
ALTERNATE 0		1?	1?	1?	0	0
STRUCTURE 7	.54					
ALTERNATE 0		15	16	16	14	12
STRUCTURE 6	.28					
ALTERNATE 0		27	19	14	10	7
XSECTION 10	.03					
ALTERNATE 0		4	2	2	1	1?
XSECTION 13	.54					
ALTERNATE 0		64	44	32	22	15
XSECTION 15	.62					
ALTERNATE 0		21	22	20	17	15
XSECTION 17	.56					
ALTERNATE 0		16	17	17	15	13
XSECTION 19	.06					
ALTERNATE 0		11	6	4	3	2
XSECTION 24	.01					
ALTERNATE 0		3	1	1	1?	0
XSECTION 49	.00					
ALTERNATE 0		0	0	0	0	0
XSECTION 50	.54					
ALTERNATE 0		15	16	16	14	12
XSECTION 90	.43					

ALTERNATE	0		45	33	25	17	12
XSECTION	91	.09					

SUMMARY TABLE 3

STORM DISCHARGES (CFS) AT XSECTIONS AND STRUCTURES FOR ALL ALTERNATES
QUESTION MARK (?) AFTER: OUTFLOW PEAK - RISING TRUNCATED HYDROGRAPH.

XSECTION/ STRUCTURE ID		DRAINAGE AREA (SQ MI)	STORM NUMBERS..... 11	12	13	14	15
XSECTION	91	.09					
ALTERNATE	0		9	6	4	3	2
XSECTION	92	.13					
ALTERNATE	0		16	10	7	5	3
XSECTION	93	.22					
ALTERNATE	0		24	16	12	8	6
XSECTION	94	.02					
ALTERNATE	0		1	1?	1?	0	0
XSECTION	95	.24					
ALTERNATE	0		25	17	12	9	6
XSECTION	96	.01					
ALTERNATE	0		2	1?	1?	0	0
XSECTION	97	.25					
ALTERNATE	0		26	18	13	9	6
XSECTION	98	.28					
ALTERNATE	0		30	20	15	10	7
XSECTION	99	.15					
ALTERNATE	0		25	14	10	7	5

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TR20 ------------------------------------------------------------------- SCS -
001         CANTERA - WARRENVILLE, ILLINOIS - MASTER PLAN W/OFFSITE      VERSION
04/19/**  PROPERTY NORTH OF THE EAST-WEST TOLLWAY (JRB 11/1/95 FILE: 8932.04TEST



END OF  1 JOBS IN THIS RUN









                    SCS  TR-20,  VERSION 2.04TEST
                           001       FILES

     INPUT  = C:\TR20\PR2B.DAT                       , GIVEN DATA FILE
     OUTPUT = C:\TR20\PR2B.OUT                       , DATED 04/19/**,12:30:24

              FILES GENERATED - DATED 04/19/**,12:30:24

    FILE C:\TR20\PR2B.TRD CONTAINS READHD INFORMATION

    FILE C:\TR20\PR2B.TMG CONTAINS MESSAGE + WARNING INFORMATION


           TOTAL NUMBER OF WARNINGS =  97,  MESSAGES =  50

                       JOB ENDED AT 12:30:24
                    *** TR-20 RUN COMPLETED ***
```

Soil Erosion & Sediment Control
(Tab 7)

RIVERVIEW WEST

City of Warrenville
DuPage County, Illinois

Prepared by:

Bollinger, Lach & Associates, Inc.
333 Pierce Road, Suite 200
Itasca, IL 60143
Contact: Kevin Kenniff
p: 630.438.6400
f: 630.438.6444

April 19, 2019

TAB 7 - NARRATIVE

Erosion and Sediment Control plans have been completed for the proposed development and are included in Tab 8 - Maps of this submittal. Please refer to the General Notes and Details Sheets of the Plans for general erosion and sediment control notes, maintenance and inspection notes, responsible parties, soil protection chart and an estimated construction schedule.

The proposed development disturbs over 1 acre of land. As such, a NPDES permit from the Illinois Environmental Protection Agency (IEPA) is required. A Stormwater Pollution Prevention Plan (SWPPP) and a Notice of Intent (NOI) will be submitted to the IEPA prior to land disturbing activities.

SEQUENCE OF CONSTRUCTION ACTIVITIES

- Install silt fence
- Install stabilized construction entrance
- Site clearing
- Construction of pond outlet structures
- Mass grading
- Temporary erosion control measures
- Foundation excavation and construction / Building construction
- Underground utility installation
- Install inlet protection
- Subgrade preparation
- Curb and gutter and roadway construction
- Sidewalk construction
- Fire lane construction
- Fine grading
- Final site stabilization and landscaping
- Removal of temporary erosion control measures
- Final Inspection / Punchlist Items
- Final Site acceptance

EROSION CONTROL MAINTENANCE & MONITORING

1. The contractor shall install the erosion and sediment control devices as shown on the approved erosion and sediment control plan.
2. Erosion and sediment control practices shall be functional prior to hydrologic disturbance of the site.
3. All design criteria, specifications, and installation of erosion and sediment control practices shall be in accordance with the Illinois Urban Manual.
4. A copy of the approved erosion and sediment control plan shall be maintained on the site at all times.
5. Inspections and documentation shall be performed, at a minimum:

a) Upon completion of initial erosion and sediment control measures, prior to any

soil disturbance.

b) Once every seven (7) calendar days and within 24 hours of the end of a storm event with greater than 0.5 inch of rainfall or liquid equivalent precipitation.

6. If stripping, clearing, grading, or landscaping are to be done in phases, the contractor shall plan for appropriate soil erosion and sediment control measures.
7. A stabilized construction entrance shall be installed at any point where traffic will be entering or leaving construction site.
8. Sediment or soil reaching a public right of way, street, alley or parking area shall be removed by scraping or street cleaning as accumulations warrant and transported to a controlled sediment disposal area.
9. Concrete washout facilities shall be shall be installed prior to any on site construction activities involving concrete.
10. Temporary diversions shall be constructed as necessary to direct all runoff from hydrologically disturbed areas to an appropriate sediment trap or basin. Retention/detention facilities shall not be used as temporary sediment basins.
11. Disturbed areas where construction activities have temporarily or permanently ceased shall be stabilized with temporary or permanent measures within 7 days.
12. All flood protection areas and wetlands shall, at a minimum, be protected with a double-row of silt fence.
13. Soil stockpiles shall, at a minimum, be protected with perimeter sediment controls. Stockpiles that are to remain in place for more than three days shall receive soil erosion and sediment control measures. Soil stockpiles shall not be placed in flood protection areas or their buffers.
14. Earthen embankment side slopes shall be stabilized with erosion control blanket.
15. Storm sewers that are or will be functioning during construction shall be protected by inlet filters.
16. The contractor shall either remove or replace any existing drain tiles and incorporate them into the drainage system for the development.
17. If dewatering services are used, adjoining properties and discharge locations shall be protected from erosion and sedimentation. Dewatering systems should be inspected daily during operational periods. The site inspector must be present at the commencement of dewatering activities.
18. Any trench dewatering, which contains sediment shall pass through a sediment settling pond or equally effective sediment control device. Alternatives may include dewatering into a sump pit, filter bag or existing vegetated upslope area. Sediment laden waters shall not be discharge to waterways, flood protection areas or the combined sewer system.
19. All permanent erosion control practices shall be initiated within seven (7) days following the completion of soil disturbing activities.
20. All erosion and sediment control measures shall be maintained and repaired as needed on a year-round basis during construction and any periods of construction shutdown until permanent stabilization is achieved.
21. All temporary erosion and sediment control measures shall be removed within thirty (30) days after permanent site stabilization.
22. The erosion and sediment control measures shown on the plans are the minimum requirements. Additional measures may be required by the engineer, site inspector, or DuPage County at no additional cost to the owner.

23. Soil stockpiles shall not be located in a drainageway, flood plain area or a designated buffer, unless otherwise approved, under specific conditions to be established by the director or administrator.

Maps
(Tab 8)

RIVERVIEW WEST

City of Warrenville
DuPage County, Illinois

Prepared by:

Bollinger, Lach & Associates, Inc.
333 Pierce Road, Suite 200
Itasca, IL 60143
Contact: Kevin Kenniff
p: 630.438.6400
f: 630.438.6444

April 19, 2019

TAB 8 - NARRATIVE

The following plan sheets are included:

1. COVER SHEET
2. GENERAL NOTES
3. GENERAL NOTES
4. EXISTING CONDITIONS
5. PHASING PLAN
6. GRADING PLAN
7. GRADING PLAN
8. GRADING PLAN
9. GRADING PLAN
10. GRADING PLAN
11. UTILITY PLAN
12. UTILITY PLAN
13. UTILITY PLAN
14. UTILITY PLAN
15. UTILITY PLAN
16. UTILITY CALLOUTS
17. UTILITY CALLOUTS
18. UTILITY CALLOUTS
19. EROSION AND SEDIMENT CONTROL PLAN
20. EROSION AND SEDIMENT CONTROL PLAN
21. EROSION AND SEDIMENT CONTROL PLAN
22. EROSION AND SEDIMENT CONTROL PLAN
23. EROSION AND SEDIMENT CONTROL PLAN
24. PLAN AND PROFILE NORTH-SOUTH ROADWAY
25. PLAN AND PROFILE NORTH-SOUTH ROADWAY
26. PLAN AND PROFILE COMMERCIAL DRIVE
27. PLAN AND PROFILE COMMERCIAL DRIVE
28. PLAN AND PROFILE TORCH PARKWAY
29. PLAN AND PROFILE TORCH PARKWAY
30. PLAN AND PROFILE TORCH PARKWAY
31. PAVEMENT MARKING AND SIGNAGE PLAN
32. PAVEMENT MARKING AND SIGNAGE PLAN
33. PAVEMENT MARKING AND SIGNAGE PLAN
34. PAVEMENT MARKING AND SIGNAGE PLAN
35. PAVEMENT MARKING AND SIGNAGE PLAN
36. CONSTRUCTION DETAILS
37. CONSTRUCTION DETAILS
38. CONSTRUCTION DETAILS
39. CONSTRUCTION DETAILS
40. CONSTRUCTION DETAILS
41. CONSTRUCTION DETAILS
42. CONSTRUCTION DETAILS
43. CONSTRUCTION DETAILS

44. CONSTRUCTION DETAILS
45. ADA RAMP GRADING PLAN
46. ADA RAMP GRADING PLAN
47. ADA RAMP GRADING PLAN
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58. ADA RAMP GRADING PLAN
59. ADA RAMP GRADING PLAN
60. ADA RAMP GRADING PLAN
61. ADA RAMP GRADING PLAN
62. DRY UTILITY PLAN
63. SIGHT DISTANCE PLAN
64. SNOW REMOVAL PLAN
65. SWPPP
66. CONSTRUCTION DETAILS
67. CROSS SECTIONS
68. CROSS SECTIONS
69. CROSS SECTIONS
70. VEHICLE TURNING MOVEMENTS
71. VEHICLE TURNING MOVEMENTS

SEQUENCE OF CONSTRUCTION ACTIVITIES

- Install silt fence
- Install stabilized construction entrance
- Site clearing
- Construction of pond outlet structures
- Mass grading
- Temporary erosion control measures
- Underground utility installation
- Install inlet protection
- Final site stabilization
- Removal of temporary erosion control measures
- Final Inspection / Punchlist Items
- Final Site acceptance

Design Firm License No. 184-001129

INDEX OF SHEETS

1. COVER SHEET
2. GENERAL NOTES
3. GENERAL NOTES
4. EXISTING CONDITIONS
5. PHASING PLAN
6. GRADING PLAN
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10. GRADING PLAN
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22. EROSION AND SEDIMENT CONTROL PLAN
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24. PLAN AND PROFILE NORTH-SOUTH ROADWAY
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31. PAVEMENT MARKING AND SIGNAGE PLAN
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61. ADA RAMP GRADING PLAN
62. DRY UTILITY PLAN
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66. CONSTRUCTION DETAILS
67. CROSS SECTIONS
68. CROSS SECTIONS
69. CROSS SECTIONS
70. VEHICLE TURNING MOVEMENTS
71. VEHICLE TURNING MOVEMENTS

811 Know what's below. Call before you dig.
Formerly JULIE 1-800-892-0123

PROPOSED SITE IMPROVEMENT PLANS

FOR

RIVERVIEW WEST

LEGAL DESCRIPTION

LOT 2 IN CANTERA SUB-AREA "C" LOTS C1 AND C2, BEING A RESUBDIVISION OF PART OF THE NORTHEAST 1/4 OF SECTION 2, TOWNSHIP 38 NORTH, RANGE 9, EAST OF THE THIRD PRINCIPAL MERIDIAN, ACCORDING TO THE PLAT OF SAID CANTERA SUB-AREA "C" LOTS C1 AND C2 RECORDED JANUARY 19, 2010 AS DOCUMENT R2010-007747, IN DUPAGE COUNTY, ILLINOIS.

AND

OUTLOT "A" IN AMOCO BUSINESS CENTER FINAL PLAT OF SUBDIVISION CANTERA SUBAREA "C", BEING A SUBDIVISION OF PART OF LOT 2 IN CANTERA SERVICE STATION NUMBER 1, TOGETHER WITH PART OF THE NORTHEAST 1/4 OF SECTION 2, TOWNSHIP 38 NORTH, RANGE 9, EAST OF THE THIRD PRINCIPAL MERIDIAN, ACCORDING TO THE PLAT RECORDED FEBRUARY 7, 1996 AS DOCUMENT R96-020336, IN DUPAGE COUNTY, ILLINOIS.

PROJECT LOCATION



CITY OF WARRENVILLE
DUPAGE COUNTY, ILLINOIS

UTILITY CONTACT LIST

WARRENVILLE PUBLIC WORKS DEPARTMENT
3S346 MIGNIN DR
WARRENVILLE, IL 60555
PH: (630) 393-9050

WARRENVILLE CITY HALL
3S258 MANNING AVE
WARRENVILLE, IL 60555
PH: (630) 393-9427

WARRENVILLE FIRE PROTECTION DISTRICT
FIRE PREVENTION BUREAU
P.O. BOX 51
3S472 BATAVIA ROAD
WARRENVILLE, ILLINOIS 60555
PH: (630) 393-2175

DUPAGE COUNTY
DIVISION OF TRANSPORTATION
421 N COUNTY FARM RD
WHEATON, IL 60187
PH: (630) 407-6900

COMED
321 SWIFT RD,
LOMBARD, IL 60148
PH: (800) 334-7661

AT&T
1000 COMMERCE DR.
OAK BROOK, IL 60523
PH: (630)573-5450

NICOR
90 N FINLEY ROAD
GLEN ELLYN, IL 60137
PH: (888) 642-6748

BENCHMARK

1) RAILROAD SPKE IN SOUTHEAST FACE OF POWER POLE, 7" ABOVE GRADE AT SOUTHWEST CORNER OF WARRENVILLE ROAD AND WINFIELD ROAD
ELEVATION=725.47 (NAVD 88)

2) SQUARE CUT ON THE SOUTHEST CORNER OF DEIHL ROAD BRIDGE OVER DUPAGE RIVER
ELEVATION=700.25 (NAVD 88)

3) DUPAGE COUNTY BENCHMARK WI35004.
BRASS DISK LOCATED 0.2 MILES WEST ALONG WARRENVILLE ROAD FROM THE INTERSECTION OF WARRENVILLE ROAD & WINFIELD ROAD AT THE NORTHWEST END OF THE BRIDGE FOR WARRENVILLE ROAD OVER THE DUPAGE RIVER. STATION IS 31.4 FT NORTH OF THE CENTERLINE OF WARRENVILLE ROAD, 70.7 FT EAST OF POWER POLE 69299, AND 16.0 FT EAST OF THE WEST END OF THE SIDEWALK ON THE NORTH EDGE OF THE BRIDGE. MONUMNET IS FLUSH WITH THE SIDEWALK.
ELEVATION=695.79 (NAVD 88)

Existing Conditions									
Lot 1	Area	Lot 2	Area	Lot 3	Area	Torch Parkway ROW	Area	Outlot A	Area
Total Area	4.40	Total Area	17.71	Total Area	3.37	Total Area	3.05	Total Area	4.62
Pond Area	0.65	Pond Area	6.14	Pond Area	0.60	Pond Area	0.00	Pond Area	1.76
Impervious Area	0.13	Impervious Area	0.03	Impervious Area	0.00	Impervious Area	0.02	Impervious Area	0.00
Pervious Area	3.62	Pervious Area	11.54	Pervious Area	2.77	Pervious Area	3.04	Pervious Area	2.86
Weighted C	0.55	Weighted C	0.64	Weighted C	0.55	Weighted C	0.45	Weighted C	0.66
Proposed Conditions									
Lot 1	Area	Lot 2	Area	Lot 3	Area	Torch Parkway ROW	Area	Outlot A	Area
Total Area	4.40	Total Area	17.71	Total Area	3.37	Total Area	3.05	Total Area	3.83
Pond Area	0.00	Pond Area	5.95	Pond Area	0.00	Pond Area	0.00	Pond Area	2.36
Impervious Area	3.29	Impervious Area	7.87	Impervious Area	2.13	Impervious Area	1.99	Impervious Area	0.09
Pervious Area	1.11	Pervious Area	3.89	Pervious Area	1.24	Pervious Area	1.06	Pervious Area	1.38
Weighted C	0.82	Weighted C	0.86	Weighted C	0.77	Weighted C	0.78	Weighted C	0.80
LOT 1 DISTURBED AREA = 4.40 AC		LOT 2 DISTURBED AREA = 11.76 AC		LOT 3 DISTURBED AREA = 3.37 AC		TORCH PARKWAY ROW DISTURBED AREA = 3.05 AC		OUTLOT A DISTURBED AREA = 1.47 AC	

LEGEND

- PROPOSED FLARED END SECTION
- EXISTING FLARED END SECTION
- PROPOSED MANHOLE
- PROPOSED SANITARY MANHOLE
- EXISTING MANHOLE
- PROPOSED INLET
- EXISTING INLET
- PROPOSED FIRE HYDRANT
- EXISTING FIRE HYDRANT
- PROPOSED VALVE AND VAULT
- EXISTING VALVE AND VAULT
- PROPOSED B-BOX
- PROPOSED CATCH BASIN
- EXISTING CATCH BASIN
- PROPOSED NYLOPLAST DRAIN BASIN
- EXISTING TREE TO BE REMOVED
- EXISTING POWER POLE
- 8"W PROPOSED WATERMAIN
- 8"W EXISTING WATERMAIN
- PROPOSED SANITARY SEWER
- EXISTING SANITARY SEWER
- PROPOSED STORM SEWER
- EXISTING STORM SEWER
- EXISTING TREE LINE
- EXISTING STREET LIGHT
- 632 EXISTING CONTOUR
- 632 PROPOSED CONTOUR
- PROPOSED RIP-RAP
- PROPOSED SILT FENCE
- PROPOSED INLET FILTER
- 100-YEAR OVERLAND FLOW ROUTE
- PROPOSED FENCE
- EXISTING FENCE
- ROLLED SEDIMENT LOG
- ADA ACCESSIBLE RAMP
- PROPOSED LIGHT POLE
- WEST BRANCH DUPAGE RIVER WATERS EDGE
- WEST BRANCH DUPAGE RIVER BFE
- EXISTING BFE PER FEMA FIRM - GRAPHICAL
- EXISTING BFE PER ELEVATION
- PROPOSED BFE PER ELEVATION
- WET WEST BRANCH DUPAGE RIVER WETLAND BOUNDARY
- WEST BRANCH DUPAGE RIVER WETLAND BUFFER
- HWL - NWL
- LOT LINE
- NATIVE SEEDING AND EROSION CONTROL BLANKET BROAD SPECTRUM PRAIRIE W/ FLOWERS MIX
- NATIVE SEEDING AND EROSION CONTROL BLANKET LOW PROFILE DRY MESIC PRAIRIE W/ FLOWERS MIX
- NATIVE SEEDING AND EROSION CONTROL BLANKET TOUGH SHORELINE MIX
- SODDING
- TEMPORARY SEEDING AND MULCH OR HYDROSEED
- PCC PAVEMENT / SIDEWALK
- ASPHALT TRAIL / PATH
- GRASSCRETE FIRELANE PAVING SYSTEM
- PERMEABLE PAVEMENT
- HEAVY DUTY PAVEMENT
- TOWNHOME DRIVEWAYS
- TRENCH BACKFILL
- PROPOSED BIOSWALE

PREPARED BY:

Bollinger, Lach & Associates, Inc.
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PROJECT MANAGER

PAGES 1-71 DATE 04-19-19

KEVIN E. KENNER 062-054009 REGISTERED PROFESSIONAL ENGINEER OF ILLINOIS

Design Firm License No. 184-001129

FILE: I:\060-020 Cantera Lot 2 Sub Area C\Engineering\Drawings\Final Engineering

04-19-19: PER CITY COMMENTS
03-25-19: PER FPD COMMENTS
03-15-19: PER DUDOT COMMENTS
02-25-19: PER INTERNAL COORDINATION

REVISIONS:
09-18-18: REVISED PER CITY COMMENTS
11-05-18: REVISED PER FPD COMMENTS
01-18-19: REVISED PER CITY COMMENTS
02-18-19: REVISED PER CITY COMMENTS

JOB NO. 060-020
FIELD BOOK: N/A
FIELD BOOK: N/A
DRAWN BY: MK
CHECKED BY: KEK
COMPLETED: 04/07/19

PREPARED FOR:
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CONSULTING ENGINEERS

COVER SHEET

RIVER VIEW WEST
CITY OF WARRENVILLE, ILLINOIS

SHEET NUMBER
1
OF 71

Design Firm License No. 184-001129

GENERAL NOTES:

1. THE STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, ILLINOIS DEPARTMENT OF TRANSPORTATION, LATEST REVISION (HEREINAFTER REFERRED TO AS "STANDARD SPECIFICATIONS"), AND THE STANDARD SPECIFICATIONS FOR WATER AND SEWER MAIN CONSTRUCTION IN ILLINOIS, LATEST REVISION (HEREINAFTER REFERRED TO AS "SSWSCI"), SHALL GOVERN CONSTRUCTION FOR THE PROPOSED IMPROVEMENTS, UNLESS SUPERCEDED BY THE THE CITY OF WARRENVILLE, ILLINOIS SUBDIVISION REGULATIONS AND/OR THE THE CITY OF WARRENVILLE BUILDING CODE, LATEST EDITIONS, AND/OR THE CITY OF WARRENVILLE STANDARD SPECIFICATIONS FOR WATERMAIN, SANITARY, SEWER AND STORM SEWER.

2. IN THE EVENT OF CONFLICT, THE CITY OF WARRENVILLE STANDARD SPECIFICATIONS SHALL PREVAIL.

3. THE STANDARD SPECIFICATIONS, HIGHWAY STANDARDS AND SUPPLEMENTAL SPECIFICATIONS AND RECURRING SPECIAL PROVISIONS, CONSTRUCTION PLANS, AND SUBSEQUENT DETAILS ARE ALL TO BE CONSIDERED AS PART OF THE CONTRACT. INCIDENTAL ITEMS NECESSARY TO COMPLETE THIS WORK MAY NOT BE SPECIFICALLY NOTED BUT ARE CONSIDERED PART OF THIS CONTRACT.

4. PRIOR TO COMMENCEMENT OF CONSTRUCTION, THE CONTRACTOR MUST NOTIFY THE OWNER AND ALL AFFECTED GOVERNMENTAL AGENCIES INCLUDING, BUT NOT LIMITED TO THE THE CITY OF WARRENVILLE (COMMUNITY DEVELOPMENT, BUILDING DEPARTMENT, PUBLIC WORKS), DUPAGE COUNTY, IEPA, ETC. TO ARRANGE FOR APPROPRIATE CONSTRUCTION INSPECTION. IN ADDITION, PRIOR TO COMMENCEMENT OF ANY CONSTRUCTION, ALL REQUIRED BONDS MUST BE POSTED, PERMIT FEES PAID AND PERMITS OBTAINED AND POSTED ONSITE.

5. NOTIFICATIONS

   A. THE CONTRACTOR SHALL NOTIFY THE OWNER AND/OR HIS REPRESENTATIVE AND ALL AFFECTED GOVERNMENTAL AGENCIES AT LEAST THREE (3) WORKING DAYS BEFORE THE INITIAL START OF OPERATIONS OR ANY TEMPORARY STOP OR RESUMPTION OF OPERATIONS. IN ADDITION, THE CONTRACTOR SHALL NOTIFY ALL AFFECTED TESTING AND INSPECTION AGENCIES SUFFICIENTLY IN ADVANCE OF CONSTRUCTION TO PROVIDE THE REQUIRED TESTING AND INSPECTIONS.

   B. THE CONTRACTOR SHALL BEAR ALL COSTS THAT RESULTS FROM THE FAILURE TO NOTIFY GOVERNMENTAL, TESTING OR INSPECTIONS AGENCIES INCLUDING, BUT NOT LIMITED TO SUSPENSIONS IN CONSTRUCTION OPERATIONS AND/OR REJECTIONS OF COMPLETED WORK.

6. A COPY OF THE APPROVED STAMPED PLANS AND SPECIFICATIONS AND OTHER AGENCIES' PERMITS, I.E. COUNTY HIGHWAY, ILLINOIS ENVIRONMENTAL PROTECTION AGENCY, ETC., MUST BE KEPT ON THE JOB SITE DURING CONSTRUCTION OF THE PROJECT WORK.

7. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR SAFETY ON THE JOB.

8. IT SHALL BE THE CONTRACTOR'S SOLE RESPONSIBILITY TO PROVIDE PROPER BARRICADING, SIGNAGE, WARNING DEVICES AND THE SAFE MANAGEMENT OF TRAFFIC WITHIN THE AREA OF CONSTRUCTION. ALL SUCH DEVICES AND THEIR INSTALLATION SHALL CONFORM TO THE ILLINOIS MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES FOR STREET AND HIGHWAYS, LATEST EDITION AND IN ACCORDANCE WITH THE CITY OF WARRENVILLE, ILLINOIS SUBDIVISION REGULATIONS AND THE CITY OF WARRENVILLE BUILDING CODE. NAME AND EMERGENCY PHONE NUMBERS SHALL BE GIVEN TO THE CITY OF WARRENVILLE AND THE ENGINEER PRIOR TO CONSTRUCTION.

9. CHANGES IN THE ENGINEERING PLANS MUST BE APPROVED BY THE ENGINEER. A WRITTEN REQUEST, ACCOMPANIED BY REVISED ENGINEERING PLANS, ARE TO BE SUBMITTED AND APPROVED BEFORE CONSTRUCTION OF CHANGES ARE STARTED.

10. NO PLANS SHALL BE USED FOR CONSTRUCTION UNLESS SPECIFICALLY MARKED FOR CONSTRUCTION. PRIOR TO COMMENCEMENT OF CONSTRUCTION, THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS, ELEVATIONS AND CONDITIONS AFFECTING THE WORK WITH THE ACTUAL CONDITIONS AT THE JOB SITE. THE CONTRACTOR MUST VERIFY THE ENGINEER'S LINE AND GRADE STAKES. IF THERE ARE ANY DISCREPANCIES WITH WHAT IS SHOWN ON THE CONSTRUCTION PLANS, HE MUST IMMEDIATELY REPORT SAME TO ENGINEER BEFORE DOING ANY WORK, OTHERWISE THE CONTRACTOR ASSUMES FULL RESPONSIBILITY. IN THE EVENT OF DISAGREEMENT BETWEEN THE CONSTRUCTION PLANS, SPECIFICATIONS AND/OR SPECIAL DETAILS, THE CONTRACTOR SHALL SECURE WRITTEN INSTRUCTION FROM THE ENGINEER PRIOR TO PROCEEDING WITH ANY PART OF THE WORK AFFECTED BY OMISSIONS OR DISCREPANCIES. FAILING TO SECURE SUCH INSTRUCTION, THE CONTRACTOR WILL BE CONSIDERED TO HAVE PROCEEDED AT HIS OWN RISK AND EXPENSE. IN THE EVENT OF ANY DOUBT OR QUESTIONS ARISING WITH RESPECT TO THE TRUE MEANING OF THE CONSTRUCTION PLANS OR SPECIFICATIONS, THE DECISION OF THE ENGINEER SHALL BE FINAL AND CONCLUSIVE.

11. EXISTING EASEMENTS AND RIGHT-OF-WAY LINES FOR EXISTING UTILITIES, BOTH PUBLIC AND PRIVATE, AND UTILITIES WITHIN PUBLIC RIGHT-OF-WAY ARE SHOWN ON THE PLANS ACCORDING TO AVAILABLE RECORDS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING THE EXACT LOCATION IN THE FIELD OF THESE UTILITIES AND THEIR PROTECTION FROM DAMAGE DURING CONSTRUCTION. IF EXISTING UTILITY LINES OF ANY NATURE ARE FOUND TO BE IN CONFLICT WITH THE NEW CONSTRUCTION, THE CONTRACTOR SHALL NOTIFY THE ENGINEER SO THAT THE CONFLICT MAY BE RESOLVED.

12. THE CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING ALL UTILITIES (AMERITECH, COMMONWEALTH EDISON ELECTRIC COMPANY, ETC.) PRIOR TO CONSTRUCTION AND ALL UTILITIES DAMAGED AND/ OR DISTURBED BY THE CONTRACTOR SHALL BE REPAIRED AT NO ADDITIONAL COST TO THE OWNER. LOCATIONS AS SHOWN ARE APPROXIMATE AND BASED UPON THE BEST AVAILABLE INFORMATION, CALL J.U.L.I.E. (800) 892-0123 FOR MAJOR UTILITY LOCATIONS.

13. ALL REQUIRED TESTING OF CONSTRUCTED IMPROVEMENTS INCLUDING, BUT NOT LIMITED TO WATERMAINS, SANITARY SEWERS, STORM SEWERS, STRUCTURES, PAVEMENTS, ETC. SHALL BE THE RESPONSIBILITY AND AT THE COST OF THE CONTRACTOR.

14. ALL EXISTING UTILITIES AND IMPROVEMENTS, INCLUDING BUT NOT LIMITED TO STRUCTURES, PAVEMENTS, CURBS AND PARKWAYS DAMAGED OR REMOVED AS A RESULT OF CONSTRUCTION ACTIVITIES SHALL BE PROMPTLY RESTORED TO THEIR RESPECTIVE ORIGINAL CONDITION. THIS WORK SHALL BE CONSIDERED INCIDENTAL TO THE CONTRACT UNLESS A SPECIFIC PAY ITEM IS LISTED ON THE BID LIST.

15. ANY TEMPORARY SHEETING OR BRACING FOR ANY EXCAVATIONS OR TRENCHES THAT MAY BE REQUIRED SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR AND SHALL NOT BE CONSIDERED EXTRA WORK. IN THE EVENT THAT SOFT MATERIALS ARE ENCOUNTERED IN SEWER CONSTRUCTION, THE CONTRACTOR SHALL (UPON APPROVAL OF THE OWNER AND/OR ENGINEER) OVER-EXCAVATE TO A DEPTH OF ONE (1) FOOT BELOW THE BOTTOM OF THE PIPE AND BACKFILL WITH COMPACTED CRUSHED STONE, PROPERLY FORMED TO FIT THE BOTTOM OF THE PIPE.

16. THE EXCAVATION TRENCH FOR SEWER PIPE AND STRUCTURE INSTALLATION SHALL BE KEPT DRY AT ALL TIMES DURING PIPE PLACEMENT. APPROPRIATE FACILITIES TO MAINTAIN THE DRY TRENCH SHALL BE PROVIDED BY THE CONTRACTOR AND THE COST OF SUCH SHALL BE INCIDENTAL TO THE UNIT PRICE BID FOR THE ITEM. PLANS FOR THE SITE DEWATERING, IF EMPLOYED, SHALL BE SUBMITTED TO AND APPROVED BY THE ENGINEER PRIOR TO IMPLEMENTATION. NO ADDITIONAL COMPENSATION SHALL BE MADE FOR DEWATERING DURING CONSTRUCTION.

17. THE CONTRACTOR SHALL PRESERVE ALL CONSTRUCTION STAKES UNTIL THEY ARE NO LONGER NEEDED. ANY STAKES DESTROYED OR DISTURBED BY THE CONTRACTOR PRIOR TO THEIR USE SHALL BE RESET BY THE DEVELOPER'S ENGINEER AT CONTRACTOR'S EXPENSE.

18. THE CONTRACTOR SHALL COLLECT AND REMOVE ALL CONSTRUCTION DEBRIS, EXCESS MATERIALS, TRASH, OIL AND GREASE RESIDUE, MACHINERY, TOOLS AND OTHER MISCELLANEOUS ITEMS WHICH WERE NOT PRESENT PRIOR TO PROJECT COMMENCEMENT AT NO ADDITIONAL EXPENSE TO THE OWNER. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ACQUIRING ANY AND ALL PERMITS NECESSARY FOR THE HAULING AND DISPOSAL REQUIRED FOR CLEAN-UP AS DIRECTED BY THE ENGINEER OR OWNER. BURNING ON THE SITE IS NOT PERMITTED.

19. BEFORE ACCEPTANCE BY THE OWNER AND FINAL PAYMENT, ALL WORK SHALL BE INSPECTED BY THE OWNER OR HIS REPRESENTATIVE.

20. CONTRACTOR SHALL REFER TO LANDSCAPE PLANS FOR COMPLETE LANDSCAPE INFORMATION.

21. REFER TO SITE ELECTRICAL DRAWINGS FOR EXISTING AND PROPOSED LIGHTING AND WIRING DETAILS AND SPECIFICATIONS.

MASS GRADING:

1. PRIOR TO THE COMMENCEMENT OF EARTHWORK OPERATIONS, THE SITE SHALL BE CLEARED IN ACCORDANCE WITH SECTION 201 OF THE STANDARD SPECIFICATIONS AT NO ADDITIONAL COST TO THE OWNER. CLEARING SHALL CONSIST OF THE REMOVAL AND DISPOSAL OF ALL OBSTRUCTIONS SUCH AS FENCES, WALLS, FOUNDATIONS, BUILDINGS, RUBBISH OF WHATEVER NATURE, EXISTING STRUCTURES, LOGS, SHRUBS, BUSHES, SAPLINGS, GRASS, WEEDS, OTHER VEGETATION, AND STUMPS OF LESS THAN SIX (6) INCHES IN DIAMETER. CLEARING SHALL EXTEND TO THE LIMITS OF DEVELOPMENT AND SHALL ALSO INCLUDE ALL ITEMS NOT SPECIFICALLY MARKED FOR PROTECTION.

2. THE CONTRACTOR SHALL REVIEW ALL SUBSURFACE/SOILS REPORTS, PERFORM SITE INSPECTION, AND VERIFY EXISTING TOPOGRAPHIC INFORMATION. ANY DISCREPANCY IN FINDINGS/CONCLUSIONS REGARDING EXISTING SITE CONDITIONS SHALL BE RESOLVED PRIOR TO THE START OF ANY EARTHWORK OPERATIONS. COMMENCEMENT OF EARTHWORK OPERATIONS INDICATES THAT THE CONTRACTOR HAS REVIEWED ALL AVAILABLE SITE INVESTIGATION DATA AND BASED HIS BID ACCORDINGLY.

3. EARTHWORK OPERATIONS, EARTH EXCAVATION AND PLACEMENT OF EMBANKMENT SHALL CONFORM TO SECTIONS 200, 202 AND 205 OF THE STANDARD SPECIFICATIONS.

4. ALL GRADING OPERATIONS MUST BE CONSTRUCTED ACCORDING TO THE ELEVATIONS AND GRADES AS SHOWN ON THE PLANS OR MODIFIED BY THE ENGINEER.

5. ALL EXCAVATED MATERIAL SHALL BE PLACED AND STOCKPILED ONSITE, AS SHOWN ON THE PLANS AND OUTSIDE OF FLOODPLAIN AREAS, WETLAND AREAS OR SPECIAL MANAGEMENT AREAS.

6. PLACEMENT OF STRUCTURAL FILL (EARTH AND OTHER SUITABLE MATERIALS) IN ORDER TO ACHIEVE THE PLAN SUBGRADE ELEVATIONS SHALL BE WITHIN A TOLERANCE OF 0.1 FEET. THE FILL MATERIAL SHALL BE PLACED IN LOOSE LIFTS THAT SHALL NOT EXCEED EIGHT (8) INCHES IN THICKNESS, AND THE WATER CONTENT SHALL BE ADJUSTED IN ORDER TO ACHIEVE REQUIRED COMPACTION. EARTH MATERIAL MAY BE PLACED WITHIN THOSE PORTIONS OF THE SITE NOT REQUIRING STRUCTURAL FILL, TO WITHIN SIX (6) INCHES OF THE PLAN FINISHED GRADE ELEVATION. IN AREAS REQUIRING STRUCTURAL FILL THE EARTH MATERIAL SHALL NOT BE PLACED OVER TOPSOIL OR OTHER UNSUITABLE MATERIALS UNLESS SPECIFICALLY DIRECTED BY A SOILS ENGINEER WITH THE CONCURRENCE OF THE OWNER.

MASS GRADING (CONT'D):

7. EXCESS EXCAVATED AND SURPLUS MATERIALS, IF NOT UTILIZED AS FILL OR IF DETERMINED TO BE UNSUITABLE BY THE SOILS ENGINEER, SHALL BE COMPLETELY REMOVED FROM THE CONSTRUCTION SITE AND DISPOSED OF OFF-SITE BY THE CONTRACTOR IN A LEGAL MANNER.

8. UNSUITABLE MATERIAL SHALL BE CONSIDERED AS MATERIAL WHICH IS NOT SUITABLE FOR THE SUPPORT OF PAVEMENT AND BUILDING CONSTRUCTION, AND IS ENCOUNTERED BELOW NORMAL TOPSOIL DEPTHS AND THE PROPOSED SUBGRADE ELEVATION. THE DECISION TO REMOVE SAID MATERIAL, AND TO WHAT EXTENT, SHALL BE MADE BY A SOILS ENGINEER WITH THE CONCURRENCE OF THE OWNER.

9. POSITIVE DRAINAGE MUST BE PROVIDED AT ALL TIMES IN AN ATTEMPT NOT TO AFFECT THE SUBJECT DEVELOPMENT OR TO INFRINGE UPON ADJACENT PROPERTIES. STORM WATER SHALL BE PREVENTED FROM RUNNING INTO OR STANDING IN EXCAVATED AREAS. FINAL GRADES SHALL BE PROTECTED AGAINST DAMAGE FROM EROSION AND TRAFFIC.

10. THE UPPER TWELVE (12) INCHES OF THE SUITABLE SUBGRADE MATERIAL IN ALL AREAS THAT MAY BE SOFT DUE TO EXCESS MOISTURE CONTENT SHALL BE SCARIFIED AND COMPACTED TO THE DEGREE SPECIFIED. THIS APPLIES TO CUT AREAS AS WELL AS FILL AREAS.

PAVEMENT:

1. PRIOR TO THE CONSTRUCTION OF THE CURB AND GUTTER AND THE PLACEMENT OF THE BASE MATERIAL, THE STREETS SHALL BE FINE GRADED TO WITHIN 0.1 FEET OF FINAL SUBGRADE ELEVATION, TO A POINT TWO (2) FEET BEYOND THE BACK OF CURB.

2. THE SUBGRADE OF ALL ROADS SHALL BE GRADED AND ROLLED IN ACCORDANCE WITH SECTION 301 OF THE STANDARD SPECIFICATIONS FOR THE ROAD AND BRIDGE CONSTRUCTION, CURRENT EDITION. PARTICULAR ATTENTION IS DIRECTED TO THE REQUIREMENTS FOR THE REPLACEMENT OF SOFT AND UNSTABLE MATERIAL AS CONTAINED IN ARTICLE 202.03 EMBANKMENT SHALL BE PLACED AND COMPACTED IN ACCORDANCE WITH SECTION 205 OF SAID SPECIFICATIONS.

3. SUBGRADE MATERIAL HAVING AN IBR LESS THAN 2.5 SHALL BE REMOVED AND REPLACED WITH SUITABLE FILL OR THE PAVEMENT MUST BE DESIGNED TO COMPENSATE FOR THE EXISTING SOIL CONDITIONS.

4. AT LEAST ONE STANDARD DENSITY TEST (PERFORMED IN ACCORDANCE WITH AASHTO T99) SHALL BE TAKEN IN EACH FILL SECTION, WITH THE MAXIMUM DISTANCE BETWEEN TESTS OF 300 FEET. ONE STANDARD PROCTOR TEST SHALL BE TAKEN FROM EACH DIFFERENT SOURCE OF BORROWED MATERIAL, IF REQUIRED BY THE CITY OF WARRENVILLE. THE PROCTOR AND DENSITY TESTS MUST BE SUBMITTED FOR REVIEW AND APPROVAL BY THE CITY OF WARRENVILLE. UPON APPROVAL OF THESE TESTS, THE CITY WILL MAKE AN INSPECTION OF THE SUBGRADE. THE SUBGRADE MUST BE APPROVED PRIOR TO PLACING ANY TYPE OF CURB AND GUTTER OR BASE MATERIAL. THE COST OF ALL TESTING WILL BE THE RESPONSIBILITY OF THE CONTRACTOR.

5. AGGREGATE BASE COURSE MATERIAL SHALL BE TYPE B, GRADATION CA-6. THE COMPACTED THICKNESS SHALL BE AS LISTED ON THE PLANS. PRIOR TO RECEIVING ANY PRIME COAT MATERIALS, THE BASE COURSE SHALL BE PREPARED ACCORDING TO SECTION 358 OF THE STANDARD SPECIFICATIONS.

6. AFTER THE AGGREGATE BASE COURSE HAS BEEN PREPARED, AND WHEN IN A DRY CONDITION, THE BITUMINOUS MATERIALS, AS SPECIFIED FOR PRIME IN ARTICLE 406.02 OF THE STANDARD SPECIFICATIONS, SHALL BE APPLIED UNIFORMLY AT A RATE OF 0.25 - 0.50 GAL/SYD. THE BITUMINOUS PRIMING MATERIAL SHALL BE PREPARED ACCORDING TO ARTICLE 403.07 AND THE METHOD OF APPLICATION SHALL BE AS SPECIFIED IN ARTICLE 403.09.

7. THE BITUMINOUS CONCRETE BINDER AND SURFACE COURSE SHALL COMPLY WITH THE STATE OF ILLINOIS CLASS I, AS SET FORTH IN SECTION 406 OF THE STANDARD SPECIFICATIONS. A TACK COAT SHALL BE APPLIED TO THE BASE COURSE AT A RATE OF 0.40 GALLONS PER SQUARE YARD.

8. AFTER A BASE CURING PERIOD OF NOT MORE THAN FIVE (5) DAYS AFTER PRIMING, A BITUMINOUS CONCRETE BINDER COURSE (MIXTURE B) SHALL BE CONSTRUCTED UPON THE BASE COURSE. THE COMPACTED THICKNESS OF THE BINDER AND COMPACTED GRANULAR BASE IS LISTED ON THE PLANS.

9. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING THE BASE AND BINDER COURSE ON A SAFE AND PASSABLE CONDITION UNTIL THE SAID BASE IS SURFACED. SHOULD ANY CONDITION OCCUR WHICH, IN THE JUDGEMENT OF THE ENGINEER, WOULD CONSTITUTE A HAZARD TO VEHICULAR OR PEDESTRIAN TRAFFIC. THE CONTRACTOR SHALL DO WHATEVER IS REQUIRED TO RESTORE THE ROADWAY TO A SAFE CONDITION. IF THE CONTRACTOR DOES NOT CORRECT SUCH HAZARDOUS CONDITIONS WITHIN 12 HOURS AFTER NOTIFICATION BY THE ENGINEER, THEN THE CITY OF WARRENVILLE MAY PERFORM REMEDIAL WORK AND BILL THE CHARGES TO THE CONTRACTOR.

10. ALL BITUMINOUS BINDER COURSE MATERIALS MUST BE IN PLACE FOR A MINIMUM OF TEN (10) MONTHS, INCLUDING WINTER AND SPRING BEFORE THE INSTALLATION OF THE SURFACE COURSE.

11. A PRIME COAT SHALL THEN BE APPLIED AT A RATE OF 0.15 GALLONS PER SQUARE YARD, AFTER WHICH BITUMINOUS SURFACE COURSE, CLASS I, MODIFIED, SHALL BE CONSTRUCTED. THE CONTRACTOR SHALL BE REQUIRED TO SEAL ANY SHRINKAGE CRACKS WHICH BECOME APPARENT WITHIN ONE (1) YEAR AFTER PLACING SURFACE COURSE. SURFACE COURSE SHALL BE OF THE THICKNESS LISTED ON THE PLANS.

12. CONCRETE CURB AND GUTTER SHALL BE CONSTRUCTED IN CONFORMANCE WITH SECTION 606 OF THE STANDARD SPECIFICATIONS AT THE LOCATIONS AND IN CONFORMANCE WITH THE DETAILS SHOWN ON THE PLANS. TWO (2) CONTINUOUS #4 BARS OF REINFORCING STEEL SHALL RUN THE ENTIRE LENGTH OF THE CURB AND GUTTER. THE CONCRETE USED THEREIN SHALL CONFORM TO STANDARD SPECIFICATIONS.

13. 3/4 INCH PRE-MOLDED BITUMINOUS EXPANSION JOINTS HAVING TWO (2) 3/4 INCH DOWEL BARS SHALL BE INSTALLED AT 45 FOOT INTERVALS AND AT ALL POINTS OF CURVATURE WHERE THE RADIUS IS LESS THAN 100 FEET. THE DOWEL BARS SHALL BE 18 INCHES LONG AND SHALL BE PROPERLY GREASED AND HAVE EXPANSION CAPS. CONTRACTION JOINTS SHALL BE FORMED AT 15-FOOT INTERVALS.

14. DEVELOPMENT PLANS SHALL INCLUDE SIDEWALK AND/OR CROSSWALKS AND SHALL BE CONSTRUCTED OF PORTLAND CEMENT CONCRETE TO A MINIMUM THICKNESS OF FIVE (5) INCHES. ALL SIDEWALKS MATERIALS, CONSTRUCTION AND TESTING SHALL MEET THE REQUIREMENTS OF THE STANDARD SPECIFICATIONS. REFER TO ARCHITECTURAL DRAWINGS FOR CONTROL JOINT LOCATIONS FOR WALKS ADJACENT TO BUILDING.

15. ALL EXPOSED CONCRETE WORK INCLUDING SIDEWALKS AND CURBS MUST HAVE CURING COMPOUND APPLIED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

16. PRIOR TO CONSTRUCTING THE BITUMINOUS SURFACE COURSE, THE BASE COURSE WILL BE REPAIRED TO THE SATISFACTION OF THE ENGINEER. BASE AND BINDER REPAIR SHALL INCLUDE REMOVAL OF THE EXISTING BINDER, PREPARING AND PRIMING THE BASE COURSE AT THE SPECIFIED RATE AND PLACING AND COMPACTING A MINIMUM OF TWO (2) INCHES OF CLASS I BINDER. PRIOR TO THE CONSTRUCTION THE SURFACE COURSE THE BASE COURSE SHALL BE PREPARED TO THE SATISFACTION OF THE ENGINEER.

17. THE CONSTRUCTION OF ALL PAVEMENT, CURBS AND GUTTERS, AND SIDEWALK IMPROVEMENTS, INCLUDING THE USE OF ALL MACHINERY, EQUIPMENT AND TOOLS, AND THE FURNISHING OF ALL MATERIALS, AND THE CONSTRUCTION OF ALL OTHER WORK NECESSARY TO COMPLETE THE PROPOSED IMPROVEMENTS, SHALL BE CONSTRUCTED ACCORDING TO THE REQUIREMENTS AS OUTLINED IN THE STATE'S STANDARD SPECIFICATIONS. THE MATERIAL FOR THOSE IMPROVEMENTS SHALL BE IN CONFORMANCE WITH THE APPROPRIATE SECTION OF THE STATE STANDARD SPECIFICATIONS.

18. ALL EXISTING MANHOLES AND STRUCTURES SHALL BE ADJUSTED TO MEET FINISHED GRADE. THIS SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.

19. ALL PAVING IMPROVEMENTS INSTALLED WILL BE SUBJECT TO TESTING, AS PROVIDED FOR IN THESE SPECIFICATIONS AND IN THE STANDARD SPECIFICATIONS. A COMPANY APPROVED BY DUPAGE COUNTY WILL PERFORM THE TESTING AT THE COST OF THE DEVELOPER. IF ANY IMPROVEMENTS ARE FOUND TO BE DEFECTIVE IN WORKMANSHIP OR MATERIALS, THEY SHALL BE REMOVED AND REPLACED.

20. THE SUBGRADE MATERIALS MUST BE PROOF-ROLLED AND TESTED PRIOR TO ANY PAVING OR CURB IMPROVEMENTS. TESTING REPORTS MUST BE SUBMITTED TO THE CITY OF WARRENVILLE FOR REVIEW AND APPROVAL. DENSITY TESTING OF THE BASE COURSE MATERIALS IS REQUIRED, ALL TESTING REPORTS MUST BE SUBMITTED TO THE CITY OF WARRENVILLE. TESTING WILL HAVE TO PASS A PROOF ROLL OF ONE QUARTER (¼) INCH DEFLECTION.

21. ALL STREETS, CURBS, GUTTERS AND SIDEWALKS WHICH ARE CONSTRUCTED WITHIN PUBLIC RIGHT-OF-WAY SHALL BE UNDER WARRANTY FOR ALL DEFECTS AND FAILURES FOR A PERIOD OF TWO (2) YEARS AFTER THE DATE OF ACCEPTANCE.

22. IN PAVEMENT AREAS WHERE UNSTABLE SOILS ARE PRESENT, TERRATEX NO. 8 GEOFABRIC OR APPROVED EQUAL SHALL BE USED AT THE DISCRETION OF THE ENGINEER. PLACE THE GEOFABRIC/GEOGRID SYSTEM IMMEDIATELY ABOVE THE STABLE PREPARED SUBGRADE AT BASE COURSE/SUBGRADE CONTACT, AND INSTALL FOLLOWING MANUFACTURERS INSTRUCTIONS. THE CITY OF WARRENVILLE APPROVAL IS REQUIRED.

23. PAVEMENT STRIPPING SHALL BE IN ACCORDANCE WITH STANDARD SPECIFICATIONS SECTION 780. PAVEMENT STRIPPING SHALL BE PAINT. PAVEMENT STRIPPING SHALL BE 4" WHITE UNTIL OTHERWISE NOTED. HANDICAPPED PARKING STALLS SHALL BE STRIPPED AS PER ADA SPECIFICATION. SEE DETAILS.

CITY OF WARRENVILLE WATER MAIN SPECIFICATIONS

1. ALL OPEN CUT WATER MAIN SHALL BE POLYVINYL CHLORIDE PLASTIC (PVC) PRESSURE PIPE PER AWWA SPECIFICATION C-900, CLASS 150 (DR-18). THE ABOVE PIPE AND FITTINGS SHALL BE FURNISHED WITH ELASTOMERIC GASKET JOINTS CONFORMING TO ASTM F477. TRENCH BACKFILL SHALL BE UTILIZED TO TWELVE INCHES (12") ABOVE THE TOP OF THE PVC WATER MAIN.

2. ALL WATER MAIN INSTALLED BY HORIZONTAL DIRECTIONAL DRILLING SHALL BE PVC PER AWWA SPECIFICATION C-900 WITH CERTALOK JOINTS. ASSEMBLY AND INSTALLATION OF PIPE SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS. ALL MATERIAL SPECIFICATIONS SHALL BE SUBMITTED TO THE CITY AND APPROVED PRIOR TO INSTALLATION.

3. ONE ¼" DIAMETER STAINLESS STEEL WIRES OR A SOLOSHOT 845 EHS TRACER WIRE AS MANUFACTURED BY COPPERHEAD OR APPROVED EQUAL SHALL BE INSTALLED DIRECTLY OVER THE CENTER OF THE WATER MAIN IN THE TRENCH WITH A MAXIMUM SEPARATION OF FOUR INCHES (4") ABOVE THE PIPE. THE TRACER WIRE WILL BE INSTALLED WITH THE WATER MAIN AND ATTACHED TO ALL IN-LINE VALVES, HYDRANT VALVES, HYDRANTS AND SERVICE LINES TO INSURE SIGNAL CONDUCTIVITY ALONG ALL PORTIONS OF THE NEW MAIN.

4. FITTINGS SHALL BE DUCTILE IRON, 250 PSI PRESSURE RATING, CEMENT MORTAR LINED WITH RESTRAINED PUSH-ON JOINT OR MECHANICAL JOINT WITH MEGALUG RETAINER GLANDS, OR APPROVED EQUAL.

5. WATER MAIN BOLTS SHALL BE STAINLESS STEEL ASTM 304.

6. RESTRAINED JOINTS - ALL FITTINGS SHALL HAVE RESTRAINED JOINTS. ALL WATER MAIN PIPING IN CASING SHALL HAVE RESTRAINED JOINTS. RESTRAINED JOINTS SHALL BE PUSH JOINT WITH A FIELD LOCK GASKET OR A MECHANICAL JOINT WITH MEGALUG RETAINER GLANDS, OR APPROVED EQUAL. ALL BENDS, TEES, AND DEAD END PIPING MUST BE RESTRAINED A MINIMUM OF 24' IN BOTH DIRECTIONS OF THE FITTING. THRUST CEMENT BLOCKING OF ALL FITTINGS, HYDRANTS, AND DEAD END PIPING IS REQUIRED.

7. PRESSURE CONNECTIONS - PRESSURE TAPPING SLEEVES SHALL BE ALL STAINLESS STEEL.

8. ALL VALVES SHALL BE RESILIENT WEDGE GATE VALVES MANUFACTURED IN A PRECAST CONCRETE VAULT. VALVES SHALL BE MUELLER, WATEROUS, OR CLOW MANUFACTURE. ALL BOLTS SHALL BE STAINLESS STEEL.

9. VALVE VAULTS SHALL BE PRE-CAST CONCRETE UNITS. FOR WATER MAINS 8-INCH DIAMETER OR LESS, THE VAULT SHALL BE 48-INCH INSIDE DIAMETER. FOR WATER MAINS 10-INCH DIAMETER AND GREATER, THE VAULT SHALL BE 60-INCH INSIDE DIAMETER.

10. FRAMES AND LIDS SHALL CONFORM TO NEENAH FOUNDRY R-1713 OR APPROVED EQUAL AND THE WORD "WATER" SHALL BE CAST IN THE COVER.

11. CASING - SPACERS ALL JOINTS WITHIN THE CASING SHALL BE RESTRAINED. SPACERS SHALL BE INSTALLED ON ALL PIPE IN CASING. SPACERS SHALL BE BOLT ON STYLE WITH A SHELL MADE IN TWO SECTIONS OF HEAVY T-304 STAINLESS STEEL. CASING SHALL BE FILLED WITH PEA GRAVEL OR SAND AND SEALED AT BOTH ENDS.

12. ALL DUCTILE IRON PIPES AND FITTINGS ARE REQUIRED TO BE ENCASED IN 8-MIL POLYETHYLENE CONFORMING TO AWWA C-105.

13. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO OBTAIN AND SUPPLY CERTIFICATION FOR ALL MATERIALS. SHOP DRAWINGS SHALL BE SUBMITTED TO AND APPROVED BY THE CITY BEFORE INSTALLATION.

14. DEPTH OF BURY FOR WATER MAIN TO BE 5'-6" (MINIMUM).

15. INSTALLATION SHALL CONFORM TO "STANDARD SPECIFICATIONS FOR WATER AND SEWER MAIN CONSTRUCTION IN ILLINOIS" LATEST EDITION.

CITY OF WARRENVILLE FIRE HYDRANT SPECIFICATIONS

1. HYDRANT SHALL BE FM APPROVED AND UL LISTED, SHALL CONFORM TO AWWA C-502, AND SHALL HAVE BREAKAWAY SAFETY FLANGES.

2. HYDRANTS SHALL BE MUELLER CENTURION, WATEROUS WB67-250, OR CLOW MEDALLION.

3. ALL BOLTS SHALL BE STAINLESS STEEL FROM AND INCLUDING THE BREAKAWAY FLANGE TO THE INLET ON THE HYDRANT SHOE.

4. ALL HYDRANTS SHALL HAVE A BRONZE CROSS ARM / TOP PLATE.

5. CONNECTING PIPING SHALL BE SIX-INCH (6") DIAMETER SHALL BE POLYVINYL CHLORIDE PLASTIC (PVC) PRESSURE PIPE PER AWWA SPECIFICATION C-900, CLASS 150 (DR-18). THE ABOVE PIPE AND FITTINGS SHALL BE FURNISHED WITH ELASTOMERIC GASKET JOINTS CONFORMING TO ASTM F477.

6. MAIN VALVE OPENING SHALL BE FIVE AND ONE QUARTER INCH (5-1/4") IN DIAMETER, COMPRESSION TYPE, WITH A BRASS DRAIN VALVE.

7. NOZZLES SHALL HAVE THREADED MALE ENDS CONFORMING TO "AMERICAN NATIONAL STANDARD FIRE HOSE CONNECTION SCREW THREADS. THE HYDRANT SHALL HAVE TWO NOZZLES OF 63 MM WHICH ARE 2- 1/2" AND ONE PUMPER NOZZLE OF 114 MM (4-1/2") WITH CAPS AND CHAINS.

8. HYDRANTS SHALL HAVE A MINIMUM WORKING PRESSURE OF 175 PSI.

9. HYDRANTS SHALL OPEN IN A COUNTER-CLOCKWISE DIRECTION, AS INDICATED BY AN ARROW AND THE WORD "OPEN" ON THE DOME.

10. HYDRANTS SHALL BE PAINTED A HIGH VISIBILITY RED, FACTORY APPLIED PAINT. HYDRANTS SHALL HAVE A SIX-INCH (6") AUXILIARY VALVE WITH BOX ON THE INLET PIPING. VALVE SHALL MEET WATER MAIN PIPING SPECIFICATIONS FOR THE CITY OF WARRENVILLE. AUXILIARY VALVE ATTACHED TO HYDRANT SHALL HAVE STAINLESS STEEL BOLTS AT THE FLANGE INLET.

11. CONNECTION OF SIX-INCH (6") PIPING SHALL BE RESTRAINED JOINTS FROM THE TEE AT THE WATER MAIN TO THE INLET OF THE HYDRANT WITH FIELD LOCK GASKETS FOR PUSH JOINT AND MEGALUG RETAINER GLANDS, OR APPROVED EQUAL FOR MECHANICAL JOINT.

CITY OF WARRENVILLE WATER SERVICE SPECIFICATIONS

1. FOR WATER SERVICES 2-INCH DIAMETER AND LESS SHALL BE TYPE "K" COPPER ONLY WITH A MINIMUM SIZE OF ONE-INCH (1") DIAMETER.

2. BRASS SHALL BE MUELLER OR FORD. ALL BRASS IS PREFERRED TO HAVE COMPRESSION FITTINGS. COMPRESSION FITTINGS MUST BE OF THE STAINLESS FULL CIRCLE RING RETAINAGE. N

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CITY OF WARRENVILLE SANITARY SEWER SPECIFICATIONS

1. ALL SANITARY SEWER AND SANITARY SEWER SERVICE PIPE SHALL BE SDR 26 ASTM D-2241 AND FITTINGS SHALL MEET THE REQUIREMENTS OF ASTM D-3139 OR EQUIVALENT. NOTE: THIS IS A PRESSURE RATED PIPE.
2. SANITARY SEWER SERVICES SHALL BE A MINIMUM OF 6-INCHES IN DIAMETER.
3. ALL SANITARY SEWERS SHALL BE AIR AND MANDREL TESTED, AND TELEVISED, INCLUDING PRIVATE COMMERCIAL LINES BETWEEN INSPECTION MANHOLE AND THE PUBLIC SANITARY SEWER. COPIES OF DVDS AND REPORTS SHALL BE PROVIDED TO THE CITY.
4. SANITARY SEWER MANHOLES SHALL HAVE OPENINGS FOR THE PIPE CONNECTIONS CAST INTO THE WALL OF THE STRUCTURE. RUBBER GASKETED COUPLING (BOOT) WITH STAINLESS STEEL BANDS / RETAINERS SHALL BE PER ASTM C-923.
5. WHEN CONNECTING TO AN EXISTING MANHOLE, THE HOLE MUST BE CORED AND A RUBBER GASKETED COUPLING (BOOT) WITH STAINLESS STEEL BANDS / RETAINERS SHALL BE PER ASTM C-923. THE BENCH SHALL BE REMOVED AND REPOURED, IF NECESSARY. RUBBER BOOTS/SEALS MUST BE USED WHERE PIPES ENTER MANHOLES. THE INTERNAL CONNECTION SHALL BE DRESSED UP WITH NON-SHRINK HYDRAULIC CEMENT. HYDRAULIC CEMENT, MORTAR, AND CONCRETE MUST BE OF THE STRENGTH AND WATER-TIGHTNESS QUALITY AS SPECIFIED IN THE ASTM STANDARDS
6. WHEN CONNECTING A NEW SANITARY SERVICE TO AN EXISTING SANITARY SEWER MAIN WITHOUT AN EXISTING WYE, CONTACT PUBLIC WORKS TO DETERMINE WHICH ONE OF THE TWO FOLLOWING METHODS SHALL BE USED:
   A. A SECTION OF THE MAIN SHALL BE CUT OUT TO INSTALL A NEW WYE. CONNECTION BETWEEN THE EXISTING SANITARY SEWER AND THE NEW WYE SHALL BE MADE WITH NON-SHEAR MISSION COUPLINGS WITH TWO STAINLESS STEEL BANDS TO A POINT WHERE THE COUPLING CANNOT SHIFT.
   B. CORE THE EXISTING MAIN AND MAKE THE CONNECTION WITH AN INSERTA TEE CONNECTION OR AN APPROVED EQUAL
7. SANITARY MANHOLES SHALL BE PRE-CAST CONCRETE UNITS. FOR SANITARY SEWERS 18-INCH DIAMETER OR LESS, THE MANHOLE SHALL BE 48-INCH INSIDE DIAMETER. FOR SANITARY SEWERS 21-INCH DIAMETER AND LARGER, THE MANHOLE SHALL BE 60-INCH INSIDE DIAMETER.
8. FRAMES AND LIDS SHALL CONFORM TO NEENAH FOUNDRY R-1713 OR APPROVED EQUAL OR OTHERWISE NOTED IN PLANS AND THE WORD "SANITARY" SHALL BE CAST IN THE COVER. THE LID SHALL BE A SELF- SEALING SOLID LID WITH WATERTIGHT GASKET AND CONCEALED PICKHOLE. ANY MANHOLE WITHIN A FLOODPLAIN SHALL HAVE A WATERTIGHT, BOLTDOWN FRAME AND LID, NEENAH R-1916-F1 OR APPROVED EQUAL.
9. ALL COMMERCIAL BUILDINGS SHALL HAVE AN INSPECTION MANHOLE.
10. MANHOLE SECTIONS AND ADJUSTING RINGS SHALL BE SEALED WITH BUTYL ROPE.
11. SANITARY MANHOLES SHALL HAVE A POURED CONCRETE BENCH.
12. RUNGS / STEPS SHALL BE INSTALLED IN MANHOLES UNLESS SPECIFICALLY PROHIBITED.
13. EXTERNAL CHIMNEY SEALS AND MACWRAP WILL BE REQUIRED WITH ALL SANITARY MANHOLES. THE FRAME, CHIMNEY, AND TOP "LIP" OF THE CONE SECTION SHALL BE REQUIRED TO BE SEALED WITH A CHIMNEY SEAL. THIS SHOULD BE OBSERVED BY THE CITY PRIOR TO BACKFILLING.
14. NO GROUND WATER WILL BE ALLOWED TO ENTER THE SANITARY SEWER DURING OR AFTER CONSTRUCTION.
15. NO MORE THAN TWELVE INCHES (12") OF ADJUSTING RINGS ARE ALLOWED.

SANITARY SEWER:

1. ALL SEWER PIPES MUST BE LAID ON A MINIMUM 6" CLASS B BEDDING MATERIAL (#2 TORPEDO SAND, OR GRADE 8 STONE, PROPERLY COMPACTED). TRENCH BACKFILL MUST BE WELL SPADED ON BOTH SIDES OF PIPE. SEE SANITARY SEWER TRENCH DETAIL FOR TRENCH BACKFILL REQUIREMENTS.
2. A DROP PIPE SHALL BE PROVIDED FOR A SEWER ENTERING A MANHOLE AT AN ELEVATION OF TWENTY-FOUR (24) INCHES OR MORE ABOVE THE MANHOLE INVERT. WHERE THE DIFFERENCE IN ELEVATION BETWEEN THE INCOMING SEWER AND THE MANHOLE INVERT IS LESS THAN TWENTY-FOUR (24) INCHES, THE INVERT SHALL BE FILLETED TO PREVENT SOLID DEPOSITION. ALL MANHOLES SHALL BE CONSTRUCTED WITH AN OUTSIDE DROP CONNECTION.
3. MANHOLES SHALL BE MADE OF PRECAST CONCRETE CONFORMING TO ASTM C-478. NO BRICK OR CONCRETE BLOCK MANHOLES SHALL BE PERMITTED. ALL MANHOLES SHALL BE WATERPROOFED BY COATING THE OUTSIDE WALL ACCORDING TO ASTM C-877. DISH FLOW LINE IS NOT ALLOWED. SEE SANITARY MANHOLE DETAIL FOR ADDITIONAL REQUIREMENTS.
4. SEWER SERVICES LATERALS SHALL BE MINIMUM OF SIX (6) INCHES IN DIAMETER AT A MINIMUM SLOPE OF ONE (1) PERCENT AND ARE TO BE CONNECTED TO THE SEWER MAIN AT THE TIME OF CONSTRUCTION BY USING A WYE. PROPOSED SERVICES ARE TO BE POLYVINYL CHLORIDE PIPE (PVC SDR-26) ASTM D-2241 WITH ASTM D-3139 FLEXIBLE ELASTOMERIC SEALS. WHERE A SANITARY SEWER SERVICE LINE IS TO CONNECT TO AN EXISTING SEWER MAIN OR LATERAL, TAPS SHALL BE MADEAS APPROVEDBY THE CITY OF WARRENVILLE.
9. ALL SANITARY SEWER, SERVICES, AND MANHOLES SHALL BE TESTED AND INSPECTED PRIOR TO ACCEPTANCE BY THE THE CITY OF WARRENVILLE. CONTRACTOR SHALL COMPLETE ALL TESTING AND PROVIDE ALL MATERIAL AND EQUIPMENT NECESSARY FOR TESTING. IF TESTING FAILS, CONTRACTOR SHALL REMEDY THE FAILURE TO THE SATISFACTION OF THE ENGINEER AND THE DISTRICT.
10. AS A MINIMUM, AN AIR TEST SHALL BE PERFORMED AS DESCRIBED IN SECTION 31-1.13(C) OF THE "SSWSCI". ALL FLEXIBLE SANITARY SEWER SHALL ALSO PASS A DEFLECTION (MANDREL) TEST AS DESCRIBED IN SECTION 31-1.13(D) OF THE "SSWSCI" AFTER THE SEWER PIPE HAS BEEN IN THE GROUND FOR A MINIMUM OF 30 DAYS.
11. THE CITY OF WARRENVILLE MAY REQUIRE ADDITIONAL EXFILTRATION AND/OR INFILTRATION TESTS TO BE COMPLETED ON ALL SANITARY SEWERS IN LIEU OF THE AIR TEST. IF DIRECTED BY THE DISTRICT, THE CONTRACTOR SHALL COMPLETE ALL ADDITIONAL TESTS ACCORDING TO SECTIONS 31.1.13 (A) & (B) OF THE "SSWSCI" AT NO ADDITIONAL COST TO THE OWNER, UNLESS OTHERWISE REQUIRED BY THE DISTRICT OR THE ENGINEER, THE MAXIMUM EXFILTRATION AND INFILTRATION LIMITS SHALL BE 240 AND 200 GALLONS PER INCH OF PIPE DIAMETER PER MILE PER DAY OF SEWER PIPE, INCLUDING MANHOLES IN THE TEST SECTION, RESPECTIVELY.
12. ALL MANHOLES SHALL BE TESTED FOR WATER TIGHTNESS IN ACCORDANCE WITH ASTM C969, "STANDARD PRACTICE FOR INFILTRATION AND EXFILTRATION ACCEPTANCE TESTING OF INSTALLED PRECAST CONCRETE PIPE SEWER LINES" OR ASTM C1244,"STANDARD TEST METHOD FOR CONCRETE SEWER MANHOLES BY NEGATIVE PRESSURE (VACUUM) TEST." ALL MANHOLES SHALL BE THOROUGHLY CLEANED OF DEBRIS AND ALL VISIBLE LEAKAGE ELIMINATED BEFORE INSPECTION AND ACCEPTANCE.
13. ALL DEFECTS AND CORRECTIVE WORK REQUIRED AS THE RESULT OF TV INSPECTION SHALL BE TAKEN CARE OF BY THE CONTRACTOR WITHOUT DELAY. UPON COMPLETION THEREOF, THE SEWER SHALL BE RE-TESTED AND SUCH FURTHER INSPECTION OF THE WORK MADE AS DEEMED NECESSARY BY THE CITY OF WARRENVILLE AT THE COST OF THE CONTRACTOR.
14. SPECIAL CONSIDERATION MUST BE GIVEN TO THE INSTALLATION OF THE SEWER SYSTEM BY THE CONTRACTOR DURING THE COURSE OF CONSTRUCTION TO INSURE PROTECTION OF THE ADJACENT AREA, SEWER ALIGNMENT, CONNECTION, WYE LOCATIONS, BACKFILLING, ETC.
15. ANY DEVIATION FROM APPROVED PLANS OR SPECIFICATIONS AFFECTING CAPACITY, FLOW, OPERATION OF UNITS, OR POINT OF DISCHARGE SHALL BE APPROVED, IN WRITING BY THE CITY OF WARRENVILLE BEFORE SUCH CHANGES ARE MADE AND SHALL BE SHOWN ON THE AS-BUILT DRAWINGS.

STANDARD CITY OF WARRENVILLE EROSION CONTROL NOTES

1. SEDIMENT AND EROSION CONTROL DEVICES SHALL BE INSTALLED AND FUNCTIONAL BEFORE THE SITE IS OTHERWISE DISTURBED. ALL RUNOFF FROM DISTURBED AREAS SHALL BE FILTERED BY SILT FENCE. IN ADDITION TO SILT FENCE, DISTURBED AREAS DRAINING MORE THAN ONE ACRE BUT FEWER THAN FIVE ACRES SHALL INCORPORATE A TEMPORARY SEDIMENT TRAP AT THE OUTFALL AND DISTURBED AREAS DRAINING MORE THAN FIVE ACRES SHALL INCORPORATE A TEMPORARY SEDIMENT BASIN AT THE OUTFALL.
2. IF A STOCKPILE IS TO REMAIN IN PLACE FOR MORE THAN THREE DAYS, IT SHALL BE SURROUNDED BY SILT FENCE. IF A STOCKPILE IS TO REMAIN IN PLACE FOR MORE THAN 7 DAYS, IT SHALL BE PROTECTED WITH TEMPORARY SEEDING.
3. ALL FLARED END SECTIONS SHALL BE PROTECTED BY SEDIMENT TRAPS AND/OR PERFORATED RISER PIPES UNTIL GROUND COVER HAS BEEN ESTABLISHED. FILTER FABRIC OR FILTER BASKETS SHALL BE INSTALLED UNDER ALL INLET AND CATCH BASIN GRATES AND SHALL BE MAINTAINED UNTIL GROUND COVER HAS BEEN ESTABLISHED.
4. WATER PUMPED FROM THE SITE SHALL BE FILTERED THROUGH THE USE OF A SILT BAG ON THE END OF THE DISCHARGE HOSE.
5. A SPECIFIC AREA SHALL BE DESIGNATED AS A CONCRETE WASH LOCATION AND SHALL BE SURROUNDED BY SILT FENCE.
6. ALL SOIL, MUD AND CONSTRUCTION DEBRIS WASHED, TRACKED OR OTHERWISE DEPOSITED ON STREET PAVEMENT SHALL BE REMOVED IMMEDIATELY AND A WASH-DOWN FACILITY SHALL BE PROVIDED FOR ALL CONSTRUCTION VEHICLES LEAVING THE SITE.
7. VEHICULAR ACCESS TO THE SITE SHALL BE RESTRICTED TO A TEMPORARY GRAVEL CONSTRUCTION ENTRANCE. THE TEMPORARY CONSTRUCTION ENTRANCE SHALL BE INSTALLED BEFORE THE START OF CONSTRUCTION AND SHALL REMAIN IN PLACE UNTIL THE PERMANENT DRIVEWAY IS INSTALLED
8. SEED WITH MULCH OR EROSION BLANKET, OR SOD, SHALL BE PLACED ON ALL DISTURBED AREAS WITHIN 7 DAYS OF TOP SOIL PLACEMENT AND FINAL GRADING. SILT FENCE SHALL REMAIN IN PLACE UNTIL A HEALTHY STAND OF GRASS HAS BEEN ESTABLISHED.

EROSION CONTROL:

1. THE CONTRACTOR SHALL INSTALL THE EROSION AND SEDIMENT CONTROL DEVICES AS SHOWN ON THE APPROVED EROSION AND SEDIMENT CONTROL PLAN.
2. EROSION AND SEDIMENT CONTROL PRACTICES SHALL BE FUNCTIONAL PRIOR TO HYDROLOGIC DISTURBANCE OF THE SITE.
3. ALL DESIGN CRITERIA, SPECIFICATIONS, AND INSTALLATION OF EROSION AND SEDIMENT CONTROL PRACTICES SHALL BE IN ACCORDANCE WITH THE ILLINOIS URBAN MANUAL.
4. A COPY OF THE APPROVED EROSION AND SEDIMENT CONTROL PLAN SHALL BE MAINTAINED ON THE SITE AT ALL TIMES.
5. INSPECTIONS AND DOCUMENTATION SHALL BE PERFORMED, AT A MINIMUM:
   a) UPON COMPLETION OF INITIAL EROSION AND SEDIMENT CONTROL MEASURES, PRIOR TO ANY SOIL DISTURBANCE.
   b) ONCE EVERY SEVEN (7) CALENDAR DAYS AND WITHIN 24 HOURS OF THE END OF A STORM EVENT WITH GREATER THAN 0.5 INCH OF RAINFALL OR LIQUID EQUIVALENT PRECIPITATION.
6. IF STRIPPING, CLEARING, GRADING, OR LANDSCAPING ARE TO BE DONE IN PHASES, THE CONTRACTOR SHALL PLAN FOR APPROPRIATE SOIL EROSION AND SEDIMENT CONTROL MEASURES.
7. A STABILIZED CONSTRUCTION ENTRANCE SHALL BE INSTALLED AT ANY POINT WHERE TRAFFIC WILL BE ENTERING OR LEAVING CONSTRUCTION SITE.
8. SEDIMENT OR SOIL REACHING A PUBLIC RIGHT OF WAY, STREET, ALLEY OR PARKING AREA SHALL BE REMOVED BY SCRAPING OR STREET CLEANING AS ACCUMULATIONS WARRANT AND TRANSPORTED TO A CONTROLLED SEDIMENT DISPOSAL AREA.
9. CONCRETE WASHOUT FACILITIES SHALL BE SHALL BE INSTALLED PRIOR TO ANY ON SITE CONSTRUCTION ACTIVITIES INVOLVING CONCRETE.
10. TEMPORARY DIVERSIONS SHALL BE CONSTRUCTED AS NECESSARY TO DIRECT ALL RUNOFF FROM HYDROLOGICALLY DISTURBED AREAS TO AN APPROPRIATE SEDIMENT TRAP OR BASIN.
11. DISTURBED AREAS WHERE CONSTRUCTION ACTIVITIES HAVE TEMPORARILY OR PERMANENTLY CEASED SHALL BE STABILIZED WITH TEMPORARY OR PERMANENT MEASURES WITHIN 7 DAYS.
12. ALL FLOOD PROTECTION AREAS AND WETLANDS SHALL, AT A MINIMUM, BE PROTECTED WITH A DOUBLE-ROW OF SILT FENCE.
13. SOIL STOCKPILES SHALL, AT A MINIMUM, BE PROTECTED WITH PERIMETER SEDIMENT CONTROLS. STOCKPILES THAT ARE TO REMAIN IN PLACE FOR MORE THAN THREE DAYS SHALL RECEIVE SOIL EROSION AND SEDIMENT CONTROL MEASURES. SOIL STOCKPILES SHALL NOT BE PLACED IN FLOOD PROTECTION AREAS OR THEIR BUFFERS.
14. EARTHEN EMBANKMENT SIDE SLOPES SHALL BE STABILIZED WITH EROSION CONTROL BLANKET.
15. STORM SEWERS THAT ARE OR WILL BE FUNCTIONING DURING CONSTRUCTION SHALL BE PROTECTED BY INLET FILTERS.
16. THE CONTRACTOR SHALL EITHER REMOVE OR REPLACE ANY EXISTING DRAIN TILES AND INCORPORATE THEM INTO THE DRAINAGE SYSTEM FOR THE DEVELOPMENT.
17. IF DEWATERING SERVICES ARE USED, ADJOINING PROPERTIES AND DISCHARGE LOCATIONS SHALL BE PROTECTED FROM EROSION AND SEDIMENTATION. DEWATERING SYSTEMS SHOULD BE INSPECTED DAILY DURING OPERATIONAL PERIODS. THE SITE INSPECTOR MUST BE PRESENT AT THE COMMENCEMENT OF DEWATERING ACTIVITIES.
18. ANY TRENCH DEWATERING, WHICH CONTAINS SEDIMENT SHALL PASS THROUGH A SEDIMENT SETTLING POND OR EQUALLY EFFECTIVE SEDIMENT CONTROL DEVICE. ALTERNATIVES MAY INCLUDE DEWATERING INTO A SUMP PIT, FILTER BAG OR EXISTING VEGETATED UPSLOPE AREA. SEDIMENT LADEN WATERS SHALL NOT BE DISCHARGE TO WATERWAYS, FLOOD PROTECTION AREAS OR THE COMBINED SEWER SYSTEM.
19. ALL PERMANENT EROSION CONTROL PRACTICES SHALL BE INITIATED WITHIN SEVEN (7) DAYS FOLLOWING THE COMPLETION OF SOIL DISTURBING ACTIVITIES.
20. ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE MAINTAINED AND REPAIRED AS NEEDED ON A YEAR-ROUND BASIS DURING CONSTRUCTION AND ANY PERIODS OF CONSTRUCTION SHUTDOWN UNTIL PERMANENT STABILIZATION IS ACHIEVED.
21. ALL TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES SHALL BE REMOVED WITHIN THIRTY (30) DAYS AFTER PERMANENT SITE STABILIZATION.
22. THE EROSION AND SEDIMENT CONTROL MEASURES SHOWN ON THE PLANS ARE THE MINIMUM REQUIREMENTS. ADDITIONAL MEASURES MAY BE REQUIRED BY THE ENGINEER, SITE INSPECTOR, OR THE CITY OF WARRENVILLE AT NO ADDITIONAL COST TO THE OWNER.
23. SOIL STOCKPILES SHALL NOT BE LOCATED IN A DRAINAGEWAY, FLOOD PLAIN AREA OR A DESIGNATED BUFFER, INLESS OTHERWISE APPROVED, UNDER SPECIFIC CONDITIONS TO BE ESTABISHED BY THE DIRECTOR OR ADMINISTRATOR.

FILE: I:\080-020 Cantera Lot 2 Sub Area C\Engineering\Drawings\Final Engineering

△ 04-19-19: PER CITY COMMENTS △ 03-15-19: PER DUDOT COMMENTS
△ 03-25-19: PER FPD COMMENTS △ 02-25-19: PER INTERNAL COORDINATION

REVISIONS:
△ 09-18-18: REVISED PER CITY COMMENTS
△ 11-05-18: REVISED PER FPD COMMENTS
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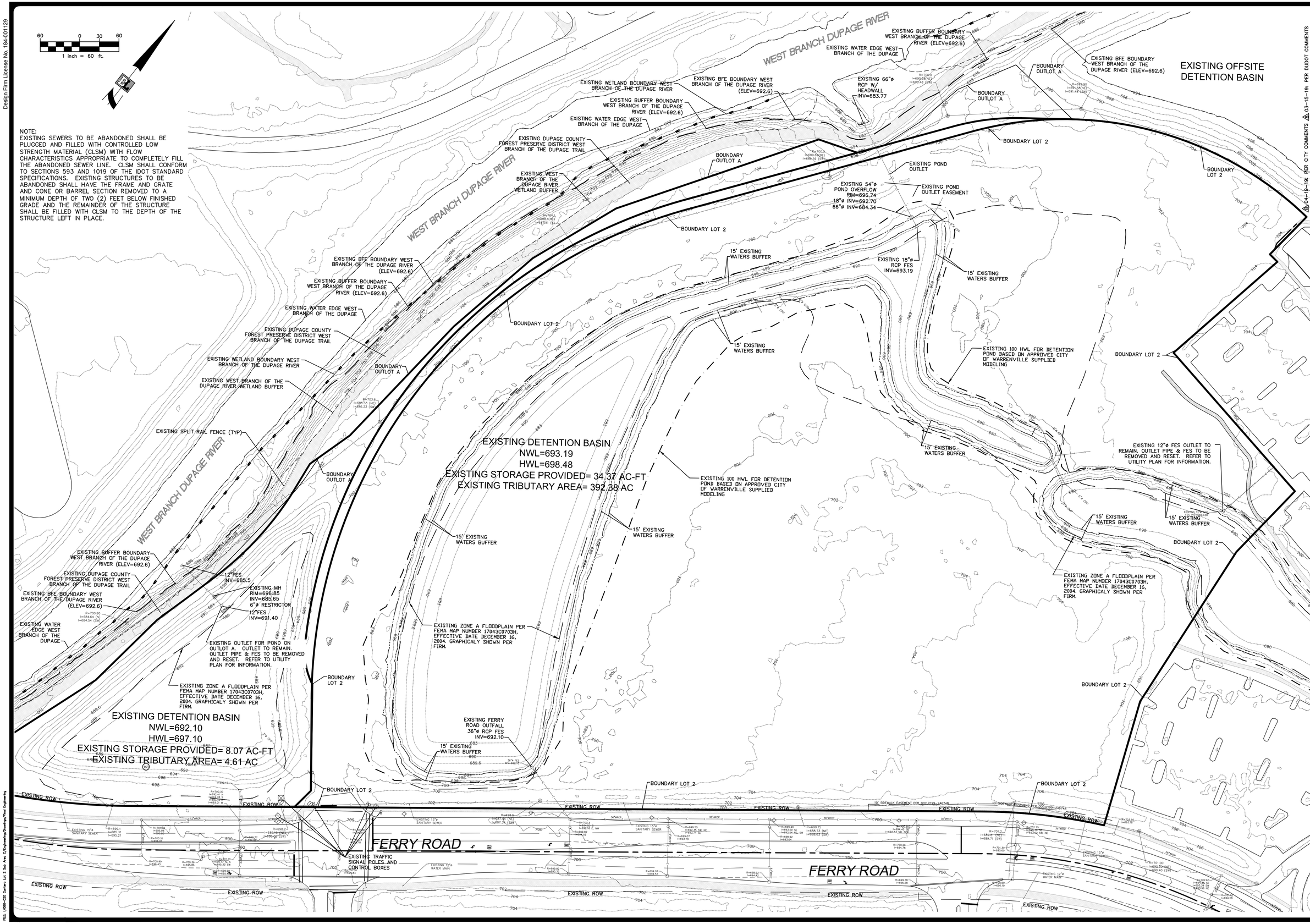
GENERAL NOTES

RIVER VIEW WEST
CITY OF WARRENVILLE, ILLINOIS

SHEET NUMBER
3
OF 71



Design Firm License No. 184-001129

FILE: I:/080-020 Cantera Lot 2 Sub Area C/Engineering/Drawings/Final Engineering

JOB NO: 080-020	
FIELD BOOK: N/A	
FIELD BOOK: N/A	
DRAWN BY: MK	
CHECKED BY: KEK	
COMPLETED: 04/07/18	

REVISIONS:
1. 09-18-18: REVISED PER CITY COMMENTS
2. 11-05-18: REVISED PER FPD COMMENTS
3. 01-18-19: REVISED PER CITY COMMENTS
4. 02-18-19: REVISED PER CITY COMMENTS
5. 03-15-19: PER DUDOT COMMENTS
6. 04-19-19: PER CITY COMMENTS
7. 03-25-19: PER FPD COMMENTS
8. 02-25-19: PER INTERNAL COORDINATION

PREPARED FOR:
CANTERA DEVELOPMENT HOLDINGS, LLC.
TWO NORTHFIELD PLAZA, SUITE 320
NORTHFIELD, IL 60093
TEL :(847) 562-2001

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EXISTING CONDITIONS

RIVER VIEW WEST
CITY OF WARRENVILLE, ILLINOIS

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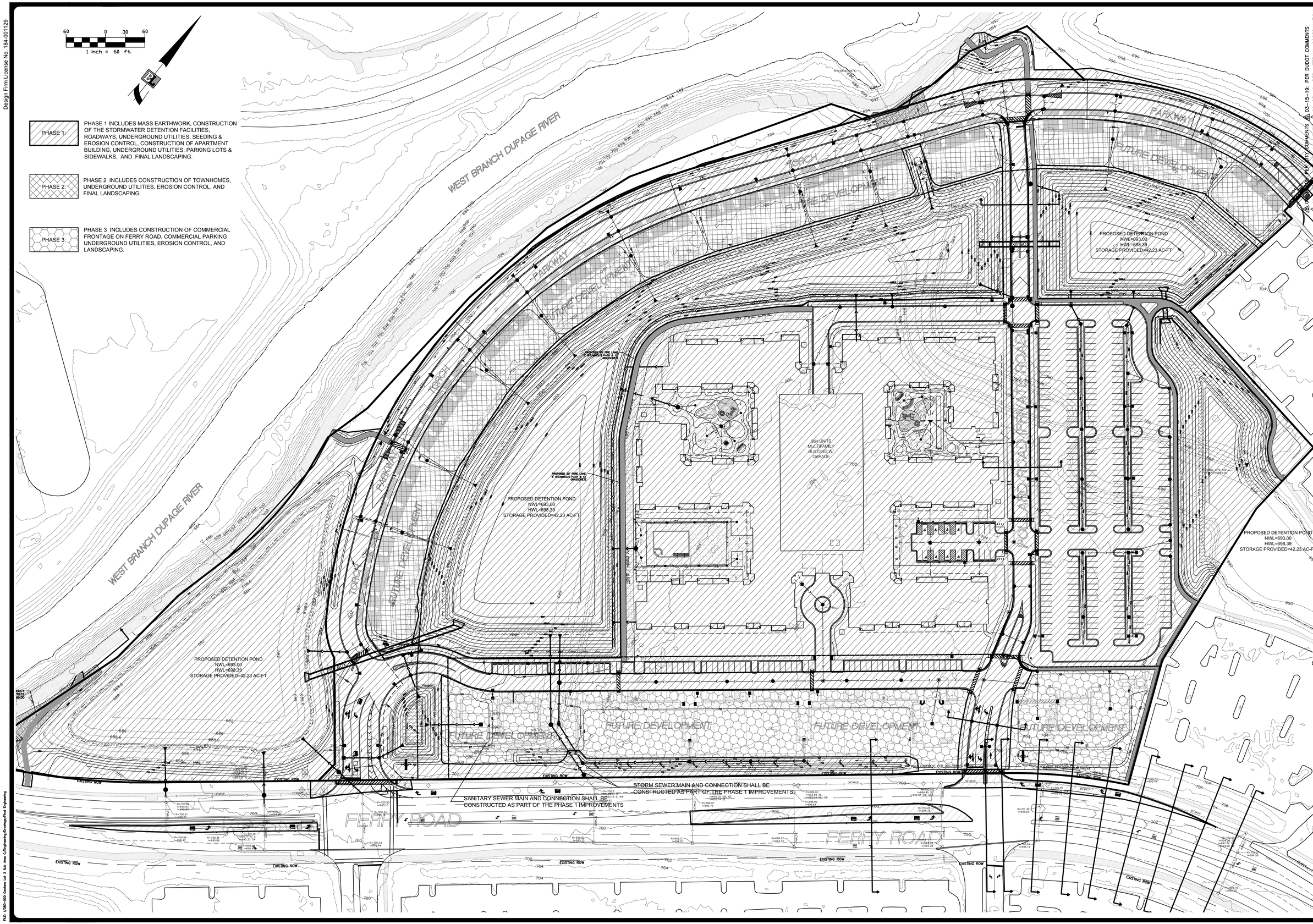

PHASE 1: PHASE 1 INCLUDES MASS EARTHWORK, CONSTRUCTION OF THE STORMWATER DETENTION FACILITIES, ROADWAYS, UNDERGROUND UTILITIES, SEEDING & EROSION CONTROL, CONSTRUCTION OF APARTMENT BUILDING, UNDERGROUND UTILITIES, PARKING LOTS & SIDEWALKS, AND FINAL LANDSCAPING.

PHASE 2: PHASE 2 INCLUDES CONSTRUCTION OF TOWNHOMES, UNDERGROUND UTILITIES, EROSION CONTROL, AND FINAL LANDSCAPING.

PHASE 3: PHASE 3 INCLUDES CONSTRUCTION OF COMMERCIAL FRONTAGE ON FERRY ROAD, COMMERCIAL PARKING UNDERGROUND UTILITIES, EROSION CONTROL, AND LANDSCAPING.

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CONSTRUCTION PHASING PLAN

RIVER VIEW WEST
CITY OF WARRENVILLE, ILLINOIS

SHEET NUMBER
5
OF 71

Design Firm License No. 184-001129

60 0 30 60

1 inch = 60 ft.

WEST BRANCH DUPAGE RIVER

FUTURE DEVELOPMENT

364 UNITS MULTIFAMILY BUILDING W/ GARAGE FF=704.00

PROPOSED DETENTION POND
NWL=693.00
HWL=698.39
STORAGE PROVIDED=42.23 AC-FT

FERRY ROAD

REVISIONS:	JOB NO: 080-020
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FILE: I:\080-020 Cantera Lot 2 Sub Area 4\Engineering\Drawings\	COMPLETED: 04/07/18

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03-25-19: PER INTERNAL COORDINATION

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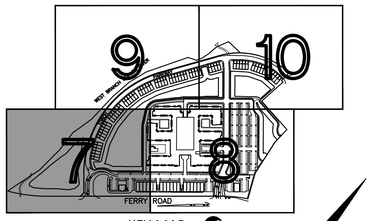
GRADING PLAN

RIVER VIEW WEST
CITY OF WARRENVILLE, ILLINOIS

SHEET NUMBER
6
OF 71

FILE: I:\080-020 Cantera Lot 2 Sub Area 4\Engineering\Drawings\Final Engineering

SEE SHEET 9 FOR CONTINUATION



30 0 15 30
1 inch = 30 ft.

WEST BRANCH DUPAGE RIVER

EXISTING WETLAND BOUNDARY WEST BRANCH OF THE DUPAGE RIVER
EXISTING WEST BRANCH OF THE DUPAGE RIVER WETLAND BUFFER
EXISTING SPLIT RAIL FENCE.
EXISTING BUFFER BOUNDARY WEST BRANCH OF THE DUPAGE RIVER (ELEV=692.6)
EXISTING WATER EDGE WEST BRANCH OF THE DUPAGE
EXISTING BFE BOUNDARY WEST BRANCH OF THE DUPAGE RIVER (ELEV=692.6)
EXISTING WETLAND BOUNDARY WEST BRANCH OF THE DUPAGE RIVER
EXISTING WEST BRANCH OF THE DUPAGE RIVER WETLAND BUFFER
EMERGENCY OVERFLOW SPILLWAY. SEE FULL PLAN VIEW ON SHEET 9.
BOUNDARY "OUTLOT A"
PROPOSD 100-YR HWL FOR DETENTION POND BASED ON MODIFIED APPROVED CITY OF WARRENVILLE SUPPLIED MODELING
DELINEATED EMERGENCY OVERLAND FLOW PATH
EXISTING BASIN SIDE SLOPE TO RECEIVE NATIVE PLANTINGS AND LANDSCAPING. REFER TO LANDSCAPE DRAWINGS FOR DETAIL
FOREST PRESERVE DISTRICT CONNECTION TRAIL
RE-GRADE EXISTING POND TO INCORPORATE DETENTION INTO LOT 2 DEVELOPMENT
PROPOSED DETENTION POND
NWL=693.00
HWL=698.39
STORAGE PROVIDED=42.23 AC-FT
EXISTING FLOODPLAIN BOUNDARY PER FEMA MAP NUMBER 17043C0703H EFFECTIVE DATE DECEMBER 16, 2004. GRAPHICALLY SHOWN PER FIRM.
PROPOSED POND OVERFLOW ELEV 699.04
PROPOSED 5'X7' PRC BOX CULVERTT
PROPOSED 5'X7' PRC BOX CULVERT
7" THICK PCC SIDEWALK ALONG TORCH PARKWAY
FUTURE DEVELOPMENT
4:1 MAX SLOPE ABOVE ELEV 697
±1,045 LF PROPOSED FENCE ON TOP OF RETAINING WALL. REFER TO DETAIL (TYP)
PROPOSED 20' FIRE LANE. 8' BITUMINOUS PATH & 12' GRASSCRETE
PROPOSED DETENTION POND
NWL=693.00
HWL=698.39
STORAGE PROVIDED=42.23 AC-FT
PROPOSED RETAINING WALL (TYP)
PROPOSED PROTECTIVE FENCE AT TOP OF RETAINING WALL. REFER TO DETAIL (TYP)
EXISTING FLOODPLAIN BOUNDARY PER FEMA MAP NUMBER 17043C0703H EFFECTIVE DATE DECEMBER 16, 2004. GRAPHICALLY SHOWN PER FIRM.
NATIVE PLANTINGS ON POND EDGE BETWEEN NWL AND ELEV 697 @ 5:1 MAX SLOPE (TYP) NATIVE PLANTINGS EXTEND TO ELEV 699.5
PROPOSED SPLIT RAIL FENCE REFER TO DETAIL (TYP)
DEPRESSED CURB & GUTTER
REVERSED PITCH CURB & GUTTER ON PARKING STALLS WHERE DRAINGE IS AWAY FROM CURB LINE (TYP).
PROVIDE CURB DEPRESSION FOR SURFACE WATER DRAINAGE
REVERSED PITCH CURB & GUTTER ON PARKING STALLS WHERE DRAINGE IS AWAY FROM CURB LINE (TYP).
REVERSED PITCH CURB & GUTTER ON PARKING STALLS WHERE DRAINGE IS AWAY FROM CURB LINE (TYP).
BIORETENTION FACILITY
BIOSWALE
REMOVE & REPLACE 50 SQFT EXISTING PCC SIDEWALK
REMOVE & REPLACE 50 SQFT EXISTING PCC SIDEWALK
EXISTING TRAFFIC SIGNAL EQUIPMENT
EXISTING TRAFFIC SIGNAL EQUIPMENT
2" MILL AND OVERLAY OF EXISTING LEFT TURN LANE APPROX. 438 SYD. MILLING LIMITS SHALL INCLUDE THE REMOVAL OF THE EXISTING RECESSED PAVEMENT MARKERS(TYP).
2" MILL AND OVERLAY OF EXISTING RIGHT TURN LANE AND DRIVEWAY ENTRANCE, APPROX. 757 SYD. MILLING LIMITS SHALL INCLUDE THE REMOVAL OF THE EXISTING RECESSED PAVEMENT MARKERS(TYP).
FERRY ROAD
EXISTING ROW
HEAVY DUTY PAVEMENT
NWL
HWL
BOUNDARY "OUTLOT A"

SEE SHEET 8 FOR CONTINUATION

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GRADING PLAN

RIVER VIEW WEST
CITY OF WARRENVILLE, ILLINOIS

SHEET NUMBER
7
OF 71

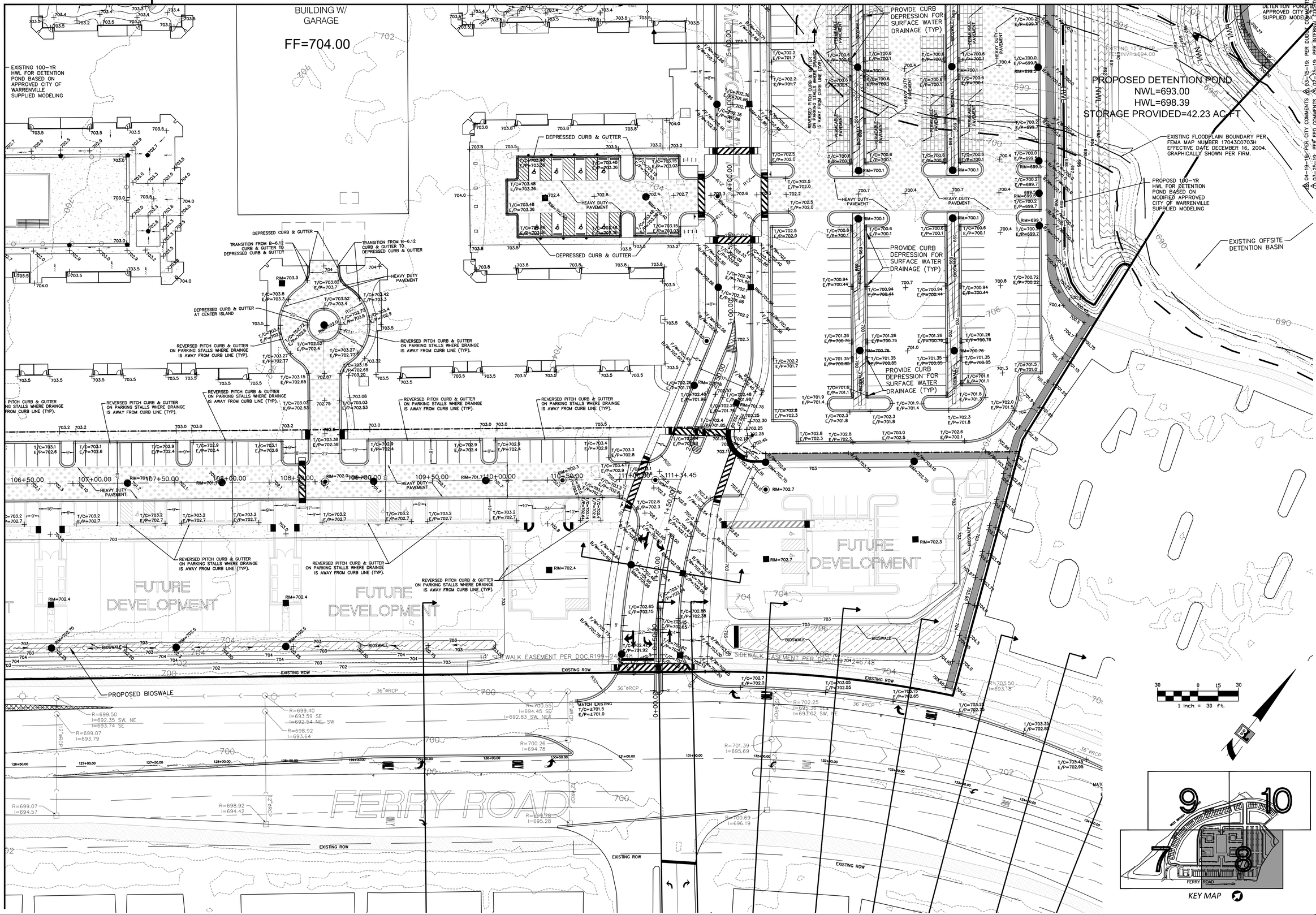
Design Firm License No. 184.001129

FILE: I:\080-020 Cantera Lot 2 Sub Area C\Engineering\Drawings\Final Engineering

SEE SHEET 9
FOR CONTINUATION

SEE SHEET 10 FOR CONTINUATION

SEE SHEET 7 FOR CONTINUATION



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GRADING PLAN
RIVER VIEW WEST
CITY OF WARRENVILLE, ILLINOIS

SHEET NUMBER
8
OF 71

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FILE: I:/080-020 Cantera Lot 2 Sub Area C/Engineering/Drawings/Final Engineering

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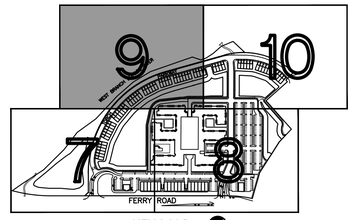
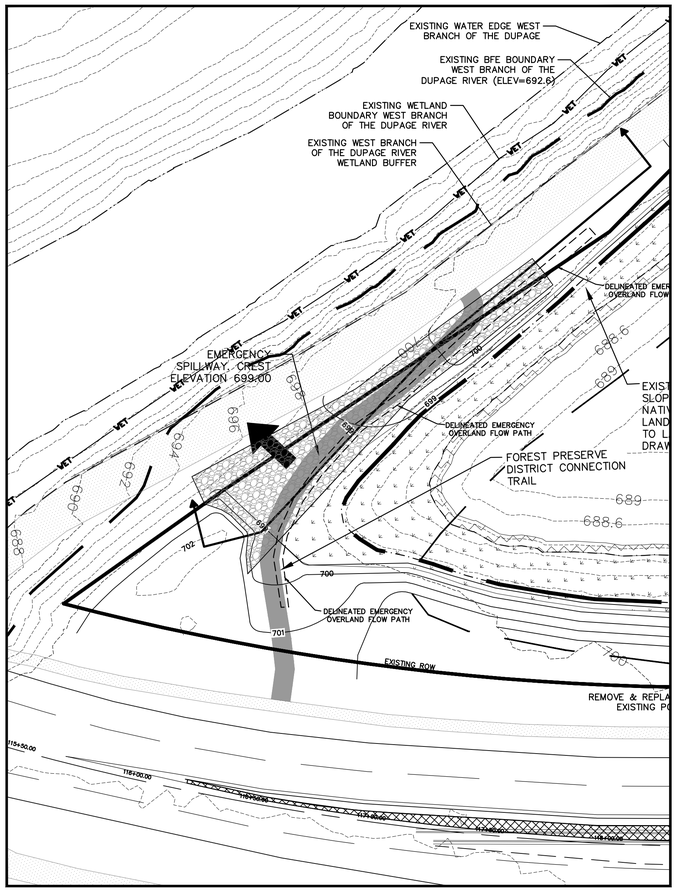
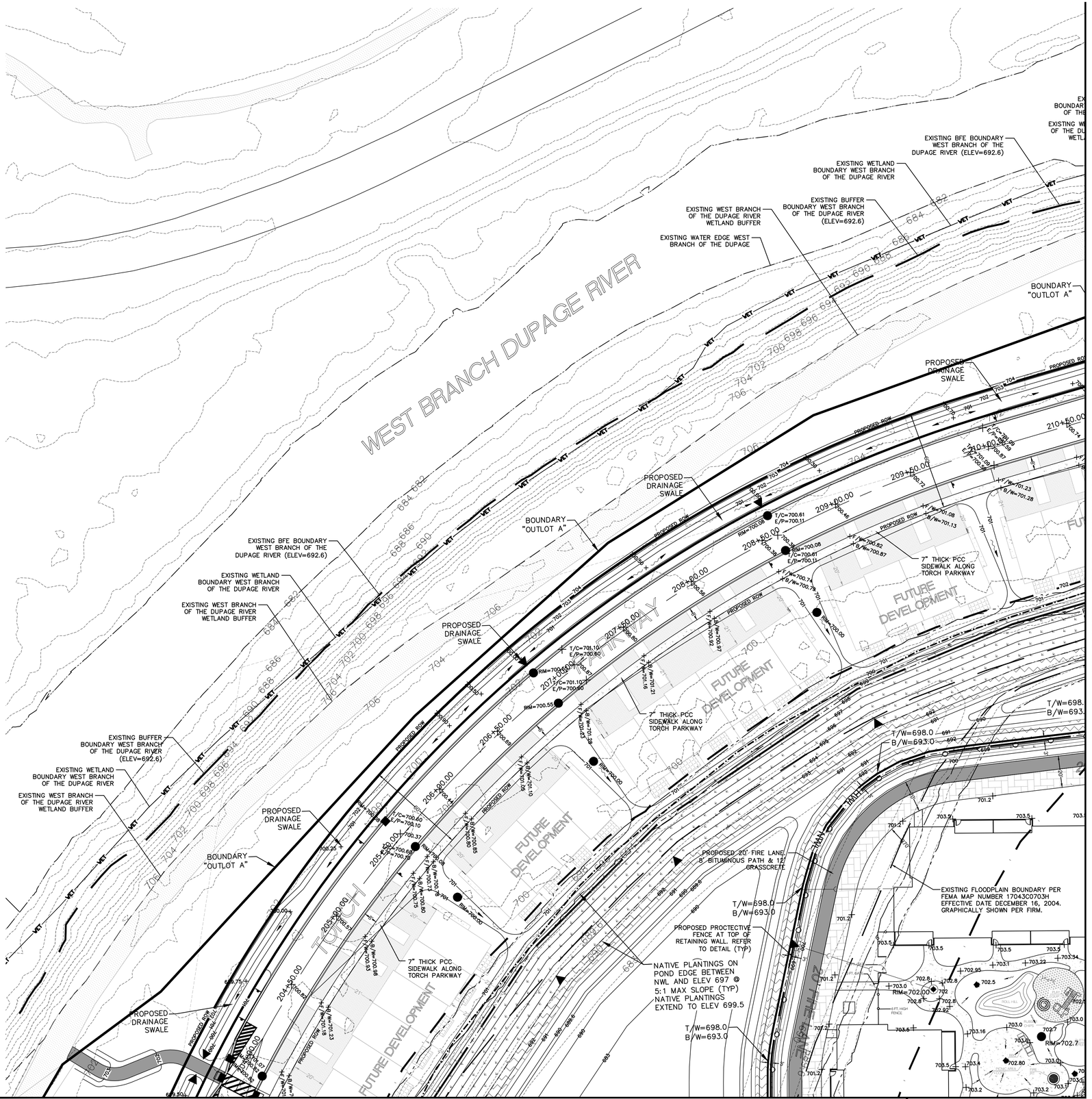
30 0 15 30
1 inch = 30 ft.



KEY MAP



OUTLOT A OVERFLOW SPILLWAY DETAIL
SEE CONTINUATION ON SHEET 7



SEE SHEET 7 FOR CONTINUATION

SEE SHEET 8
FOR CONTINUATION

SEE SHEET 10 FOR CONTINUATION

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JOB NO: 086-020
FIELD BOOK: N/A
FIELD BOOK: N/A
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COMPLETED: 04/07/18

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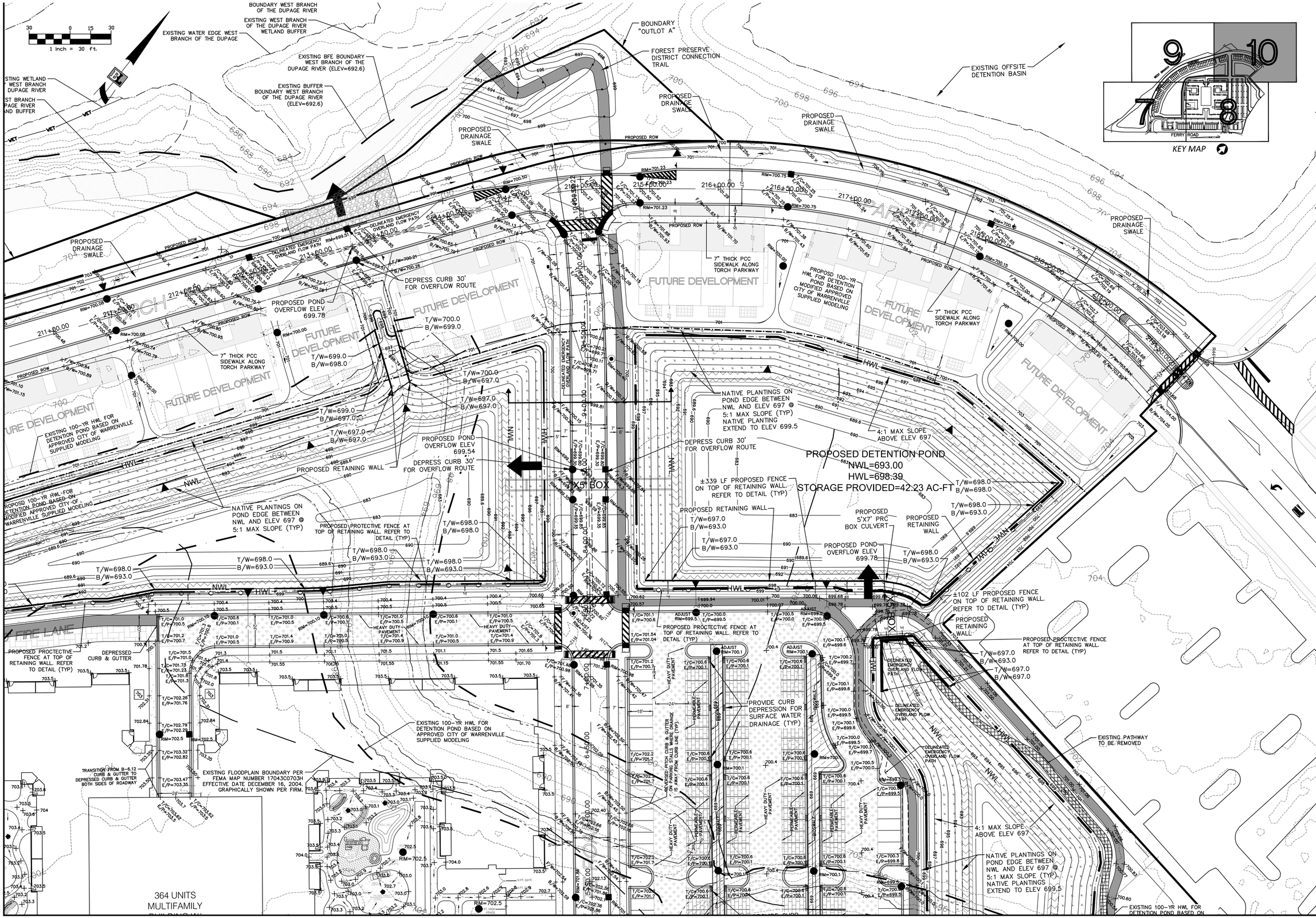
GRADING PLAN

RIVER VIEW WEST
CITY OF WARRENVILLE, ILLINOIS

SHEET NUMBER
9
OF 71



SEE SHEET 9 FOR CONTINUATION

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GRADING PLAN

RIVER VIEW WEST
CITY OF WARRENVILLE, ILLINOIS

SHEET NUMBER
10
OF 71

Design Firm License No. 184-001129

60 0 30 60

1 inch = 60 ft.

NOTE:
1) CONNECTIONS TO EXISTING SANITARY SEWERS SHALL BE MADE USING AN INSERTA TEE OR APPROVED EQUAL/
2) ALL CONNECTIONS TO EXISTING SANITARY SEWER MANHOLES SHALL USE RUBBER BOOTS
3) REFER TO THE CITY OF WARRENVILLE STANDARD NOTES FOR INFORMATION REGARDING UTILITY MATERIALS.
4) REFER TO ARCHITECTURAL PLANS FOR DOWNSPOUT LOCATIONS.
5) GRANULAR TRENCH BACKFILL IS REQUIRED WHEN A SERVICE IS WITHIN THE 'ZONE OF INFLUENCE' (BASED UPON DEPTH) OR UNDER THE DRIVEWAY/SIDEWALK/CURB/ROAD. GRANULAR TRENCH BACKFILL SHALL BE PROVIDED ON UTILITY SERVICES TO THE PROPOSED BUILDING.
6) EXISTING SEWERS TO BE ABANDONED SHALL BE PLUGGED AND FILLED WITH CONTROLLED LOW STRENGTH MATERIAL (CLSM) WITH FLOW CHARACTERISTICS APPROPRIATE TO COMPLETELY FILL THE ABANDONED SEWER LINE. CLSM SHALL CONFORM TO SECTIONS 593 AND 1019 OF THE IDOT STANDARD SPECIFICATIONS. EXISTING STRUCTURES TO BE ABANDONED SHALL HAVE THE FRAME AND GRATE AND CONE OR BARREL SECTION REMOVED TO A MINIMUM DEPTH OF TWO (2) FEET BELOW FINISHED GRADE AND THE REMAINDER OF THE STRUCTURE SHALL BE FILLED WITH CLSM TO THE DEPTH OF THE STRUCTURE LEFT IN PLACE.
7) WATERMAIN SHALL BE PVC C-900 (DR-18).

WEST BRANCH DUPAGE RIVER
EXISTING OUTLET TO WEST BANCH OF DUPAGE RIVER
EXISTING WETLAND BOUNDARY WEST BRANCH OF THE DUPAGE RIVER
EXISTING BUFFER BOUNDARY WEST BRANCH OF THE DUPAGE RIVER
EXISTING WATER EDGE WEST BRANCH OF THE DUPAGE
EXISTING WEST BRANCH OF THE DUPAGE RIVER WETLAND BUFFER
EXISTING BFE BOUNDARY WEST BRANCH OF THE DUPAGE RIVER (ELEV=692.6)
EXISTING BUFFER BOUNDARY WEST BRANCH OF THE DUPAGE RIVER (ELEV=692.6)
EXISTING WETLAND BOUNDARY WEST BRANCH OF THE DUPAGE RIVER
EXISTING BFE BOUNDARY WEST BRANCH OF THE DUPAGE RIVER (ELEV=693.6)
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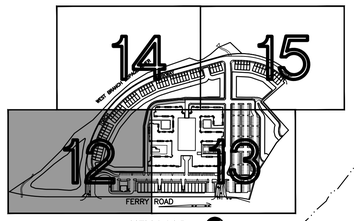
EXISTING WETLAND BOUNDARY WEST BRANCH OF THE DUPAGE RIVER
EXISTING WEST BRANCH OF THE DUPAGE RIVER WETLAND BUFFER
EXISTING WATER EDGE WEST BRANCH OF THE DUPAGE
EXISTING BFE

SEE SHEET 14 FOR CONTINUATION

30 0 15 30
1 inch = 30 ft.

NOTE:
1) CONNECTIONS TO EXISTING SANITARY SEWERS SHALL BE MADE USING AN INSERTA TEE OR APPROVED EQUAL/
2) ALL CONNECTIONS TO EXISTING SANITARY SEWER MANHOLES SHALL USE RUBBER BOOTS
3) REFER TO THE CITY OF WARRENVILLE STANDARD NOTES FOR INFORMATION REGARDING UTILITY MATERIALS.
4) REFER TO ARCHITECTURAL PLANS FOR DOWNSPOUT LOCATIONS.
5) GRANULAR TRENCH BACKFILL IS REQUIRED WHEN A SERVICE IS WITHIN THE 'ZONE OF INFLUENCE' (BASED UPON DEPTH) OR UNDER THE DRIVEWAY/SIDEWALK/CURB/ROAD. GRANULAR TRENCH BACKFILL SHALL BE PROVIDED ON UTILITY SERVICES TO THE PROPOSED BUILDING.
6) EXISTING SEWERS TO BE ABANDONED SHALL BE PLUGGED AND FILLED WITH CONTROLLED LOW STRENGTH MATERIAL (CLSM) WITH FLOW CHARACTERISTICS APPROPRIATE TO COMPLETELY FILL THE ABANDONED SEWER LINE. CLSM SHALL CONFORM TO SECTIONS 593 AND 1019 OF THE IDOT STANDARD SPECIFICATIONS. EXISTING STRUCTURES TO BE ABANDONED SHALL HAVE THE FRAME AND GRATE AND CONE OR BARREL SECTION REMOVED TO A MINIMUM DEPTH OF TWO (2) FEET BELOW FINISHED GRADE AND THE REMAINDER OF THE STRUCTURE SHALL BE FILLED WITH CLSM TO THE DEPTH OF THE STRUCTURE LEFT IN PLACE.
7) WATERMAIN SHALL BE PVC C-900 (DR-18).



KEY MAP

WEST BRANCH DUPAGE RIVER

EXISTING BFE BOUNDARY WEST BRANCH OF THE DUPAGE RIVER (ELEV=692.6)
EXISTING WETLAND BOUNDARY WEST BRANCH OF THE DUPAGE RIVER
EXISTING WEST BRANCH OF THE DUPAGE RIVER WETLAND BUFFER
12"ø RCP FES INV=685.50
EXISTING BUFFER BOUNDARY WEST BRANCH OF THE DUPAGE RIVER (ELEV=692.6)
STORM MH RIM=696.85 INV=685.65 6"ø PVC RESTRICTOR
EXISTING POND OUTLET TO REMAIN
12"ø RCP FES INV=691.40
REMOVE EXISTING FES & RESET AT INV=693.00. PROVIDE PERFORATED 12"ø RISER DURING CONSTRUCTION. SEE DETAIL
R=700.80 I=684.64 (N) I=684.54 (SW)
EXISTING WATER EDGE WEST BRANCH OF THE DUPAGE
EXISTING BFE BOUNDARY WEST BRANCH OF THE DUPAGE RIVER (ELEV=692.6)
EXISTING WETLAND BOUNDARY WEST BRANCH OF THE DUPAGE RIVER
EXISTING WEST BRANCH OF THE DUPAGE RIVER WETLAND BUFFER
PROPOSED NWL=693 HWL=698.39
PROVIDE 31 LF 22"Ø STEEL CASING PIPE FOR PROPOSED WATER MAIN UNDER BOX CULVERT
PROVIDE 30 LF 22"Ø STEEL CASING PIPE FOR PROPOSED SANITARY UNDER BOX CULVERT
246 LF 7'X5' PRECAST CONCRETE BOX CULVERT, I=693.0
12"Ø WATER MAIN PVC C900 (DR-18)
CONNECT TO EXISTING12" WATER MAIN STUB. REMOVE EXISTING VALVE AN VAULT AND REPLACE WITH PROPOSED VALVE AND VAULT AT CONNECTION POINT
REMOVE EXISTING 15"ø PIPE & REPLACE WITH 24"ø RCP.
EXISTING 15"ø SANITARY SEWER
ABANDON EXIST 12"ø PIPE
CONNECT TO EXIST STRUCTURE INV=695.83
CONNECT TO EXIST STRUCTURE INV=694.86
CONNECT TO EXISTING SANITARY SEWER INV=686.20 EXIST 15"Ø INV=687.03 PROP 8"Ø
CONNECT TO EXIST STRUCTURE INV=695.10
EXISTING 12"ø WATER MAIN
FERRY ROAD
EXISTING ROW
12"øRCP
15"øRCP
24"øRCP
NWL
HWL
7'X5' BOX
12"WM
8"WM
W
S
SAN
EXISTING BFE BOUNDARY WEST BRANCH OF THE DUPAGE RIVER (ELEV=692.6)
12"øINV=699.45
RCP @ 0.50%
CONNCET 18"ø STORM SEWER TO PROPOSED BOX CULVERT INV=693.08
246 LF 7'X5' PRECAST CONCRETE BOX CULVERT, I=693.0
8"Ø WATER MAIN PVC C900 (DR-18)
6"Ø SANITARY SEWER SERVICE @1.00% W/ CLEANOUT & 1" TYPE K COPPER WATER SERVICE (TYP). STUB AT ROW LINE.
3"Ø FIRE PROTECTION & DOMESTIC WATER SERVICE
36"ø FES INV=692.10
PROPOSED RETAINING WALL (TYP)
8"Ø WATER MAIN PVC C900 (DR-18)
PROPOSED RETAINING WALL (TYP)
PROVIDE 30 LF 22"Ø STEEL CASING PIPE FO PROPOSED SANITARY UNDER BOX CULVERT
8"Ø SANITARY BUILDIN SERVICE (TYP)
INTERCEPT EXISTING 36"Ø STORM SEWER AND ROUTE TO PROPOSED POND. REMOVE EXISTING RCP & FES.CONSTRUCT MANHOLE OVER EXISTING SEWER.
FUTURE DEVELOPMENT
P87 P87A P88 P89A P90 P84 P84A P85 P86 P82 P78 P78A P80 P81 P135 P136 P132 P134 P133 P131 P128 P127 P69 P68 P67 P66 P65 P74 P75 P77
W32 W31 W29 W30 W27 W28 W26 W2
S17 S16 S15 S14 S1 S2 S2A S10 S9 S18 S19
113 113A 114 110 110A 111 105 95 106 107 108 48 49 47 46 45 44 52 50 51 153 155 156 157 152 154 149 150 101 103 102 104 91 92 93 94 16 17 8 1 2
R=699.10 I=685.31 I=695.21
R=699.1 I=685.31 I=695.21
R=700.51 I=696.01
R=700.99 I=696.43
R=700.36 I=695.86
R=701.10 I=695.17 N, S I=695.33 SW
R=699.98 I=695.43
R=698.2 I=686.15 (NE) I=686.05 (SW)
R=699.77 I=694.86
R=700.30 I=692.41 N I=694.78 S I=693.10 E I=693.01 W
R=700.80 I=695.10
R=700.34 I=695.18
R=700.34 I=695.84
R=698.5 I=687.44 (NE) I=687.34 (SW)
R=700.3 I=694.53 S I=692.16 E, NW
R=699.82 I=694.59
R=699.82 I=695.32
201+00.00 200+00.00 203+50.00 202+00.00 204+00.00 103+00.00 102+00.00 101+00.00 100+00.00 104+00.00 104+50.00 105+00.00 105+50.00

SEE SHEET 13 FOR CONTINUATION

04-19-19: PER CITY COMMENTS
03-25-19: PER PPD COMMENTS
03-15-19: PER DUDOT COMMENTS
02-25-19: PER INTERNAL COORDINATION

REVISIONS:
09-18-18: REVISED PER CITY COMMENTS
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02-18-19: REVISED PER CITY COMMENTS
FILE: I:\080-020 Cantera Lot 2 Sub Area C\Engineering\Drawings

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UTILITY PLAN

RIVER VIEW WEST
CITY OF WARRENVILLE, ILLINOIS

SHEET NUMBER
12
OF 71

Design Firm License No. 184-001129

FILE: I:\080-020 Cantera Lot 2 Sub Area C\Engineering\Drawings\Final Engineering

Design Firm License No. 184-001129

SEE SHEET 14 FOR CONTINUATION

SEE SHEET 15 FOR CONTINUATION

SEE SHEET 12 FOR CONTINUATION

364 UNITS MULTIFAMILY BUILDING W/ GARAGE

PROVIDE 10"Ø SOLID DRAIN PIPE WITH CLEANOUTS FOR CONNECTION TO ROOF DRAIN DOWNSPOUTS. REFER TO ARCHITECTURAL PLANS FOR DOWNSPOUT LOCATIONS.

PROVIDE 10"Ø SOLID DRAIN PIPE WITH CLEANOUTS FOR CONNECTION TO ROOF DRAIN DOWNSPOUTS. REFER TO ARCHITECTURAL PLANS FOR DOWNSPOUT LOCATIONS.

FIRE DEPARTMENT CONNECTION

FIRE DEPARTMENT CONNECTION

8"Ø FIRE PROTECTION & DOMESTIC WATER SERVICE

BUILDING SERVICE 8"Ø PVC SDR 26 @ 0.50%

PROVIDE 10"Ø SOLID DRAIN PIPE WITH CLEANOUTS FOR CONNECTION TO ROOF DRAIN DOWNSPOUTS. REFER TO ARCHITECTURAL PLANS FOR DOWNSPOUT LOCATIONS.

ROOF DRAIN DISCHARGE

BUILDING SERVICE 8"Ø PVC SDR 26 @ 0.50%

8"Ø WATER MAIN PVC C900 (DR-18)

8"Ø WATER MAIN PVC C900 (DR-18)

8"Ø WATER MAIN PVC C900 (DR-18)

PROPOSED BIO-SWALE

PROPOSED BIO-SWALE

REMOVE 20 LF EXISTING 12"ø RCP & FES. RESET PROPOSED FES AT INV=693.00.

EXISTING 12"ø RCP FES INV=±694.00

POOL DECK DRAINAGE BY OTHERS

DOMESTIC & FIRE PROTECTION SEREVICE (TYP)

CONNECT BUILDING SERVICE WITH WYE INV=691.03

8"Ø SANITARY BUILDING SERVICE (TYP)

CONNECT BUILDING SERVICE WITH WYE INV=691.81

8"Ø SANITARY BUILDING SERVICE (TYP)

DOMESTIC & FIRE PROTECTION SEREVICE (TYP)

3"Ø FIRE PROTECTION & DOMESTIC WATER SERVICE

FUTURE DEVELOPMENT

FUTURE DEVELOPMENT

FUTURE DEVELOPMENT

AUGER PUSH PIT ± 20' X 40'

AUGER RECEIVING PIT ± 10'X30'

AUGER AND ENCASE PROPOSED WATER MAIN UNDER FERRY ROAD WITH 1 LF 22"Ø STEEL CASING PIPE

CONNECT TO EXISTING SANITARY SEWER INV=689.85 EXIST 15"Ø INV=690.60 PROP. 6"Ø

REMOVE AND REPLACE APPROXIMATLEY 13 SYD BITUMINOUS PEDESTRIAN PATH.

EXISTING 15"ø SANITARY SEWER

EXISTING 12"ø WATER MAIN

EXISTING 15"ø SANITARY SEWER

10' SIDEWALK EASEMENT PER DOC.R199-24

EXISTING ROW

FERRY ROAD

NOTE:
1) CONNECTIONS TO EXISTING SANITARY SEWERS SHALL BE MADE USING AN INSERTA TEE OR APPROVED EQUAL/
2) ALL CONNECTIONS TO EXISTING SANITARY SEWER MANHOLES SHALL USE RUBBER BOOTS
3) REFER TO THE CITY OF WARRENVILLE STANDARD NOTES FOR INFORMATION REGARDING UTILITY MATERIALS.
4) REFER TO ARCHITECTURAL PLANS FOR DOWNSPOUT LOCATIONS.
5) GRANULAR TRENCH BACKFILL IS REQUIRED WHEN A SERVICE IS WITHIN THE 'ZONE OF INFLUENCE' (BASED UPON DEPTH) OR UNDER THE DRIVEWAY/SIDEWALK/CURB/ROAD. GRANULAR TRENCH BACKFILL SHALL BE PROVIDED ON UTILITY SERVICES TO THE PROPOSED BUILDING.
6) EXISTING SEWERS TO BE ABANDONED SHALL BE PLUGGED AND FILLED WITH CONTROLLED LOW STRENGTH MATERIAL (CLSM) WITH FLOW CHARACTERISTICS APPROPRIATE TO COMPLETELY FILL THE ABANDONED SEWER LINE. CLSM SHALL CONFORM TO SECTIONS 593 AND 1019 OF THE IDOT STANDARD SPECIFICATIONS. EXISTING STRUCTURES TO BE ABANDONED SHALL HAVE THE FRAME AND GRATE AND CONE OR BARREL SECTION REMOVED TO A MINIMUM DEPTH OF TWO (2) FEET BELOW FINISHED GRADE AND THE REMAINDER OF THE STRUCTURE SHALL BE FILLED WITH CLSM TO THE DEPTH OF THE STRUCTURE LEFT IN PLACE.
7) WATERMAIN SHALL BE PVC C-900 (DR-18).

30 0 15 30
1 inch = 30 ft.

KEY MAP

04-19-19: PER CITY COMMENTS
03-25-19: PER FPD COMMENTS
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UTILITY PLAN

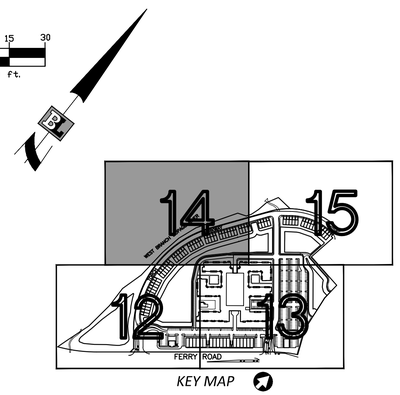
RIVER VIEW WEST
CITY OF WARRENVILLE, ILLINOIS

SHEET NUMBER 13 OF 71

FILE: I:\080-020 Cantera Lot 3 Sub Area 1\Engineering\Drawings\Final Engineering

Design Firm License No. 184-001129

30 0 15 30
1 inch = 30 ft.



KEY MAP

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1) CONNECTIONS TO EXISTING SANITARY SEWERS SHALL BE MADE USING AN INSERTA TEE OR APPROVED EQUAL.
2) ALL CONNECTIONS TO EXISTING SANITARY SEWER MANHOLES SHALL USE RUBBER BOOTS
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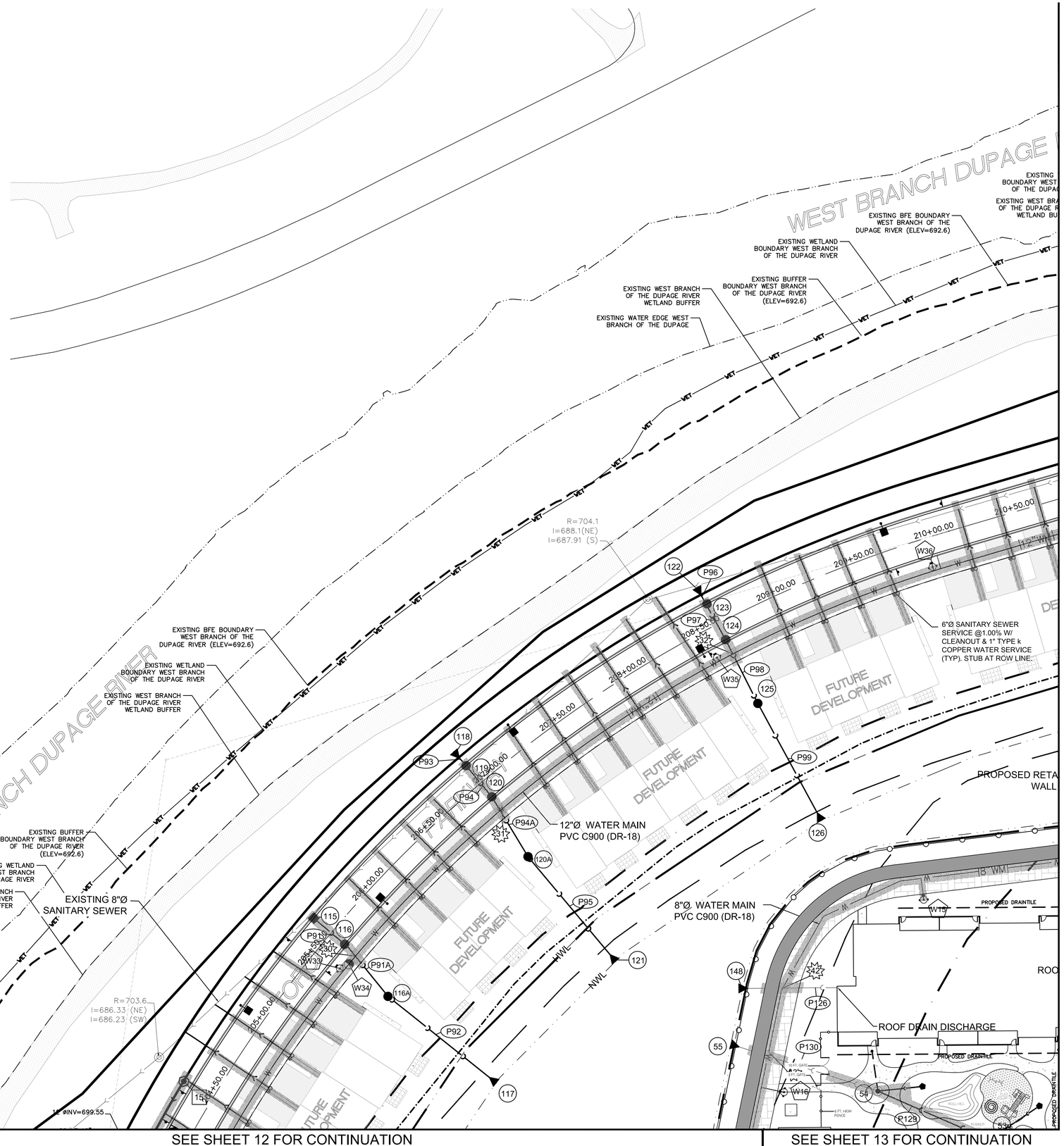
6) EXISTING SEWERS TO BE ABANDONED SHALL BE PLUGGED AND FILLED WITH CONTROLLED LOW STRENGTH MATERIAL (CLSM) WITH FLOW CHARACTERISTICS APPROPRIATE TO COMPLETELY FILL THE ABANDONED SEWER LINE. CLSM SHALL CONFORM TO SECTIONS 593 AND 1019 OF THE IDOT STANDARD SPECIFICATIONS. EXISTING STRUCTURES TO BE ABANDONED SHALL HAVE THE FRAME AND GRATE AND CONE OR BARREL SECTION REMOVED TO A MINIMUM DEPTH OF TWO (2) FEET BELOW FINISHED GRADE AND THE REMAINDER OF THE STRUCTURE SHALL BE FILLED WITH CLSM TO THE DEPTH OF THE STRUCTURE LEFT IN PLACE.
7) WATERMAIN SHALL BE PVC C-900 (DR-18).



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UTILITY PLAN

RIVER VIEW WEST
CITY OF WARRENVILLE, ILLINOIS

SHEET NUMBER
14
OF 71

Design Firm License No. 184-001129

SEE SHEET 14 FOR CONTINUATION

1 inch = 30 ft.

NOTE:
1) CONNECTIONS TO EXISTING SANITARY SEWERS SHALL BE MADE USING AN INSERTA TEE OR APPROVED EQUAL/
2) ALL CONNECTIONS TO EXISTING SANITARY SEWER MANHOLES SHALL USE RUBBER BOOTS
3) REFER TO THE CITY OF WARRENVILLE STANDARD NOTES FOR INFORMATION REGARDING UTILITY MATERIALS.
4) REFER TO ARCHITECTURAL PLANS FOR DOWNSPOUT LOCATIONS.
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7) WATERMAIN SHALL BE PVC C-900 (DR-18).

EXISTING WETLAND BOUNDARY WEST BRANCH OF THE DUPAGE RIVER
EXISTING WEST BRANCH OF THE DUPAGE RIVER WETLAND BUFFER
EXISTING WATER EDGE WEST BRANCH OF THE DUPAGE
EXISTING OUTLET TO WEST BANCH OF DUPAGE RIVER
EXISTING BFE BOUNDARY WEST BRANCH OF THE DUPAGE RIVER (ELEV=692.6)
EXISTING BUFFER BOUNDARY WEST BRANCH OF THE DUPAGE RIVER (ELEV=692.6)
R=700.0 I=690.58(NE) I=690.48 (SW)
R=700.0 I=689.69(NE) I=689.59 (SW)
R=699.90 I=691.58(NE) I=691.48 (SW)
EXISTING 8"Ø SANITARY SEWER
CONNECT TO EXISTING 8"Ø SANITARY SEWER
12"Ø WATER MAIN PVC C900 (DR-18)
6"Ø SANITARY SEWER SERVICE @1.00% W/ CLEANOUT & 1" TYPE k COPPER WATER SERVICE (TYP). STUB AT ROW LINE.
EXISTING MANHOLE TO REMAIN. EXISTING RIM =696.74
REMOVE AND RESET EXISTING OUTLET INV=693.00
CONNCET 15"ø STORM SEWER TO PROPOSED BOX CULVERT INV=694.61
90 LF 7'X5' PRECAST CONCRETE BOX CULVERT, I=693.0
EXISTING DRAINAGE EASEMENT FOR OUTLET
8"Ø WATER MAIN PVC C900 (DR-18)
ENCASE PROPOSED WATER MAIN UNDER BOX CULVERT WITH 40 LF 22"Ø STEEL CASING PIPE
43 LF 7'X5' PRECAST CONCRETE BOX CULVERT, I=693.0
PROPOSED RETAINING WALL (TYP)
42 LF 5'X7' PRECAST CONCRETE BOX CULVERT, I=693.0
CONNECT TO EXISTING 12"Ø WATER STUB. REMOVE EXISTNG VALVE AND VAULT. REMOVE APPROXIMATELY 35 LF OF EXISTING 12"Ø WATERMAIN. CONNECT OT EXISTING MAIN WITH NEW 12" VALVE AND VAULT.
EXISTING 12"Ø WATER MAIN
PROPOSED DRAINTILE
PARKING GARAGE DOWNSPOUT DISCHARGE
ROOF DRAIN DOWNSPOUT CONNECTION (TYP)
FIRE DEPARTMENT CONNECTION
PROPOSED BIO-SWALE
FUTURE DEVELOPMENT
KEY MAP
FERRY ROAD

SEE SHEET 13 FOR CONTINUATION

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UTILITY PLAN
RIVER VIEW WEST
CITY OF WARRENVILLE, ILLINOIS

SHEET NUMBER 15 OF 71

Design Firm License No. 184-001129

STORM SEWER STRUCTURE

1 CB, TYA, 4'ø
NEENAH R-4340 F&G
RIM=700.76
INV=695.57
STA=2+79.13
OFF=94.24' RT

2 CB, TYA, 4'ø
NEENAH R-4340 F&G
RIM=700.10
INV=695.34
STA=3+65.06
OFF=94.59' RT

3 CB, TYA, 4'ø
NEENAH R-4340 F&G
RIM=700.76
INV=695.72
STA=2+80.19
OFF=164.72' RT

4 CB, TYA, 5'ø
NEENAH R-4340 F&G
RIM=700.10
INV=695.17
INV=695.42
INV=694.67
STA=3+64.37
OFF=164.21' RT

5 CB, TYA, 5'ø
NEENAH R-4340 F&G
RIM=699.70
INV=694.05
STA=2+80.79
OFF=218.40' RT

6 CB, TYA, 6'ø
NEENAH R-4340 F&G
RIM=699.50
INV=694.02
STA=3+67.31
OFF=216.41' RT

7 CB, TYA, 5'ø
NEENAH R-4340 F&G
RIM=699.50
INV=693.99
STA=4+02.75
OFF=218.18' RT

8 CB, TYA, 5'ø
NEENAH R-4340 F&G
RIM=699.50
INV=693.90
STA=4+80.38
OFF=218.18' RT

9 CB, TYA, 5'ø
NEENAH R-4340 F&G
RIM=699.50
INV=693.81
STA=5+56.86
OFF=218.18' RT

10 CB, TYA, 5'ø
NEENAH R-4340 F&G
RIM=699.50
INV=693.67
STA=6+28.61
OFF=218.18' RT

11 CB, TYA, 5'ø
NEENAH R-4340 F&G
ADJUST RIM=700.1
INV=693.72
INV=693.22
STA=7+15.46
OFF=164.48' RT

12 CB, TYA, 5'ø
NEENAH R-3275 F&G
ADJUST RIM=699.50
INV=693.10
STA=7+45.83
OFF=177.05

13 36"ø PRC FES
W/ GRATE
INV=693.00
STA=7+68.29
OFF=177.10' RT

14 CB, TYA, 4'ø
NEENAH R-4340 F&G
RIM=700.10
INV=695.70
STA=4+04.49
OFF=163.88' RT

15 CB, TYA, 4'ø
NEENAH R-4340 F&G
RIM=700.10
INV=695.31
STA=4+81.32
OFF=164.87' RT

16 CB, TYA, 5'ø
NEENAH R-4340 F&G
RIM=700.10
INV=694.92
STA=5+56.68
OFF=165.00' RT

17 CB, TYA, 5'ø
NEENAH R-4340 F&G
RIM=700.10
INV=693.15
INV=694.15
STA=6+42.35
OFF=169.07' RT

18 CB, TYA, 4'ø
NEENAH R-4340 F&G
RIM=700.10
INV=697.60
STA=4+04.71
OFF=94.82' RT

19 CB, TYA, 4'ø
NEENAH R-4340 F&G
RIM=700.10
INV=697.26
INV=697.01
STA=4+81.39
OFF=94.44' RT

20 CB, TYA, 4'ø
NEENAH R-4340 F&G
RIM=700.10
INV=696.76
INV=696.51
STA=5+57.45
OFF=94.78' RT

21 CB, TYA, 5'ø
NEENAH R-4340 F&G
RIM=700.10
INV=695.82
INV=696.32
STA=6+35.07
OFF=94.40' RT

22 CB, TYA, 5'ø
NEENAH R-4340 F&G
ADJUST RIM=700.10
INV=695.68
STA=7+17.96
OFF=94.56' RT

23 CB, TYA, 5'ø
NEENAH R-4340 F&G
ADJUST RIM=699.50
INV=695.64
INV=693.04
STA=7+46.34
OFF=79.83' RT

24 24"ø PRC FES
W/ GRATE
INV=693.00
STA=7+69.76
OFF=79.67' RT

25 CB, TYA, 4'ø
NEENAH R-4340 F&G
RIM=702.50
INV=694.81
STA=5+72.67
OFF=153.04' LT

26 CB, TYA, 4'ø
NEENAH R-4340 F&G
RIM=702.5
INV=694.61
STA=5+72.68
OFF=138.10' LT

27 INLET, TYA
NEENAH R-3275 F&G
RIM=701.86
INV=698.51
STA=4+54.61
OFF=12.00' RT

28 CB, TYA, 4'ø
NEENAH R-3275 F&G
RIM=701.86
INV=694.01
INV=694.51
INV=694.61
STA=4+54.61
OFF=12.00' LT

29 CB, TYA, 5'ø
NEENAH R-3275 F&G
RIM=701.86
INV=693.86
INV=693.38
INV=698.38
INV=694.61
STA=5+38.62
OFF=12.00' LT

30 INLET, TYA
NEENAH R-3275 F&G
RIM=701.86
INV=698.50
STA=5+38.62
OFF=12.00' RT

31 CB, TYA, 5'ø
NEENAH R-3275 F&G
RIM=700.98
INV=693.41
STA=7+08.72
OFF=12.00' LT

32 INLET, TY A
NEENAH R-3275 F&G
RIM=700.98
INV=698.15
STA=7+08.85
OFF=12.00' RT

33 CB, TYA, 4'ø
NEENAH R-3275 F&G
RIM=700.10
INV=693.54
STA=7+46.50
OFF=274.68' LT

34 CB, TYA, 5'ø
NEENAH R-3275 F&G
RIM=700.10
INV=693.28
INV=693.03
STA=7+46.50
OFF=194.68' LT

34A 18"ø PRC FES
W/ GRATE
INV=693.00
STA=105+50.24
OFF=88.21' LT

35 CB, TYA, 4'ø
NEENAH R-3275 F&G
RIM=700.10
INV=693.54
STA=7+46.49
OFF=114.68' LT

36 MH, TYA, 5'ø
NEENAH R-1713 F&G
ADJUST RIM=700.36
INV=693.10
STA=7+46.49
OFF=12.00' LT

37 INLET, TYA
NEENAH R-3275 F&G
RIM=700.22
INV=697.75
STA=7+59.96
OFF=12.00' RT

38 CB, TYA, 5'ø
NEENAH R-3275 F&G
RIM=700.22
INV=694.33
INV=697.63
INV=693.08
STA=7+59.48
OFF=12.00' LT

39 INLET, TYA
NEENAH R-3275 F&G
RIM=699.30
INV=697.05
STA=8+49.76
OFF=12.00' RT

40 CB, TYA, 4'ø
NEENAH R-3275 F&G
RIM=699.30
INV=696.94
INV=694.63
STA=8+49.32
OFF=12.00' LT

41 INLET, TYA
NEENAH R-3275 F&G
RIM=699.35
INV=697.05
STA=8+29.92
OFF=12.00' RT

42 CB, TYA, 4'ø
NEENAH R-3275 F&G
RIM=699.35
INV=696.94
INV=694.56
STA=8+29.51
OFF=12.00' LT

43 30"ø PRC FES
W/ GRATE
INV=693.00
STA=7+79.98
OFF=61.58' LT

44 INLET, TYA
NEENAH R-2502-A F&G
RIM=699.00
INV=695.39
STA=103+57.16
OFF=64.41' RT

45 12"ø PRC FES
W/ GRATE
INV=695.00
STA=101+09.66
OFF=84.70' RT

46 18"ø PRC FES
W/ GRATE
INV=695.00
STA=102+10.35
OFF=55.85' RT

•47 CB, TYA, 4'ø
NEENAH R-3275 F&G
RIM=698.65
INV=694.90
STA=102+29.52
OFF=19.59' RT

•48 CB, TYA, 4'ø
NEENAH R-3275 F&G
RIM=698.65
INV=694.85
STA=102+10.35
OFF=27.08' LT

49 MH, TYA, 4'ø
NEENAH R-3275 F&G
RIM=699.32
INV=694.81
STA=102+88.03
OFF=30.54' LT

50 CB, TYA, 4'ø
NEENAH R-3275 F&G
RIM=702.70
INV=695.16
STA=103+53.87
OFF=27.05' LT

51 CB, TYA, 5'ø
NEENAH R-3275 F&G
ADJUST RIM=700.40
INV=695.06
STA=100+53.50
OFF=26.91' RT

52 24"ø PRC FES
W/ GRATE
INV=695.00
STA=100+69.23
OFF=57.59' RT

53 CB, TYA, 4'ø
NEENAH R-4340 F&G
RIM=702.70
INV=699.70
STA=5+66.20
OFF=456.99' LT

54 CB, TYA, 4'ø
NEENAH R-4340 F&G
RIM=702.00
INV=699.00 (12"E)
INV=693.90 (15"W)
STA=5+95.62
OFF=522.94' LT

55 12"ø PRC FES
W/ GRATE
INV=693.00
STA=6+24.15
OFF=610.15' LT

56 12"ø PRC FES
W/ GRATE
INV=700.00
STA=215+71.40
OFF=26.40' LT

57 CB, TYA, 4'ø
NEENAH R-3275 F&G
RIM=701.23
INV=696.76
STA=215+42.84
OFF=13.50' LT

58 CB, TYA, 5'ø
NEENAH R-3275 F&G
RIM=701.23
INV=696.69
INV=696.19
STA=215+42.93
OFF=13.50' RT

59 CB, TYA, 5'ø
NEENAH R-3275 F&G
RIM=700.70
INV=696.12
INV=695.77
INV=695.27
STA=10+24.58
OFF=12.66' RT

60 12"ø PRC FES
W/ GRATE
INV=700.00
STA=214+47.90
OFF=25.77' LT

61 CB, TYA, 5'ø
NEENAH R-3275 F&G
RIM=700.50
INV=695.95
STA=214+46.00
OFF=13.50' LT

62 CB, TYA, 5'ø
NEENAH R-3275 F&G
RIM=700.50
INV=695.9
STA=214+46.00
OFF=13.50' RT

63 CB, TYA, 5'ø
NEENAH R-3275 F&G
RIM=700.70
INV=695.83
STA=10+24.58
OFF=12.68' LT

64 MH, TYA, 5'ø
NEENAH R-1713 F&G
RIM=700.40
INV=695.17
INV=693.05
STA=9+32.22
OFF=17.29' RT

65 36"ø PRC FES
W/ GRATE
INV=693.00
STA=9+18.95
OFF=60.76' RT

66 CB, TYA, 4'ø
NEENAH R-2502 F&G
RIM=702.40
INV=695.43
STA=3+86.40
OFF=139.69' LT

67 CB, TYA, 4'ø
NEENAH R-2502 F&G
RIM=702.40
INV=695.13
STA=3+86.39
OFF=65.19' LT

68 MH, TYA, 4'ø
NEENAH R-1713 F&G
RIM=702.30
INV=694.94
INV=694.69
STA=3+86.38
OFF=12.00' LT

69 CB, TYA, 5'ø
NEENAH R-3275 F&G
RIM=701.86
INV=695.03
INV=698.39
STA=3+18.91
OFF=12.00' LT

70 INLET, TYA
NEENAH R-3275 F&G
RIM=701.86
INV=698.50
STA=3+18.91
OFF=12.00' RT

71 MH, TYA, 5'ø
NEENAH R-1713 F&G
RIM=702.60
INV=694.98
STA=2+76.85
OFF=16.55' LT

72 CB, TYA, 5'ø
NEENAH R-3275 F&G
RIM=701.76
INV=694.93
INV=698.35
STA=2+36.86
OFF=17.07' LT

73 INLET, TYA
NEENAH R-3275 F&G
RIM=701.76
INV=698.51
STA=2+36.86
OFF=16.94' RT

74 MH, TYA, 5'ø
NEENAH R-1713 F&G
RIM=702.40
INV=694.81
INV=696.18
INV=693.81
STA=1+62.41
OFF=17.69' LT

75 MH, TYA, 5'ø
NEENAH R-1713 F&G
RIM=702.70
INV=694.95
INV=698.77
INV=698.21
STA=1+85.68
OFF=61.52' RT

76 CB, TYA, 4'ø
NEENAH R-3275 F&G
RIM=702.70
INV=698.26
STA=2+04.60
OFF=53.68' RT

77 INLET, TYA
NEENAH R-2502-A F&G
RIM=702.30
INV=699.05
STA=1+11.39
OFF=77.40' RT

78 CB, TYA, 4'ø
NEENAH R-3275 F&G
RIM=702.70
INV=698.54
INV=698.79
STA=2+47.67
OFF=155.05' RT

79 INLET, TYA
NEENAH R-2502-A F&G
RIM=702.30
INV=699.05
STA=1+55.27
OFF=185.92' RT

80 CB, TYA, 5'ø
NEENAH R-3275 F&G
RIM=701.90
INV=696.22
INV=698.22
INV=697.22
STA=1+11.14
OFF=21.42' LT

81 INLET, TYA
NEENAH R-3275 F&G
RIM=701.96
INV=698.44
STA=1+11.81
OFF=22.72' RT

82 CB, TYA, 5'ø
NEENAH R-3275 F&G
RIM=701.92
INV=697.39
STA=0+37.62
OFF=27.51' LT

83 CB, TYA, 5'ø
NEENAH R-3275 F&G
RIM=702.12
INV=697.50
STA=0+35.92
OFF=29.26' RT

84 MH, TYA, 5'ø
NEENAH R-1713 F&G
RIM=702.30
INV=693.74
INV=698.78
STA=110+46.75
OFF=0.24' RT

85 INLET, TYA
NEENAH R-2052-A F&G
RIM=702.40
INV=699.15
STA=110+46.75
OFF=76.00' RT

86 CB, TYA, 5'ø
NEENAH R-2502-A F&G
RIM=701.70
INV=693.68
STA=109+89.75
OFF=0.00

87 CB, TYA, 5'ø
NEENAH R-2052-A F&G
RIM=701.70
INV=693.59
STA=109+06.75
OFF=0.00

88 CB, TYA, 5'ø
NEENAH R-2502-A F&G
RIM=701.70
INV=693.47
STA=107+94.25
OFF=0.00

89 CB, TYA, 5'ø
NEENAH R-2502-A F&G
RIM=701.70
INV=693.39
STA=107+24.25
OFF=0.00

90 CB, TYA, 5'ø
NEENAH R-2502-A F&G
RIM=701.70
INV=693.27
STA=106+16.00
OFF=0.00

91 MH, TYA, 5'ø
NEENAH R-1713 F&G
RIM=701.70
INV=693.11
INV=696.72
STA=104+68.58
OFF=0.00

92 CB, TYA, 5'ø
NEENAH R-3275 F&G
RIM=700.70
INV=693.07
INV=696.86
INV=696.83
STA=104+69.25
OFF=31.43' LT

93 INLET, TYA
NEENAH R-3275 F&G
RIM=700.30
INV=697.05
STA=105+12.00
OFF=30.00' LT

94 INLET, TYA
NEENAH R-3275 F&G
RIM=700.30
INV=697.05
STA=104+20.49
OFF=30.00' LT

95 36"ø FES PRC
W/ GRATE
INV=693.00
STA=104+70.13
OFF=73.50' LT

96 INLET, TYA
NEENAH R-3275 F&G
RIM=702.40
INV=698.50
STA=108+46.50
OFF=89.50' RT

97 CB, TYA, 4'ø
NEENAH R-4340 F&G
RIM=702.50
INV=698.34
INV=698.09
STA=108+46.25
OFF=122.00' RT

98 CB, TYA, 4'ø
NEENAH R-4340 F&G
RIM=702.50
INV=697.81
STA=107+59.46
OFF=121.96' RT

99 INLET, TYA
NEENAH R-3275 F&G
RIM=702.40
INV=697.94
STA=106+72.50
OFF=89.50' RT

100 CB, TYA, 4'ø
NEENAH R-4340 F&G
RIM=702.70
INV=697.53
INV=696.78
STA=106+72.65
OFF=121.81' RT

101 CB, TYA, 4'ø
NEENAH R-4340 F&G
RIM=702.70
INV=697.31
INV=697.06
STA=105+03.34
OFF=123.00' RT

102 CB, TYA, 4'ø
NEENAH R-2502-A F&G
RIM=702.70
INV=696.88
STA=104+67.25
OFF=63.25' RT

103 CONSTRUCT 5'ø MH OVER
36"ø STORM
NEENAH R-1713 F&G
RIM=MATCH EXISTING
INV=±691.85
STA=105+06.89
OFF=139.34' RT

104 MH, TYA, 5'ø
NEENAH R-1713 F&G
RIM=701.83
INV=691.76
STA=104+55.25
OFF=63.98' RT

105 36"ø PRC FES
W/ GRATE
INV=691.62
STA=104+55.25
OFF=73.50' LT

106 INLET, TYA
NEENAH R-3275 F&G
RIM=698.78
INV=696.92
STA=200+60.04
OFF=12.00' RT

107 CB, TYA, 4'ø
NEENAH R-3275 F&G
RIM=698.78
INV=693.09
STA=200+60.04
OFF=12.00' LT

108 15"ø PRC FES
INV=693.00
STA=200+79.06
OFF=73.11' LT

109 INLET, TYA
NEENAH R-3275 F&G
RIM=700.55
INV=697.63
STA=202+60.00
OFF=13.50' LT

110 CB, TYA, 4'ø
NEENAH R-3275 F&G
RIM=700.55
INV=697.51
STA=202+60.00
OFF=13.50' RT

110A CB, TYA, 4'ø
NEENAH R-4340 F&G
RIM=700.00
INV=697.33
INV=693.26
STA=202+67.00
OFF=54.00' RT

111 15"ø PRC FES
INV=693.00
STA=202+66.00
OFF=132.00' RT

112 INLET, TYA
NEENAH R-3275 F&G
RIM=700.82
INV=697.63
STA=203+92.00
OFF=13.50' LT

113 CB, TYA, 4'ø
NEENAH R-3275 F&G
RIM=700.82
INV=697.5
STA=203+92.00
OFF=13.50' RT

113A CB, TYA, 4'ø
NEENAH R-4340 F&G
RIM=700.00
INV=697.33
INV=693.26
STA=203+92.00
OFF=49.00' RT

114 15"ø PRC FES
W/ GRATE
INV=693.00
STA=203+90.00
OFF=132.00' RT

115 INLET, TYA
NEENAH R-3275 F&G
RIM=700.08
INV=69686
STA=205+64.00
OFF=13.50' LT

116 CB, TYA, 4'ø
NEENAH R-3275 F&G
RIM=700.08
INV=696.74
INV=696.49
STA=205+64.00
OFF=13.50' RT

116A CB, TYA, 5'ø
NEENAH R-4340 F&G
RIM=700.00
INV=696.36
INV=693.14
STA=205+64.00
OFF=50.00' RT

117 24"ø PRC FES
W/ GRATE
INV=693.00
STA=205+62.00
OFF=132.00' RT

118 12"ø PRC FES
W/GRATE
INV=700.00
STA=206+90.00
OFF=25.00' LT

119 INLET, TYA
NEENAH R-3275 F&G
RIM=700.55
INV=697.63
STA=206+90.00
OFF=13.50' LT

120 CB, TYA, 4'ø
NEENAH R-3275 F&G
RIM=700.55
INV=697.51
STA=206+90.00
OFF=13.50' RT

120A CB, TYA, 4'ø
NEENAH R-4340 F&G
RIM=700.00
INV=697.33
INV=693.26
STA=206+89.00
OFF=57.6' RT

121 15"ø PRC FES
W/ GRATE
INV=693.00
STA=206+87.50
OFF=132.00' RT

122 12"ø PRC FES
W/ GRATE
INV=700.00
STA=208+60.00
OFF=25.00' LT

123 CB, TYA, 4'ø
NEENAH R-3275 F&G
RIM=700.08
INV=697.31
STA=208+60.00
OFF=13.50' LT

124 CB, TYA, 4'ø
NEENAH R-3275 F&G
RIM=700.08
INV=697.17 (12"N)
STA=208+60.00
OFF=13.50' RT

125 CB, TYA, 5'ø
NEENAH R-4340 F&G
RIM=700.00
INV=696.97 (12"W)
INV=693.40 (15"E)
STA=208+60.00
OFF=53.00' RT

126 24"ø PRC FES
W/ GRATE
INV=693.00
STA=208+60.00
OFF=132.20' RT

127 12"ø PRC FES
W/ GRATE
INV=700.00
STA=211+44.00
OFF=25.00' LT

128 CB, TYA, 4'ø
NEENAH R-3275 F&G
RIM=700.08
INV=696.99
INV=696.74
STA=211+44.00
OFF=13.50' LT

129 CB, TYA, 4'ø
NEENAH R-4340 F&G
RIM=700.08
INV=696.65
INV=696.40
STA=211+44.00
OFF=13.50' RT

130 CB, TYA, 5'ø
NEENAH R-4340 F&G
RIM=700.00
INV=696.30
INV=693.14
STA=211+44.00
OFF=43.50' RT

131 24"ø PRC FES
W/ GRATE
INV=693.00
STA=211+44.00
OFF=133.00' RT

132 NOT USED
STRUCTURE ELIMINATED

133 CB, TYA, 4'ø
NEENAH R-3275 F&G
RIM=700.12
INV=697.00
INV=696.75
STA=212+52.46
OFF=13.50' LT

134 CB, TYA, 4'ø
NEENAH R-3275 F&G
RIM=700.12
INV=696.66
INV=696.26
STA=212+52.46
OFF=13.50' RT

135 CB, TYA, 5'ø
NEENAH R-4340 F&G
RIM=700.00
INV=696.16
INV=693.14
STA=212+57.47
OFF=42.90' RT

136 24" W/ GRATE
INV=693.00
STA=212+52.47
OFF=133.00' RT

137 INLET, TYA
NEENAH R-3275 F&G
RIM=699.50
INV=696.75
STA=213+12.50
OFF=13.50' LT

138 CB, TYA, 4'ø
NEENAH R-3275 F&G
RIM=699.50
INV=696.66
INV=696.41
STA=213+12.50
OFF=13.50' RT

139 INLET, TYA
NEENAH R-3275 F&G
RIM=700.75
INV=697.32
STA=216+52.14
OFF=13.50' LT

140 CB, TYA, 4'ø
NEENAH R-3275 F&G
RIM=700.75
INV=697.21 (12"N)
STA=216+52.14
OFF=13.50' RT

140A CB, TYA, 4'ø
NEENAH R-4340 F&G
RIM=700.00
INV=697.05
INV=693.24
STA=216+51.00
OFF=53.70' RT

141 15"ø PRC FES
W/ GRATE
INV=693.00
STA=216+48.70
OFF=132.43' RT

142 INLET, TYA
NEENAH R-3275 F&G
RIM=701.15
INV=697.77
STA=218+17.30
OFF=14.10' LT

143 CB, TYA, 4'ø
NEENAH R-3275 F&G
RIM=701.15
INV=697.64
STA=218+19.00
OFF=15.60' RT

144 CB, TYA, 4'ø
NEENAH R-4340 F&G
RIM=700.00
INV=697.31
INV=693.29
STA=218+36.87
OFF=48.10' RT

145 15"ø PRC FES
W/ GRATE
INV=693.00
STA=218+30.62
OFF=137.87' RT

146 18"ø PRC FES
W/ GRATE
INV=693.00
STA=213+31.34
OFF=126.85' RT

147 12"ø PRC FES
W/ GRATE
INV=693.00
STA=7+65.53
OFF=250.17' LT

148 12"ø PRC FES
W/ GRATE
INV=693.00
STA=6+57.31
OFF=603.02' LT

149 12"ø PRC FES
W/ GRATE
INV=693.00
STA=105+50.24
OFF=88.21' LT

150 15"ø PRC FES
W/ GRATE
INV=693.00
STA=105+50
OFF=203.7" LT

151 MH, TYA, 5'ø
NEENAH R-1713 F&G
RIM=702.00
INV=693.36
STA=105+86.5
OFF=203.8' LT

33A CB, TYA, 4'ø
NEENAH R-3275 F&G
RIM=702.50
INV=699.39 (12"E)
INV=694.02 (12"N)
STA=6+60
OFF=315.45' LT

33B INLET, TYA
NEENAH R-3275 F&G
RIM=702.50
INV=699.50
STA=6+60
OFF=293.45' LT

152 MH, TYA, 5'ø
NEENAH R-1713 F&G
RIM=702.00
INV=693.55 (E,W 36")
INV=698.42 (N 12")
STA=108+70.81
OFF=0.00' LT

153 CB, TYA, 4'ø
NEENAH R-3275 F&G
RIM=702.00
INV=699.00 (12"N)
STA=108+70.81
OFF=116.17' LT

154 INLET, TYA
NEENAH R-3275 F&G
RIM=703.30
INV=700.30
STA=108+39.70
OFF=147.28' LT

UTILITY NOTES:

1. RIM GRADES FOR STORM STRUCTURES LOCATED IN CURB AND GUTTER ARE TO EDGE OF PAVEMENT.
2. OFFSETS FOR FLARED END SECTIONS ARE TO TOE END OF SECTION.
3. OFFSETS FOR STORM STRUCTURES LOCATED IN CURB AND GUTTER ARE TO EDGE OF PAVEMENT. OFFSETS FOR ALL OTHER STRUCTURES ARE TO CENTER OF STRUCTURE.
4. BUILDING SERVICE LOCATIONS SHOWN ON THIS PLAN ARE ASSUMED. REFER TO ARCHITECTURAL / MECHANICAL PLANS FOR BUILDING SERVICE LOCATIONS.
5. FRAMES AND GRATES SHLL BE:
   A) CLOSED LID MANHOLE: NEENAH R-1713
   B) BARRIER CURB AND GUTTER: NEENAH R-3275
   C) LAWN: NEENAH R-4340-B
   D) PARKING LOT PAVEMENT: NEENAH R-2502-A
6. ALL RCP PIPE SHALL BE "O-RING" CONSTRUCTION.
7. ALL PIPE 18" ø OR SMALLER SHALL BE PVC SDR26 W/ASTM D-3034 FITTINGS.
8. "•" DENOTES STRUCTURES WITH A 6" FRAME AND GRATE DUE TO COVER CONSTRAINTS
9. ALL WATERMAIN SHALL BE PVC C-900 (DR-18)
10. ALL FLARED END SECTIONS SHALL BE EQUIPPED WITH GRATES.

SHADED STRUCTURES INSTALLED AS PART OF MASS GRADING CONSTRUCTION

△ 04-19-19: PER CITY COMMENTS △ 03-15-19: PER DUDOT COMMENTS
△ 03-25-19: PER FPD COMMENTS △ 02-25-19: PER INTERNAL COORDINATION

JOB NO: 080-020
FIELD BOOK: N/A
FIELD BOOK: N/A
DRAWN BY: MK
CHECKED BY: KEK
COMPLETED: 04/07/19

REVISIONS:
△ 09-18-18: REVISED PER CITY COMMENTS
△ 11-05-18: REVISED PER FPD COMMENTS
△ 01-18-19: REVISED PER CITY COMMENTS
△ 02-18-19: REVISED PER CITY COMMENTS

FILE: I:\080-020 Cantera Lot 2 Sub Area C\Engineering\Drawings\Final Engineering

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UTILITY SCHEDULE

RIVER VIEW WEST
CITY OF WARRENVILLE, ILLINOIS

SHEET NUMBER
16
OF 71

Design Firm License No. 184-001129

STORM SEWER PIPES

- P1 93 LF 18"ø PVC SDR26 @ 0.25%
- P2 69 LF 18"ø PVC SDR26 @ 0.25%
- P3 93 LF 15"ø PVC SDR26 @ 0.32%
- P4 67 LF 24"ø RCP @ 0.18%
- P5 24 LF 30"ø RCP @ 0.13%
- P6 24 LF 30"ø RCP @ 0.13%
- P7 72 LF 30"ø RCP @ 0.13%
- P8 70 LF 30"ø RCP @ 0.13%
- P9 69 LF 30"ø RCP @ 0.13%
- P10 63 LF 36"ø RCP @ 0.11%
- P11 73 LF 36"ø RCP @ 0.11%
- P12 33 LF 36"ø RCP @ 0.11%
- P13 23 LF 36"ø RCP @ 0.11%
- P14 77 LF 15"ø PVC SDR26 @ 0.32%
- P15 77 LF 18"ø PVC SDR26 @ 0.25%
- P16 77 LF 24"ø RCP @ 0.18%
- P17 77 LF 12"ø PVC SDR26 @ 0.44%
- P18 77 LF 15"ø PVC SDR26 @ 0.32%
- P19 77 LF 18"ø PVC SDR26 @ 0.25%
- P20 77 LF 24"ø RCP @ 0.18%
- P21 23 LF 24"ø RCP @ 0.18%
- P22 24 LF 24"ø RCP @ 0.18%
- P23 79 LF 15"ø PVC SDR26 @ 0.32%
- P24 63 LF 15"ø PVC SDR26 @ 0.32%
- P25 24 LF 12"ø PVC SDR26 @ 0.71%
- P26 85 LF 18"ø RCP @ 0.26%
- P27 24 LF 12"ø PVC SDR26 @ 0.50%
- P28 170 LF 30"ø RCP @ 0.13%
- P29 24 LF 12"ø PVC SDR26 @ 0.50%
- P30 80 LF 15"ø PVC SDR26 @ 0.32%
- P31 80 LF 15"ø PVC SDR26 @ 0.32%
- P32 19 LF 18"ø PVC SDR26 @ 0.15%
- P33 34 LF 30"ø RCP @ 0.13%
- P34 12 LF 30"ø RCP @ 0.14%
- P35 24 LF 12"ø PVC SDR26 @ 0.50%
- P36 24 LF 12"ø PVC SDR26 @ 0.44%
- P37 20 LF 15"ø PVC SDR26 @ 0.33%
- P38 24 LF 12"ø PVC SDR26 @ 0.44%
- P39 70 LF 15"ø PVC SDR26 @ 0.33%
- P40 49 LF 30"ø RCP @ 0.16%
- P41 74 LF 15"ø PVC SDR26 @ 0.40%
- P42 48 LF 15"ø PVC SDR26 @ 0.40%
- P43 70 LF 18"ø PVC SDR26 @ 0.26%
- P44 24 LF 12"ø PVC SDR26 @ 0.44%
- P45 37 LF 24"ø RCP @ 0.16%
- P46 31 LF 24"ø RCP @ 0.16%
- P47 35 LF 12"ø PVC SDR26 @ 0.44%
- P48 75 LF 24"ø RCP @ 0.16%
- P49 79 LF 24"ø RCP @ 0.16%
- P50 56 LF 12"ø PVC SDR26 @ 0.50%
- P51 18 LF 18"ø PVC SDR26 @ 0.25%
- P52 110 LF 18"ø PVC SDR26 @ 0.25%
- P53 79 LF 15"ø PVC SDR26 @ 0.32%
- P54 36 LF 36"ø RCP @ 0.11%
- P55 43 LF 12"ø PVC SDR26 @ 0.50%
- P56 94 LF 24"ø RCP @ 0.18%
- P57 57 LF 24"ø RCP @ 0.18%
- P58 63 LF 36"ø RCP @ 0.11%
- P59 73 LF 12"ø PVC SDR26 @ 0.50%
- P60 54 LF 36"ø RCP @ 0.11%
- P61 83 LF 36"ø RCP @ 0.11%
- P62 36 LF 36"ø RCP @ 0.11%
- P62A 77 LF 36"ø RCP @ 0.11%
- P63 70 LF 36"ø RCP @ 0.11%
- P64 108 LF 36"ø RCP @ 0.11%
- P65 147 LF 36"ø RCP @ 0.11%
- P66 31 LF 36"ø RCP @ 0.14%
- P67 43 LF 12"ø PVC SDR26 @ 0.44%
- P68 49 LF 12"ø PVC SDR26 @ 0.44%
- P69 42 LF 36"ø RCP @ 0.16%
- P70 32 LF 12"ø PVC SDR26 @ 0.50%
- P71 87 LF 15"ø PVC SDR26 @ 0.32%
- P72 87 LF 15"ø PVC SDR26 @ 0.32%
- P73 32 LF 12"ø PVC SDR26 @ 0.50%
- P74 169 LF 15"ø PVC SDR26 @ 0.32%
- P75 70 LF 18"ø PVC SDR26 @ 0.25%
- P76 63 LF 18"ø PVC SDR26 @ 0.25%
- P77 91 LF 36"ø RCP @ 0.10%
- P78 137 LF 36"ø RCP @ 0.10%
- P78A 78 LF 12"ø PVC SDR26 @ 0.50%
- P79 97 LF 12"ø PVC SDR26 @ 0.40%
- P80 54 LF 24"ø RCP @ 0.18%
- P81 34 LF 24"ø RCP @ 0.18%
- P82 33 LF 24"ø RCP @ 0.17%
- P83 28 LF 24"ø RCP @ 0.17%
- P84 23 LF 24"ø RCP @ 0.17%
- P84A 11 LF 24"ø RCP @ 0.17%
- P85 27 LF 12"ø PVC SDR26 @ 0.40%
- P86 44 LF 15"ø PVC SDR26 @ 0.15%
- P87 27 LF 12"ø PVC SDR26 @ 0.44%
- P87A 40 LF 12"ø PVC SDR26 @ 0.44%
- P88 80 LF 15"ø PVC SDR26 @ 0.32%
- P89 27 LF 12"ø PVC SDR26 @ 0.44%
- P89A 40 LF 12"ø PVC SDR26 @ 0.44%
- P90 80 LF 15"ø PVC SDR26 @ 0.32%
- P91 27 LF 12"ø PVC SDR26 @ 0.44%
- P91A 40 LF 12"ø PVC SDR26 @ 0.32%
- P92 80 LF 24"ø PVC SDR26 @ 0.18%
- P93 12 LF 12"ø PVC SDR26 @ 19.75%
- P94 27 LF 12"ø PVC SDR26 @ 0.44%
- P94A 40 LF 12"ø PVC SDR26 @ 0.44%
- P95 80 LF 15"ø PVC SDR26 @ 0.32%
- P96 12 LF 12"ø PVC SDR26 @ 22.42%
- P97 27 LF 15"ø PVC SDR26 @ 0.32%
- P98 40 LF 18"ø PVC SDR26 @ 0.25%
- P99 80 LF 24"ø RCP @ 0.18%
- P100 12 LF 12"ø PVC SDR26 @ 22.42%
- P101 27 LF 15"ø PVC SDR26 @ 0.32%
- P102 40 LF 18"ø PVC SDR26 @ 0.25%
- P103 80 LF 24"ø RCP @ 0.18%
- P104 NOT USED / ELIMINATED
- P105 27 LF 15"ø PVC SDR26 @ 0.32%
- P106 40 LF 18"ø PVC SDR26 @ 0.25%
- P107 80 LF 24"ø RCP @ 0.18%
- P108 27 LF 15"ø PVC SDR26 @ 0.32%
- P109 60 LF 18"ø PVC SDR26 @ 0.25%
- P110 12 LF 12"ø PVC SDR26 @ 25.42%
- P111 27 LF 24"ø RCP @ 0.18%
- P112 38 LF 24"ø RCP @ 0.18%
- P113 34 LF 24"ø RCP @ 0.18%
- P114 31 LF 12"ø PVC SDR26 @ 9.52%
- P115 27 LF 18"ø PVC SDR26 @ 0.25%
- P116 37 LF 24"ø RCP @ 0.18%
- P117 84 LF 36"ø RCP @ 0.11%
- P118 45 LF 36"ø RCP @ 0.11%
- P119 27 LF 12"ø PVC SDR26 @ 0.40%
- P119A 40 LF 12"ø PVC SDR26 @ 0.40%
- P120 80 LF 15"ø PVC SDR26 @ 0.30%
- P121 30 LF 12"ø PVC SDR26 @ 0.44%
- P122 30 LF 15"ø PVC SDR26 @ 0.44%
- P123 90 LF 15"ø PVC SDR26 @ 0.32%
- P124 43 LF 18"ø RCP @ 0.50%
- P125 71 LF 12"ø PVC SDR26 @ 1.00%
- P126 57 LF 12"ø PVC SDR26 @ 1.00%
- P127 36 LF 12"ø PVC SDR26 @ 1.00%
- P128 36 LF 15"ø PVC SDR36 @ 1.00%
- P129 80 LF 12"ø PVC SDR26 @ 1.15%
- P130 70 LF 15"ø PVC SDR26 @ 1.15%
- P131 8 LF 12"ø PVC SDR26 @ 1.00%
- P132 57 LF 15"ø PVC SDR26 @ 0.33%
- P133 11 LF 15"ø PVC SDR26 @ 1.00%
- P134 59 LF 24"ø RCP @ 0.18%
- P135 47 LF 15"ø PVC SDR26 @ 0.33%
- P136 68 LF 24"ø RCP @ 0.18%
- P137 96 LF 12"ø PVC SDR26 @ 0.50%
- P138 22 LF 12"ø PVC SDR26 @ 0.50%
- P139 116 LF 12"ø PVC SDR26 @ 0.50%
- P140 44 LF 12"ø PVC SDR26 @ 2.95%

SANITARY SEWER STRUCTURE

- S1 MH TYPE A, 4'ø
  NEENAH R-1713 F&G
  CONSTRUCT OVER EXISTING
  RIM=MATCH EXISTING
  INV=687.00 (15"E,W)
  INV=687.83 (8"N)
  STA=103+65.80
  OFF=137.50' RT
- S2 MH TYPE A, 4'ø
  NEENAH R-1713 F&G
  RIM=700.76
  INV=688.45 (S)
  INV=688.55 (N)
  STA=103+57.03
  OFF=14.12' RT
- S3 MH TYPE A, 4'ø
  NEENAH R-1713 F&G
  RIM=702.20
  INV=689.91 (W)
  INV=690.01 (E)
  STA=106+05.11
  OFF=13.00' RT
- S4 MH TYPE A, 4'ø
  NEENAH R-1713 F&G
  RIM=702.20
  INV=691.22 (W)
  INV=691.32 (E)
  STA=108+46.25
  OFF=13.00' RT
- S5 MH TYPE A, 4'ø
  NEENAH R-1713 F&G
  RIM=702.20
  INV=692.17
  STA=110+16.09
  OFF=13.11' RT
- S6 MH TYPE A, 4'ø
  NEENAH R-1713 F&G
  RIM=703.40
  INV=691.90
  STA=108+05.85
  OFF=69.00' LT
- S7 MH TYPE A, 4'ø
  NEENAH R-1713 F&G
  RIM=703.40
  INV=692.00
  STA=109+44.23
  OFF=69.36' LT
- S8 MH TYPE A, 4'ø
  NEENAH R-1713 F&G
  RIM=701.80
  INV=688.24
  STA=100+84.49
  OFF=205.54' RT
- S9 MH TYPE A, 4'ø
  NEENAH R-1713 F&G
  RIM=703.20
  INV=691.23
  STA=1+00.05
  OFF=104.68' RT
- S10 MH TYPE A, 4'ø
  NEENAH R-1713 F&G
  RIM=702.90
  INV=691.20
  STA=1+10.75
  OFF=90.60' RT
- S11 MH TYPE A, 4'ø
  NEENAH R-1713 F&G
  CONSTRUCT OVER EXISTING
  15"ø MAIN
  RIM=698.30
  INV=687.03 (8")
  INV=686.20 (15")
  STA=100+21.53
  OFF=73.70' LT
- S12 MH TYPE A, 4'ø
  NEENAH R-1713 F&G
  RIM=700.00
  INV=687.28 (S)
  INV=687.38 (N)
  STA=100+57.30
  OFF=39.80' LT
- S13 MH TYPE A, 4'ø
  NEENAH R-1713 F&G
  RIM=699.00
  INV=688.42
  INV=688.32
  STA=200+89.94
  OFF=26.44' LT
- S14 MH TYPE A, 4'ø
  NEENAH R-1713 F&G
  RIM=701.50
  INV=689.67 (N)
  INV=689.57 (S)
  STA=203+05.88
  OFF=29.01' LT
- S15 MH TYPE A, 4'ø
  NEENAH R-1713 F&G
  RIM=701.00
  INV=690.37
  STA=204+42.31
  OFF=19.89' LT
- S16 MH TYPE A, 4'ø
  NEENAH R-1713 F&G
  RIM=701.80
  INV=689.28 (8" S,E)
  INV=689.19 (8"W)
  STA=104+80.31
  OFF=13.00' RT
- S17 MH TYPE A, 4'ø
  NEENAH R-1713 F&G
  RIM=702.30
  INV=689.46 (8"N)
  INV=689.56 (8"E)
  STA=104+80
  OFF=49.20' RT
- S18 MH TYPE A, 4'ø
  NEENAH R-1713 F&G
  RIM=702.70
  INV=689.46 (8"N)
  INV=689.56 (8"E)
  STA=108+46.25
  OFF=47.60' RT

SANITARY SEWER PIPES

- S1 124 LF 8"ø PVC SDR26 @ 0.50%
- S2 250 LF 8"ø PVC SDR26 @ 0.50%
- S3 204 LF 8"ø PVC SDR26 @ 0.50%
- S4 207 LF 8"ø PVC SDR26 @ 0.50%
- S5 82 LF 8"ø PVC SDR26 @ 0.50%
- S6 15 LF 8"ø PVC SDR26 @ 0.50%
- S7 82 LF 8"ø PVC SDR26 @ 0.50%
- S8 15 LF 8"ø PVC SDR26 @ 0.50%
- S9 14 LF 8"ø PVC SDR26 @ 1.00%
- S10 12 LF 8"ø PVC SDR26 @ 1.00%
- S11 60 LF 8"ø PVC SDR26 @ 1.00%
- S12 13 LF 8"ø PVC SDR26 @ 1.00%
- S13 10 LF 8"ø PVC SDR26 @ 1.00%
- S14 50 LF 8"ø PVC SDR26 @ 0.50%
- S15 189 LF 8"ø PVC SDR26 @ 0.50%
- S16 229 LF 8"ø PVC SDR26 @ 0.50%
- S17 140 LF 8"ø PVC SDR26 @ 0.50%
- S18 36 LF 8"ø PVC SDR26 @ 0.50%
- S19 31 LF 8"ø PVC SDR26 @ 0.50%
- S20 35 LF 8"ø PVC SDR26 @ 0.50%
- S21 10 LF 8"ø PVC SDR26 @ 0.50%
- S22 10 LF 8"ø PVC SDR26 @ 0.50%

WATER STRUCTURE

- W1 8" PRESSURE CONNECTION IN 60"ø VAULT
  RIM=700.00
  STA=132+87.54
  OFF=64.91' RT
- W2 8" VALVE AND VAULT
  RIM=702.38
  STA=105+73.15
  OFF=25.70' LT
- W3 8" VALVE AND VAULT
  RIM=702.13
  STA=1+97.59
  OFF=10.02' LT
- W4 8" VALVE AND VAULT
  RIM=702.30
  STA=2+06.00
  OFF=0.15' RT
- W5 FIRE HYDRANT
  FLANGE EL=703.80
  STA=1+87.58
  OFF=91.80' RT
- W6 6" VALVE AND VAULT
  RIM=703.00
  STA=1+17.23
  OFF=172.82' RT
- W7 FIRE HYDRANT
  FLANGE EL=703.40
  STA=3+68.47
  OFF=31.37' LT
- W8 FIRE HYDRANT
  FLANGE EL=702.06
  STA=4+00.43
  OFF=86.20' RT
- W9 FIRE HYDRANT
  FLANGE EL=702.63
  STA=4+99.60
  OFF=16.99' LT
- W10 8" VALVE AND VAULT
  RIM=702.42
  STA=6+20.12
  OFF=0.10' RT
- W11 FIRE HYDRANT
  FLANGE EL=702.15
  STA=6+87.46
  OFF=17.00' RT
- W12 FIRE HYDRANT
  FLANGE EL=701.70
  STA=7+21.03
  OFF=87.89' RT
- W13 8" VALVE AND VAULT
  RIM=700.70
  STA=7+33.65
  OFF=77.51' LT
- W14 FIRE HYDRANT
  FLANGE EL=701.10
  STA=6+72.10
  OFF=324.82' LT
- W15 FIRE HYDRANT
  FLANGE EL=701.30
  STA=7+09.31
  OFF=494.79' LT
- W16 FIRE HYDRANT
  FLANGE EL=701.30
  STA=5+95.38
  OFF=578.75' LT
- W17 8" VALVE AND VAULT
  RIM=701.00
  STA=4+49.69
  OFF=602.63' LT
- W18 FIRE HYDRANT
  FLANGE EL=701.30
  STA=1+53.45
  OFF=566.61' LT
- W19 8" VALVE AND VAULT
  RIM=701.80
  STA=105+84.77
  OFF=46.49' LT
- W20 FIRE HYDRANT
  FLANGE EL=702.80
  STA=106+79.84
  OFF=19.09' RT
- W21 FIRE HYDRANT
  FLANGE EL=703.00
  STA=105+89.94
  OFF=17.87' LT
- W22 FIRE HYDRANT
  FLANGE EL=702.80
  STA=108+18.42
  OFF=18.15' RT
- W23 8" VALVE AND VAULT
  RIM=703.40
  STA=108+92.40
  OFF=71.74' LT
- W23A 8" VALVE AND VAULT
  RIM=703.30
  STA=109+02.41
  OFF=46.50' LT
- W24 FIRE HYDRANT
  FLANGE EL=702.70
  STA=108+82.31
  OFF=116.17' LT
- W25 FIRE HYDRANT
  FLANGE EL=703.50
  STA=110+93.82
  OFF=17.00' LT
- W26 6" VALVE AND VAULT
  RIM=701.48
  STA=104+06.49
  OFF=5.47' LT
- W27 FIRE HYDRANT
  FLANGE EL=702.60
  STA=103+81.44
  OFF=18.93' RT
- W28 12" VALVE AND VAULT
  RIM=700.50
  STA=100+31.39
  OFF=113.75' LT
- W29 12" VALVE AND VAULT
  RIM=701.55
  STA=200+32.14
  OFF=36.81' LT
- W30 8" VALVE AND VAULT
  RIM=701.51
  STA=200+24.93
  OFF=38.22' LT
- W31 FIRE HYDRANT
  FLANGE EL=700.96
  STA=200+83.00
  OFF=14.56' RT
- W32 FIRE HYDRANT
  FLANGE EL=700.99
  STA=202+52.37
  OFF=18.00' RT
- W33 FIRE HYDRANT
  FLANGE EL=700.98
  STA=205+51.00
  OFF=17.50' RT
- W34 12" VALVE AND VAULT
  RIM=700.72
  STA=205+56.15
  OFF=20.00' RT
- W35 FIRE HYDRANT
  FLANGE EL=700.91
  STA=208+50.00
  OFF=17.60' RT
- W36 FIRE HYDRANT
  FLANGE EL=700.87
  STA=209+92.95
  OFF=17.65' RT
- W36A 12" VALVE AND VAULT
  RIM=700.70
  STA=211+51.33
  OFF=20.00' RT
- W37 FIRE HYDRANT
  FLANGE EL=700.93
  STA=212+63.16
  OFF=17.55' RT
- W38 FIRE HYDRANT
  FLANGE EL=700.84
  STA=214+45.59
  OFF=17.50' RT
- W39 12" VALVE AND VAULT
  RIM=701.20
  STA=214+90.85
  OFF=21.73' RT
- W40 12" VALVE AND VAULT
  RIM=700.85
  STA=10+12.54
  OFF=0.52' LT
- W41 FIRE HYDRANT
  FLANGE EL=701.24
  STA=216+68.00
  OFF=17.70' RT
- W41A 12" VALVE AND VAULT
  RIM=701.35
  STA=216+44.8
  OFF=20.00' RT
- W42 FIRE HYDRANT
  FLANGE EL=701.84
  STA=218+54.00
  OFF=20.69' RT
- W43 12" VALVE AND VAULT
  RIM=±704 (MATCH EXISTING)
  STA=219+77.85
  OFF=45.31' RT

UTILITY NOTES:

1. RIM GRADES FOR STORM STRUCTURES LOCATED IN CURB AND GUTTER ARE TO EDGE OF PAVEMENT.
2. OFFSETS FOR FLARED END SECTIONS ARE TO TOE END OF SECTION.
3. OFFSETS FOR STORM STRUCTURES LOCATED IN CURB AND GUTTER ARE TO EDGE OF PAVEMENT. OFFSETS FOR ALL OTHER STRUCTURES ARE TO CENTER OF STRUCTURE.
4. BUILDING SERVICE LOCATIONS SHOWN ON THIS PLAN ARE ASSUMED. REFER TO ARCHITECTURAL / MECHANICAL PLANS FOR BUILDING SERVICE LOCATIONS.
5. FRAMES AND GRATES SHLL BE:
   A) CLOSED LID MANHOLE: NEENAH R-1713
   B) BARRIER CURB AND GUTTER: NEENAH R-3275
   C) LAWN: NEENAH R-4340-B
   D) PARKING LOT PAVEMENT: NEENAH R-2502-A
6. ALL RCP PIPE SHALL BE "O-RING" CONSTRUCTION.
7. ALL PIPE 18" ø OR SMALLER SHALL BE PVC SDR26 W/ASTM D-3034 FITTINGS.
8. "*" DENOTES STRUCTURES WITH A 6" FRAME AND GRATE DUE TO COVER CONSTRAINTS
9. ALL WATERMAIN SHALL BE PVC C-900 (DR-18)
10. ALL FLARED END SECTIONS SHALL BE EQUIPPED WITH GRATES.

SHADED STRUCTURES INSTALLED AS PART OF MASS GRADING CONSTRUCTION

△04-19-19: PER CITY COMMENTS △03-15-19: PER DUDOT COMMENTS
△03-25-19: PER FPD COMMENTS △02-25-19: PER INTERNAL COORDINATION

JOB NO. 080-020

REVISIONS:	FIELD BOOK: N/A
△09-18-18: REVISED PER CITY COMMENTS	FIELD BOOK: N/A
△11-05-18: REVISED PER FPD COMMENTS	DRAWN BY: MK
△01-18-19: REVISED PER CITY COMMENTS	CHECKED BY: KEK
△02-18-19: REVISED PER CITY COMMENTS	COMPLETED: 04/07/19

FILE: V:\080-020 Cantera Lot 2 Sub Area C\Engineering\Drawings\Final Engineering

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UTILITY SCHEDULE

RIVER VIEW WEST
CITY OF WARRENVILLE, ILLINOIS

SHEET NUMBER 17 OF 71

Design Firm License No. 184-001129

UTILITY CONFLICTS

1 EXIST 36" ø STORM & PROPOSED 8" WTR
T/P WTR=698.04
B/P WTR=697.23
36" ø STORM INV=693.11
T/P STORM=696.44
B/P STORM=692.81
STORM UNDER WATER
SEPARATION=0.83'
(±4.5' DEEP WATER, WATER ENCASED IN STEEL CASING PIPE)

2 PROPOSED 8" WTR & EXIST. 15" SAN
T/P WATER=698.04
B/P WATER=697.23
15" SAN INV=690.11
T/P SAN=691.50
SANITARY UNDER WATER
SEPARATION=5.73'
(±4.5' DEEP WATER)

3 CONFLICT ELIMINATED

4 PROPOSED 12" ø STORM & PROPOSED 8" ø WTR
T/P WTR=691.96
B/P WTR=691.19
12" ø INV=693.61
B/P STORM=693.56
SEPARATION=1.6'
(8.34' DEEP WATER)

5 PROPOSED 12" ø STORM & PROPOSED 8" ø WTR
T/P WTR=695.00
B/P WTR=694.06
12" ø INV=697.97
B/P STORM=696.77
SEPARATION=1.77'
(7' DEEP WATER)

6 PROP. 12" ø STORM & PROP. 8" ø WTR
T/P WTR=696.60
B/P WTR=695.66
12" ø STORM INV=698.42
B/P STORM=698.22
SEPARATION=1.62'
(5.5' DEEP WATER)

7 PROPOSED 12" ø STORM & PROP. 8" ø WTR
T/P WTR=696.60
B/P WTR=695.66
12" ø STORM INV=698.61
B/P STORM=698.41
SEPARATION=1.81'
(5.5' DEEP WATER)

8 PROPOSED 12" ø STORM & PROPOSED 8" ø WTR
T/P WTR=696.60
B/P WTR=695.66
12" ø STORM INV=698.42
B/P STORM=698.22
SEPARATION=1.62'
(5.5' DEEP WATER)

9 PROP. 12" ø STM & PROP. 8" ø WTR
T/P WTR=696.20
B/P WTR=695.26
12" ø STM INV=698.07
B/P STM=697.87
SEPARATION=1.67'
(5.5' DEEP WATER)

10 PROP. 12" ø STORM & PROP. 8" ø WTR
T/P WTR=695.70
B/P WTR=694.76
12" ø STM INV=697.66
B/P STM=697.46
SEPARATION=1.70'
(5.5' DEEP WATER)

11 PROPOSED 12" ø STORM & PROPOSED 8" WTR
T/P WTR=689.00
B/P WTR=688.06
12" ø STORM INV=695.04
B/P STORM=694.24
SEPARATION=5.24

12 PROPOSED 12" ø STM & 8" WTR
T/P WTR=689.00
B/P WTR=688.06
12" ø STM INV=695.14
B/P STM=694.74
SEPARATION=5.94

13 PROP. 12" ø STM & PROP. 8" ø WTR
T/P WTR=695.14
B/P WTR=694.20
12" ø STM INV=694.88
B/P STM=694.68
DIP WTR. T/T WTR=693.08
SEPARATION=1.60'
PROVIDE WATER PROTECTION 10' EITHER SIDE OF CROSSING

14 PROPOSED 12" ø STORM & 8" WTR
T/P WTR=697.40
B/P WTR=696.46
12" ø STORM INV=697.51
B/P STM=697.31
DIP WTR. T/P=695.71
SEPARATION=1.60
PROVIDE WATER PROTECTION 10' EITHER SIDE OF CROSSING

15 PROPOSED 6" ø SAN. SERVICE & 8" WTR
T/P WTR=697.70
B/P WTR=696.76
6" ø SAN INV=690.70
B/P SAN=690.57
T/P SAN=691.33
SEPARATION=5.43'

16 PROP. 24" ø STORM & 6" WTR
T/P WTR=696.80
B/P WTR=695.86
24" ø STORM INV=695.08
B/P STM=694.84
T/P STM=697.33
DIP WTR T/P=695.73
SEPARATION=1.60'

17 PROP. 12" ø STM & PROP. 8" ø WTR
T/P WTR=697.00
B/P WTR=696.23
12" ø STM INV=698.65
B/P STM=698.60
SEPARATION=1.6'
(5.68' DEEP WATER)

18 12" ø SAN & 24" ø STORM
24" ø STORM INV=694.83
24" ø B/P=694.58
T/P STM=697.08
12" ø SAN INV=690.85
B/P SAN=690.65
T/P SAN=692.05
SEPARATION=2.53'

19 PROP. 30" ø STM & 6" WTR
T/P WTR=696.80
B/P WTR=696.05
30" ø STM INV=694.09
B/P STM=693.80
T/P STM=696.89
DIP WTR T/P WTR=692.20
SEPARATION=1.60'
PROVIDE WATER PROTECTION 10' EITHER SIDE OF CROSSING

20 8" ø SAN & 6" WTR
T/P WTR=693.17
B/P WTR=692.42
8" SAN INV=690.17
B/P SAN=690.05
T/P SAN=690.92
SEPARATION=1.50'

21 8" ø SAN & 36" STORM
8" SAN INV=689.05
B/P SAN=688.91
T/P SAN=689.99
36" STM INV=691.71
B/P STM=691.41
T/P STM=695.01
SEPARATION=1.42'

22 8" SAN & 15 ø STORM
8" SAN INV=689.11
B/P SAN=688.97
T/P SAN=690.05
15" ø STM INV=694.94
B/P STM=694.75
T/P STM=696.38
SEPARATION=4.70'

23 PROPOSED 36" ø STORM & EXIST. 15" ø SAN
36" ø STORM INV=±691
B/P STM=690.67
T/P STM=694.33
15" SAN INV=687.52
B/P SAN=687.38
T/P SAN=688.96
SEPARATION=1.71'

24 36" ø WTR & 8" SAN
8" ø SAN=688.85
B/P SAN=688.71
T/P SAN=689.79
T/P WTR=696.29
B/P WTR=695.83
SEPARATION=6.04'

25 6" WTR & 8" SAN
T/P WTR=696.30
B/P WTR=695.55
8" SAN INV=689.80
B/P SAN=689.66
T/P SAN=690.74
SEPARATION=4.81'

26 15" ø STORM & 8" ø WTR
T/P WTR=696.00
B/P WTR=695.06
15" ø STM INV=694.50
B/P STM=694.36
T/P STM=695.94
DIP WTR T/P=692.76
SEPARATION=1.60'
PROVIDE WATER PROTECTION 10' EITHER SIDE OF CROSSING

27 PROP. 8" ø SAN & PROP. 12" ø WTR
T/P WTR=695.50
B/P WTR=694.10
8"SAN INV=687.38
B/P SAN=687.34
T/P SAN=688.32
SEPARATION=5.78'

28 12" ø STORM & 12" WTR
T/P WTR=695.50
B/P WTR=694.17
12" ø STORM INV=697.38
B/P STM=697.18
T/P STM=698.58
SEPARATION=1.88'
(6.0' DEEP WATER)

29 12" ø STM & 12" WTR
T/P WTR=695.50
B/P WTR=694.17
12" ø STM INV=697.38
B/P STM=697.18
T/P STM=698.58
SEPARATION=1.88'
(6.0' DEEP WATER)

30 12" ø STM & 12" WTR
T/P WTR=695.50
B/P WTR=694.17
12" ø STM INV=697.38
B/P STM=697.18
T/P STM=698.58
SEPARATION=1.88'
(6.0' DEEP WATER)

31 12" ø STM & 12" ø WTR
T/P WTR=695.50
B/P WTR=694.17
12" ø STM INV=697.38
B/P STM=697.18
T/P STM=698.58
SEPARATION=1.88'
(6.0' DEEP WATER)

32 12" ø STM & 12" ø WTR
T/P WTR=694.91
B/P WTR=693.57
12" ø STM INV=697.07
B/P STM=696.87
T/P STM=698.27
SEPARATION=1.96'
(6.0' DEEP WATER)

33 12" ø STM & 12" ø WTR
T/P WTR=694.91
B/P WTR=693.57
12" ø STM INV=697.07
B/P STM=696.87
T/P STM=698.27
SEPARATION=1.96'
(6.0' DEEP WATER)

34 12" ø STM & 12" ø WTR
T/P WTR=694.60
B/P WTR=693.55
12" ø STORM INV=696.40
B/P STM=696.20
T/P STM=697.60
SEPARATION=1.60'

35 18" ø STORM & EXIST. 66"ø STORM
18" ø STORM INV=696.41
T/P 18" STM=698.12
B/P 18" STM=696.20
EXIST 66" ø STM INV=±683.87
EXIST 66" T/P=±689.91
EXIST 66" B/P=±683.33
SEPARATION=6.29'

36 EXIST. 66" ø STORM & PROPOSED 12" ø WTR
T/P WTR=695.20
B/P WTR=693.87
60" ø STORM INV=683.50
B/P STORM=682.96
T/P STORM=689.54
SEPARATION=4.33'

37 12" ø STORM & 12" ø WTR
T/P WTR=695.20
B/P WTR=693.86
12" ø STORM INV=696.66
B/P STM=696.46
T/P STM=697.86
DIP WTR T/P=694.86
SEPARATION=1.60'
PROVIDE WATER PROTECTION 10' EITHER SIDE OF CROSSING

38 12" ø STM & 12" WTR
T/P WTR=695.50
B/P WTR=694.17
12" ø STM INV=696.81
B/P STM=696.61
T/P STM=698.01
DIP WTR T/P=695.01
PROVIDE WATER PROTECTION 10' EITHER SIDE OF CROSSING

39 12" ø STM & 12" ø WTR
T/P WTR=695.27
B/P WTR=693.94
12" STM INV=697.12
B/P STM=696.92
T/P STM=698.32
SEPARATION=1.65'

40 12" ø STORM & 12" WTR
T/P WTR=694.74
B/P WTR=693.41
12" STM INV=696.57
B/P STM=696.37
T/P STM=697.77
SEPARATION=1.63'

41 12" STM DOWNSPOUT & 12" WTR
T/P WTR=695.20
B/P WTR=693.87
12" ø STM INV=693.35
B/P STM=693.15
T/P STM=694.55
DIP WTR=691.55
SEPARATION=1.60'
PROVIDE WATER PROTECTION 10' EITHER SIDE OF CORSSING

41A 12" ø STM & 12" DOWNSPOUT
12" ø STM INV=695.94
B/P TM=695.74
T/P WTR=697.14
12" DOWNSPOUT=693.25
B/P STM=693.15
T/P STM=694.45
SEPARATION=1.29'

42 12" ø STM & 12" WTR
T/P WTR=695.60
B/P WTR=694.27
12" ø DOWNSPOUT=693.25
B/P STM=693.05
T/P STM=694.45
DIP WTR T/P=691.45
SEPARATION=1.60'
PROVIDE WATER PROTECTION 10' EITHER SIDE OF CROSSING

43 12" ø STM & 12" ø WTR
T/P WTR=659.60
B/P WTR=694.27
12" ø STM INV=693.28
B/P STM=693.08
T/P STM=694.48
DIP WTR T/P WTR=691.48
SEPARATION=1.60'
PROVIDE WATER PROTECTION 10' EITHER SIDE OF CROSSING

44 12" ø STM & 12" ø WTR
T/P WTR=659.60
B/P WTR=694.27
12" ø STM INV=693.28
B/P STM=693.08
T/P STM=694.48
DIP WTR T/P WTR=691.48
SEPARATION=1.60'
PROVIDE WATER PROTECTION 10' EITHER SIDE OF CROSSING

45 36" ø STM & 8" WTR
T/P WTR=695.33
B/P WTR=694.00
36" ø STM INV=691.68
B/P STM=691.35
T/P STM=695.01
DIP WTR T/P WTR=689.75
SEPARATION=1.60'
PROVIDE WATER PROTECTION 10' EITHER SIDE OF CROSSING

46 12" ø STM & 36" ø WTR
T/P WTR=695.38
B/P WTR=694.00
36" STM INV=693.09
B/P STM=692.76
T/P STM=696.42
DIP WTR T/P WTR=691.16
SEPARATION=1.60'
PROVIDE WATER PROTECTION 10' EITHER SIDE OF CROSSING

47 12" SAN & 8" WTR
T/P WTR=697.75
B/P WTR=696.35
12" ø SAN INV=691.09
B/P SAN=690.89
T/P SAN=692.29
SEPARATION=4.06'

48 12" SAN & 8" WTR
T/P WTR=697.75
B/P WTR=696.35
12" ø SAN INV=691.90
B/P SAN=691.70
T/P SAN=693.10
SEPARATION=3.25'

49 12" ø SAN & 24" ø STM
12" ø SAN INV=691.65
B/P SAN=691.45
T/P WTR=692.85
24" ø STM INV=695.31
B/P STM=695.06
T/P SAN=697.56
SEPARATION=2.21'

50 8" WTR & 12" STORM
T/P WTR=697.50
B/P WTR=696.00
12" ø STM INV=697.24
B/P STM=697.04
T/P STM=698.44
DIP WTR T/P WTR=695.44
SEPARATION=1.60'
PROVIDE WATER PROTECTION 10' EITHER SIDE OF CROSSING

51 8" SAN & 24" ø STM
T/P WTR=695.80
B/P WTR=694.86
24" ø STM INV=693.71
B/P STM=693.46
T/P SAN=695.96
DIP WTR T/P WTR=691.86
SEPARATION=1.60'
PROVIDE WATER PROTECTION 10' EITHER SIDE OF CROSSING

52 15" ø STM & 8" ø SAN
15" STM INV=693.20
B/P STM=697.75
T/P STM=694.84
8" ø SAN INV=688.57
B/P SAN=688.53
T/P SAN=689.47
SEPARATION=.73'

53 6" ø WTR & 18" ø STM
T/P WTR=696.44
B/P WTR=695.68
18" ø STM INV=694.73
18" ø STM B/P=694.52
B/P SAN=690.89
T/P STM=696.44
DIP WTR T/P WTR=691.95
SEPARATION=1.60'
PROVIDE WATER PROTECTION 10' EITHER SIDE OF CROSSING

54 CONFLICT ELIMINATED

55 15" STM & 15" ø SAN
15"ø INV STM=693.17
15"ø B/P STM=692.98
15" ø SAN INV=685.44
15" ø T/P=686.88
SEPARATION=6.10'

56 24" STM & 15" ø SAN
24"ø INV STM=693.07
24"ø B/P STM=692.82
15" ø SAN INV=685.88
15" ø T/P=687.32
SEPARATION=5.50'

57 24" STM & PROPOSED 8" ø SAN
24"ø INV STM=693.10
24"ø B/P STM=692.85
8" ø SAN INV=687.21
8" ø T/P=688.02
SEPARATION=4.83'

58 PROPOSED 12" WTR & 24" ø STM
T/P WTR=695.50
B/P WTR=694.10
24" ø STM INV=693.05
24" ø B/P=692.80
DIP WTR T/P WTR=691.20
SEPARATION=1.60'
PROVIDE WATER PROTECTION 10' EITHER SIDE OF CROSSING

UTILITY NOTES:

1. RIM GRADES FOR STORM STRUCTURES LOCATED IN CURB AND GUTTER ARE TO EDGE OF PAVEMENT.
2. OFFSETS FOR FLARED END SECTIONS ARE TO TOE END OF SECTION.
3. OFFSETS FOR STORM STRUCTURES LOCATED IN CURB AND GUTTER ARE TO EDGE OF PAVEMENT. OFFSETS FOR ALL OTHER STRUCTURES ARE TO CENTER OF STRUCTURE.
4. BUILDING SERVICE LOCATIONS SHOWN ON THIS PLAN ARE ASSUMED. REFER TO ARCHITECTURAL / MECHANICAL PLANS FOR BUILDING SERVICE LOCATIONS.
5. FRAMES AND GRATES SHLL BE:
   A) CLOSED LID MANHOLE: NEENAH R-1713
   B) BARRIER CURB AND GUTTER: NEENAH R-3275
   C) LAWN: NEENAH R-4340-B
   D) PARKING LOT PAVEMENT: NEENAH R-2502-A
6. ALL RCP PIPE SHALL BE "O-RING" CONSTRUCTION.
7. ALL PIPE 18" ø OR SMALLER SHALL BE PVC SDR26 W/ASTM D-3034 FITTINGS.
8. "*" DENOTES STRUCTURES WITH A 6" FRAME AND GRATE DUE TO COVER CONSTRAINTS
9. ALL WATERMAIN SHALL BE PVC C-900 (DR-18)
10. ALL FLARED END SECTIONS SHALL BE EQUIPPED WITH GRATES.

SHADED STRUCTURES INSTALLED AS PART OF MASS GRADING CONSTRUCTION

△ 04-19-19: PER CITY COMMENTS △ 03-15-19: PER DUDOT COMMENTS.
△ 03-25-19: PER PPD COMMENTS △ 02-25-19: PER INTERNAL COORDINATION

JOB NO: 080-020

REVISIONS:
△ 09-18-18: REVISED PER CITY COMMENTS — FIELD BOOK: N/A
△ 11-05-18: REVISED PER PPD COMMENTS — FIELD BOOK: N/A
△ 01-18-19: REVISED PER CITY COMMENTS — DRAWN BY: MK
△ 02-18-19: REVISED PER CITY COMMENTS — CHECKED BY: KEK
FILE: I:\080-020 Cantera Lot 2 Sub Area 4\Engineering\Drawings — COMPLETED:04/07/18

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UTILITY SCHEDULE

RIVER VIEW WEST
CITY OF WARRENVILLE, ILLINOIS

SHEET NUMBER
18
OF 71

FILE: I:\080-020 Cantera Lot 2 Sub Area 4\Engineering\Drawings\Final Engineering

Design Firm License No. 184-001129

60 0 30 60
1 inch = 60 ft.

NOTE:

1. SEE THE GENERAL NOTES AND DETAILS SHEETS IN THESE PLANS FOR EROSION AND SEDIMENT CONTROL NOTES, MAINTENANCE, INSPECTIONS AND DETAILS.
2. NATIVE SEEDING SHALL BE PER THE SEEDING MIX TABLES CONTAINED IN THE DETAIL SHEETS.
3. TEMPORARY SEEDING SHALL BE PER IDOT SECTION 250 & SEEDING CLASS 2A.
4. AREAS INDICATED AS FUTURE DEVELOPMENT SHALL RECEIVE TEMPORARY SEEDING AND MULCH OR HYDROSEED UPON COMPLETION OF MASS GRADING OPERATIONS.

NATIVE SEEDING AND EROSION CONTROL BLANKET BROAD SPECTRUM PRAIRIE W/ FLOWER MIX

NATIVE SEEDING AND EROSION CONTROL BLANKET LOW PROFILE DRY MESIC PRAIRIE W/ FLOWER MIX

NATIVE SEEDING AND EROSION CONTROL BLANKET TOUGH SHORELINE MIX

SODDING

TEMPORARY SEEDING AND MULCH OR HYDROSEED

WEST BRANCH DUPAGE RIVER

FERRY ROAD

PARKWAY

FUTURE DEVELOPMENT

TORCH

PROPOSED DETENTION POND
NWL=693.00
HWL=698.39
STORAGE PROVIDED=42.23 AC-FT

364 UNITS MULTIFAMILY BUILDING W/ GARAGE

PROPOSED MATERIALS STORAGE & STAGING AREA

PROPOSED SITE TRAILER LOCATION

PROPOSED TOPSOIL STOCKPILE LOCATION

CONCRETE WASHOUT

DUMPSTER LOCATION

PROPOSED RETAINING WALL

CONSTRUCTION FENCE (TYP)

SILT FENCE (TYP)

SODDING (TYP)

EXISTING ROW

STABILIZED CONSTRUCTION ENTRANCE

PROPOSED PRIVATE CONSTRUCTION ACCESS POINT

BIORETENTION FACILITY FACILITY SIDE SLOPES AND BOTTOM SHALL RECEIVE NATIVE SEEDING AND NORTH AMERICAN GREEN STORM EROSION CONTROL BLANKET, 4.5 ± 0.5 ACRES OF NATIVE SEEDING

PROPOSED 20' FIRE LANE, 6" BITUMINOUS PATH & 12" GRANSHORE

PROPOSED RETAINING WALL

DETENTION POND BOTTOM SHALL BE UTILIZED AS SEDIMENT BASINS DURING CONSTRUCTION

REVISIONS:
△ 09-18-18: REVISED PER CITY COMMENTS
△ 11-05-18: REVISED PER PPD COMMENTS
△ 01-18-19: REVISED PER CITY COMMENTS
△ 02-18-19: REVISED PER CITY COMMENTS
FILE: I:\PRO-DOS\107 2 CANTERA SUMMER\Engineering\Drawings
△ 03-25-19: PER PPD COMMENTS
△ 03-15-19: PER IDOT REVIEW

JOB NO: 080-020
FIELD BOOK: N/A
FIELD BOOK: N/A
DRAWN BY: MK
CHECKED BY: KEK
COMPLETED: 02/22/17

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EROSION CONTROL PLAN

RIVERVIEW WEST DEVELOPMENT
CITY OF WARRENVILLE, ILLINOIS

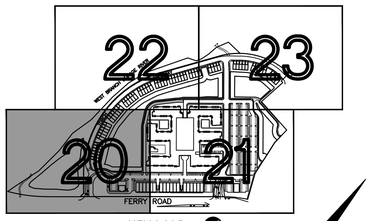
SHEET NUMBER
19
OF 71

Design Firm License No. 184-001129

SEE SHEET 23 FOR CONTINUATION

NOTE:

1. SEE THE GENERAL NOTES AND DETAILS SHEETS IN THESE PLANS FOR EROSION AND SEDIMENT CONTROL NOTES, MAINTENANCE, INSPECTIONS AND DETAILS.
2. NATIVE SEEDING SHALL BE PER THE SEEDING MIX TABLES CONTAINED IN THE DETAIL SHEETS.
3. TEMPORARY SEEDING SHALL BE PER IDOT SECTION 250 & SEEDING CLASS 2A.
4. AREAS INDICATED AS FUTURE DEVELOPMENT SHALL RECEIVE TEMPORARY SEEDING AND MULCH OR HYDROSEED UPON COMPLETION OF MASS GRADING OPERATIONS



30 0 15 30
1 inch = 30 ft.

NATIVE SEEDING AND EROSION CONTROL BLANKET BROAD SPECTRUM PRAIRIE W/ FLOWER MIX

NATIVE SEEDING AND EROSION CONTROL BLANKET LOW PROFILE DRY MESIC PRAIRIE W/ FLOWER MIX

NATIVE SEEDING AND EROSION CONTROL BLANKET TOUGH SHORELINE MIX

SODDING

TEMPORARY SEEDING AND MULCH OR HYDROSEED

EXISTING WATER EDGE WEST BRANCH OF THE DUPAGE

EXISTING BFE BOUNDARY WEST BRANCH OF THE DUPAGE RIVER (ELEV=692.6)

EXISTING WETLAND BOUNDARY WEST BRANCH OF THE DUPAGE RIVER

EXISTING WEST BRANCH OF THE DUPAGE RIVER WETLAND BUFFER

N FENCE TO BE A EXISTING FOREST ISTRICT TRAIL 4' BETWEEN EXISTING ISTRUCTION FENCE ED AND BLANKET

443 SYD A4 RIPRAP.

CLASS 2A BLANKET

EXISTING BUFFER BOUNDARY WEST BRANCH OF THE DUPAGE RIVER (ELEV=692.6)

WEST BRANCH DUPAGE RIVER

POND SIDE SLOPES SHALL RECEIVE NATIVE SEEDING AND NORTH AMERICAN GREEN S75BN EROSION CONTROL BLANKET. ±0.90 ACRES OF NATIVE SEEDING

18" BELOW NWL SHALL RECIEVE NATIVE SEEDING AND EROSION CONTROL BALNKET. ± 0.14 ACRES.

DOUBLE ROW SILT FENCE (TYP)

ROLLED / STAKED SEDIMENT LOG (TYP)

18" BELOW NWL SHALL RECIEVE NATIVE SEEDING AND EROSION CONTROL BALNKET. ± 0.44 ACRES.

SILT FENCE (TYP)

PROPOSED 20' FIRE LANE. 8' BITUMINOUS PATH & 12' GRASSCRETE

7 SYD A4 RIPRAP.

MASS GRADED BUILDING PAD SHALL RECEIVE TEMPORARY SEEDING AND MULCH OR HYDROSEED

PROPOSED 60" RCP

PROPOSED DETENTION POND
NWL=693.00
HWL=698.39
STORAGE PROVIDED=42.23 AC-FT

10 SYD A4 RIPRAP.

PROPOSED RETAINING WALL

DETENTION POND BOTTOM SHALL BE UTILIZED AS SEDIMENT BASINS DURING CONSTRUCTION

3 SYD A4 RIPRAP.

47 SYD A4 RIPRAP

36 SYD A4 RIPRAP.

INV=692.10

INV=692.15

INV=693.77

INV=694.86

INV=695.10

INV=695.18

INV=695.84

INV=695.86

INV=695.99

INV=696.01

INV=696.43

INV=695.48

INV=695.17 N, S
INV=695.33 SW

INV=695.83

INV=695.93

INV=701.90

INV=700.51

INV=700.99

INV=700.36

INV=701.10

INV=699.98

INV=700.80

INV=700.34

INV=699.82
INV=694.59

INV=700.3
INV=692.55 S
INV=692.16 E, NW

INV=699.82
INV=695.32

CONSTRUCTION FENCE WITH GATE (TYP)

PRIMARY CONSTRUCTION ACCESS POINT

STABILIZED CONSTRUCTION ENTRANCE

BIORETENTION FACILITY FACILITY SIDE SLOPES AND BOTTOM SHALL RECEIVE NATIVE SEEDING AND NORTH AMERICAN GREEN S75BN EROSION CONTROL BLANKET. ± 0.19 ACRES OF NATIVE SEEDING

FUTURE DEVELOPMENT

FUTURE DEVELOPMENT ARE SHALL RECEIVE TEMPORA SEEDING AND MULCH OR HYDROSEED

36"ø FES INV=692.10

CONSTRUCTION FENCE (TYP)

EXISTING ROW

FERRY ROAD

PARKWAY

TORCH

SEE SHEET 21 FOR CONTINUATION

REVISIONS:
- 03-25-19: PER FPD COMMENTS
- 04-19-19: PER CITY COMMENTS
- 03-15-19: PER IDOT REVIEW

JOB NO.	085-020
FIELD BOOK:	N/A
FIELD BOOK:	N/A
DRAWN BY:	MK
CHECKED BY:	KEK
COMPLETED:	02/22/17

09-18-18: REVISED PER CITY COMMENTS
11-05-18: REVISED PER FPD COMMENTS
01-18-19: REVISED PER CITY COMMENTS
02-18-19: REVISED PER CITY COMMENTS

FILE: V:\085-020 LOT 2 CANTERA SUBMKS C\Engineering\Drawings

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EROSION CONTROL PLAN

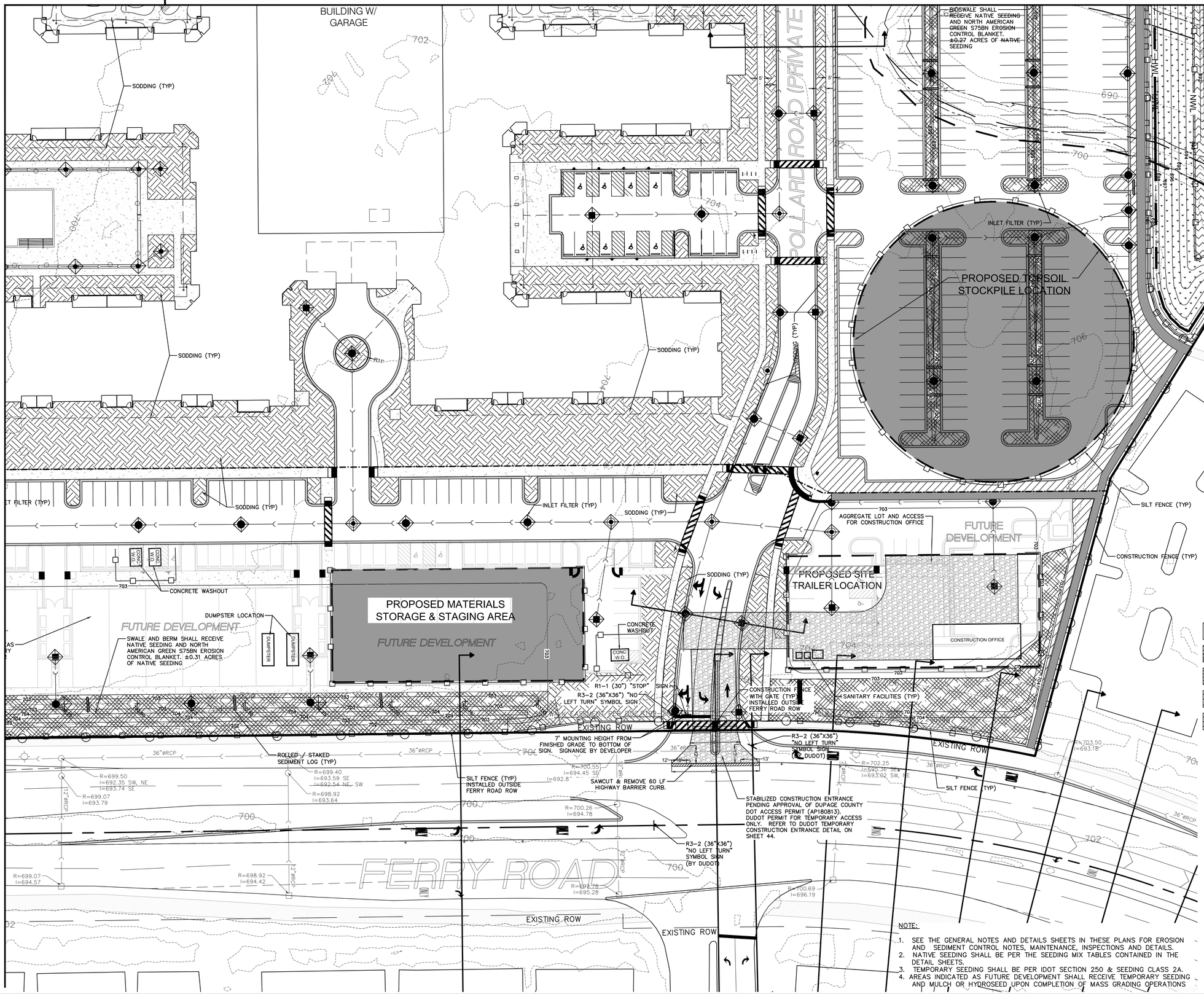
RIVERVIEW WEST DEVELOPMENT
CITY OF WARRENVILLE, ILLINOIS

SHEET NUMBER
20
OF 71

SEE SHEET 22
FOR CONTINUATION

SEE SHEET 23 FOR CONTINUATION

Design Firm License No. 184-001129



SEE SHEET 20 FOR CONTINUATION

NATIVE SEEDING AND EROSION CONTROL BLANKET BROAD SPECTRUM PRAIRIE W/ FLOWER MIX

NATIVE SEEDING AND EROSION CONTROL BLANKET LOW PROFILE DRY MESIC PRAIRIE W/ FLOWER MIX

NATIVE SEEDING AND EROSION CONTROL BLANKET TOUGH SHORELINE MIX

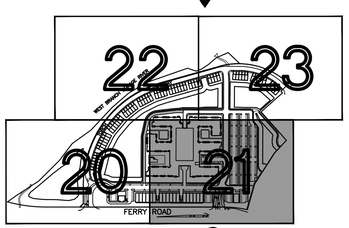
SODDING

TEMPORARY SEEDING AND MULCH OR HYDROSEED

30 0 15 30
1 inch = 30 ft.

NOTE:

1. SEE THE GENERAL NOTES AND DETAILS SHEETS IN THESE PLANS FOR EROSION AND SEDIMENT CONTROL NOTES, MAINTENANCE, INSPECTIONS AND DETAILS.
2. NATIVE SEEDING SHALL BE PER THE SEEDING MIX TABLES CONTAINED IN THE DETAIL SHEETS.
3. TEMPORARY SEEDING SHALL BE PER IDOT SECTION 250 & SEEDING CLASS 2A.
4. AREAS INDICATED AS FUTURE DEVELOPMENT SHALL RECEIVE TEMPORARY SEEDING AND MULCH OR HYDROSEED UPON COMPLETION OF MASS GRADING OPERATIONS



KEY MAP

REVISIONS:
09-18-18: REVISED PER CITY COMMENTS
11-05-18: REVISED PER FPD COMMENTS
01-18-19: REVISED PER CITY COMMENTS
02-18-19: REVISED PER CITY COMMENTS
04-19-19: PER CITY COMMENTS
03-25-19: PER FPD COMMENTS
03-15-19: PER DUDOT REVIEW

JOB NO: 080-020
FIELD BOOK: N/A
FIELD BOOK: N/A
DRAWN BY: MK
CHECKED BY: KEK
COMPLETED: 02/22/17

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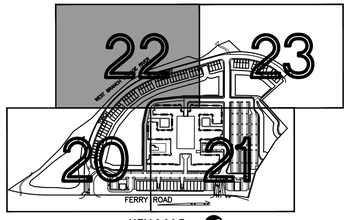
EROSION CONTROL PLAN

RIVERVIEW WEST DEVELOPMENT
CITY OF WARRENVILLE, ILLINOIS

SHEET NUMBER
21
OF 71

Design Firm License No. 184-001129

30 0 15 30
1 inch = 30 ft.



KEY MAP

NOTE:

1. SEE THE GENERAL NOTES AND DETAILS SHEETS IN THESE PLANS FOR EROSION AND SEDIMENT CONTROL NOTES, MAINTENANCE, INSPECTIONS AND DETAILS.
2. NATIVE SEEDING SHALL BE PER THE SEEDING MIX TABLES CONTAINED IN THE DETAIL SHEETS.
3. TEMPORARY SEEDING SHALL BE PER IDOT SECTION 250 & SEEDING CLASS 2A.
4. AREAS INDICATED AS FUTURE DEVELOPMENT SHALL RECEIVE TEMPORARY SEEDING AND MULCH OR HYDROSEED UPON COMPLETION OF MASS GRADING OPERATIONS

NATIVE SEEDING AND EROSION CONTROL BLANKET BROAD SPECTRUM PRAIRIE W/ FLOWER MIX

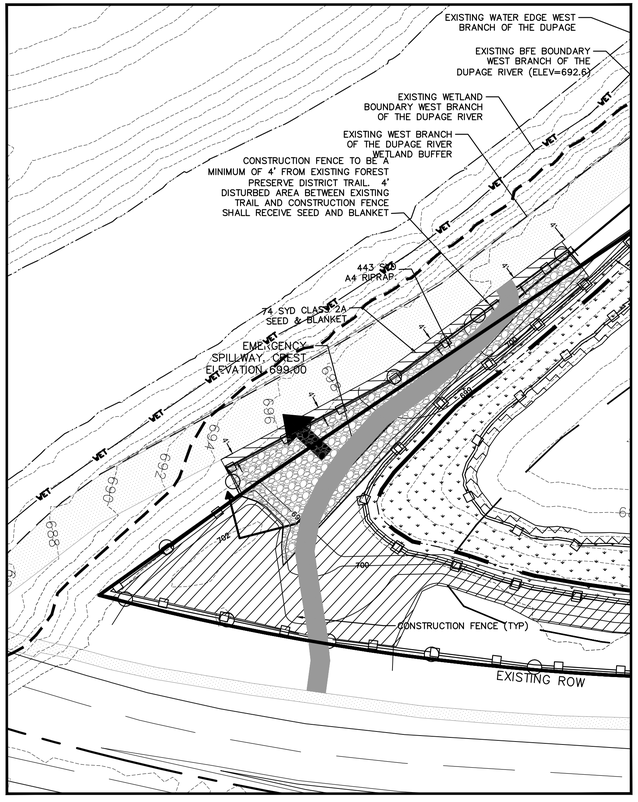
NATIVE SEEDING AND EROSION CONTROL BLANKET LOW PROFILE DRY MESIC PRAIRIE W/ FLOWER MIX

NATIVE SEEDING AND EROSION CONTROL BLANKET TOUGH SHORELINE MIX

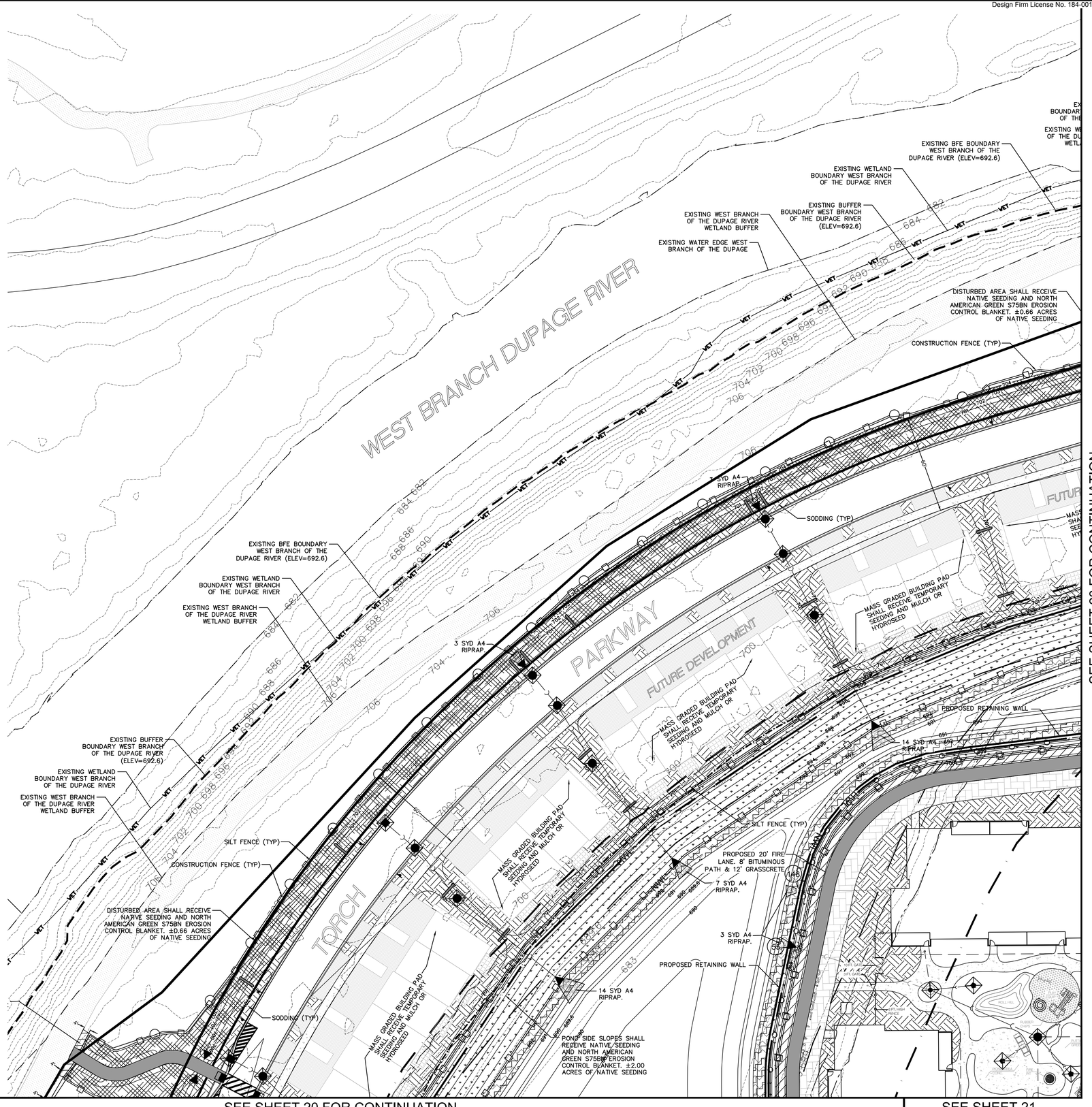
SODDING

TEMPORARY SEEDING AND MULCH OR HYDROSEED

AREAS INDICATED AS FUTURE DEVELOPMENT SHALL RECEIVE TEMPORARY SEEDING AND MULCH OR HYDROSEED UPON COMPLETION OF MASS GRADING OPERATIONS



OUTLOT A OVERFLOW SPILLWAY DETAIL
SEE CONTINUATION ON SHEET 20



SEE SHEET 20 FOR CONTINUATION

SEE SHEET 21 FOR CONTINUATION

SEE SHEET 23 FOR CONTINUATION

△ 03-25-19: PER FPD COMMENTS
△ 03-15-19: PER DUDOT REVIEW
△ 04-19-19: PER CITY COMMENTS

REVISIONS:
△ 09-18-18: REVISED PER CITY COMMENTS
△ 11-05-18: REVISED PER FPD COMMENTS
△ 01-18-19: REVISED PER CITY COMMENTS
△ 02-18-19: REVISED PER CITY COMMENTS
FILE: V:\060-020 LOT 2 CANTERA SUBAREA C\Engineering\Drawings

JOB NO: 060-020
FIELD BOOK: N/A
FIELD BOOK: N/A
DRAWN BY: MK
CHECKED BY: KEK
COMPLETED: 02/22/17

PREPARED FOR:
CANTERA DEVELOPMENT HOLDINGS, LLC.
TWO NORTHFIELD PLAZA, SUITE 320
NORTHFIELD, IL 60093
TEL :(847) 562-2001

Bollinger, Lach & Associates, Inc.
CONSULTING ENGINEERS
333 PIERCE ROAD SUITE 200 ITASCA, IL 60143
P: (630) 438 6400 F: (630) 438 6444 www.bollingerlach.com
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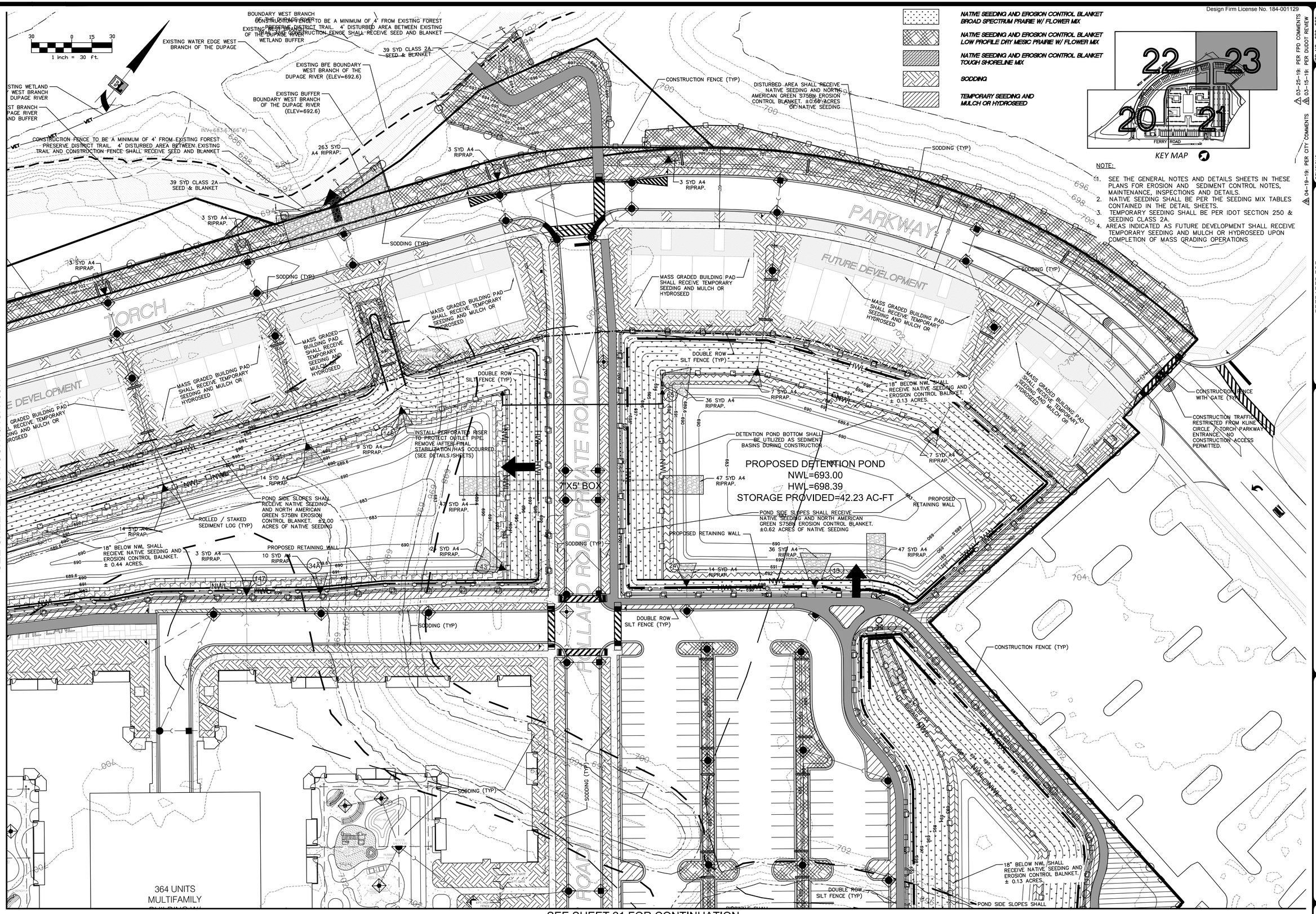
EROSION CONTROL PLAN

RIVERVIEW WEST DEVELOPMENT
CITY OF WARRENVILLE, ILLINOIS

SHEET NUMBER
22
OF 71

Design Firm License No. 184-001129



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REVISIONS:
- 03-25-19: PER FPD COMMENTS
- 03-15-19: PER IDOT REVIEW
- 04-19-19: PER CITY COMMENTS
- 09-18-18: REVISED PER CITY COMMENTS
- 11-05-18: REVISED PER FPD COMMENTS
- 01-18-19: REVISED PER CITY COMMENTS
- 02-18-19: REVISED PER CITY COMMENTS

FILE: V:\90-020 LOT 2 CANTERA SUBMKS \Engineering\Drawings

JOB NO: 090-020
FIELD BOOK: N/A
FIELD BOOK: N/A
DRAWN BY: MK
CHECKED BY: KEK
COMPLETED: 02/22/17

PREPARED FOR:
CANTERA DEVELOPMENT HOLDINGS, LLC.
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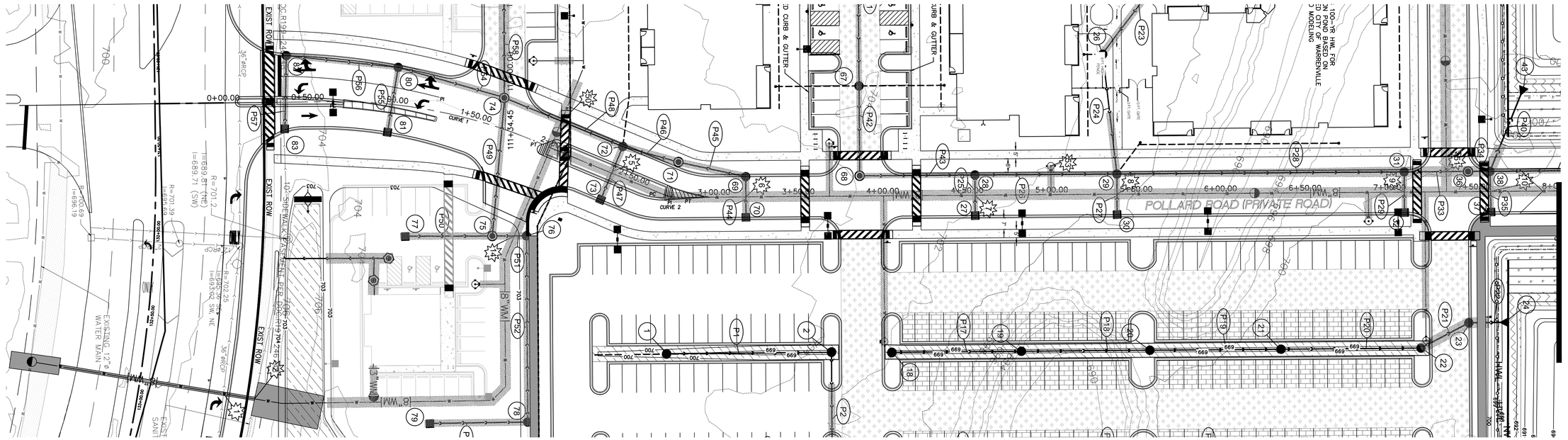
EROSION CONTROL PLAN

RIVERVIEW WEST DEVELOPMENT
CITY OF WARRENVILLE, ILLINOIS

SHEET NUMBER
23
OF 71

CURVE 1
PC: STA 0+65.17
PI: STA 1+26.08
PT: STA 1+86.98
RADIUS: 300'
DELTA: 23.2049°
CHORD: 120.98'

CURVE 2
PC: STA 2+65.23
PI: STA 2+74.15
PT: STA 2+86.69
RADIUS: 42.04'
DELTA: 23.8106°
CHORD: 17.34'



SCALE:
1" = 30' HORIZ
1" = 2' VERT

REVISIONS:	JOB NO: 080-020
04-19-19: PER CITY COMMENTS	
03-15-19: PER DUDOT COMMENTS	
09-18-18: REVISED PER CITY COMMENTS	FIELD BOOK: N/A
11-05-18: REVISED PER PPD COMMENTS	FIELD BOOK: N/A
01-18-19: REVISED PER CITY COMMENTS	DRAWN BY: KL
02-18-19: REVISED PER CITY COMMENTS	CHECKED BY: KK
FILE: 080-020 Centers Lot 2 Sub Area C/Engineering/Drawings/Base	COMPLETED: 02/07/19

PREPARED FOR:
CANTER DEVELOPMENT HOLDINGS, LLC.
TWO NORTHFIELD PLAZA, SUITE 320
NORTHFIELD, IL 60093
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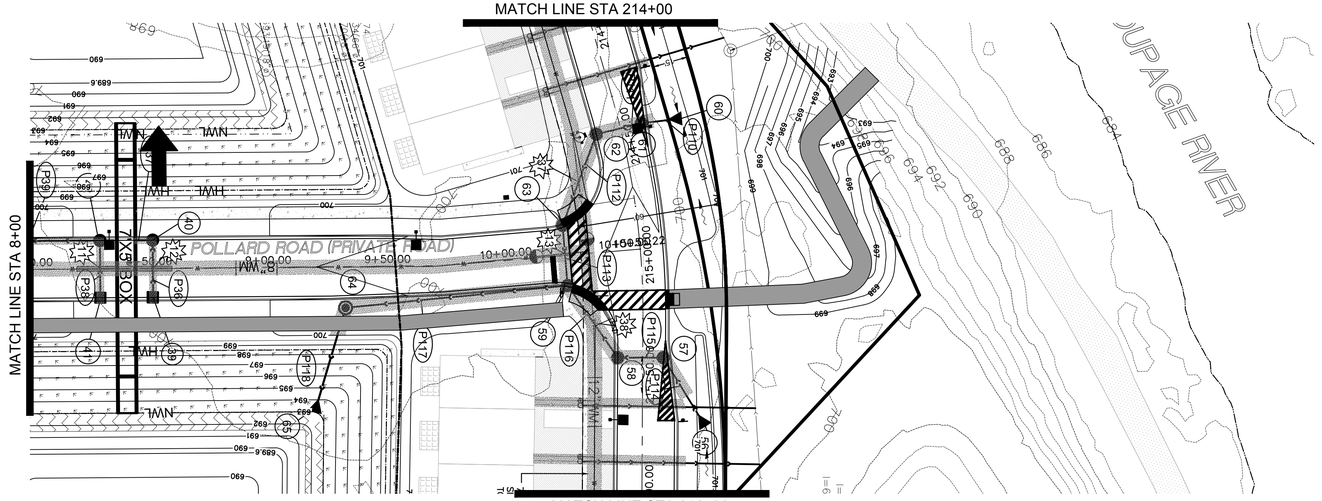
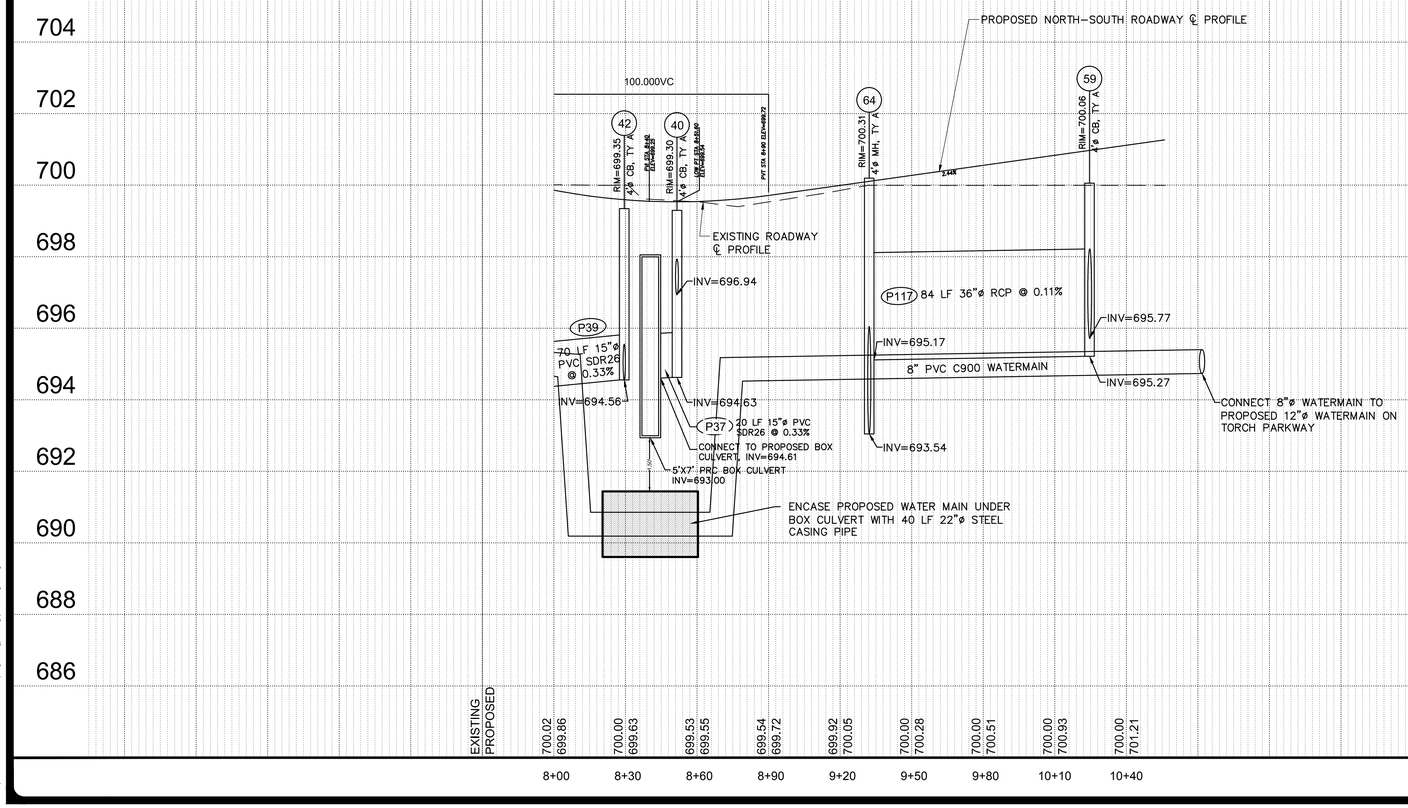
PLAN & PROFILE STA 0+00 - STA 8+00

RIVER VIEW WEST
CITY OF WARRENVILLE, ILLINOIS

SHEET NUMBER
24
OF 71

FILE: I:\080-020 Centers Lot 2 Sub Area C\Engineering\Drawings\Final Engineering





SCALE:
1" = 30' HORIZ
1" = 2' VERT

04-19-19: PER CITY COMMENTS
03-15-19: PER IDOT COMMENTS

REVISIONS:
09-18-18: REVISED PER CITY COMMENTS
11-05-18: REVISED PER FPD COMMENTS
01-18-19: REVISED PER CITY COMMENTS
02-18-19: REVISED PER CITY COMMENTS
FILE: I:\000-020 Canters Lot 2 Sub Area C\Engineering\Drawings

JOB NO: 080-020
FIELD BOOK: N/A
FIELD BOOK: N/A
DRAWN BY: KL
CHECKED BY:KK
COMPLETED:02/07/18

PREPARED FOR:
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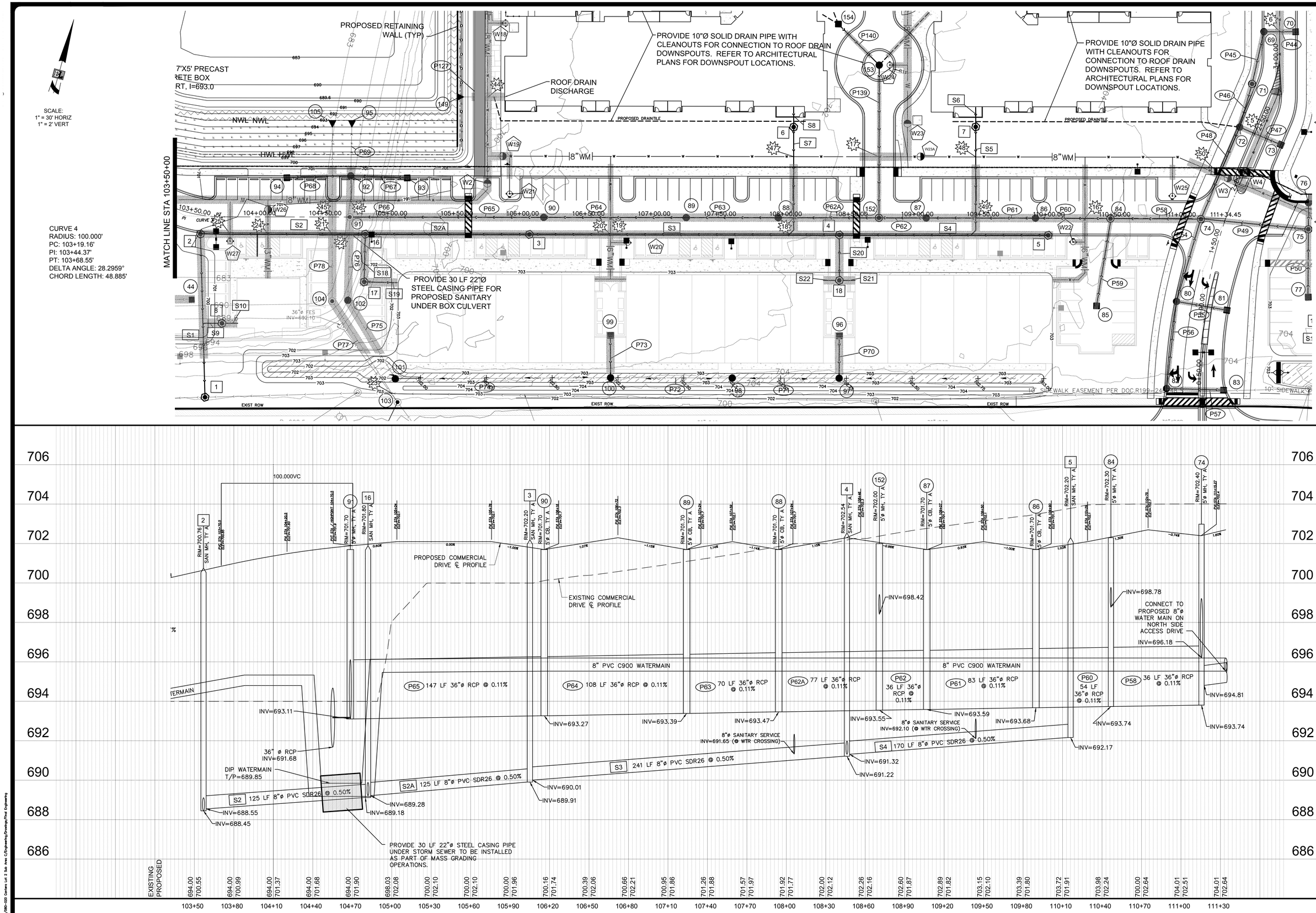
PLAN & PROFILE STA 8+00 - STA 10+70

RIVER VIEW WEST
CITY OF WARRENVILLE, ILLINOIS

SHEET NUMBER
25
OF 71

FILE: I:\000-020 Canters Lot 2 Sub Area C\Engineering\Drawings\Final Engineering



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PLAN & PROFILE STA 103+50 - STA 111+34.45

RIVER VIEW WEST
CITY OF WARRENVILLE, ILLINOIS

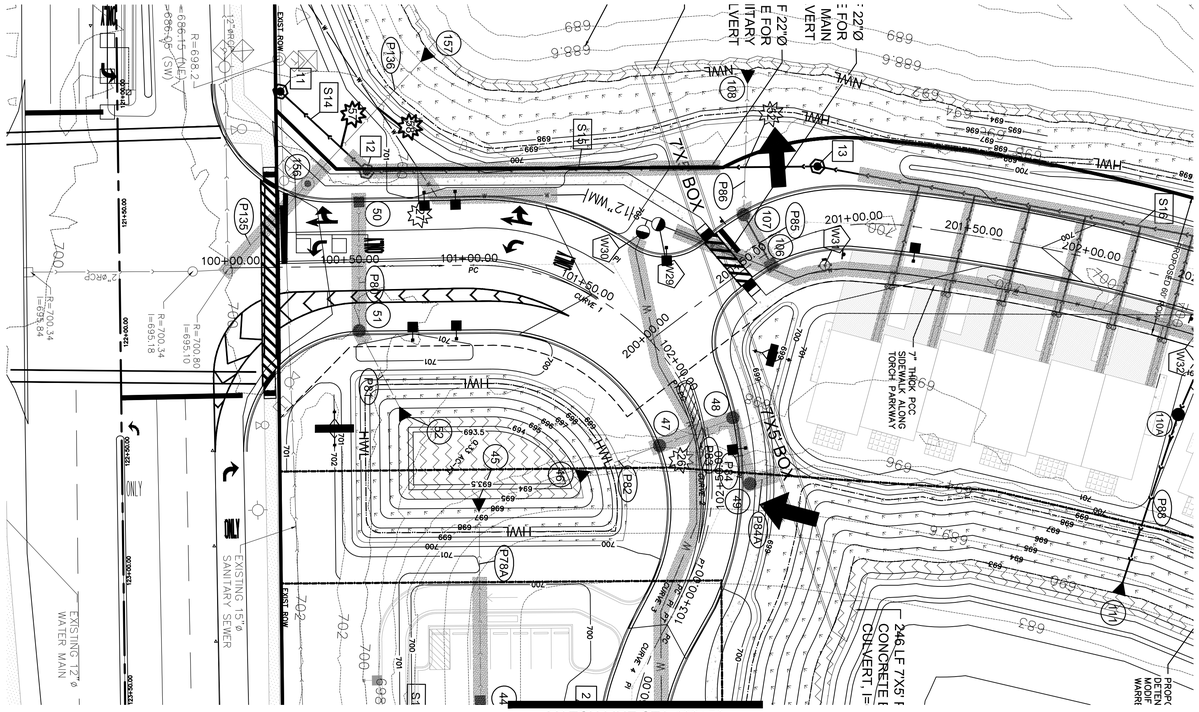
SHEET NUMBER
26
OF 71

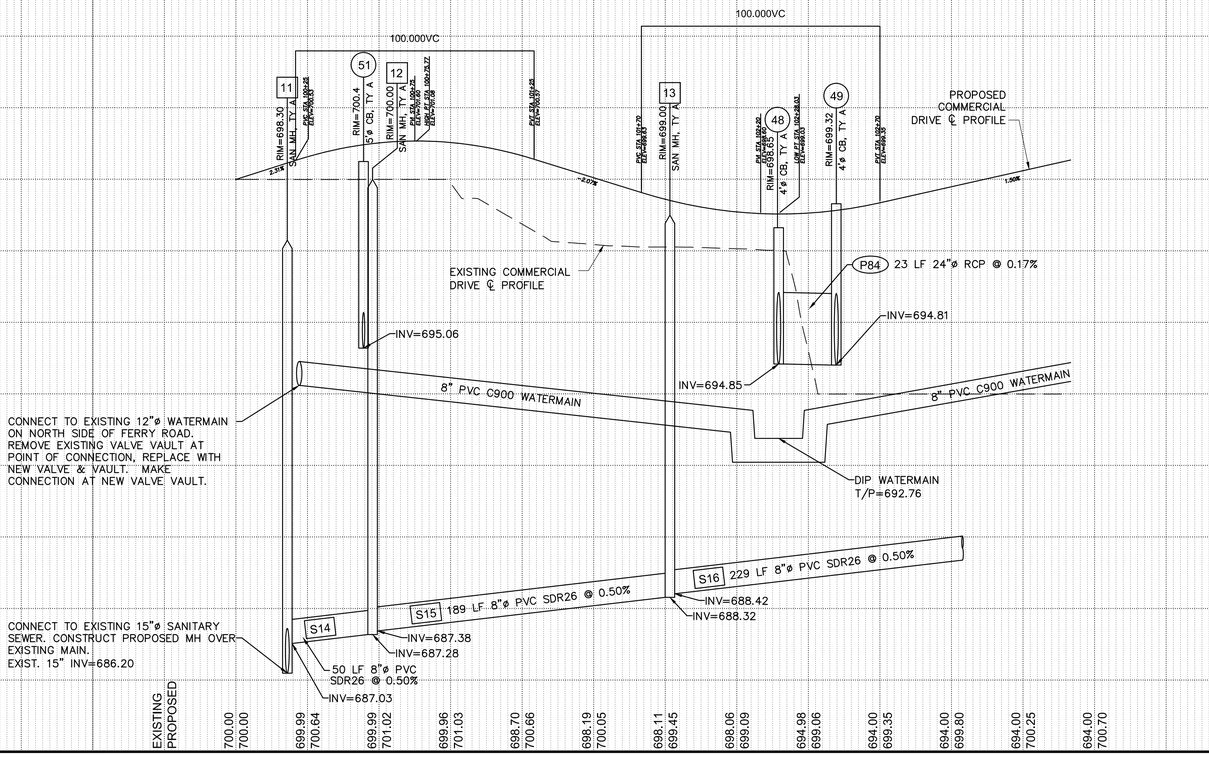
CURVE 1
RADIUS: 100'
PC: 101+01.73'
PI: 101+60.07'
PT: 102+07.36
DELTA: 60.5238°
CHORD LENGTH: 100.791'

CURVE 2
RADIUS: 80.000'
PC: 102+10.71'
PI: 02+51.29'
PT: 102+85.82'
DELTA ANGLE: 53.7986°
CHORD LENGTH: 72.388'

CURVE 3
RADIUS: 100.000'
PC: 103+00.88'
PI: 103+05.74'
PT: 103+10.60'
DELTA ANGLE: 5.5683°
CHORD LENGTH: 9.715'

CURVE 4
RADIUS: 100.000'
PC: 103+19.16'
PI: 103+44.37'
PT: 103+68.55'
DELTA ANGLE: 28.2959°
CHORD LENGTH: 48.885'





SCALE:
1" = 30' HORIZ
1" = 2' VERT

REVISIONS:	JOB NO: 080-020
09-18-18: REVISED PER CITY COMMENTS	FIELD BOOK: N/A
11-05-18: REVISED PER PDD COMMENTS	FIELD BOOK: N/A
01-18-19: REVISED PER CITY COMMENTS	DRAWN BY: KL
02-18-19: REVISED PER CITY COMMENTS	CHECKED BY:KK
FILE: I:\080-020 Canters Lot 2 Site Area C\Engineering\Drawings\	COMPLETED:02/07/18

03-15-19: PER DUDOT COMMENTS
04-19-19: PER CITY COMMENTS

PREPARED FOR:
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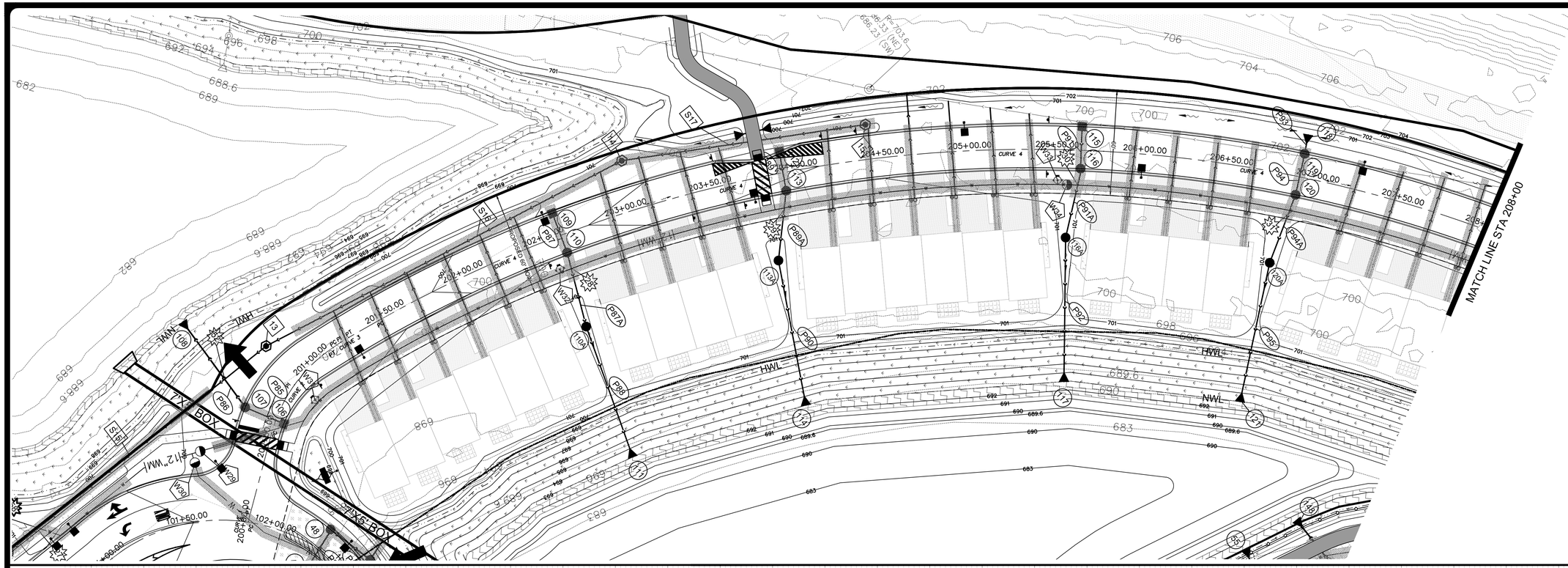
PLAN & PROFILE STA 100+00 - STA 103+50

RIVER VIEW WEST
CITY OF WARRENVILLE, ILLINOIS

SHEET NUMBER
27
OF 71

FILE: I:\080-020 Canters Lot 2 Site Area C\Engineering\Drawings\Final Engineering

Design Firm License No. 184-001129



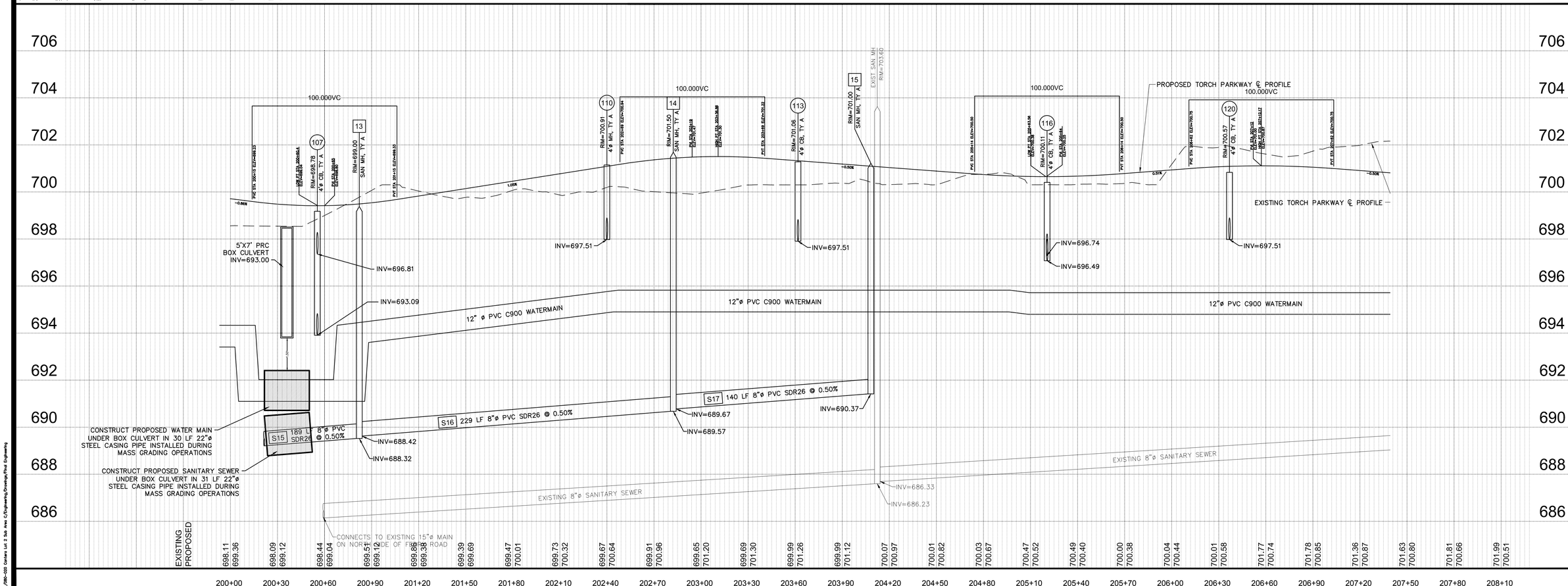
SCALE:
1"=30' HORIZ
1"=2' VERT

CURVE 1
RADIUS: 30.000'
PC STA: 200+00.43'
PI STA: 200+01.99'
PT STA: 200+03.55'
DELTA: 5.9571°
CHORD LENGTH: 3.118'

CURVE 2
RADIUS: 85.000'
PC STA: 200+52.67'
PI STA: 200+84.92'
PT STA: 201+14.32'
DELTA: 041.5615 (D)
CHORD LENGTH: 60.315'

CURVE 3
RADIUS: 85.000'
PC STA: 201+14.32'
PI STA: 201+19.63'
PT STA: 201+24.93'
DELTA: 007.1500 (D)
CHORD LENGTH: 10.600'

CURVE 4
RADIUS: 760.123'
PC STA: 201+44.69'
PI STA: 206+30.00'
PT STA: 210+08.52'
DELTA: 065.1127 (D)
CHORD LENGTH: 818.088'



REVISIONS:
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△ 04-19-19: PER CITY COMMENTS

JOB NO: 080-020
FIELD BOOK: N/A
FIELD BOOK: N/A
DRAWN BY: KL
CHECKED BY: KK
COMPLETED: 02/07/18

PREPARED FOR:
CANTER DEVELOPMENT HOLDINGS, LLC.
TWO NORTHFIELD PLAZA, SUITE 320
NORTHFIELD, IL 60093
TEL :(847) 562-2001

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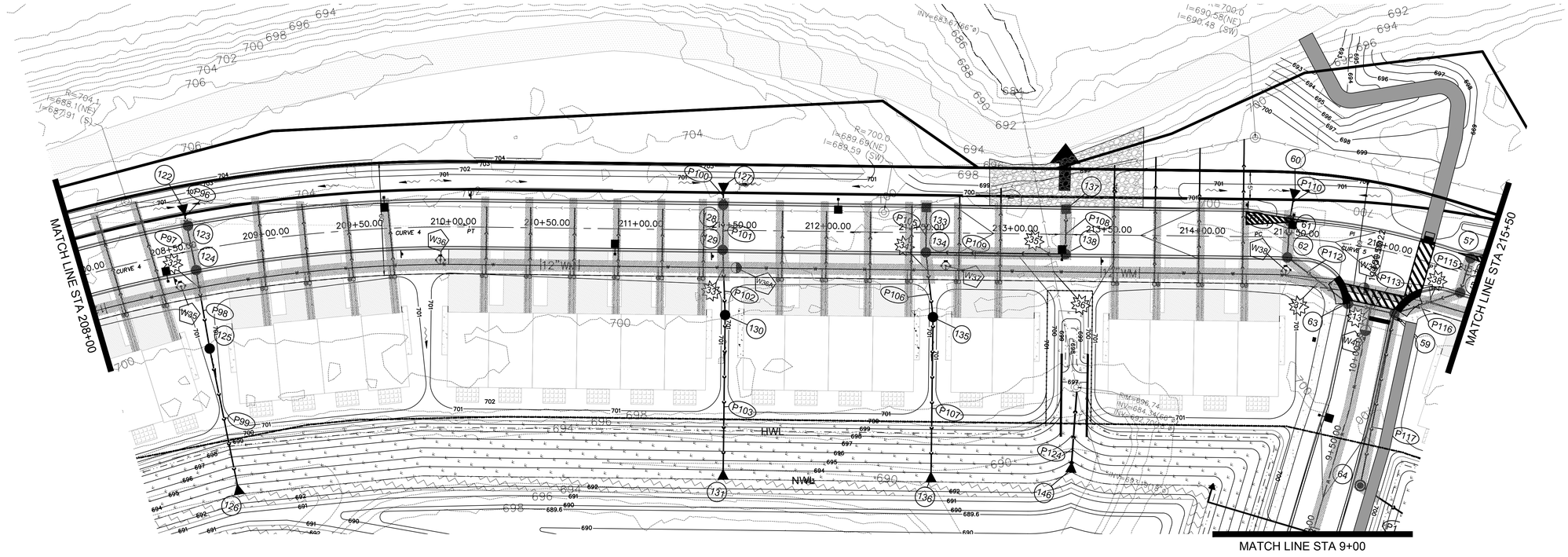
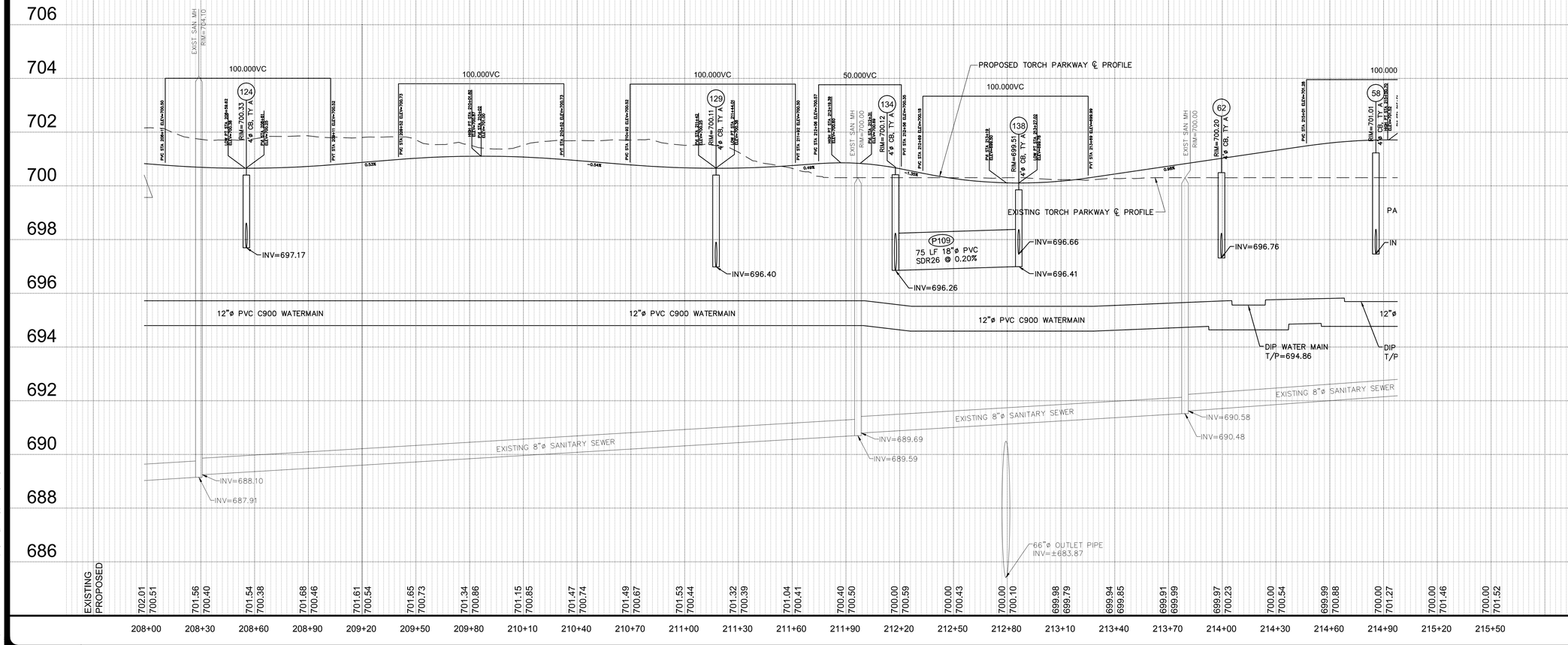
PLAN & PROFILE STA 200+00 - STA 208+00

RIVER VIEW WEST
CITY OF WARRENVILLE, ILLINOIS





SCALE:
1"=30' HORIZ
1"=2' VERT

CURVE 5
RADIUS: 325.001'
PC STA: 214+32.13'
PI STA: 214+79.62'
PT STA: 215+26.44'
DELTA: 016.6270 (D)
CHORD LENGTH: 93.983'

REVISIONS:
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03-15-19: PER DUDOT COMMENTS
09-18-18: REVISED PER CITY COMMENTS
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FILE: V:\060-020 Centers Lot 2 Sub Area C\Engineering\Drawings\Cover.dwg

JOB NO. 060-020
FIELD BOOK: N/A
FIELD BOOK: N/A
DRAWN BY: KL
CHECKED BY: KK
COMPLETED: 02/07/18

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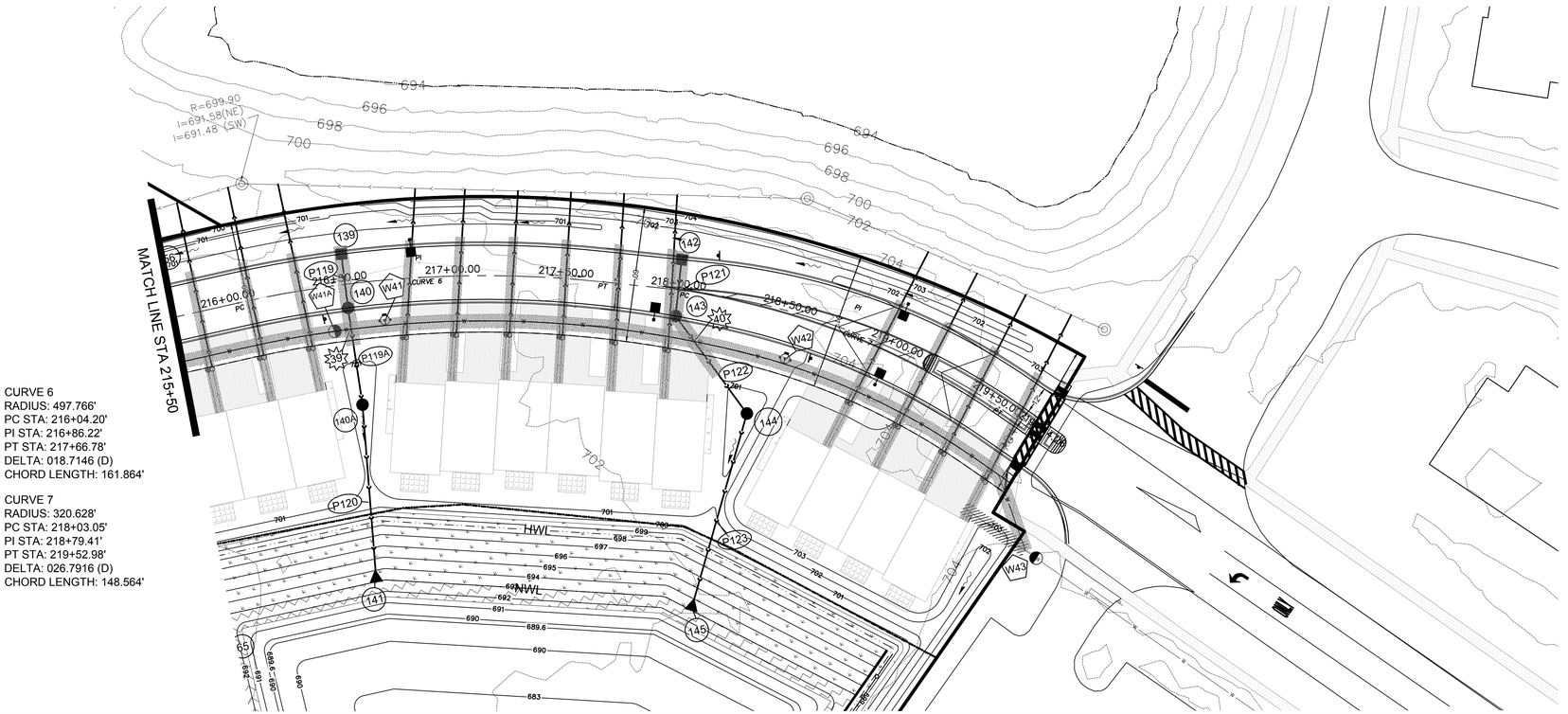
PLAN & PROFILE STA 208+00 - STA 215+50

RIVER VIEW WEST
CITY OF WARRENVILLE, ILLINOIS

SHEET NUMBER
29
OF 71

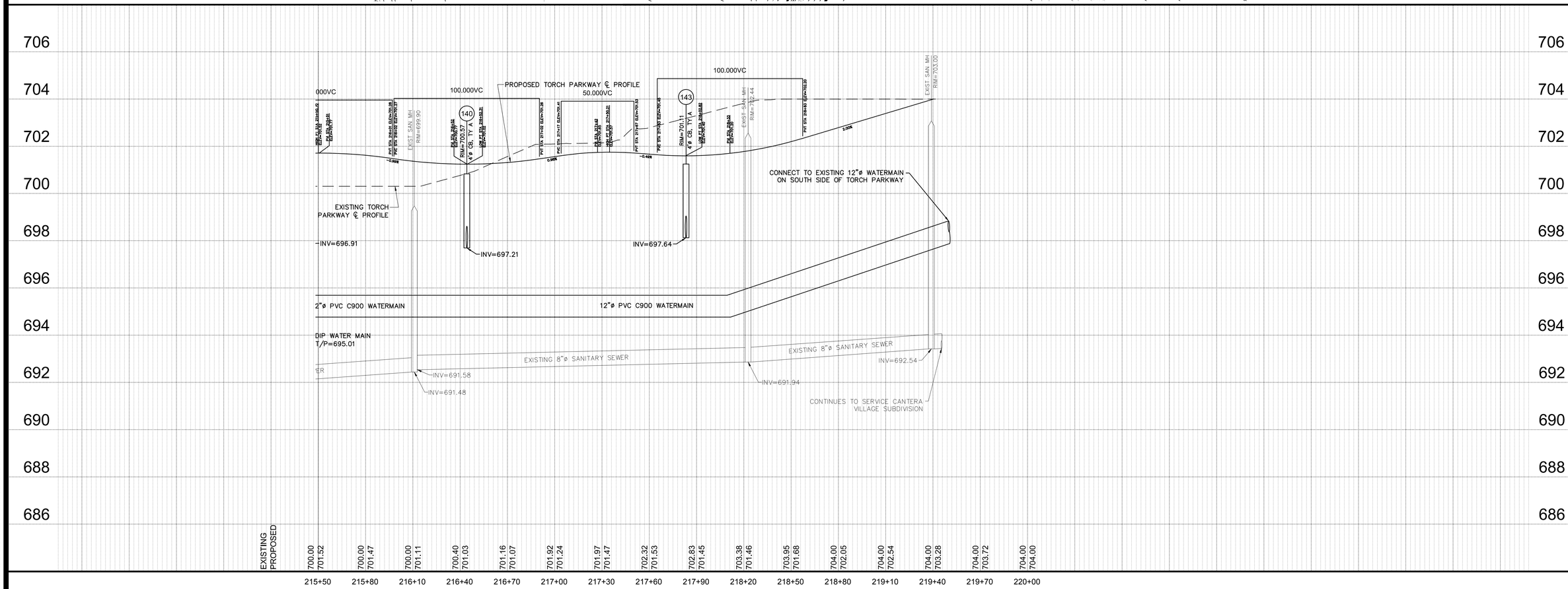
FILE: V:\060-020 Centers Lot 2 Sub Area C\Engineering\Drawings\Final Engineering



CURVE 6
RADIUS: 497.766'
PC STA: 216+04.20'
PI STA: 216+86.22'
PT STA: 217+66.78'
DELTA: 018.7146 (D)
CHORD LENGTH: 161.864'

CURVE 7
RADIUS: 320.628'
PC STA: 218+03.05'
PI STA: 218+79.41'
PT STA: 219+52.98'
DELTA: 026.7916 (D)
CHORD LENGTH: 148.564'

SCALE:
1"=30' HORIZ
1"=2' VERT



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JOB NO: 080-020
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PLAN & PROFILE STA 215+50 - STA 219+74.26

RIVER VIEW WEST
CITY OF WARRENVILLE, ILLINOIS

SHEET NUMBER
30
OF 71

Design Firm License No. 184-001129

60 0 30 60
1 inch = 60 ft.

WEST BRANCH DUPAGE RIVER

TORCH PARKWAY

RIVERVIEW DRIVE (PRIVATE ROAD)

FERRY ROAD

364 UNITS MULTIFAMILY BUILDING W/ GARAGE

SPEED LIMIT SIGN
SPEED LIMIT 25

NO PARKING SIGN

NO PARKING BETWEEN SIGNS

NO PARKING THIS SIDE OF STREET

NO PARKING FIRE LANE

FIRE LANE SIGN

EMERGENCY VEHICLES ONLY SIGN

PEDESTRIAN CROSSING SIGN (W11-2)

PEDESTRIAN CROSSWALK SIGN (R1-6A), TWO (2)SIGNS, ONE FACING EACH DIRECTION OF VEHICULAR TRAFFIC

STATE LAW STOP FOR PEDESTRIAN WITHIN CROSSWALK

STOP SIGN R1-1

STOP BAR – 24" WHITE THERMOPLASTIC (TYP)

CROSSWALK – 6" SOLID W/ 24" SOLID DIAGONALS – WHITE THERMOPLASTIC (TYP)

LANE REDUCTION MARKINGS – 4" SOLID W/ 12" SOLID DIAGONALS @ 2' O.C. – YELLOW PAINT (TYP)

ADA COMPLIANT HANDICAPPED RAMP (TYP)

HANDICAPPED PARKING SIGN

HANDICAPPED SYMBOLS AND STRIPPING (TYP). SEE DETAIL.

PARKING STALL STRIPING – 4"YELLOW PAINT (TYP)

WHEEL STOP (TYP)

LETTERS & SYMBOLS – WHITE THERMOPLASTIC (TYP)

LANE LINE 6" SOLID – WHITE THERMOPLASTIC (TYP)

CENTERLINE 2-4" SOLID YELLOW 11' C/C, WITH THERMOPLASTIC (TYP)

MEDIAN ISLAND 2-4" SOLID YELLOW 11' C/C, WITH 12' YELLOW DIAGONALS 50' C/C– THERMOPLASTIC (TYP)

LANE LINE 6" SKIP–DASH 2' DASH, 6' SKIP – WHITE THERMOPLASTIC (TYP)

RECESSED PAVEMENT MARKERS, 40' OC (TYP)

DETECTOR LOOPS WITH UNIT DUCT AND HANDHOLE

10' SIDEWALK PER DOC R1994-246749

EXIST ROW

NWL

HWL

TWH

REVISIONS:	FIELD BOOK:
09-18-18: REVISED PER CITY COMMENTS	FIELD BOOK: N/A
11-05-18: REVISED PER FPD COMMENTS	FIELD BOOK: N/A
01-18-19: REVISED PER CITY COMMENTS	DRAWN BY: MK
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PAVEMENT STRIPING & SIGNAGE PLAN

RIVER VIEW WEST
CITY OF WARRENVILLE, ILLINOIS

SHEET NUMBER
31
OF 71

P:\Eng\080-020 Cantera Lot 2 Sub Area 4\Engineering\Drawings\Final Engineering

Design Firm License No. 184.001129

SEE SHEET 34 FOR CONTINUATION

30 0 15 30
1 inch = 30 ft.

KEY MAP

34 35 32 33 WEST BRANCH DUPAGE RIVER FERRY ROAD

WEST BRANCH DUPAGE RIVER

PEDSTRIAN CROSSWALK SIGN (R1-6A). TWO (2)SIGNS, ONE FACING EACH DIRECTION OF VEHICULAR TRAFFIC

STATE LAW STOP FOR WITHIN CROSSWALK

NO PARKING SIGN

NO PARKING BETWEEN SIGNS

CROSSWALK – 6" SOLID W/ 24" SOLID DIAGONALS – WHITE THERMOPLASTIC (TYP)

ADA COMPLIANT HANDICAPPED RAMP (TYP)

NO PARKING SIGN

NO PARKING THIS SIDE OF STREET

PARKWAY

HWL

PEDESTRIAN CROSSING SIGN (W11-2)

PROPOSED 60' ROW

SPEED LIMIT SIGN

SPEED LIMIT 25

NWL

NO PARKING SIGN

NO PARKING THIS SIDE OF STREET

TORCH

NO PARKING FIRE LANE

FIRE LANE SIGN

CROSSWALK – 6" SOLID W/ 24" SOLID DIAGONALS – WHITE THERMOPLASTIC (TYP)

STOP BAR – 24" WHITE THERMOPLASTIC (TYP)

STOP SIGN R1-1

STOP

ADA COMPLIANT HANDICAPPED RAMP (TYP)

PARKING STALL STRIPING 4"YELLOW PAINT (TYP)

WHEEL STOP (TYP)

CROSSWALK – 6" SOLID W/ 24" SOLID DIAGONALS – WHITE PAINT (TYP)

EMERGENCY SPILLWAY. CREST ELEVATION 699.00

LETTERS & SYMBOLS – WHITE THERMOPLASTIC (TYP)

LANE LINE 6" SOLID – WHITE THERMOPLASTIC (TYP)

LETTERS & SYMBOLS – WHITE THERMOPLASTIC (TYP)

STOP BAR – 24" WHITE THERMOPLASTIC (TYP)

CROSSWALK – 6" SOLID W/ 24" SOLID DIAGONALS – WHITE THERMOPLASTIC (TYP)

CROSSWALK – 6" SOLID W/ 24" SOLID DIAGONALS – WHITE THERMOPLASTIC (TYP)

HANDICAPPED SYMBOLS AND STRIPPING (TYP). SEE DETAIL.

ADA COMPLIANT HANDICAPPED RAMP (TYP)

HWL

HANDICAPPED PARKING SIGN

RESERVED PARKING $250 FINE

HANDICAPPED PARKING SIGN

RESERVED PARKING $250 FINE

CENTERLINE 2-4" SOLID YELLOW 11' C/C, THERMOPLASTIC (TYP)

LANE REDUCTION MARKINGS – 8" SOLID W/ 12" SOLID DIAGONALS @ 45', 15' O.C – WHITE THERMOPLASTIC (TYP)

ADA COMPLIANT HANDICAPPED RAMP (TYP)

PARKING STALL STRIPING 4"YELLOW PAINT (TYP)

WHEEL STOP (TYP)

NWL

HWL

EXIST ROW

EXIST ROW

RECESSED PAVEMENT MARKERS, 40' OC (TYP)

LETTERS & SYMBOLS – WHITE THERMOPLASTIC (TYP)

LANE LINE 6" SOLID – WHITE THERMOPLASTIC (TYP)

LANE LINE 6" SKIP-DASH 2' DASH, 6' SKIP – WHITE THERMOPLASTIC (TYP)

DETECTOR LOOPS WITH UNIT DUCT AND HANDHOLE

LANE LINE 6" SKIP-DASH 2' DASH, 6' SKIP – WHITE THERMOPLASTIC (TYP)

LANE LINE 6" SOLID – WHITE THERMOPLASTIC (TYP)

FERRY ROAD

LETTERS & SYMBOLS – WHITE THERMOPLASTIC (TYP)

RECESSED PAVEMENT MARKERS, 40' OC (TYP)

SEE SHEET 33 FOR CONTINUATION

REVISIONS:
△ 04-19-19: PER CITY COMMENTS △ 03-15-19: PER DUDOT COMMENTS
△ 03-25-19: PER FPD COMMENTS △ 02-25-19: PER INTERNAL COORDINATION
△ 09-18-18: REVISED PER CITY COMMENTS
△ 11-05-18: REVISED PER FPD COMMENTS
△ 01-18-19: REVISED PER CITY COMMENTS
△ 02-18-19: REVISED PER CITY COMMENTS

JOB NO: 080-020
FIELD BOOK: N/A
FIELD BOOK: N/A
DRAWN BY: MK
CHECKED BY: KEK
COMPLETED: 04/07/19

FILE: I:\080-020 Cantera Lot 2 Sub Area C\Engineering\Drawings\Final Engineering

PREPARED FOR:
CANTERA DEVELOPMENT HOLDINGS, LLC.
TWO NORTHFIELD PLAZA, SUITE 320
NORTHFIELD, IL 60093
TEL: (847) 562-2001

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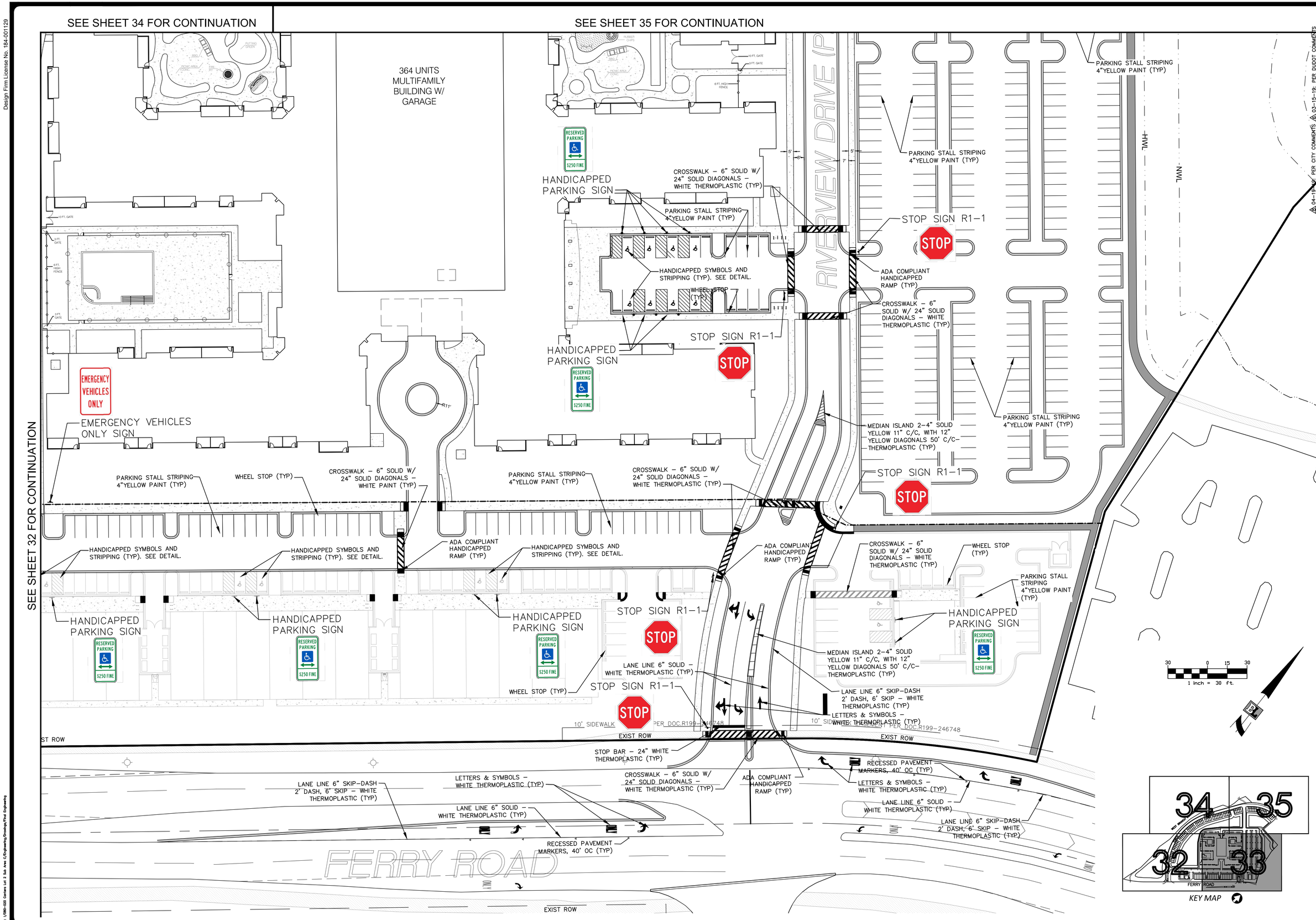
PAVEMENT STRIPING & SIGNAGE PLAN

RIVER VIEW WEST
CITY OF WARRENVILLE, ILLINOIS

SHEET NUMBER
32
OF 71



Design Firm License No. 184-001129

FILE: I/080-020 Cantera Lot 2 Sub Area C/Engineering/Drawings/Final Engineering

REVISIONS:	
1 09–18–18: REVISED PER CITY COMMENTS	JOB NO: 080–020
2 11–05–18: REVISED PER FPD COMMENTS	FIELD BOOK: N/A
3 01–18–19: REVISED PER CITY COMMENTS	FIELD BOOK: N/A
4 02–18–19: REVISED PER CITY COMMENTS	DRAWN BY: MK
FILE: I/080-020 Cantera Lot 2 Sub Area C/Engineering/Drawings	CHECKED BY: KEK
	COMPLETED: 04/07/18

03–15–19: PER DUDOT COMMENTS
04–19–19: PER CITY COMMENTS
03–25–19: PER FPD COMMENTS
02–25–19: PER INTERNAL COORDINATION

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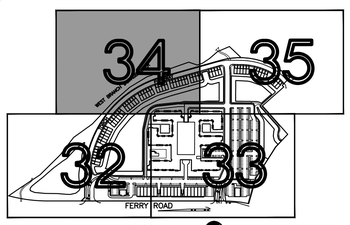
PAVEMENT STRIPING & SIGNAGE PLAN

RIVER VIEW WEST
CITY OF WARRENVILLE, ILLINOIS

SHEET NUMBER
33
OF 71

Design Firm License No. 184-001129

30 0 15 30
1 inch = 30 ft.



KEY MAP

WEST BRANCH DUPAGE RIVER

WEST BRANCH DUPAGE RIVER

PARKWAY

TORCH

SPEED LIMIT SIGN
SPEED LIMIT 25

SPEED LIMIT SIGN
SPEED LIMIT 25

NO PARKING SIGN
NO PARKING THIS SIDE OF STREET

SPEED LIMIT SIGN
SPEED LIMIT 25

PEDESTRIAN CROSSING SIGN (W11-2)

SPEED LIMIT SIGN
SPEED LIMIT 25

NO PARKING SIGN
NO PARKING BETWEEN SIGNS

LANE REDUCTION MARKINGS – 4" SOLID W/ 12" SOLID DIAGONALS @ 2' O.C – YELLOW PAINT (TYP)

HWL

NWL

SEE SHEET 35 FOR CONTINUATION

SEE SHEET 32 FOR CONTINUATION

SEE SHEET 33 FOR CONTINUATION

△04-19-19: PER CITY COMMENTS △03-15-19: PER DUDOT COMMENTS
△03-25-19: PER FPD COMMENTS △02-25-19: PER INTERNAL COORDINATION

REVISIONS:
△09-18-18: REVISED PER CITY COMMENTS
△11-05-18: REVISED PER FPD COMMENTS
△01-18-19: REVISED PER CITY COMMENTS
△02-18-19: REVISED PER CITY COMMENTS

FILE: V:\060-020 Cantera Lot 2 Sub Area 1\Engineering\Drawings

JOB NO: 060-020
FIELD BOOK: N/A
FIELD BOOK: N/A
DRAWN BY: MK
CHECKED BY: KEK
COMPLETED: 04/07/19

PREPARED FOR:
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PAVEMENT STRIPING & SIGNAGE PLAN

RIVER VIEW WEST
CITY OF WARRENVILLE, ILLINOIS

SHEET NUMBER
34
OF 71

Design Firm License No. 184-001129

1 inch = 30 ft.

SEE SHEET 34 FOR CONTINUATION

SEE SHEET 33 FOR CONTINUATION

NO PARKING BETWEEN SIGNS

NO PARKING SIGN

CROSSWALK – 6" SOLID W/ 24" SOLID DIAGONALS – WHITE THERMOPLASTIC (TYP)

LANE REDUCTION MARKINGS – 4" SOLID W/ 12" SOLID DIAGONALS @ 2' O.C – YELLOW PAINT (TYP)

TORCH PARKWAY

SPEED LIMIT SIGN

SPEED LIMIT 25

ADA COMPLIANT HANDICAPPED RAMP (TYP)

MEDIAN ISLAND 2–4" SOLID YELLOW 11" C/C, WITH 12" YELLOW DIAGONALS 50' C/C– THERMOPLASTIC (TYP)

STOP SIGN R1–1

STOP

STOP SIGN R1–1 ON DECORATIVE POLE

STOP BAR – 24" WHITE THERMOPLASTIC (TYP)

STOP BAR – 24" WHITE THERMOPLASTIC

NO PARKING THIS SIDE OF STREET

HWL

NWL

NO PARKING FIRE LANE

FIRE LANE SIGN

EMERGENCY VEHICLES ONLY SIGN

EMERGENCY VEHICLES ONLY

PRIVATE ROAD

CROSSWALK – 6" SOLID W/ 24" SOLID DIAGONALS – WHITE THERMOPLASTIC (TYP)

PARKING STALL STRIPING 4"YELLOW PAINT (TYP)

CENTERLINE 2–4" SOLID YELLOW 11" C/C, PAINT (TYP)

LETTE WHITE

KEY MAP

34 35 32 33 FERRY ROAD

04-19-19: PER CITY COMMENTS
03-25-19: PER FPD COMMENTS
03-15-19: PER DUPDT COMMENTS
02-25-19: PER INTERNAL COORDINATION

REVISIONS:
09-18-18: REVISED PER CITY COMMENTS
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RIVER VIEW WEST
CITY OF WARRENVILLE, ILLINOIS

SHEET NUMBER
35
OF 71

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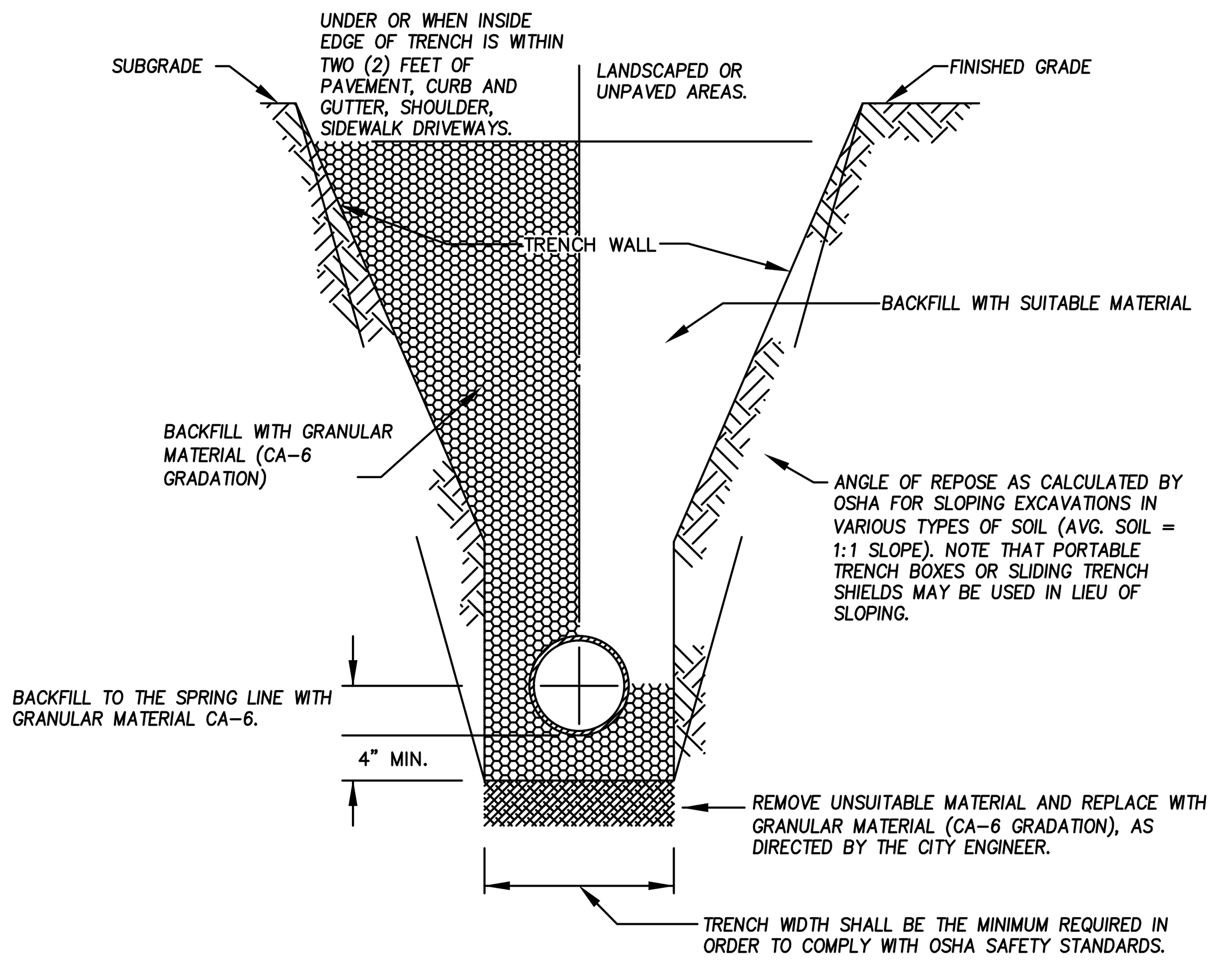


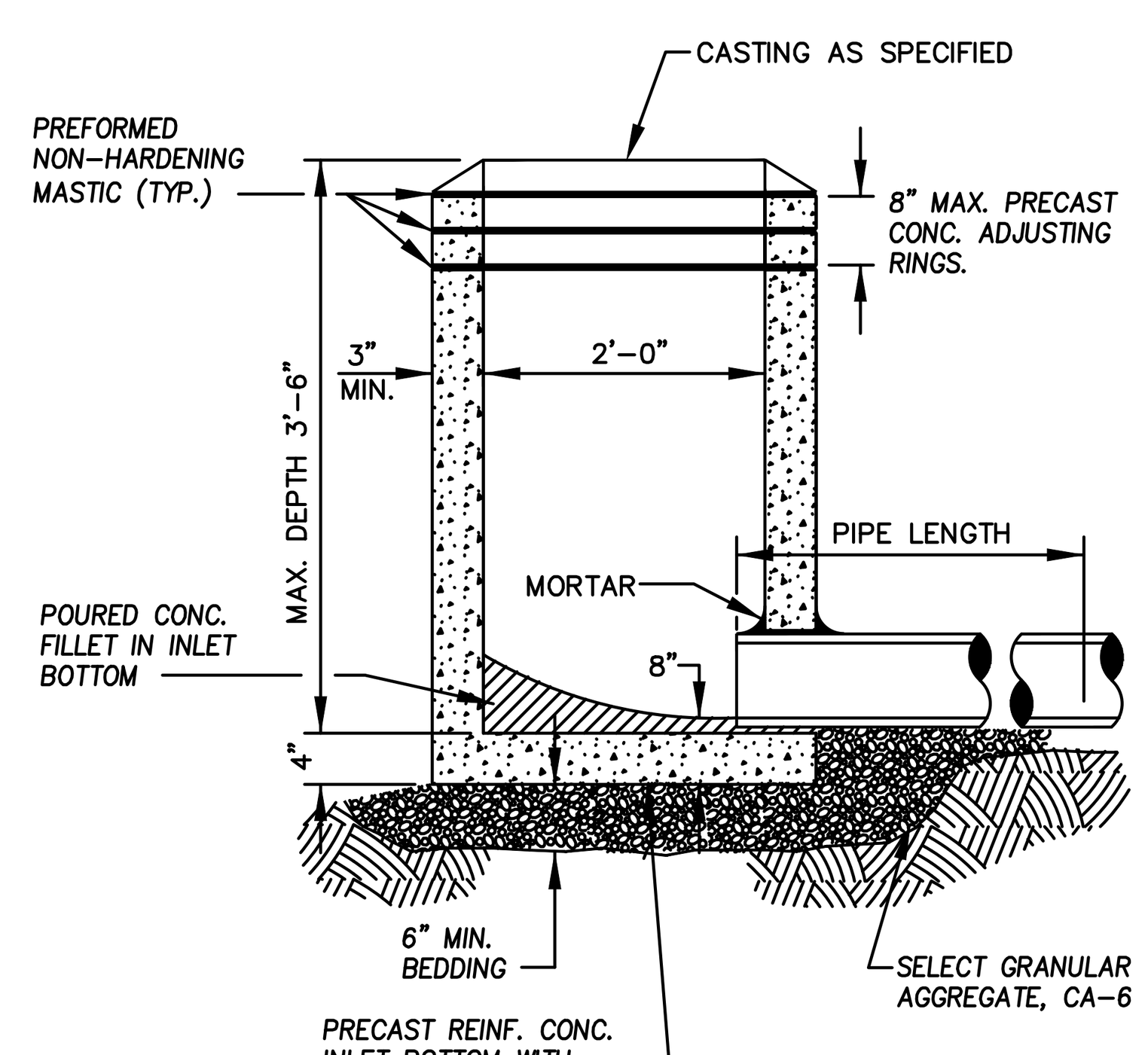
GENERAL NOTES:

1. CONTRACTOR SHALL CONDUCT HIS OPERATIONS IN A SAFE MANNER AT ALL TIMES AND SHALL COMPLY WITH ALL APPLICABLE GOVERNING REGULATIONS, INCLUDING BUT NOT LIMITED TO OSHA SAFETY STANDARDS.
2. ALL BACKFILL MATERIAL UP TO A HEIGHT OF 12 INCHES ABOVE THE PIPE SHALL BE CAREFULLY DEPOSITED IN UNIFORM LAYERS NOT EXCEEDING 8 INCHES THICK (LOOSE MEASURE). THE MATERIAL IN EACH LAYER SHALL BE FIRMLY COMPACTED BY RAMMING OR TAMPING WITH TOOLS APPROVED BY THE CITY ENGINEER IN SUCH A MANNER AS NOT TO DISTURB OR INJURE THE PIPE. THE BACKFILLING ABOVE THIS HEIGHT SHALL BE DONE AS NOTED BELOW.
3. GRANULAR BACKFILL MATERIAL SHALL BE PLACED AND COMPACTED AS SPECIFIED IN NOTE 2, ABOVE. THE USE OF JETTING SHALL NOT BE ALLOWED UNLESS AUTHORIZED IN WRITING BY THE CITY ENGINEER. IT SHALL BE THE DESIGN ENGINEER OR CONTRACTOR'S RESPONSIBILITY TO PROVIDE APPROPRIATE JUSTIFICATION AND DOCUMENTATION (SOIL INVESTIGATION REPORTS. ETC.) TO THE CITY ENGINEER WITH THE REQUEST FOR APPROVAL OF JETTING.

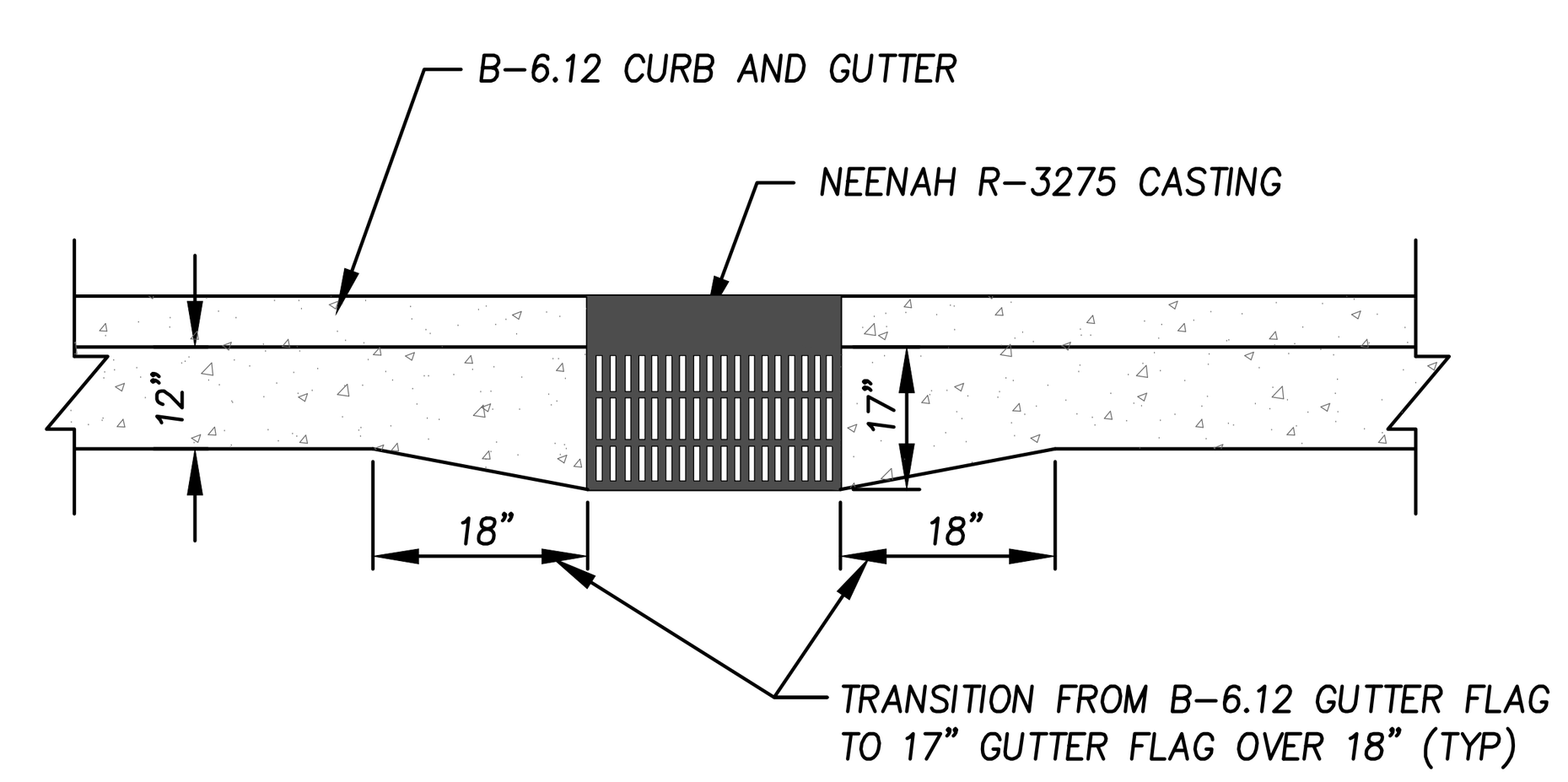
STORM SEWER TRENCH SECTION

NOTE:

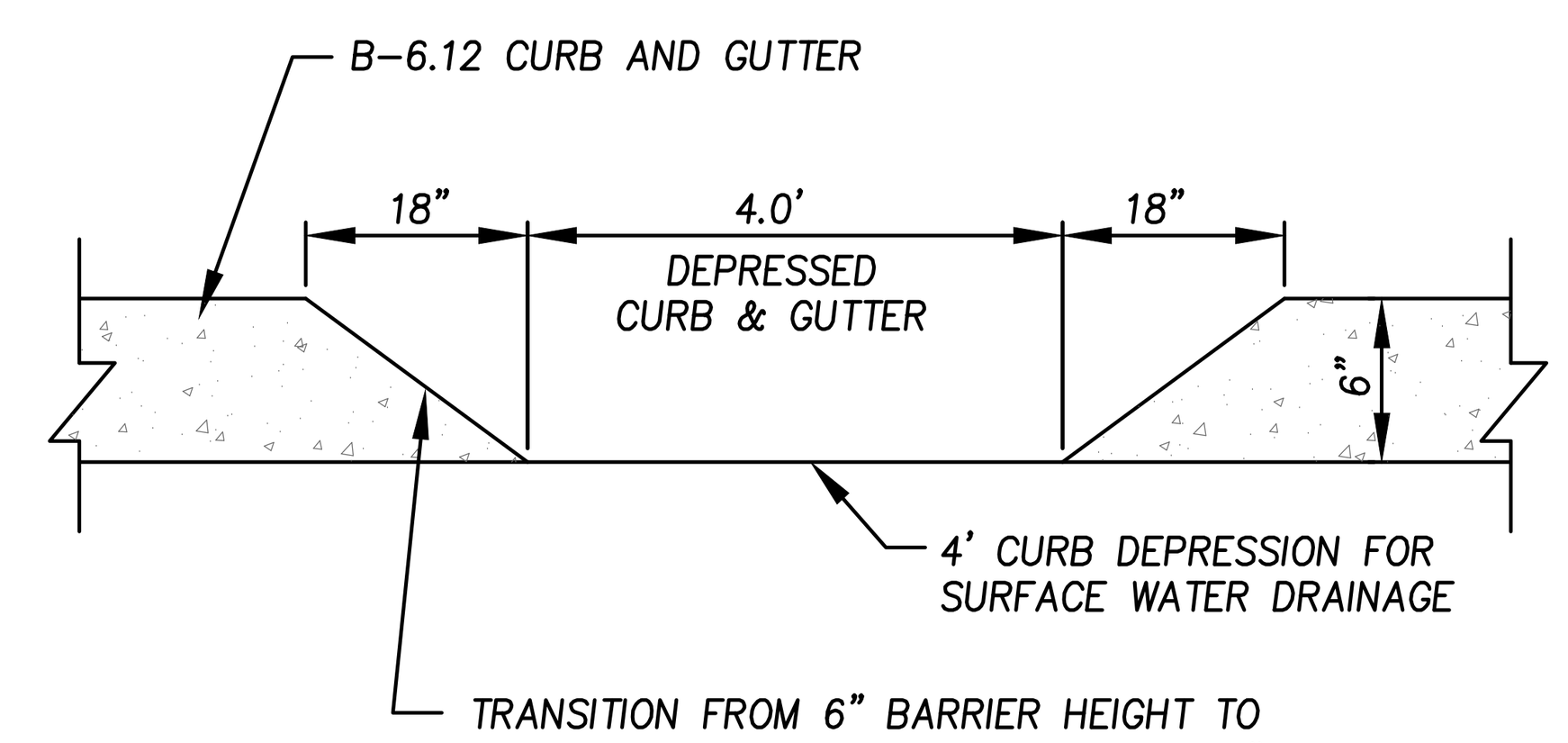
1. PROVIDE SELECT GRANULAR BACKFILL AROUND INLET TO SUBGRADE ELEVATION IN PAVED AREAS.
2. ALTERNATE INLET BOTTOM – PRECAST REINFORCED CONCRETE BASE
3. CONCRETE FILLETS SHALL BE MADE WITH NON-SHRINK MOTAR TO PROVIDE A SMOOTH TRANSITION BETWEEN THE CASTING AND ADJUSTING RING (ON TOP OF STRUCTURE). SEE STORM 6 & 7.
4. WHEN ADJUSTMENT ARE NECESSARY, THEY WILL BE PERFORMED WITH A MAXIMUM OF TWO PRECAST CONCRETE RINGS SET IN A BED OF PREFORMED NON-HARDENING MASTIC (RUB-R-NEK OR APPROVED EQUAL) TO A MAXIMUM HEIGHT OF EIGHT INCHES. TWO INCH RINGS SHALL ONLY BE USED WHEN ADJUSTMENT IS LESS THE THREE INCHES.
5. NO MORTAR SHALL BE USED TO DRESS UP INSIDE ADJUSTING RINGS.
6. A MINIMUM OF FOUR (4), TWO (2) INCH DIAMETER HOLES SHALL BE PROVIDED WITHIN ONE (1) FOOT OF THE LOWEST PIPE INVERT. THE HOLES SHALL BE DISTRIBUTED EQUIDISTANT AROUND THE PERIMETER OF THE STRUCTURE. A ONE (1) FOOT BY ONE (1) FOOT SECTION OF UNDERDRAIN FILTER CLOTH MATERIAL SHALL BE SUFFICIENTLY FIXED TO THE OUTSIDE OF THE MANHOLE WITH MASTIC MATERIALS TO PREVENT SLIPPAGE DUING BACKFILLING.



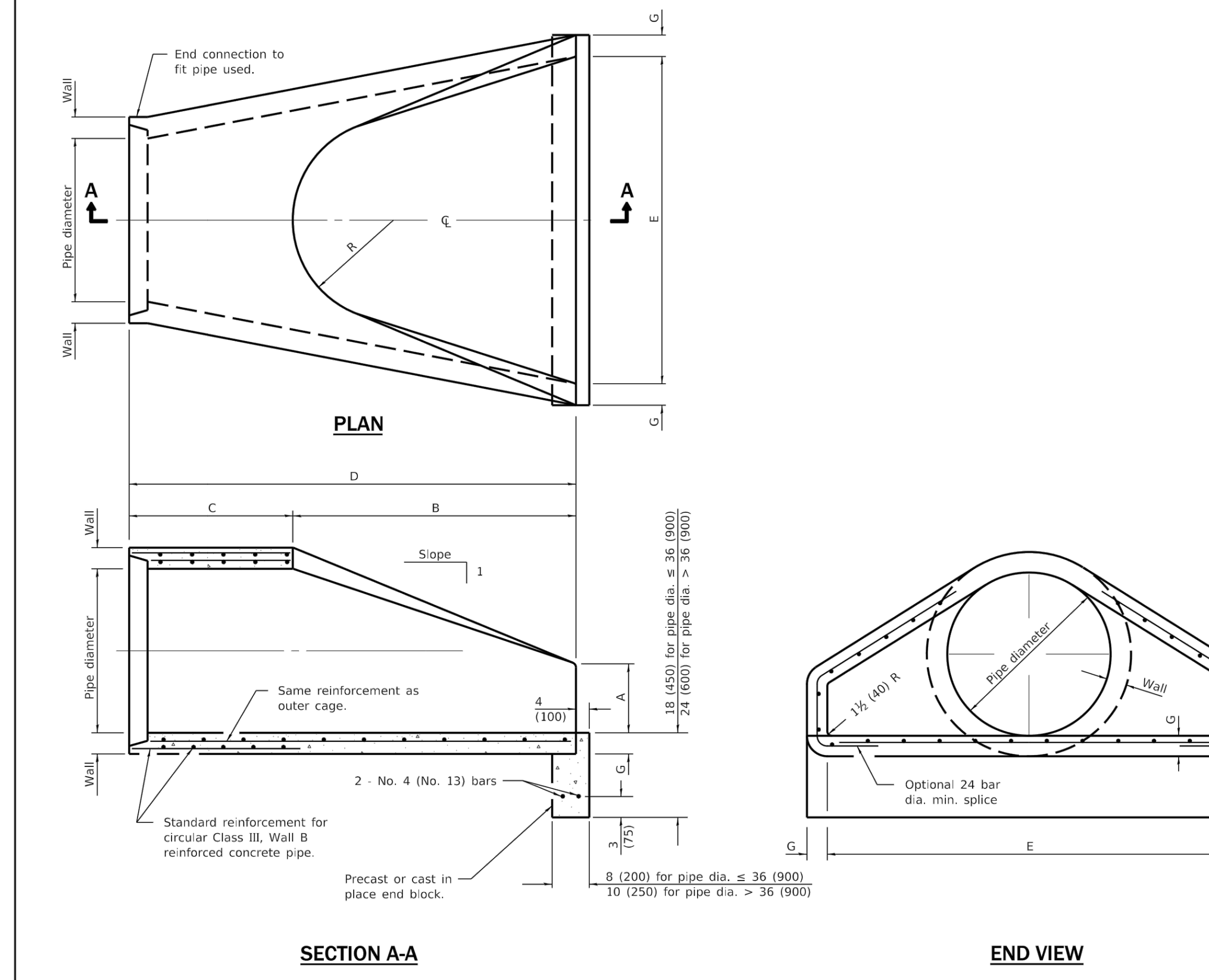
INLET TYPE A
N.T.S.



B-6.12 GUTTER TRANSITION



B-6.12 BARRIER TRANSITION FOR SURFACE DARINGAE



PIPE DIA.	APPROX. QTY. lbs. (kg)	WALL	A	B	C	D	E	G	R	APPROX. SLOPE
12 (300)	530 (240)	2 (51)	4 (102)	24 (610)	4'-0⅞" (1.241 m)	6'-0⅞" (1.851 m)	24 (610)	2 (51)	9 (229)	1:2.4
15 (375)	740 (335)	2¼ (57)	6 (152)	27 (686)	3'-10" (1.168 m)	6'-1" (1.854 m)	30 (762)	2¼ (57)	11 (280)	1:2.4
18 (450)	990 (450)	2½ (64)	9 (229)	27 (686)	3'-10" (1.168 m)	6'-1" (1.854 m)	36 (914)	2½ (64)	12 (305)	1:2.4
21 (525)	1280 (580)	2¾ (70)	9 (229)	35 (889)	38 (965)	6'-1" (1.854 m)	3'-6" (1.067 m)	2¾ (70)	13 (330)	1:2.4
24 (600)	1520 (690)	3 (76)	9½ (241)	3'-7½" (1.105 m)	30 (762)	6'-1½" (1.867 m)	4'-0" (1.219 m)	3 (76)	14 (356)	1:2.5
27 (675)	1930 (875)	3¼ (83)	10½ (267)	4'-0" (1.219 m)	25½ (648)	6'-1½" (1.867 m)	4'-6" (1.372 m)	3¼ (83)	14½ (368)	1:2.4
30 (750)	2190 (995)	3½ (89)	12 (305)	4'-6" (1.375 m)	19¾ (502)	6'-1¾" (1.874 m)	5'-0" (1.524 m)	3½ (89)	15 (381)	1:2.5
33 (825)	3200 (1450)	3¾ (95)	13½ (343)	4'-10½" (1.486 m)	39¼ (997)	8'-1¾" (2.483 m)	5'-6" (1.676 m)	3¾ (95)	17½ (445)	1:2.5
36 (900)	4100 (1860)	4 (102)	15 (381)	5'-3" (1.6 m)	34¾ (883)	8'-1¾" (2.483 m)	6'-0" (1.829 m)	4 (102)	20 (508)	1:2.5
42 (1050)	5380 (2440)	4½ (114)	21 (533)	5'-3" (1.6 m)	35 (889)	8'-2" (2.489 m)	6'-6" (1.981 m)	4½ (114)	22 (559)	1:2.5
48 (1200)	6550 (2970)	5 (127)	24 (610)	6'-0" (1.829 m)	26 (660)	8'-2" (2.489 m)	7'-0" (2.134 m)	5 (127)	22 (559)	1:2.5
54 (1350)	8240 (3740)	5½ (140)	27 (686)	5'-5" (1.651 m)	35 (889)	8'-4" (2.54 m)	7'-6" (2.286 m)	5½ (140)	24 (610)	1:2.0
60 (1500)	8730 (3960)	6 (152)	35 (889)	5'-0" (1.524 m)	39 (991)	8'-3" (2.515 m)	8'-0" (2.438 m)	5 (127)	*	1:1.9
66 (1650)	10710 (4860)	6½ (165)	30 (762)	6'-0" (1.829 m)	27 (686)	8'-3" (2.515 m)	8'-6" (2.591 m)	5½ (140)	*	1:1.7
72 (1800)	12520 (5680)	7 (178)	36 (914)	6'-6" (1.981 m)	21 (533)	8'-3" (2.514 m)	9'-0" (2.743 m)	6 (152	*	1:1.8
78 (1950)	14770 (6700)	7½ (191)	36 (914)	7'-6" (2.286 m)	21 (533)	9'-3" (2.819 m)	9'-6" (2.896 m)	6½ (165)	*	1:1.8
84 (2100)	18160 (8240)	8 (203)	36 (914)	7'-6½" (2.299 m)	21 (533)	9'-3½" (2.832 m)	10'-0" (3.048 m)	6½ (165)	*	1:1.6

* Radius as furnished by manufacturer

GENERAL NOTES

All slope ratios are expressed as units of vertical displacement to units of horizontal displacement (V:H).

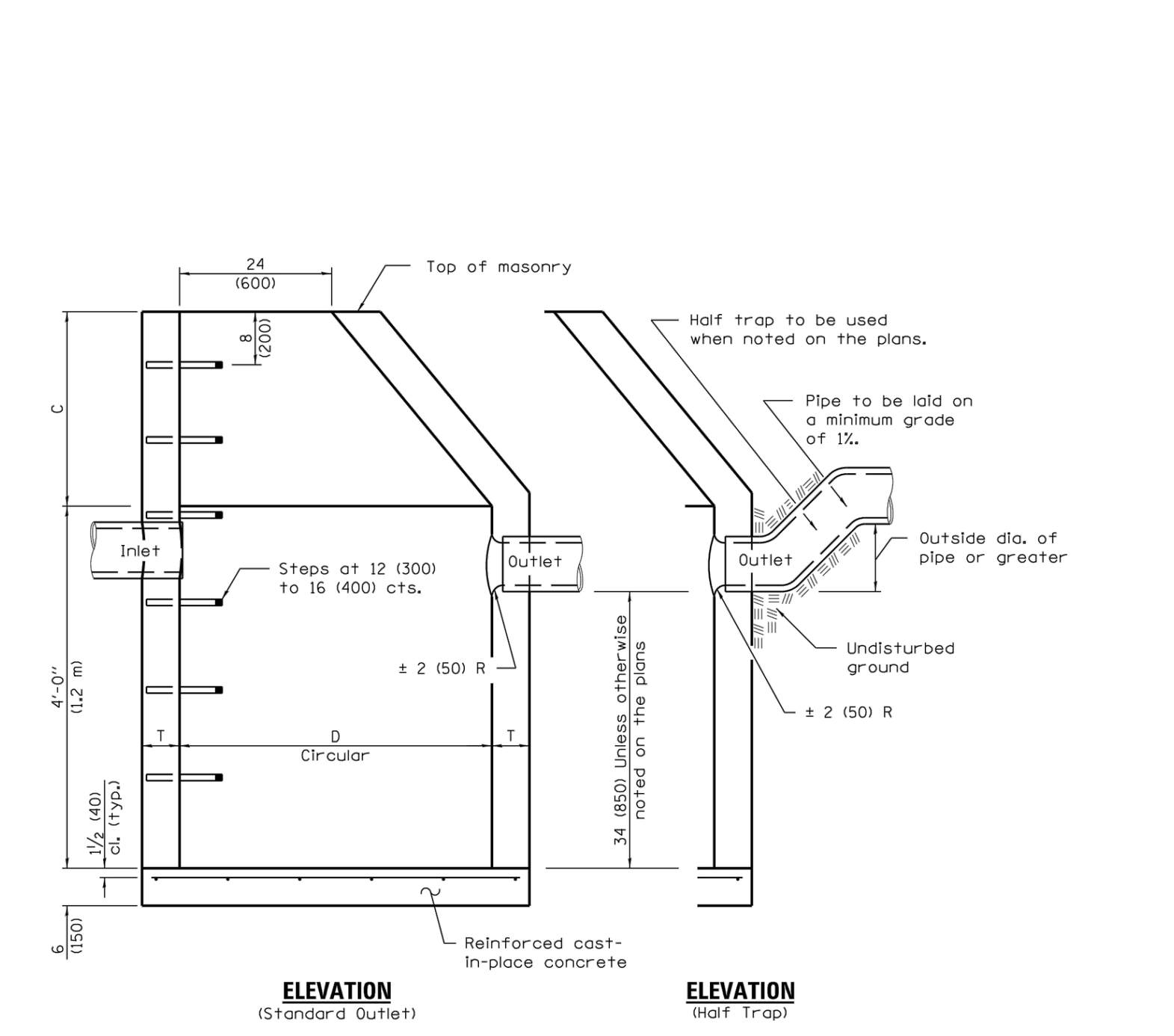
All dimensions are in inches (millimeters) unless otherwise shown.

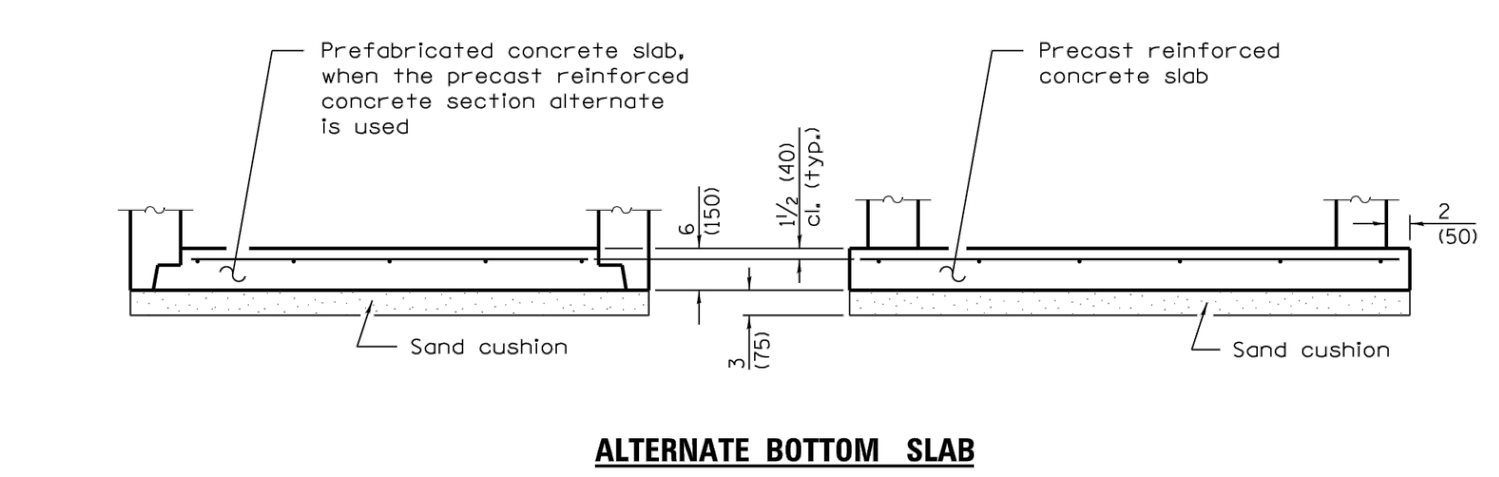
Illinois Department of Transportation
APPROVED January 1, 2011 — ENGINEER OF BRIDGES AND STRUCTURES
APPROVED January 1, 2011 — ENGINEER OF DESIGN AND ENVIRONMENT
ISSUED 1-1-97

DATE	REVISIONS
1-1-11	Clarified ref. to pipe dia. on Section A-A. Changed 'inner' to 'outer' cage ref.
1-1-09	Switched units to English (metric).

PRECAST REINFORCED CONCRETE FLARED END SECTION

STANDARD 542301-03





ALTERNATE BOTTOM SLAB

ALTERNATE MATERIALS FOR WALLS	D	C•	T (min.)
Concrete Masonry Unit	4'-0" (1.2 m) 5'-0" (1.5 m)	30 (750) 3'-9" (1.15 m)	5 (125) 5 (125)
Brick Masonry	4'-0" (1.2 m) 5'-0" (1.5 m)	30 (750) 3'-9" (1.15 m)	8 (200) 8 (200)
Precast Reinforced Concrete Section	4'-0" (1.2 m) 5'-0" (1.5 m)	30 (750) 3'-9" (1.15 m)	4 (100) 5 (125)
Cast-in-place Concrete	4'-0" (1.2 m) 5'-0" (1.5 m)	30 (750) 3'-9" (1.15 m)	6 (150) 6 (150)

• For precast reinforced concrete sections, dimension "C" may vary from the dimension given to plus 6 (150).

GENERAL NOTES

Bottom slabs shall be reinforced with a minimum of 0.20 sq. in./ft (420 sq. mm/m) in both directions with a maximum spacing of 12 (300).

Bottom slabs may be connected to the riser as determined by the fabricator; however, only a single row of reinforcement around the perimeter may be utilized.

See Standard 602601 for optional precast reinforced concrete flat slab top.

See Standard 602701 for details of steps.

All dimensions are in inches (millimeters) unless otherwise shown.

Illinois Department of Transportation
PASSED January 1, 2011 — ENGINEER OF POLICY AND PROCEDURES
APPROVED January 1, 2011 — ENGINEER OF DESIGN AND ENVIRONMENT
ISSUED 1-1-97

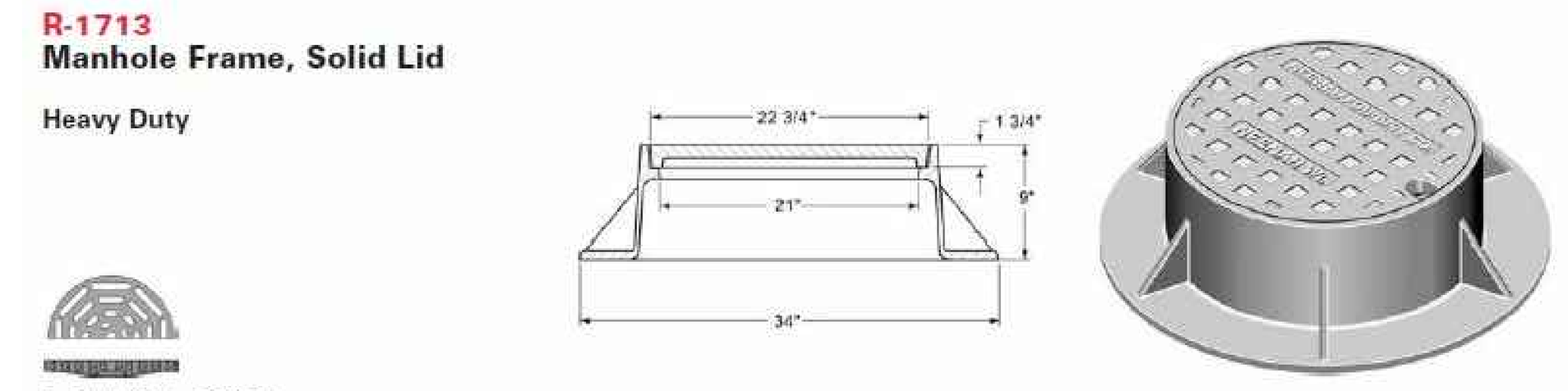
DATE	REVISIONS
1-1-11	Added 'Outside' to half trap note. Detail rein. in slabs. Revised general notes.
1-1-09	Switched units to English (metric).

CATCH BASIN TYPE A

STANDARD 602001-02

R-1713
Manhole Frame, Solid Lid

Heavy Duty

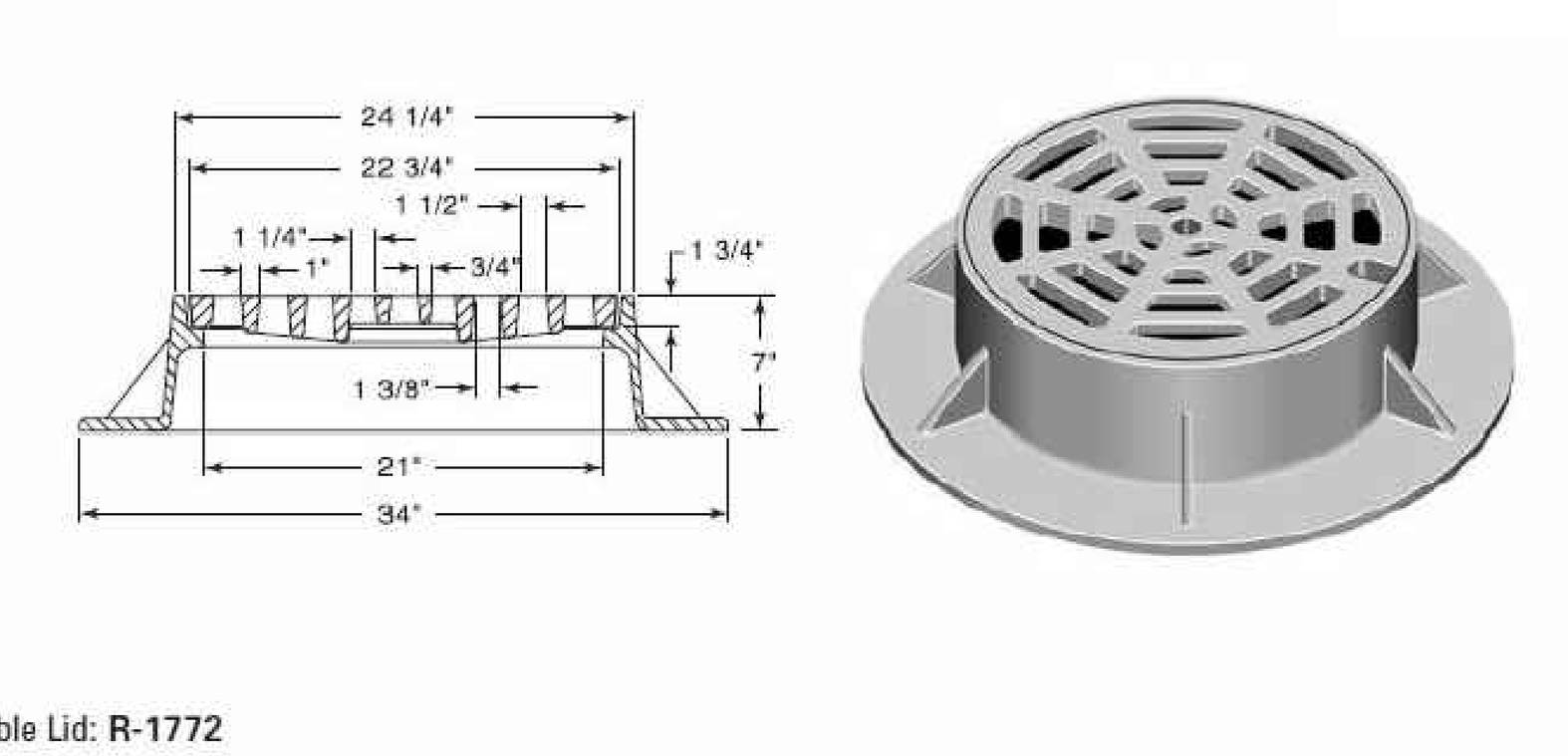


Available Grate: R-2504

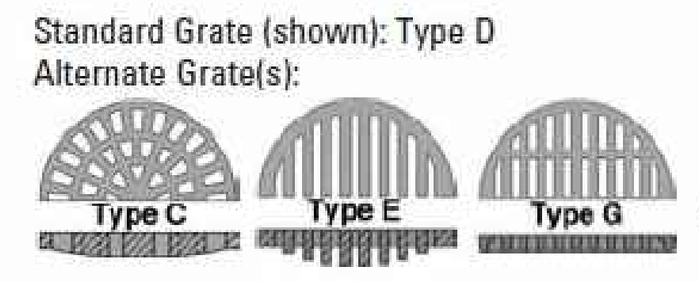
R-2502
Inlet Frame, Grate

Heavy Duty

CATALOG NUMBER	GRATE TYPE	SQ. FT. OPEN	WEIR PERIMETER LINEAL FEET
R-2502	D	0.9	6.0
R-2502	G	1.3	6.0
R-2502	C	1.2	6.0
R-2502	E	1.5	6.0



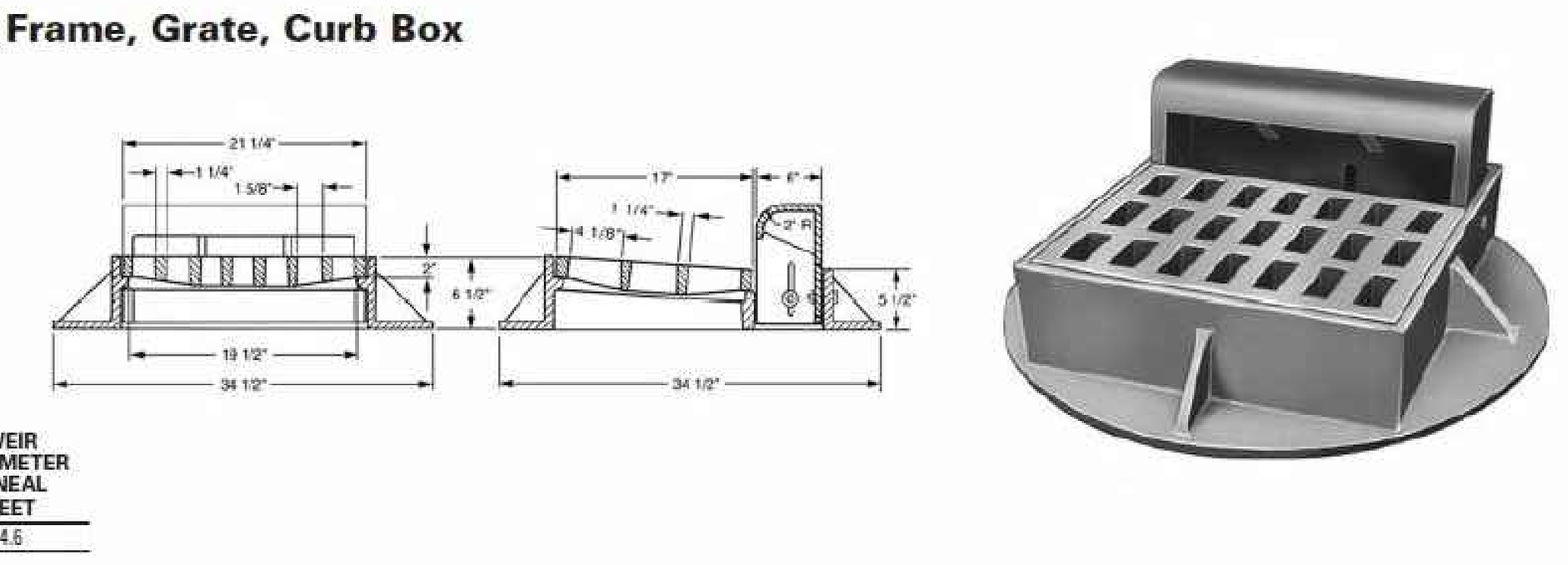
Standard Grate (shown): Type D
Alternate Grate(s):



Available Lid: R-1772

R-3275
Combination Inlet Frame, Grate, Curb Box

Heavy Duty

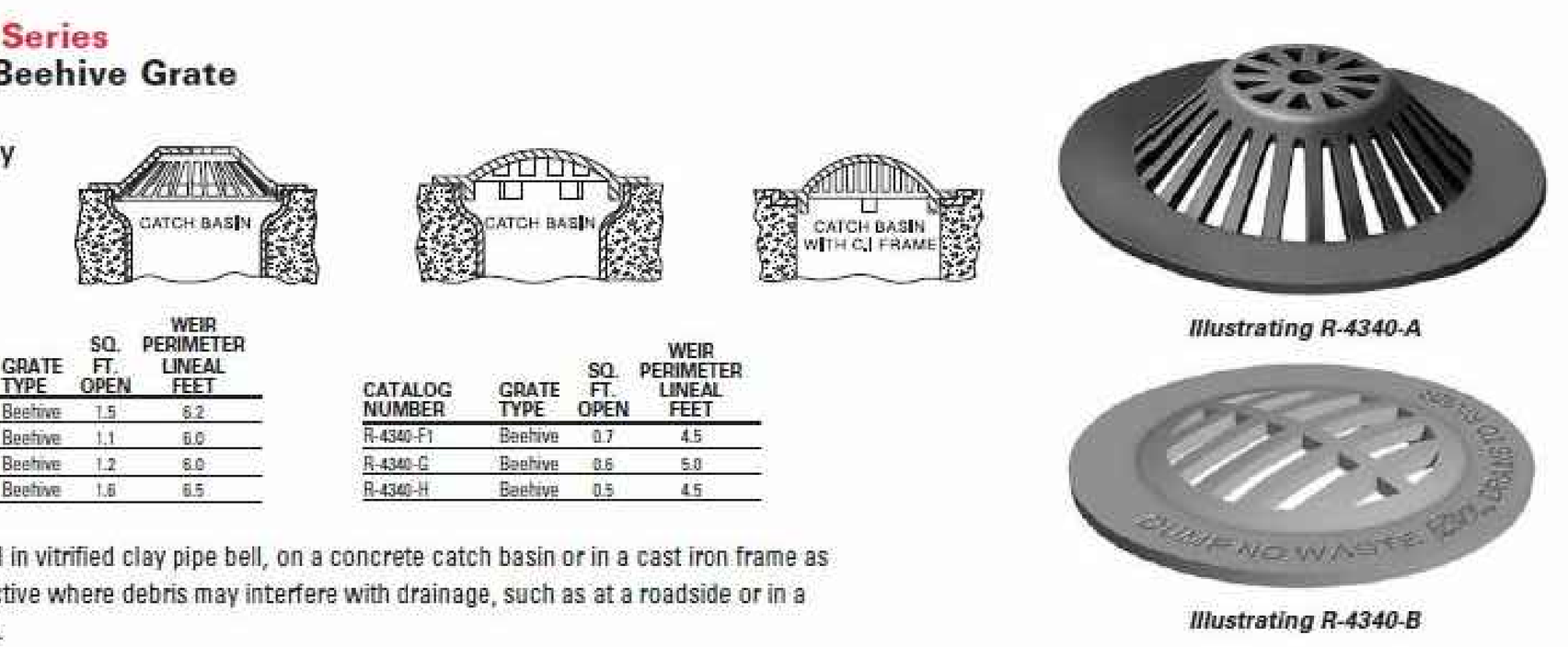


CATALOG NUMBER	GRATE TYPE	SQ. FT. OPEN	WEIR PERIMETER LINEAL FEET
R-3275	A	1.0	4.6

Available with barred curb box.

R-4340 Series
Round Beehive Grate

Light Duty



CATALOG NUMBER	GRATE TYPE	SQ. FT. OPEN	WEIR PERIMETER LINEAL FEET
R-4340-A	Beehive	1.5	6.2
R-4340-B	Beehive	1.1	6.0
R-4340-C	Beehive	1.2	6.0
R-4340-F	Beehive	1.6	6.5

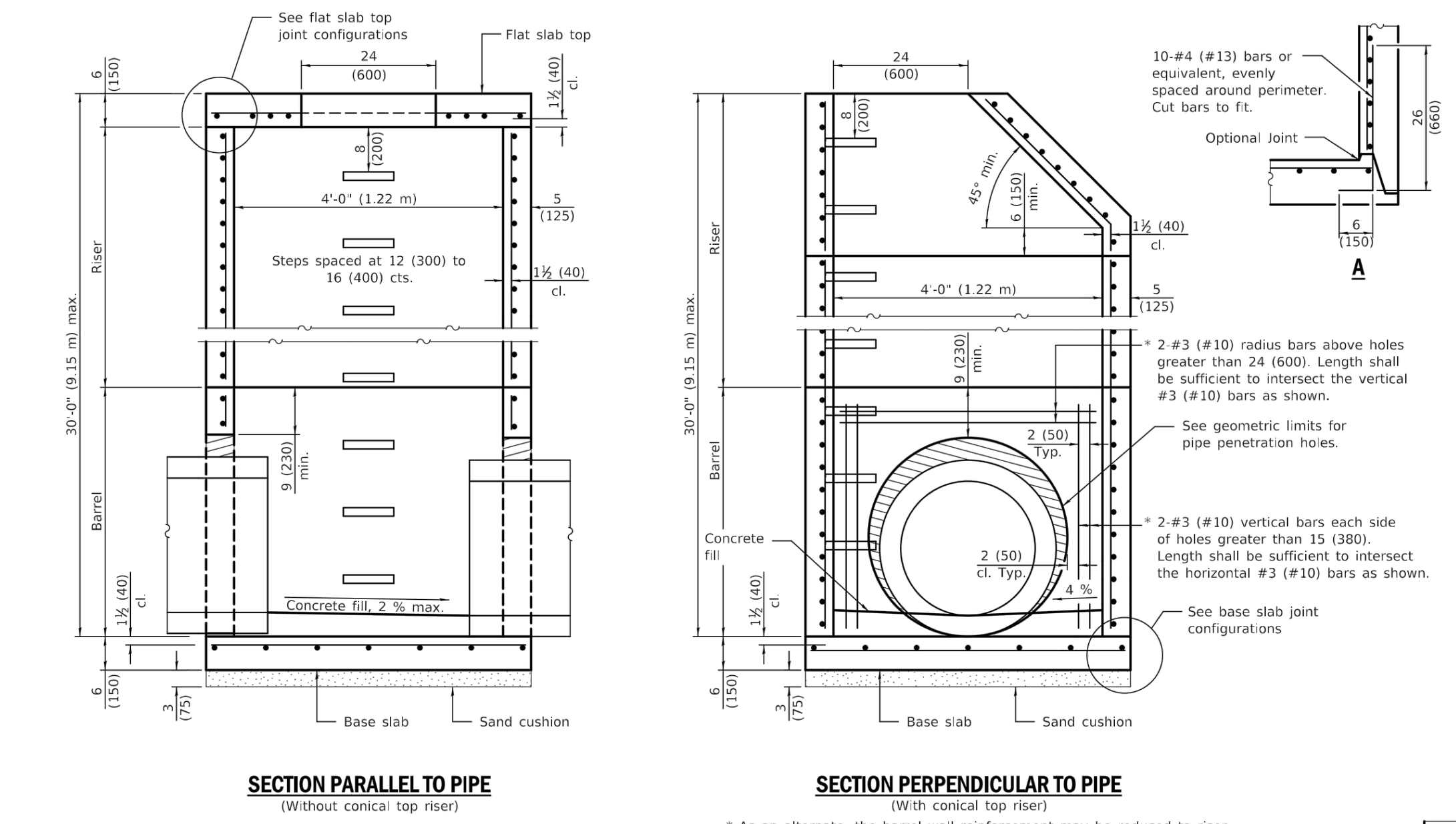
CATALOG NUMBER	GRATE TYPE	SQ. FT. OPEN	WEIR PERIMETER LINEAL FEET
R-4340-F1	Beehive	0.7	4.5
R-4340-G	Beehive	0.6	5.0
R-4340-H	Beehive	0.5	4.5

May be used in vitrified clay pipe bell, on a concrete catch basin or in a cast iron frame as shown. Effective where debris may interfere with drainage, such as at a roadside or in a median strip.
Bell and spigot vitrified clay and concrete pipe are made under many specifications and dimensions vary. Check the grate sizes in the table to be sure they will fit the pipe you are using.

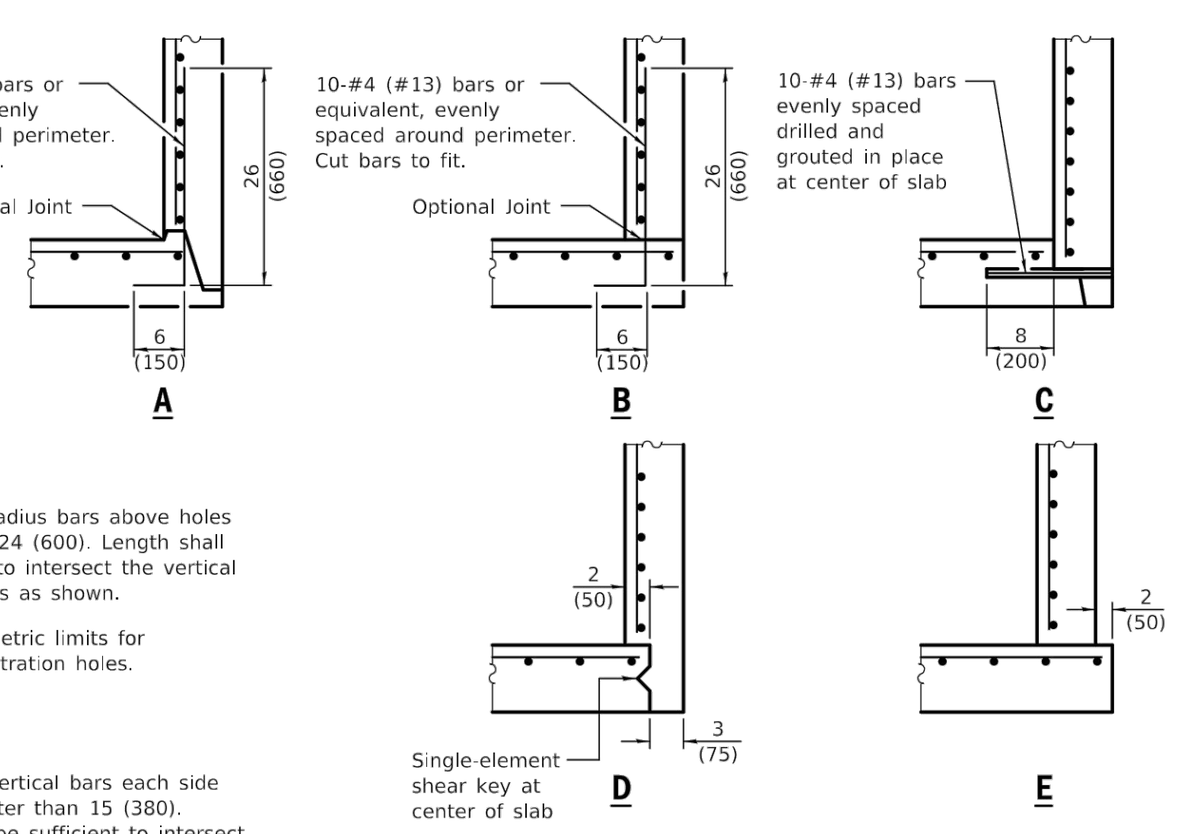
Dimensions in inches

Catalog No.	O Dia.	O.D. Lugs	Dia. Bhv.	Ht. Bhv.	No. Lugs	Size Bars	Size Op.	Pipe Size
R-4340-A	34	26 1/4	23 7/8	6	*	1 1/2	1	24
R-4340-B	33	23	23	2	6	2	1 1/2	24
R-4340-C	33	29	23	5 3/4	4	1	1 1/4	24
R-4340-F	33	28	25	5	4	1	1	24
R-4340-F1 **	25 1/2	21 3/4	17	3	4	1	1	18
R-4340-G **	28	18	19	3	3	1 3/4	2	15
R-4340-H	25	15	17	3	3	1 5/8	1 3/4	12

* Furnished with ring instead of lugs.
** Frame not available.
Grate flange lettered "DUMP NO WASTE – DRAINS TO RIVER"

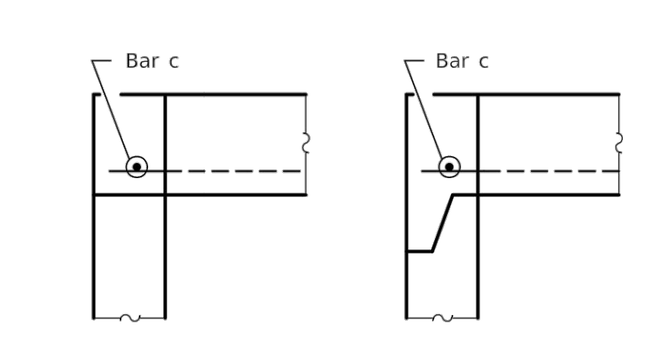


* As an alternate, the barrel wall reinforcement may be reduced to riser wall reinforcement with #3 (#10) bars placed around the pipe penetration holes as shown. This option may be utilized when the pipe penetration holes are formed as opposed to cored.



BASE SLAB JOINT CONFIGURATIONS

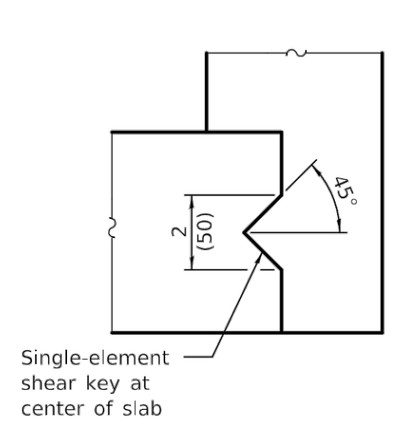
Joint configurations C and D require the unit to be lifted from the top of the base slab. Lifting from the walls shall not be permitted without providing additional wall reinforcement extending to the bottom of the wall.



FLAT SLAB TOP JOINT CONFIGURATIONS (Shown at access hole)

GEOMETRIC LIMITS FOR PIPE PENETRATION HOLES

1. A minimum of 9 (230) of monolithic reinforced concrete shall be maintained above pipe penetration holes > 24 (600).
2. A minimum 9 (230) inside arc length of reinforced concrete shall be maintained between pipe penetration holes > 15 (380).
3. A maximum of 60 percent of the inside perimeter of the reinforced concrete manhole walls may be removed.
4. Horizontal joints that intersect pipe penetration holes > 15 (380) shall have one joint splice for every location around the perimeter of the joint where the inside arc length between pipe penetration holes is < 24 (600). See joint splice detail.
5. The recommended pipe penetration hole is equal to the O.D. of the pipe plus 4 (100).
6. Only pipe penetration holes ≤ 15 (380) are allowed in riser sections.



SHEAR KEY GEOMETRY (Reinforcement not shown for clarity)

GENERAL NOTES

The manufacturer shall ensure that all precast manhole sections are additionally reinforced where required to resist damage from handling, shipping and installation stresses.

Lifting holes shall be located in the sections as per the manufacturer's recommendations, except as noted.

See Standard 602701 for details of manhole steps.

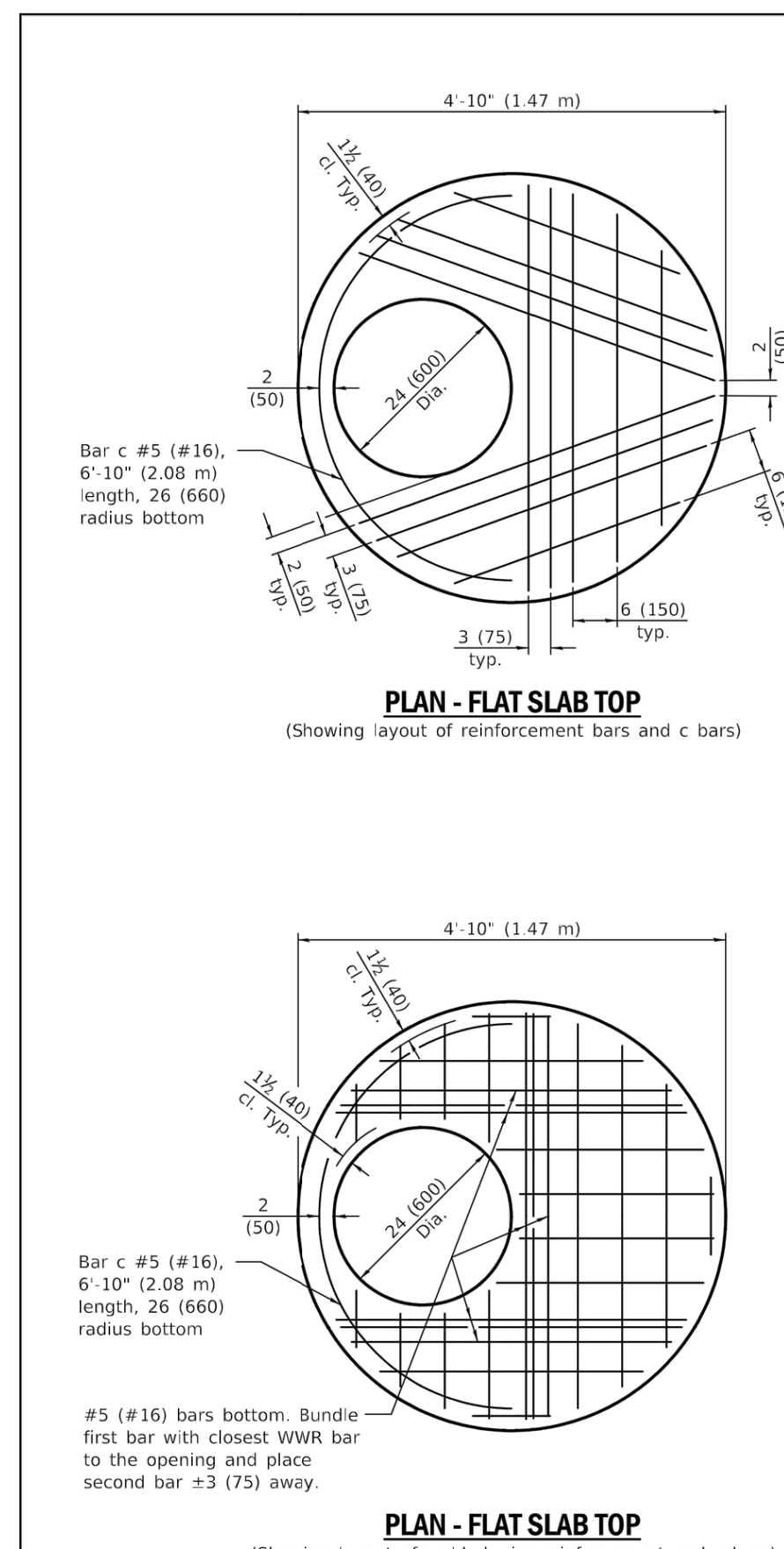
All dimensions are in inches (millimeters) unless otherwise noted.

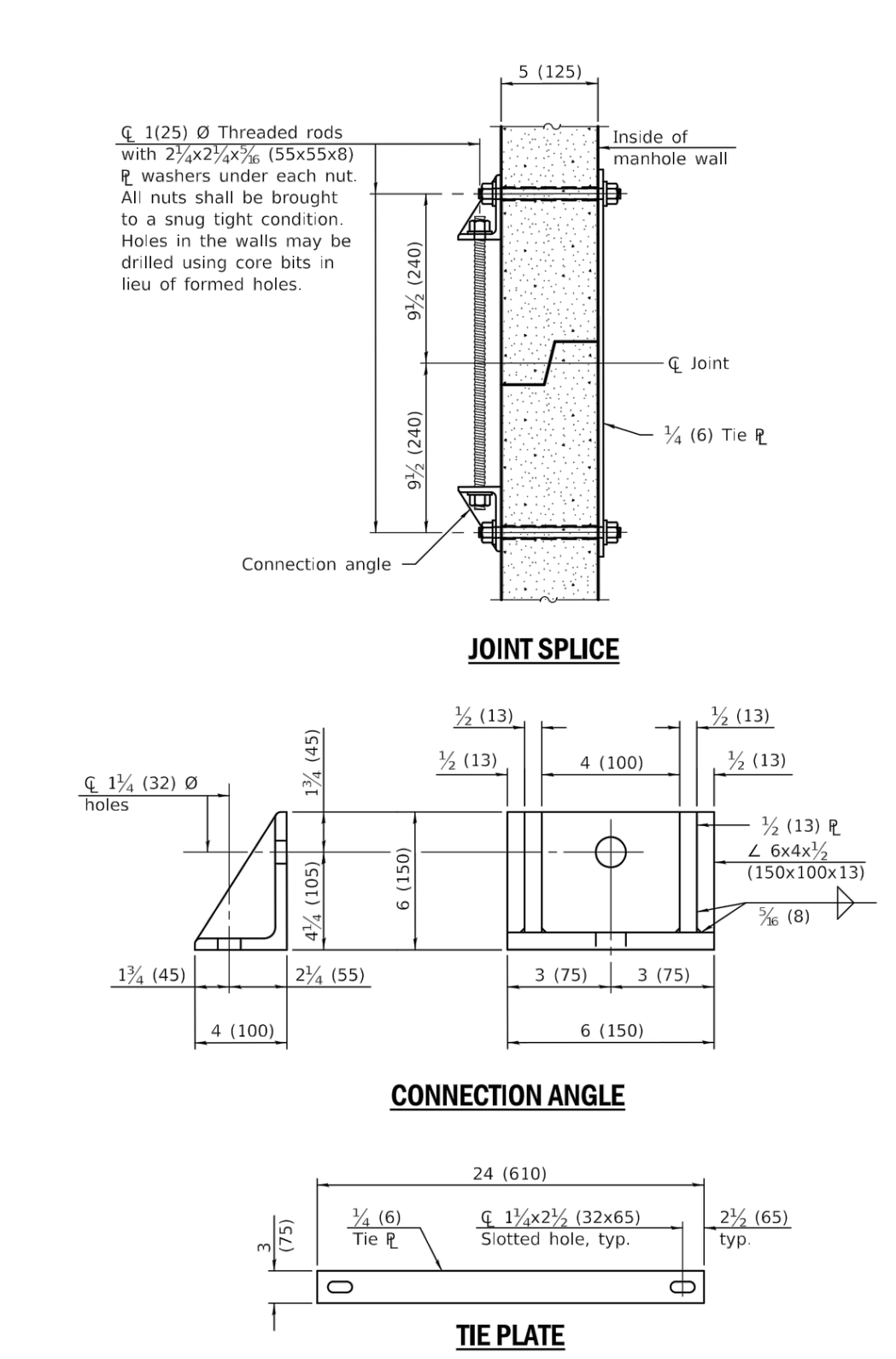
Illinois Department of Transportation
PASSED January 1, 2019 — ENGINEER OF POLICY AND PROCEDURES
APPROVED January 1, 2019 — ENGINEER OF DESIGN AND ENVIRONMENT
ISSUED 1-1-97

DATE	REVISIONS
1-1-19	Expanded / refined reinforcement options. Increased manhole depths.
1-1-18	Expanded / revised base slab connections; included geometric limits. Renamed standard.

PRECAST MANHOLE TYPE A 4' (1.22 m) DIAMETER (Sheet 1 of 2)

STANDARD 602401-05





FLAT SLAB TOP REINFORCEMENT

Location	WWR (each direction) As (min.)	WWR (each direction) Spacing (max.)	Rebar As (min.)	Rebar Spacing (max.)	Rebar Bar Size
Bottom Mat	** 0.62 sq. in./ft. (1312 sq. mm/m)	6 (150)	See plan view for rebar orientation and spacing and this table for bar size		#5 (#16)

** Only one layer of WWR permitted to avoid congestion.

WALL REINFORCEMENT

Location	Orientation	WWR or Rebar As (min.)	WWR or Rebar Spacing (max.)
Riser - Inside Mat	Circumferential	0.12 sq. in./ft. (254 sq. mm/m)	6 (150)
	Vertical	0.045 sq. in./ft. (95 sq. mm/m)	8 (200)
Barrel - Inside Mat	Circumferential	0.12 sq. in./ft. (254 sq. mm/m)	6 (150)
	Vertical	0.16 sq. in./ft. (339 sq. mm/m)	3 (75)

BASE SLAB REINFORCEMENT

Location	Total Height	WWR or Rebar (each direction) As (min.)	Spacing (max.)
Top Mat	≤ 20 ft. (6.10 m)	0.24 sq. in./ft. (508 sq. mm/m)	10 (250)
	> 20 ft. (6.10 m)	0.24 sq. in./ft. (508 sq. mm/m)	10 (250)

Illinois Department of Transportation
PASSED January 1, 2019 — ENGINEER OF POLICY AND PROCEDURES
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ISSUED 1-1-97

PRECAST MANHOLE TYPE A 4' (1.22 m) DIAMETER (Sheet 2 of 2)

STANDARD 602401-05

JOB NO: 080-020
FIELD BOOK: N/A
FIELD BOOK: N/A
DRAWN BY: MK
CHECKED BY: KEK
COMPLETED: 04/07/18

8 04-19-19: PER CITY COMMENTS

REVISIONS:
1 09-18-18: REVISD PER CITY COMMENTS
2 11-05-18: REVISD PER FPD COMMENTS
3 01-18-19: REVISD PER CITY COMMENTS
4

FILE: I/080-020 Cantera Lot 2 Sub Area C/Engineering/Drawings

PREPARED FOR:
CANTERA DEVELOPMENT HOLDINGS, LLC.
TWO NORTHFIELD PLAZA, SUITE 320
NORTHFIELD, IL 60093
TEL :(847) 562-2001

CONSULTING ENGINEERS
Bollinger, Lach & Associates, Inc.
333 PIERCE ROAD SUITE 200 ITASCA, IL 60143
P:(630) 438 6400 F:(630) 438 6444 www.bollingerlach.com
ITASCA * CHICAGO * ALGONQUIN * LAKE GENEVA * SOUTH BEND * INDIANAPOLIS

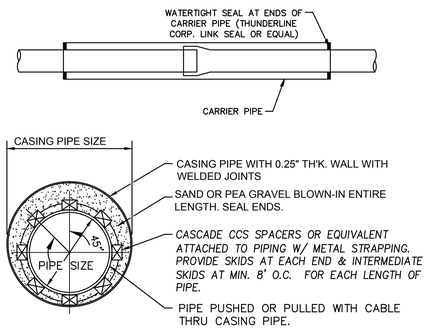
DETAILS

RIVER VIEW WEST
CITY OF WARRENVILLE, ILLINOIS

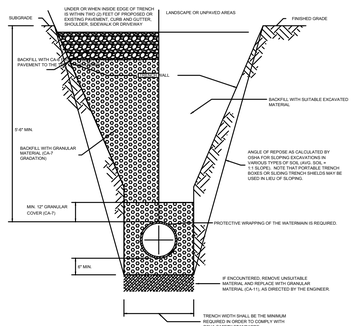
SHEET NUMBER 36 OF 71

FILE: I/080-020 Cantera Lot 2 Sub Area C/Engineering/Drawings/Final Engineering

Design Firm License No. 184-001129



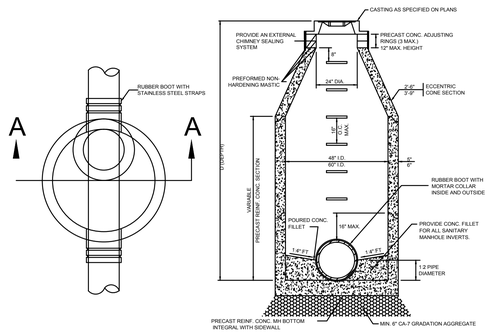
STEEL CASING PIPE



GENERAL NOTES:

1. CONTRACTOR SHALL CONDUCT HIS OPERATIONS IN A SAFE MANNER AT ALL TIMES AND SHALL COMPLY WITH ALL APPLICABLE GOVERNING REGULATIONS, INCLUDING BUT NOT LIMITED TO OSHA SAFETY STANDARDS.
2. ALL BACKFILL MATERIAL UP TO A HEIGHT OF 12 INCHES ABOVE THE PIPE SHALL BE CAREFULLY DEPOSITED IN UNIFORM LAYERS NOT EXCEEDING 6 INCHES THICK (LOOSE MEASURE). THE MATERIAL IN EACH LAYER SHALL BE FIRMLY COMPACTED BY RAMMING OR TAMPING IN SUCH A MANNER AS NOT TO DISTURB OR INJURE THE PIPE. THE BACKFILLING ABOVE THIS HEIGHT SHALL BE DONE AS NOTED BELOW.
3. GRANULAR BACKFILL MATERIAL SHALL BE PLACED AND COMPACTED AS SPECIFIED IN NOTE 2, ABOVE. THE USE OF JETTING SHALL NOT BE ALLOWED.
4. BACKFILL MATERIAL CONSISTING OF SUITABLE EXCAVATED MATERIAL SHALL BE PLACED IN LIFTS NOT EXCEEDING TWELVE (12) INCHES THICK (LOOSE MEASURE) AND EACH LAYER SHALL BE COMPACTED BY RAMMING OR TAMPING TO ACHIEVE THE REQUIRED COMPACTION.

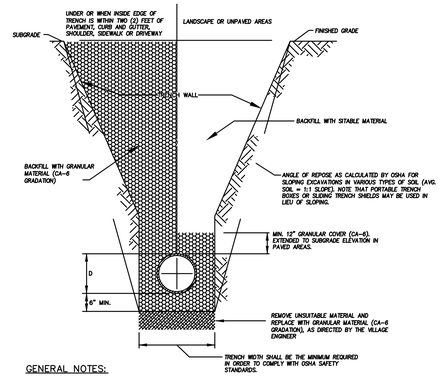
SANITARY MANHOLE



PLAN SECTION A–A

GENERAL NOTES:

1. PROVIDE PRECAST REINFORCED CONCRETE BARREL AND RISER SECTION CONCRETE BLOCK CONSTRUCTION IS NOT PERMITTED.
2. PROVIDE SELECT GRANULAR BACKFILL AROUND MANHOLE TO SUBGRADE ELEVATION IN PAVED AREAS. MATERIAL SHALL MEET THE REQUIREMENT OF IDOT "STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION" COARSE AGGREGATE CA–7 GRADATION UP TO 12" FROM THE BOTTOM OF THE PAVEMENT, THEN PLACE CA–6 FROM 12" BELOW THE BOTTOM OF PAVEMENT TO THE TOP OF THE TRENCH, OR AS OTHERWISE DIRECTED BY THE ENGINEER.
3. APPLY A CONTINUOUS LAYER OF NON–HARDENING PREFORMED BITUMINOUS MASTIC MATERIAL (RUB–R–NEK OR EZ STICK) TO EACH JOINT TO PREVENT INFLOW.
4. WHEN THE FRAME DOES NOT MEET PROPOSED ELEVATION, A MAXIMUM OF THREE PRECAST CONCRETE RINGS MAY BE USED TO A MAXIMUM HEIGHT OF 12 INCHES. EACH RING AND THE FRAME SHALL BE SET ON A BED OF PREFORMED NON–HARDENING MASTIC (RUB–R–NEK OR APPROVED EQUAL).
5. PRECAST ADJUSTING RINGS SHALL BE REINFORCED WITH NO. 3 GAUGE WIRE OR EQUIVALENT.
6. MORTAR SHALL NOT BE USED TO DRESS UP ADJUSTING RINGS AND/OR FRAME.
7. ONLY PLASTIC POLYMER STEPS SHALL BE USED.
8. WHEN MANHOLE DEPTH IS OVER 12 FEET, THE THICKNESS OF THE BASE SHALL BE A MINIMUM OF 10 INCHES. WHEN MANHOLE DEPTH IS LESS THAN 12 FEET, THE THICKNESS SHALL BE A MINIMUM OF 8 INCHES.
9. DRESS UP INTERIOR JOINTS WITH THE HYDRAULIC CEMENT.
10. SANITARY MANHOLES SHALL BE CONSTRUCTED WITH A CHIMNEY SEALING SYSTEM BY CRETEX OR AN EQUAL APPROVED BY THE CITY, WHEN IN PAVEMENT OR SUBJECT TO INUNDATION.



GENERAL NOTES:

CONTRACTOR SHALL CONDUCT HIS OPERATIONS IN A SAFE MANNER AT ALL TIMES AND SHALL COMPLY WITH ALL APPLICABLE GOVERNING REGULATIONS, INCLUDING BUT NOT LIMITED TO OSHA SAFETY STANDARDS.

ALL BACKFILL MATERIAL UP TO A HEIGHT OF 12 INCHES ABOVE THE PIPE SHALL BE CAREFULLY DEPOSITED IN UNIFORM LAYERS NOT EXCEEDING 6 INCHES THICK (LOOSE MEASURE). THE MATERIAL IN EACH LAYER SHALL BE FIRMLY COMPACTED BY RAMMING OR TAMPING WITH TOOLS APPROVED BY THE CITY ENGINEER IN SUCH A MANNER AS NOT TO DISTURB OR INJURE THE PIPE. THE BACKFILLING ABOVE THIS HEIGHT SHALL BE DONE AS NOTED BELOW.

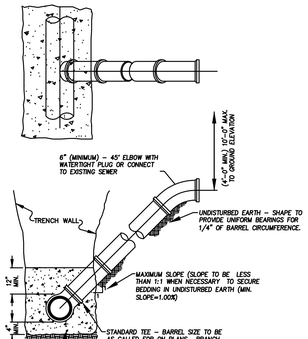
GRANULAR BACKFILL MATERIAL SHALL BE PLACED AND COMPACTED AS SPECIFIED IN NOTE 2, ABOVE. THE USE OF JETTING SHALL NOT BE ALLOWED UNLESS AUTHORIZED IN WRITING BY THE CITY ENGINEER. IT SHALL BE THE DESIGN ENGINEER OR CONTRACTOR'S RESPONSIBILITY TO PROVIDE APPROPRIATE JUSTIFICATION AND DOCUMENTATION (SOIL INVESTIGATION REPORTS, ETC.) TO THE CITY ENGINEER WITH THE REQUEST FOR APPROVAL OF JETTING.

BACKFILL MATERIAL CONSISTING OF SUITABLE EXCAVATED MATERIAL SHALL BE PLACED IN LIFTS NOT EXCEEDING TWELVE (12) INCHES THICK (LOOSE MEASURE) AND EACH LAYER SHALL BE COMPACTED BY RAMMING OR TAMPING TO ACHIEVE THE REQUIRED COMPACTION. JETTING OF THIS MATERIAL MAY BE PERMITTED WHEN AUTHORIZED IN WRITING BY THE CITY ENGINEER. IT SHALL BE THE DESIGN ENGINEER OR THE CONTRACTOR'S RESPONSIBILITY TO SUBMIT APPROPRIATE JUSTIFICATION AND DOCUMENTATION (SOIL INVESTIGATION REPORTS, ETC.) TO THE CITY ENGINEER WITH THE REQUEST FOR APPROVAL OF JETTING.

GRANULAR MATERIAL FOR BACKFILL AND BEDDING SHALL BE GRAVEL, CRUSHED GRAVEL OR STONE MEETING THE REQUIREMENTS OF THE IDOT "STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION" FOR COARSE AGGREGATE (CA–6 GRADATION).

THE BEDDING THICKNESS SHALL BE EQUAL TO ONE–QUARTER (1/4) OF THE OUTSIDE DIAMETER OF THE PIPE BUT NOT LESS THAN SIX (6) INCHES.

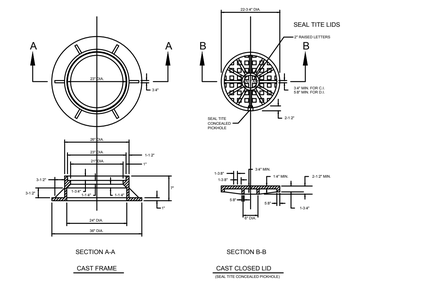
SANITARY SEWER TRENCH DETAIL



NOTES:

1. THE OPEN ENDS OF LATERAL SHALL BE PROTECTED WITH EITHER POLYESTEROR WITHIFIED CLAY COVER.
2. STAKES SHALL BE USED IF NECESSARY TO HOLD LATERAL IN PLACE.
3. MISSION COUPLING OR APPROVED EQUAL TO BE USED WHERE DIFFERENT MATERIALS ARE TO BE CONNECTED.

SANITARY SERVICE RISER



SECTION A-A CAST FRAME

SECTION B-B CAST CLOSED LID (SEAL TITE CONCEALED PICKHOLE)

GENERAL NOTES:

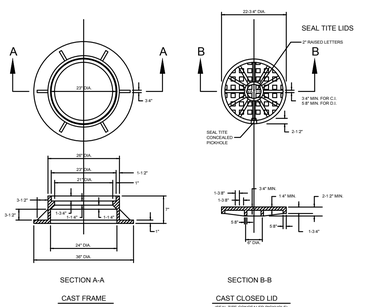
1. DUCTILE IRON CASTING SHALL BE TESTED IN ACCORDANCE WITH FEDERAL SPECIFICATIONS.
2. ALL FRAMES AND COVERS SHALL HAVE A MACHINED HORIZONTAL AND VERTICAL BEARING SURFACES. PICK HOLES IN THE COVER SHALL NOT BE OPEN.
3. THE MANHOLE COVERS SHALL BE STAMPED WITH "SANITARY".
4. DIMENSIONS FOR CASTINGS ARE COMPARABLE TO EAST JORDAN 1022 OR NEENAH FOUNDRY 1772 FURNISHED WITH TYPE F CONCEALED PICK HOLES.
5. WATERPROOF, BOLTDOWN FRAME AND COVER SHALL BE USED IN ANY LOCATION SUBJECT TO INUNDATION. (NEENAH R-1916-I, EAST JORDAN 1022 WT WITH TYPE S CLOSED PICK HOLES OR APPROVED EQUAL).
6. LIDS SHALL BE "WATERTITE" OR "SELF-SEALING" WITH A FACTORY INSTALLED GASKET.

SANITARY MANHOLE FRAME AND LID

GENERAL NOTES:

1. PROVIDE PRECAST REINFORCED CONCRETE BARREL AND RISER SECTION.
2. PROVIDE TRENCH BACKFILL IN PAVED AREAS, CA-7 GRADATION, AROUND MANHOLE TO 12" BELOW THE BOTTOM OF PAVEMENT, THEN PLACE CA-6 FROM 12" BELOW THE BOTTOM OF PAVEMENT TO THE TOP OF THE TRENCH.
3. APPLY A CONTINUOUS LAYER OF NON-HARDENING PREFORMED BITUMINOUS MASTIC MATERIAL (RUB-R-NEK OR E Z STICK) TO EACH JOINT TO PREVENT INFLOW.
4. WHEN THE FRAME DOES NOT MEET PROPOSED ELEVATION, PRECAST CONCRETE ADJUSTING RINGS SHALL BE USED FOR FINAL ADJUSTMENT. A MAXIMUM OF THREE ADJUSTING RINGS MAY BE USED TO A MAXIMUM HEIGHT OF 12 INCHES. EACH RING AND THE FRAME SHALL BE SET ON A BED OF NON-PREFORMED MASTIC.
6. WITHIN NON-PAVED AREAS, MORTAR SHALL ONLY BE USED TO DRESS UP ADJUSTING RINGS AND OR FRAME ON THE EXTERIOR OF THE STRUCTURE. MORTAR IS NOT PERMITTED ON THE INSIDE OF THE RINGS AND OR FRAME.
7. PLASTIC POLYMER STEPS SHALL NOT BE INSTALLED.
8. DRESS UP INTERIOR JOINTS WITH HYDRAULIC CEMENT.
9. VALVE MUST ALIGN WITH CENTER OF VAULT OPENING.
10. CONES MUST BE CONCENTRIC WITH VALVES 12" AND SMALLER.
11. BUTTERFLY VALVES REQUIRE ECCENTRIC CONES.
12. ALL VALVE VAULTS REQUIRE RUBBER BOOTS WITH STAINLESS STEEL STRAPS WITH THE EXCEPTION OF PRESSURE CONNECTION VALVE VAULTS.

WATERMAIN TRENCH



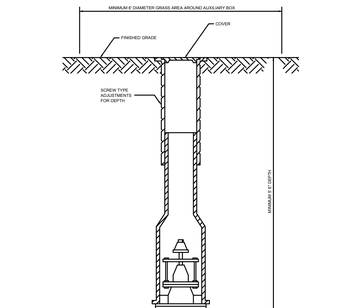
SECTION A-A CAST FRAME

SECTION B-B CAST CLOSED LID (SEAL TITE CONCEALED PICKHOLE)

GENERAL NOTES:

1. DUCTILE IRON CASTING SHALL BE TESTED IN ACCORDANCE WITH FEDERAL SPECIFICATIONS.
2. ALL FRAMES AND COVERS SHALL HAVE A MACHINED HORIZONTAL AND VERTICAL BEARING SURFACES. PICK HOLES IN THE COVER SHALL NOT BE OPEN.
3. THE MANHOLE COVERS SHALL BE STAMPED WITH "WATER".
4. DIMENSIONS FOR CASTINGS ARE COMPARABLE TO EAST JORDAN 1022 OR NEENAH FOUNDRY 1772.
5. WATERPROOF, BOLTDOWN FRAME AND COVER SHALL BE USED IN ANY LOCATION SUBJECT TO INUNDATION. (NEENAH R-1916-C, EAST JORDAN 1022 WT OR APPROVED EQUAL).
6. LIDS SHALL BE "WATERTITE" OR "SELF-SEALING" WITH A FACTORY INSTALLED GASKET.

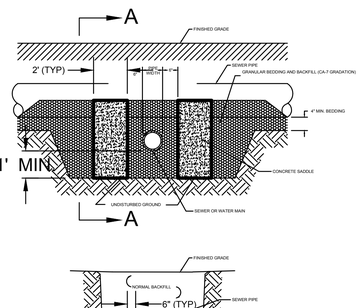
WATER VALVE VAULT FRAME AND LID



GENERAL NOTES:

1. ALL VALVES 2-1/2" OR LARGER SHALL BE PLACED IN A VALVE VAULT, UNLESS APPROVED BY DUPAGE COUNTY.
2. VALVES SHALL BE MUELLER A-2360 RESILIENT WEDGE GATE VALVE WITH STAINLESS STEEL TRIM BOLTS OR WATEROUS 2500 RESILIENT WEDGE GATE VALVE WITH STAINLESS STEEL TRIM BOLTS OR APPROVED EQUAL.
3. VALVES THAT REQUIRE RESTRAINT JOINTS, MAY USE FIELD-LOK OR MEGA LUG BRANDS.

WATER SERVICE CONNECTION



GENERAL NOTES:

1. WATER SERVICE LINE SHALL BE TYPE K COPPER MANUFACTURED IN ACCORDANCE WITH ASTM B88 AND B251 OR APPROVED EQUAL.
2. FOR 1" SERVICE LINES CORPORATION STOPS SHALL BE EITHER MUELLER H-15008N OR FORD F600-NL OR APPROVED EQUAL.
3. FOR 1" & 2" SERVICE LINES CORPORATION STOPS SHALL BE EITHER MUELLER B-25008N OR FORD FB600-NL OR APPROVED EQUAL.
4. SERVICE LINES GREATER THAN 1" IN DIAMETER SHALL HAVE A STAINLESS STEEL SADDLE (SMITH BLAIR 238 FULL CIRCLE REPAIR CLAMP OR APPROVED EQUAL).
5. B-BOX SHALL BE MUELLER H-10302 OR APPROVED EQUAL.
6. CORPORATION STOPS SHALL BE INSTALLED A MINIMUM OF 18" FROM BELL SECTIONS AND OR PIPE FITTINGS. MULTIPLE INSTALLATIONS SHALL BE STAGGERED AROUND THE MAIN BY 90 ° AND SEPARATED BY 18".

WATER VALVE BOX (B-BOX)

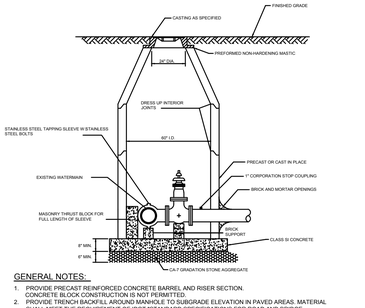
GENERAL NOTES:

1. ALL HYDRANTS ARE TO BE SUPPLIED WITH A 6" FLANGED AND MECHANICAL JOINT AUXILIARY VALVE THAT CONFORMS TO AWWA C615. TRIM BOLTS ARE TO BE STAINLESS STEEL.
2. THE HYDRANT WILL EXCEED ALL THE REQUIREMENTS OF AWWA C502.
3. RESTRAINED JOINTS ARE REQUIRED THROUGHOUT THE FIRE HYDRANT ASSEMBLY.
4. FIRE HYDRANT COLOR SHALL BE VERIFIED WITH DUPAGE COUNTY BY THE CONTRACTOR.

FIRE HYDRANT ASSEMBLY

SECTION A-A

CONCRETE SADDLE SUPPORT



GENERAL NOTES:

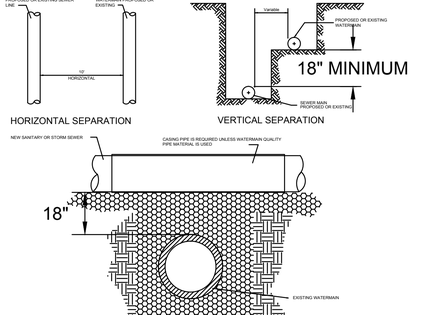
1. PROVIDE PRECAST REINFORCED CONCRETE BARREL AND RISER SECTION. CONCRETE BLOCK CONSTRUCTION IS NOT PERMITTED.
2. PROVIDE TRENCH BACKFILL AROUND MANHOLE TO SUBGRADE ELEVATION IN PAVED AREAS. MATERIAL SHALL MEET THE REQUIREMENT OF IDOT "STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION" COARSE AGGREGATE CA-7 GRADATION UP TO 12" BELOW THE BOTTOM OF THE PAVEMENT, THEN PLACE CA-6 FROM 12" BELOW THE BOTTOM OF PAVEMENT TO THE TOP OF TRENCH.
3. APPLY A CONTINUOUS LAYER OF NON-HARDENING PREFORMED BITUMINOUS MASTIC MATERIAL (RUB-R-NEK OR E Z STICK) TO EACH JOINT TO PREVENT INFLOW.
4. WHEN THE FRAME DOES NOT MEET PROPOSED ELEVATION, PRECAST CONCRETE ADJUSTING RINGS SHALL BE USED FOR FINAL ADJUSTMENT. A MAXIMUM OF THREE ADJUSTING RINGS MAY BE USED TO A MAXIMUM HEIGHT OF 12 INCHES. THE RING(S) AND FRAME SHALL BE SET ON A BED OF PREFORMED NON-HARDENING MASTIC (RUB-R-NEK OR APPROVED EQUAL).
5. PRECAST ADJUSTING RINGS SHALL BE REINFORCED WITH NO. 3 GUAGE WIRE OR EQUIVALENT.
6. MORTAR SHALL NOT BE USED TO DRESS UP ADJUSTING RINGS AND OR FRAME.
7. PLASTIC POLYMER STEPS SHALL NOT BE INSTALLED, UNLESS APPROVED BY THE DUPAGE COUNTY OR HIS HER DESIGNEE.
8. DRESS UP INTERIOR JOINTS WITH HYDRAULIC CEMENT.
9. VALVE MUST ALIGN WITH CENTER OF VAULT OPENING.
10. CONES MUST BE CONCENTRIC WITH VALVES 12" AND SMALLER.
11. BUTTERFLY VALVES REQUIRE ECCENTRIC CONES.

WATER PRESSURE CONNECTION IN VAULT

GENERAL NOTES:

1. THRUST BLOCKING IS USED TO PREVENT MOVEMENT OF LINES UNDER PRESSURE BENDS, TEES, CAPS, VALVES, HYDRANTS, AND AT POINTS SPECIFIED BY THE ENGINEER. CONCRETE SHALL BE CLASS SI AND BE A MINIMUM OF TWELVE (12) INCHES THICK PLUS THE SIZE OF THE WATERMAIN. IT SHALL BE PLACED BETWEEN UNDISTURBED GROUND AND FITTINGS. FITTINGS WILL BE ACCESSIBLE FOR REPAIRS. THRUST BLOCK SHALL BE PLACED AT BENDS OF 11-1/4 DEGREES OR MORE. THE AREA OF BEARING SHALL BE SUFFICIENT TO RESIST THE APPLIED FORCES. USE OF 90 DEGREE BENDS REQUIRE APPROVAL FROM THE ENGINEER PRIOR TO INSTALLATION.
2. USE OF WOOD MATERIAL FOR THRUST BLOCKING IS PROHIBITED.

WATER MAIN THRUST BLOCKING



HORIZONTAL SEPARATION VERTICAL SEPARATION

GENERAL NOTES:

1. WHEN THE MINIMUM 10 FEET HORIZONTAL SEPARATION CANNOT BE ACHIEVED, AN 18 INCH VERTICAL SEPARATION MAY BE PERMITTED. THE VERTICAL SEPARATION SHALL BE MAINTAINED FOR ALL PORTIONS OF THE WATERMAIN THAT ARE WITHIN 10 HORIZONTAL FEET OF ANY SEWER OR DRAIN.
2. WHEN THE WATERMAIN MUST PASS UNDER A SEWER OR DRAIN, BOTH THE WATERMAIN AND SEWER SHALL BE CONSTRUCTED OF SLIP-ON OR MECHANICAL JOINT DUCTILE IRON PIPE, PRE-STRESSED CONCRETE PIPE, OR PVC PIPE MEETING WATERMAIN STANDARDS. (SEE STANDARD SPECIFICATIONS FOR WATER AND SEWER MAIN CONSTRUCTION IN ILLINOIS).
3. WHEN THE WATERMAIN CROSSES UNDER A SEWER GREATER THAN 24 INCH IN DIAMETER, OR WHEN DIRECTED BY THE ENGINEER, THE SEWER SHALL BE SUPPORTED TO PREVENT SETTLING AND BREAKING OF THE WATER MAIN. (SEE CONCRETE SADDLE SUPPORT DETAIL)

WATER AND SEWER SEPARATION

04–19–19: PER CITY COMMENTS

REVISIONS:	JOB NO: 080–020
09–18–18: REVISD PER CITY COMMENTS	FIELD BOOK: N/A
11–05–18: REVISD PER FPD COMMENTS	FIELD BOOK: N/A
01–18–19: REVISD PER CITY COMMENTS	DRAWN BY: MK
FILE: I:\080–020 Cantera Lot 2 Sub Area 4\Engineering\Drawings	CHECKED BY: KEK
	COMPLETED:04/07/19

PREPARED FOR:
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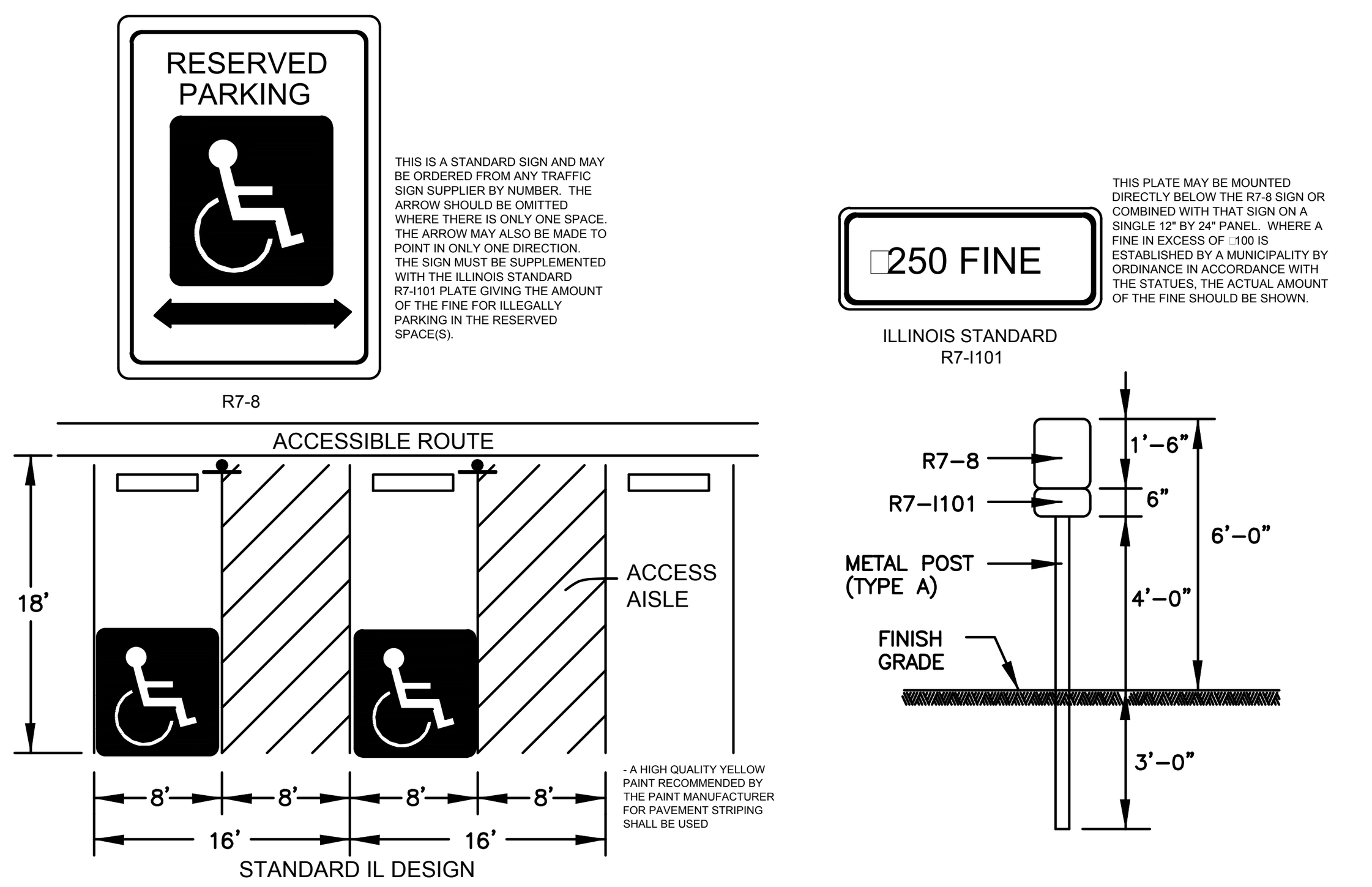
DETAILS

RIVER VIEW WEST
CITY OF WARRENVILLE, ILLINOIS

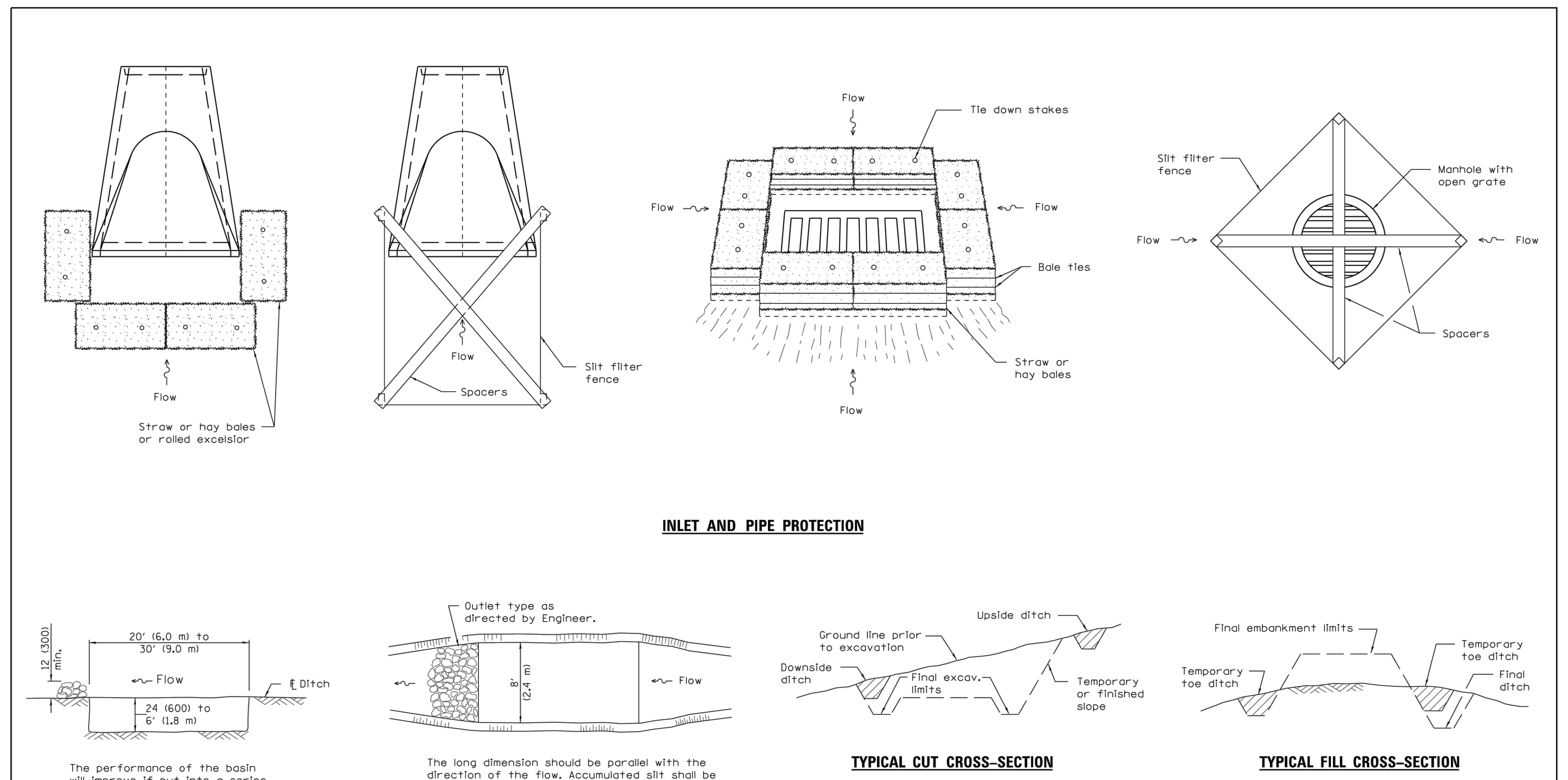
SHEET NUMBER
37
OF 71

FILE: I:\080–020 Cantera Lot 2 Sub Area 4\Engineering\Drawings\Final Engineering

Design Firm License No. 184-001129



HANDICAPPED PARKING DETAIL



INLET AND PIPE PROTECTION

The performance of the basin will improve if put into a series.

ELEVATION

The long dimension should be parallel with the direction of the flow. Accumulated silt shall be removed anytime the basins become 75% filled.

PLAN

SEDIMENT BASIN

TYPICAL CUT CROSS–SECTION

TYPICAL FILL CROSS–SECTION

TEMPORARY DITCHES FOR CUT & FILL SECTIONS

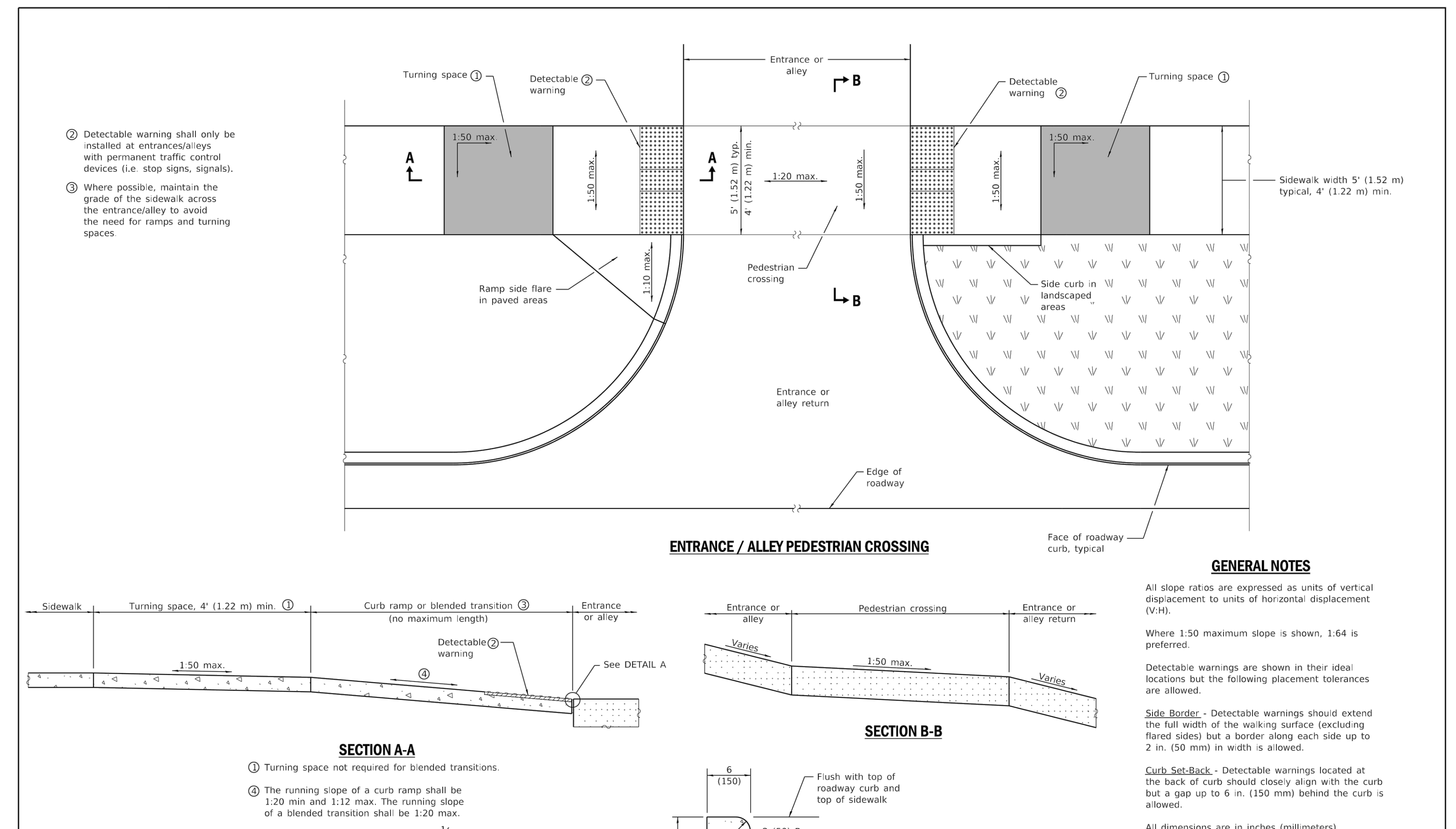
Illinois Department of Transportation
PASSED January 1, 2013 — ENGINEER OF POLICY AND PROCEDURES
APPROVED January 1, 2013 — ENGINEER OF DESIGN AND ENVIRONMENT
ISSUED 1-1-97

TEMPORARY EROSION CONTROL SYSTEMS (Sheet 2 of 2)

STANDARD 280001–07

② Detectable warning shall only be installed at entrances/alleys with permanent traffic control devices (i.e. stop signs, signals).

③ Where possible, maintain the grade of the sidewalk across the entrance/alley to avoid the need for ramps and turning spaces



ENTRANCE / ALLEY PEDESTRIAN CROSSING

SECTION A-A

① Turning space not required for blended transitions.

④ The running slope of a curb ramp shall be 1:20 min and 1:12 max. The running slope of a blended transition shall be 1:20 max.

SECTION B-B

DETAIL A

SIDE CURB DETAIL

GENERAL NOTES

All slope ratios are expressed as units of vertical displacement to units of horizontal displacement (V:H).

Where 1:50 maximum slope is shown, 1:64 is preferred.

Detectable warnings are shown in their ideal locations but the following placement tolerances are allowed.

Side Border - Detectable warnings should extend the full width of the walking surface (excluding flared sides) but a border along each side up to 2 in. (50 mm) in width is allowed.

Curb Set-Back - Detectable warnings located at the back of curb should closely align with the curb but a gap up to 6 in. (150 mm) behind the curb is allowed.

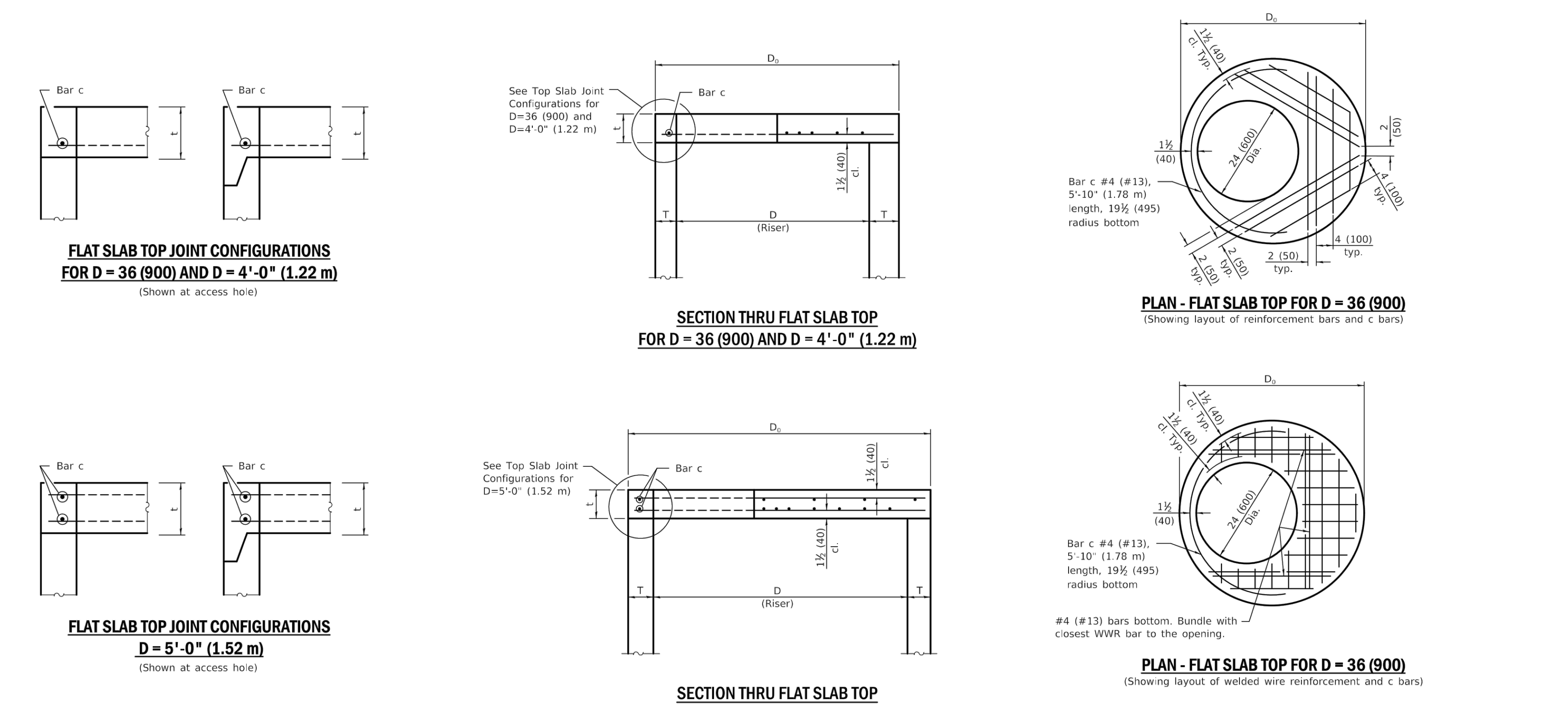
All dimensions are in inches (millimeters) unless otherwise shown.

Illinois Department of Transportation
PASSED January 1, 2019 — ENGINEER OF POLICY AND PROCEDURES
APPROVED January 1, 2019 — ENGINEER OF DESIGN AND ENVIRONMENT
ISSUED 1-1-12

DATE	REVISIONS
1-1-19	Added blended transitions and placement tolerances for detectable warnings.
1-1-18	Omitted diagonal slope at upper landings.

ENTRANCE / ALLEY PEDESTRIAN CROSSINGS

STANDARD 424026-03



FLAT SLAB TOP JOINT CONFIGURATIONS FOR D = 36 (900) AND D = 4'-0" (1.22 m) (Shown at access hole)

SECTION THRU FLAT SLAB TOP FOR D = 36 (900) AND D = 4'-0" (1.22 m)

PLAN - FLAT SLAB TOP FOR D = 36 (900) (Showing layout of reinforcement bars and c bars)

FLAT SLAB TOP JOINT CONFIGURATIONS D = 5'-0" (1.52 m) (Shown at access hole)

SECTION THRU FLAT SLAB TOP FOR D = 5'-0" (1.52 m)

PLAN - FLAT SLAB TOP FOR D = 36 (900) (Showing layout of welded wire reinforcement and c bars)

TABLE

D	T	D_o (min.)	t
36 (900)	See applicable Standards	D + 2T	6 (150)
4'-0" (1.2 m)	See applicable Standards	D + 2T	6 (150)
5'-0" (1.5 m)	See applicable Standards	D + 2T	8 (200)

GENERAL NOTES

The flat slab top may be used in lieu of the tapered tops shown on Standards 602001, 602016, or 602306 at the option of the Contractor or when field conditions prohibit the use of tapered tops.

Lifting holes shall be located in the sections as per the manufacturer's recommendations.

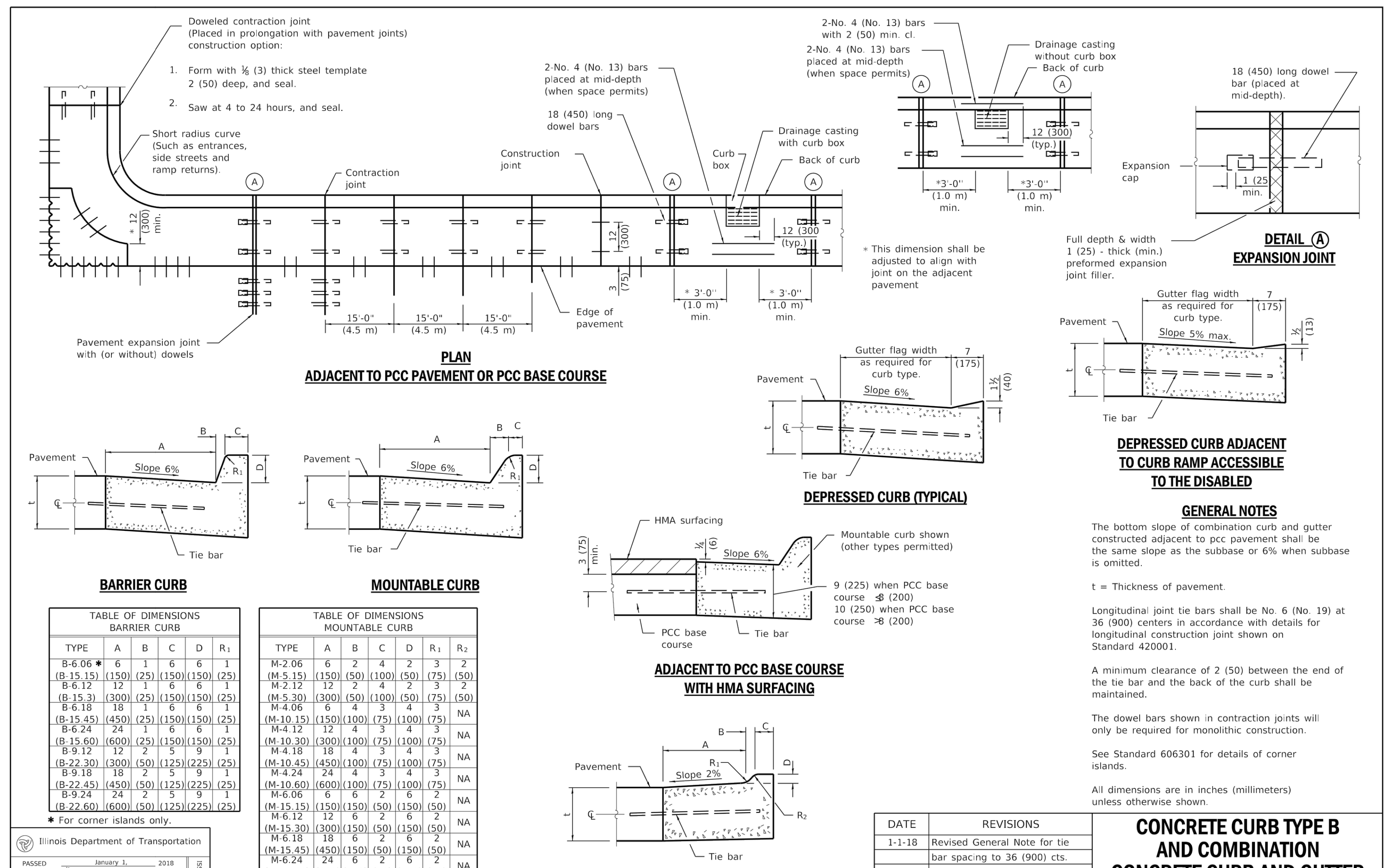
All dimensions are in inches (millimeters) unless otherwise shown.

Illinois Department of Transportation
PASSED January 1, 2019 — ENGINEER OF POLICY AND PROCEDURES
APPROVED January 1, 2019 — ENGINEER OF DESIGN AND ENVIRONMENT
ISSUED 1-1-97

DATE	REVISIONS
1-1-19	Expanded / refined reinforcement options.
1-1-18	Revised for compliance with LRFD.

PRECAST REINFORCED CONCRETE FLAT SLAB TOP (Sheet 1 of 2)

STANDARD 602601-06



PLAN ADJACENT TO PCC PAVEMENT OR PCC BASE COURSE

DETAIL Ⓐ EXPANSION JOINT

BARRIER CURB

MOUNTABLE CURB

DEPRESSED CURB (TYPICAL)

DEPRESSED CURB ADJACENT TO CURB RAMP ACCESSIBLE TO THE DISABLED

ADJACENT TO PCC BASE COURSE WITH HMA SURFACING

M-2.06 (M-5.15) and M-2.12 (M-5.30)

TABLE OF DIMENSIONS BARRIER CURB

TYPE	A	B	C	D	R_1
B-6.06 * (B-15.15)	6 (150)	1 (25)	6 (150)	6 (150)	1 (25)
B-6.12 (B-15.3)	12 (300)	1 (25)	6 (150)	6 (150)	1 (25)
B-6.18 (B-15.45)	18 (450)	1 (25)	6 (150)	6 (150)	1 (25)
B-6.24 (B-15.60)	24 (600)	1 (25)	6 (150)	6 (150)	1 (25)
B-9.12 (B-22.30)	12 (300)	2 (50)	5 (125)	9 (225)	1 (25)
B-9.18 (B-22.45)	18 (450)	2 (50)	5 (125)	9 (225)	1 (25)
B-9.24 (B-22.60)	24 (600)	2 (50)	5 (125)	9 (225)	1 (25)

* For corner islands only.

TABLE OF DIMENSIONS MOUNTABLE CURB

TYPE	A	B	C	D	R_1	R_2
M-2.06 (M-5.15)	6 (150)	2 (50)	4 (100)	2 (50)	3 (75)	2 (50)
M-2.12 (M-5.30)	12 (300)	2 (50)	4 (100)	2 (50)	3 (75)	2 (50)
M-4.06 (M-10.15)	6 (150)	4 (100)	3 (75)	4 (100)	3 (75)	NA
M-4.12 (M-10.30)	12 (300)	4 (100)	3 (75)	4 (100)	3 (75)	NA
M-4.18 (M-10.45)	18 (450)	4 (100)	3 (75)	4 (100)	3 (75)	NA
M-4.24 (M-10.60)	24 (600)	4 (100)	3 (75)	4 (100)	3 (75)	NA
M-6.06 (M-15.15)	6 (150)	6 (150)	2 (50)	6 (150)	2 (50)	NA
M-6.12 (M-15.30)	12 (300)	6 (150)	2 (50)	6 (150)	2 (50)	NA
M-6.18 (M-15.45)	18 (450)	6 (150)	2 (50)	6 (150)	2 (50)	NA
M-6.24 (M-15.60)	24 (600)	6 (150)	2 (50)	6 (150)	2 (50)	NA

GENERAL NOTES

The bottom slope of combination curb and gutter constructed adjacent to pcc pavement shall be the same slope as the subbase or 6% when subbase is omitted.

t = Thickness of pavement.

Longitudinal joint tie bars shall be No. 6 (No. 19) at 36 (900) centers in accordance with details for longitudinal construction joint shown on Standard 420001.

A minimum clearance of 2 (50) between the end of the tie bar and the back of the curb shall be maintained.

The dowel bars shown in contraction joints will only be required for monolithic construction.

See Standard 606301 for details of corner islands.

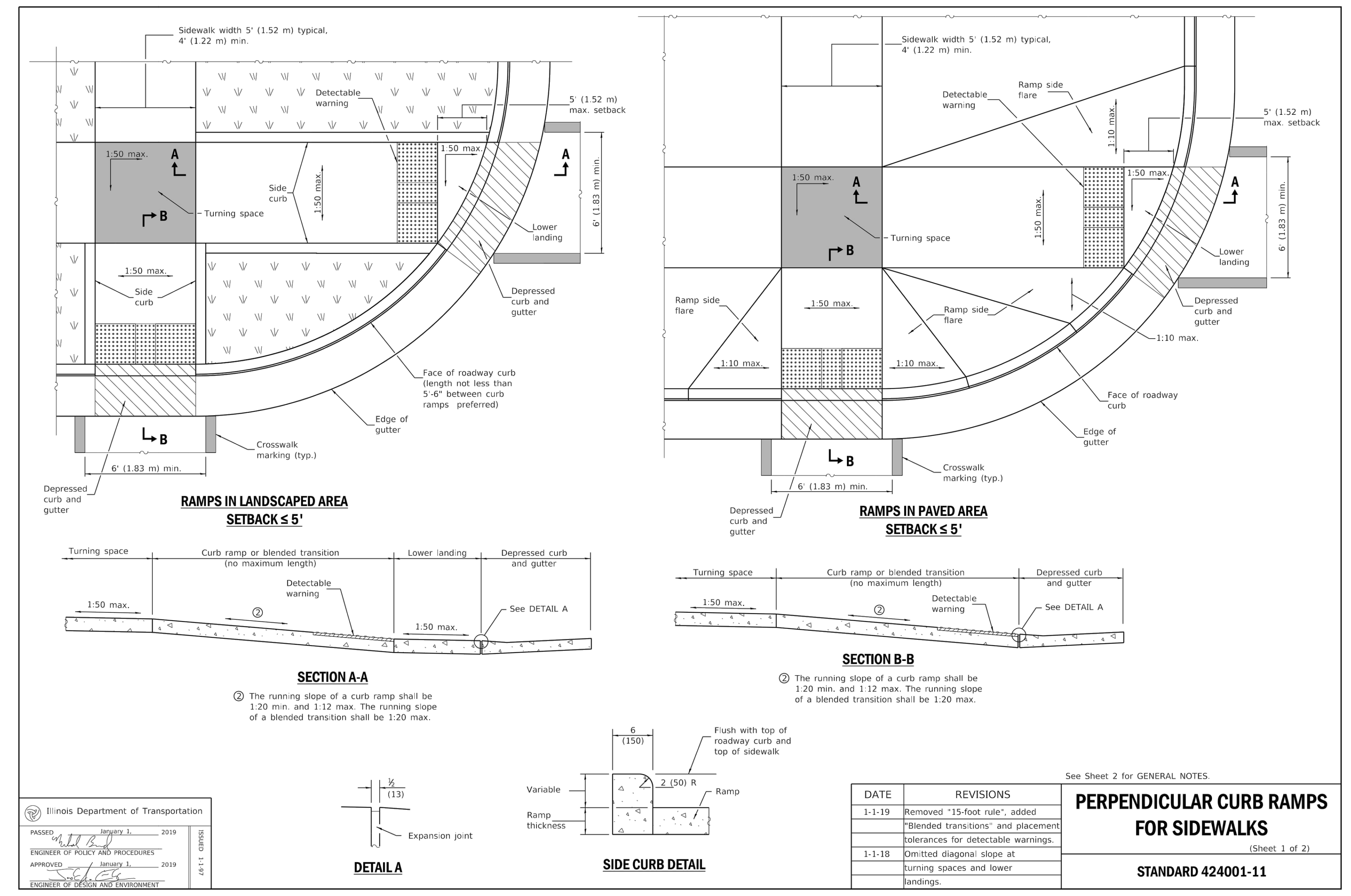
All dimensions are in inches (millimeters) unless otherwise shown.

Illinois Department of Transportation
PASSED January 1, 2018 — ENGINEER OF POLICY AND PROCEDURES
APPROVED January 1, 2018 — ENGINEER OF DESIGN AND ENVIRONMENT
ISSUED 1-1-97

DATE	REVISIONS
1-1-18	Revised General Note for tie bar spacing to 36 (900) cts.
1-1-15	Added B-6.06 (B-15.15) barrier curb and gutter to table (corner islands only).

CONCRETE CURB TYPE B AND COMBINATION CONCRETE CURB AND GUTTER (Sheet 1 of 2)

STANDARD 606001-07



RAMPS IN LANDSCAPED AREA SETBACK ≤ 5'

RAMPS IN PAVED AREA SETBACK ≤ 5'

SECTION A-A

② The running slope of a curb ramp shall be 1:20 min. and 1:12 max. The running slope of a blended transition shall be 1:20 max.

SECTION B-B

② The running slope of a curb ramp shall be 1:20 min. and 1:12 max. The running slope of a blended transition shall be 1:20 max.

DETAIL A

SIDE CURB DETAIL

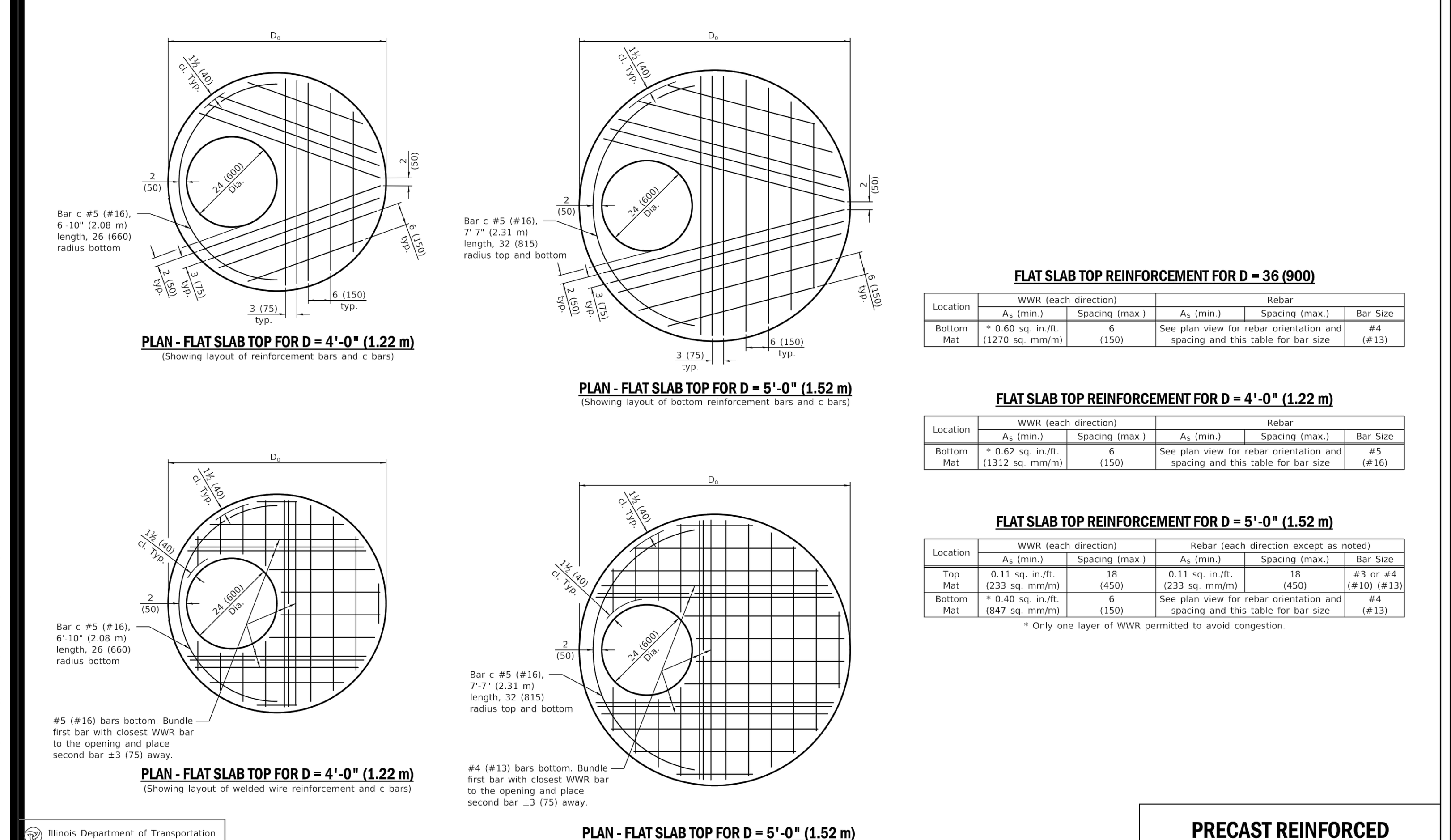
See Sheet 2 for GENERAL NOTES.

Illinois Department of Transportation
PASSED January 1, 2019 — ENGINEER OF POLICY AND PROCEDURES
APPROVED January 1, 2019 — ENGINEER OF DESIGN AND ENVIRONMENT
ISSUED 1-1-97

DATE	REVISIONS
1-1-19	Removed "15-foot rule", added "Blended transitions" and placement tolerances for detectable warnings.
1-1-18	Omitted diagonal slope at turning spaces and lower landings.

PERPENDICULAR CURB RAMPS FOR SIDEWALKS (Sheet 1 of 2)

STANDARD 424001-11



PLAN - FLAT SLAB TOP FOR D = 4'-0" (1.22 m) (Showing layout of reinforcement bars and c bars)

PLAN - FLAT SLAB TOP FOR D = 5'-0" (1.52 m) (Showing layout of bottom reinforcement bars and c bars)

PLAN - FLAT SLAB TOP FOR D = 4'-0" (1.22 m) (Showing layout of welded wire reinforcement and c bars)

PLAN - FLAT SLAB TOP FOR D = 5'-0" (1.52 m) (Showing layout of welded wire reinforcement and c bars)

FLAT SLAB TOP REINFORCEMENT FOR D = 36 (900)

Location	WWR (each direction) A_S (min.)	WWR Spacing (max.)	Rebar A_S (min.)	Rebar Spacing (max.)	Bar Size
Bottom Mat	* 0.60 sq. in./ft. (1270 sq. mm/m)	6 (150)	See plan view for rebar orientation and spacing and this table for bar size		#4 (#13)

FLAT SLAB TOP REINFORCEMENT FOR D = 4'-0" (1.22 m)

Location	WWR (each direction) A_S (min.)	WWR Spacing (max.)	Rebar A_S (min.)	Rebar Spacing (max.)	Bar Size
Bottom Mat	* 0.62 sq. in./ft. (1312 sq. mm/m)	6 (150)	See plan view for rebar orientation and spacing and this table for bar size		#5 (#16)

FLAT SLAB TOP REINFORCEMENT FOR D = 5'-0" (1.52 m)

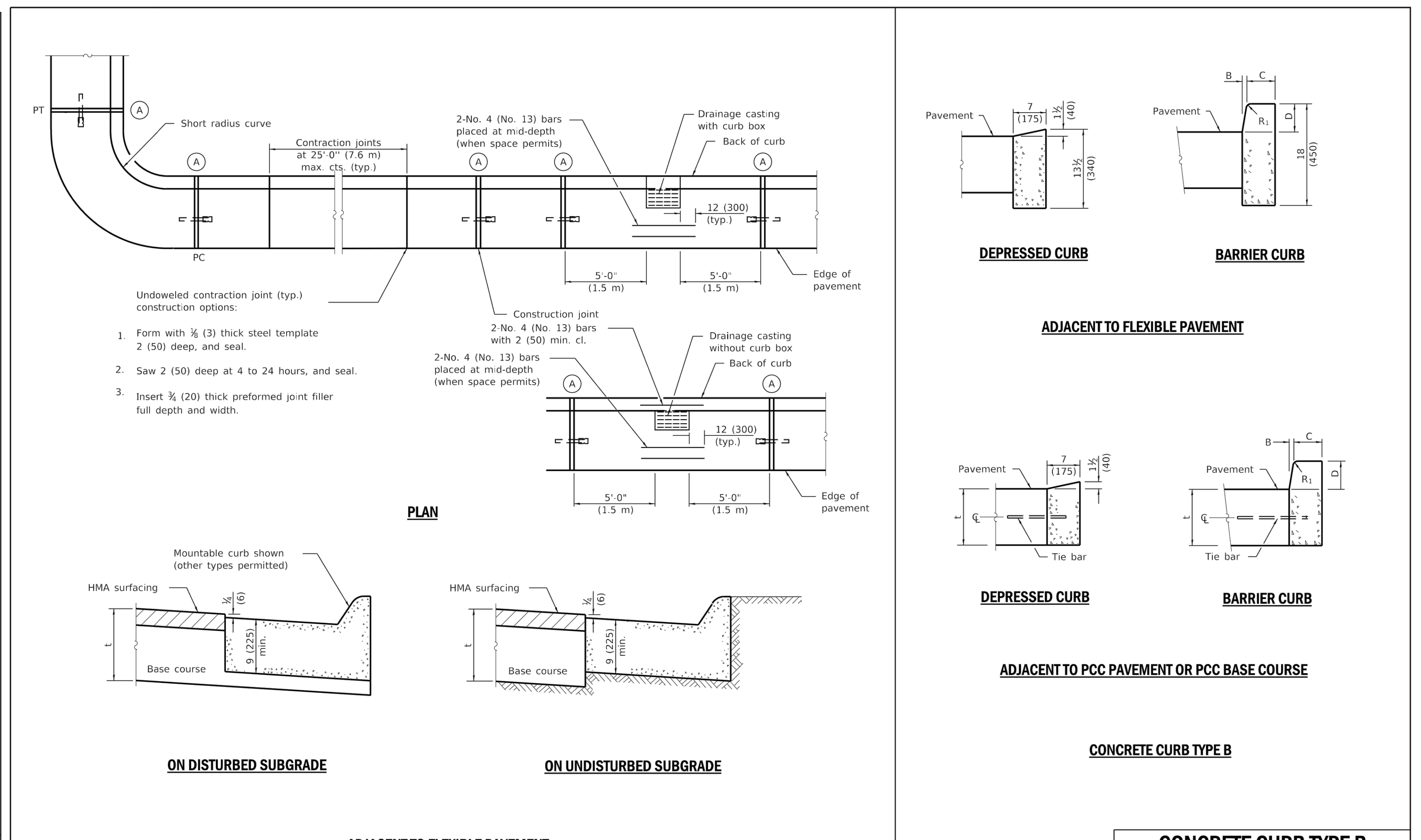
Location	WWR (each direction) A_S (min.)	WWR Spacing (max.)	Rebar (each direction except as noted) A_S (min.)	Rebar Spacing (max.)	Bar Size
Top Mat	0.11 sq. in./ft. (233 sq. mm/m)	18 (450)	0.11 sq. in./ft. (233 sq. mm/m)	18 (450)	#3 or #4 (#10) (#13)
Bottom Mat	* 0.40 sq. in./ft. (847 sq. mm/m)	6 (150)	See plan view for rebar orientation and spacing and this table for bar size		#4 (#13)

* Only one layer of WWR permitted to avoid congestion.

Illinois Department of Transportation
PASSED January 1, 2019 — ENGINEER OF POLICY AND PROCEDURES
APPROVED January 1, 2019 — ENGINEER OF DESIGN AND ENVIRONMENT
ISSUED 1-1-97

PRECAST REINFORCED CONCRETE FLAT SLAB TOP (Sheet 2 of 2)

STANDARD 602601-06



PLAN

ON DISTURBED SUBGRADE

ON UNDISTURBED SUBGRADE

ADJACENT TO FLEXIBLE PAVEMENT

DEPRESSED CURB

BARRIER CURB

ADJACENT TO FLEXIBLE PAVEMENT

DEPRESSED CURB

BARRIER CURB

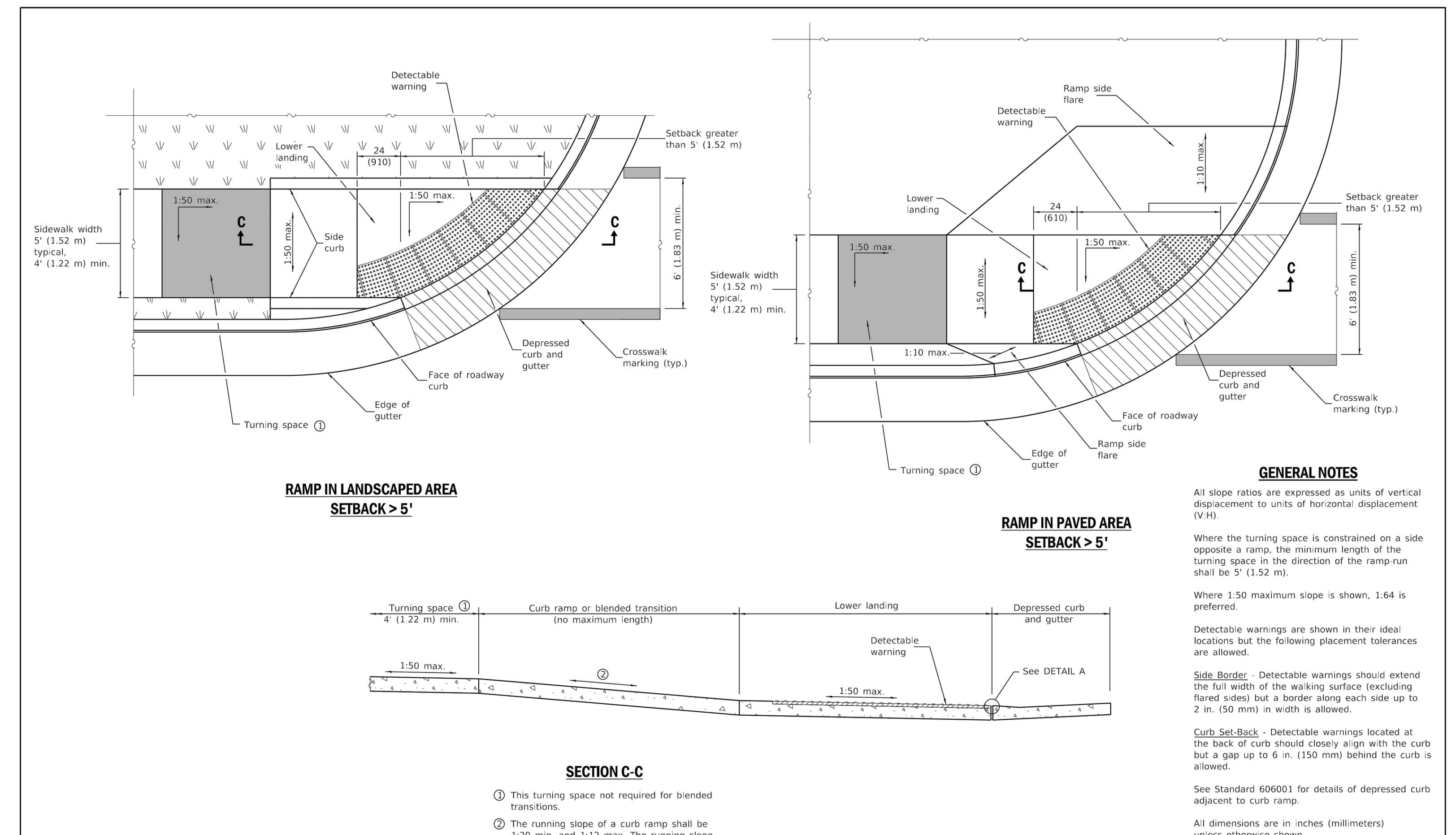
ADJACENT TO PCC PAVEMENT OR PCC BASE COURSE

CONCRETE CURB TYPE B

Illinois Department of Transportation
PASSED January 1, 2018 — ENGINEER OF POLICY AND PROCEDURES
APPROVED January 1, 2018 — ENGINEER OF DESIGN AND ENVIRONMENT
ISSUED 1-1-97

CONCRETE CURB TYPE B AND COMBINATION CONCRETE CURB AND GUTTER (Sheet 2 of 2)

STANDARD 606001-07



RAMP IN LANDSCAPED AREA SETBACK > 5'

RAMP IN PAVED AREA SETBACK > 5'

SECTION C-C

① This turning space not required for blended transitions.

② The running slope of a curb ramp shall be 1:20 min. and 1:12 max. The running slope of a blended transition shall be 1:20 max.

GENERAL NOTES

All slope ratios are expressed as units of vertical displacement to units of horizontal displacement (V:H).

Where the turning space is constrained on a side opposite a ramp, the minimum length of the turning space in the direction of the ramp-run shall be 5' (1.52 m).

Where 1:50 maximum slope is shown, 1:64 is preferred.

Detectable warnings are shown in their ideal locations but the following placement tolerances are allowed.

Side Border - Detectable warnings should extend the full width of the walking surface (excluding flared sides) but a border along each side up to 2 in. (50 mm) in width is allowed.

Curb Set-Back - Detectable warnings located at the back of curb should closely align with the curb but a gap up to 6 in. (150 mm) behind the curb is allowed.

See Standard 606001 for details of depressed curb adjacent to curb ramp.

All dimensions are in inches (millimeters) unless otherwise shown.

Illinois Department of Transportation
PASSED January 1, 2019 — ENGINEER OF POLICY AND PROCEDURES
APPROVED January 1, 2019 — ENGINEER OF DESIGN AND ENVIRONMENT
ISSUED 1-1-97

PERPENDICULAR CURB RAMPS FOR SIDEWALKS (Sheet 2 of 2)

STANDARD 424001-11

JOB NO: 080–020
FIELD BOOK: N/A
FIELD BOOK: N/A
DRAWN BY: MK
CHECKED BY: KEK
COMPLETED: 04/07/18

REVISIONS:
1. 09–18–18: REVISD PER CITY COMMENTS
2. 11–05–18: REVISD PER FPD COMMENTS
3. 01–18–19: REVISD PER CITY COMMENTS
8. 04–19–19: PER CITY COMMENTS

FILE: I/080–020 Cantera Lot 2 Sub Area C/Engineering/Drawings

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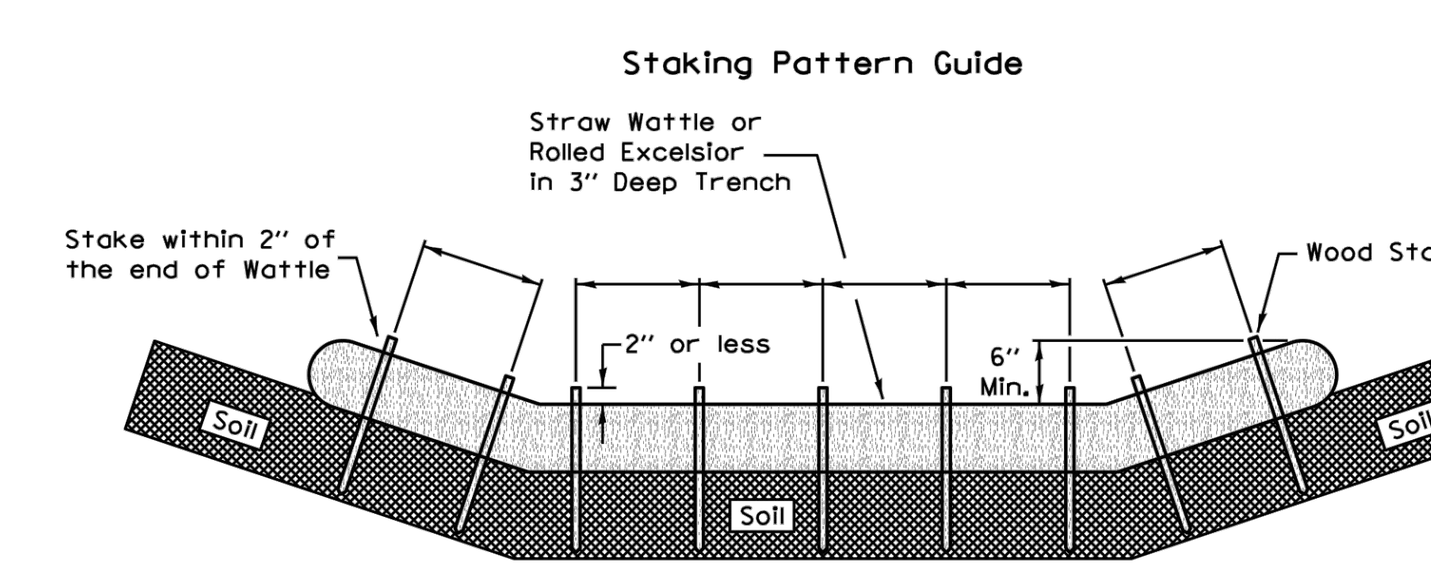
DETAILS

RIVER VIEW WEST
CITY OF WARRENVILLE, ILLINOIS

FILE: I/080–020 Cantera Lot 2 Sub Area C/Engineering/Drawings/Final Engineering

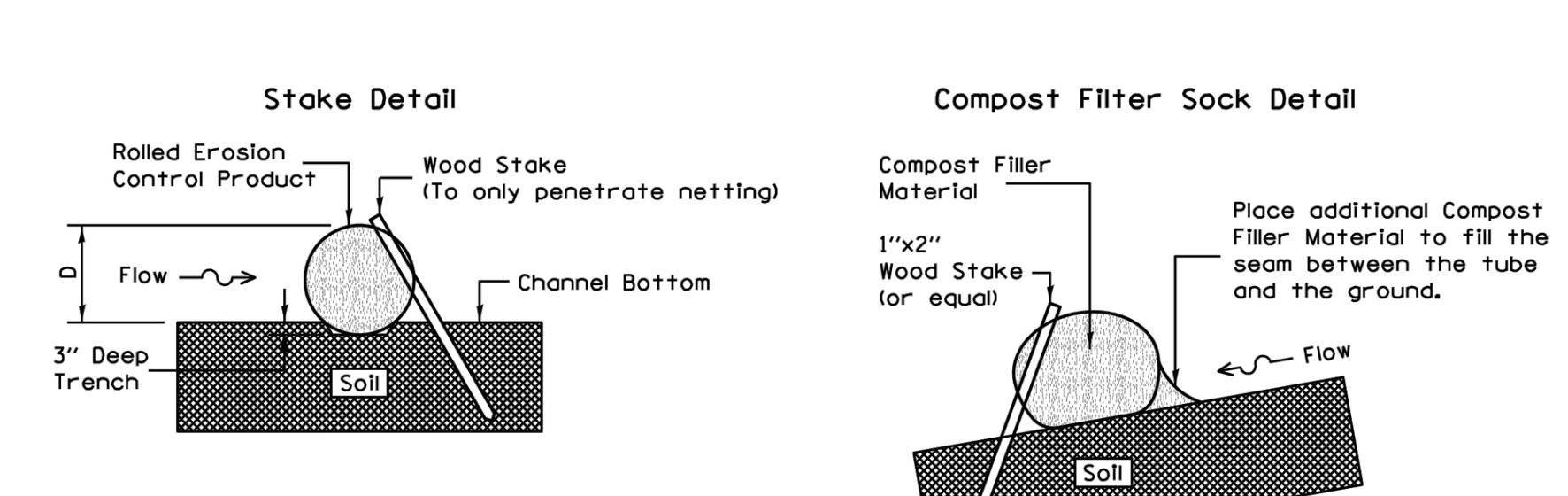
Design Firm License No. 184-001129

ROLLED EROSION CONTROL PRODUCTS



Notes:

1. Overlap minimum is the diameter of the roll.
2. 4' spacing for wattles.
3. 2' spacing for rolled excelsior.
4. Or space according to manufacturer's specifications.



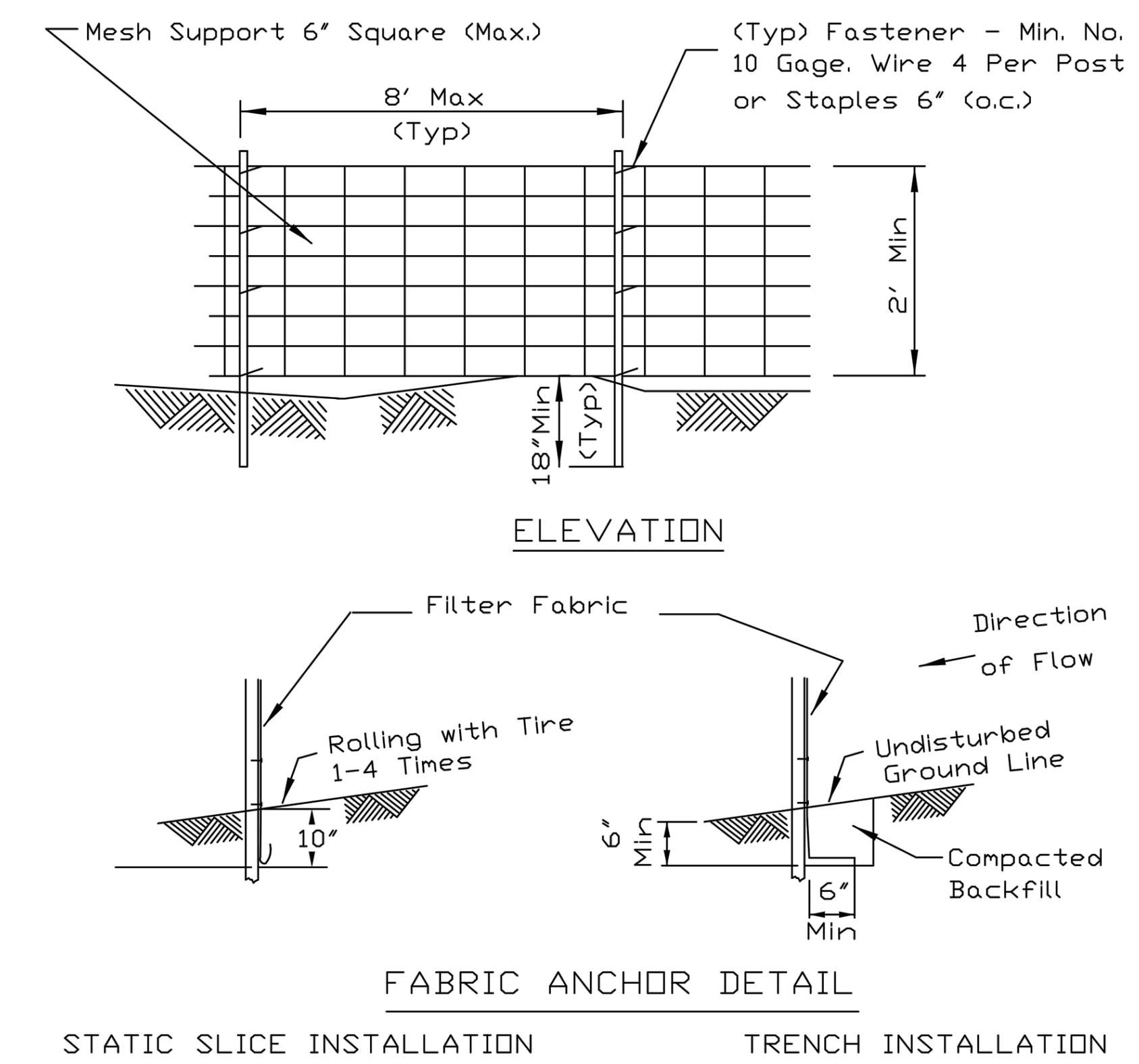
When compost filter sock ditch check is used, place a compost berm upstream of the filter sock (see IUM 805). A trench is not required.

Notes:

1. Drawings are not to scale.
2. Ends of wattles or rolled excelsior shall be turned at least 6" upslope.
3. Recommended stakes are 1 1/8" wide x 1 1/8" thick x 30" long
4. Stakes shall not extend above the straw wattle more than 2".
5. Spacing: The toe of the upstream ditch check shall create a horizontal line with the top of the downstream ditch check.
6. When compost filter sock ditch check is used, place a compost berm upstream of the filter sock (see IUM 805). A trench is not required.

REFERENCE		STANDARD DWG. NO.
Project ______		IUM-514
Designed ______ Date ______		SHEET 1 OF 1
Checked ______ Date ______		DATE 8-19-11
Approved ______ Date ______		

SILT FENCE WITH WIRE SUPPORT PLAN

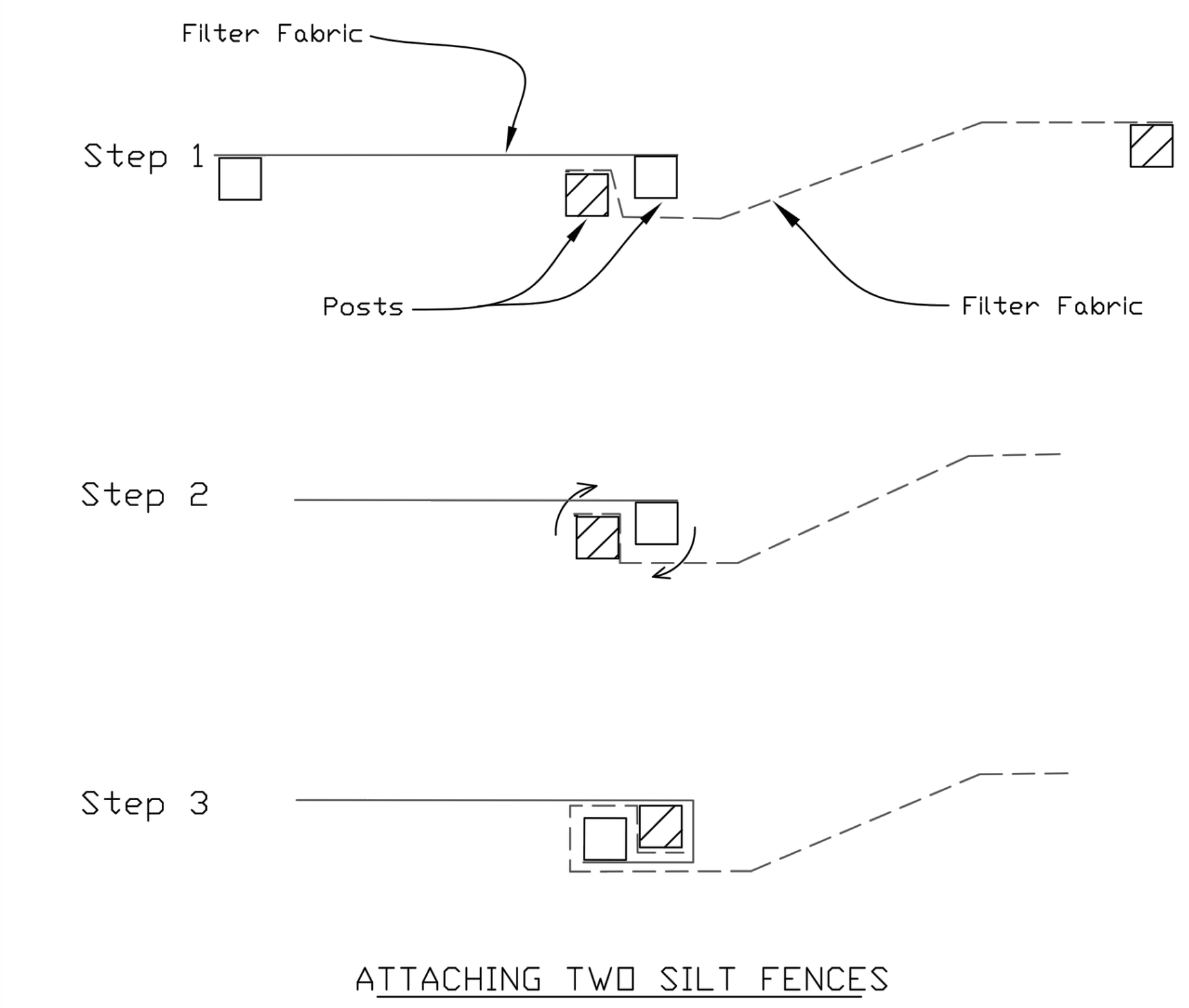


NOTES:

1. Silt Fence shall be installed prior to any grading work in the area to be protected. They shall be maintained throughout the construction period and removed in conjunction with the final grading and site stabilization. Silt fence shall be placed on the flattest area available.
2. Filter fabric shall meet the requirements of material specification 592 Geotextile Table 1 or 2, Class I with equivalent opening size of at least 30 for nonwoven and 40 for woven.
3. Fence posts shall be either standard steel post or wood post with a minimum cross-sectional area of 3.0 sq. in.

REFERENCE		STANDARD DWG. NO.
Project ______		IUM-620A(W)
Designed ______ Date ______		SHEET 1 OF 2
Checked ______ Date ______		DATE 3-16-2012
Approved ______ Date ______		

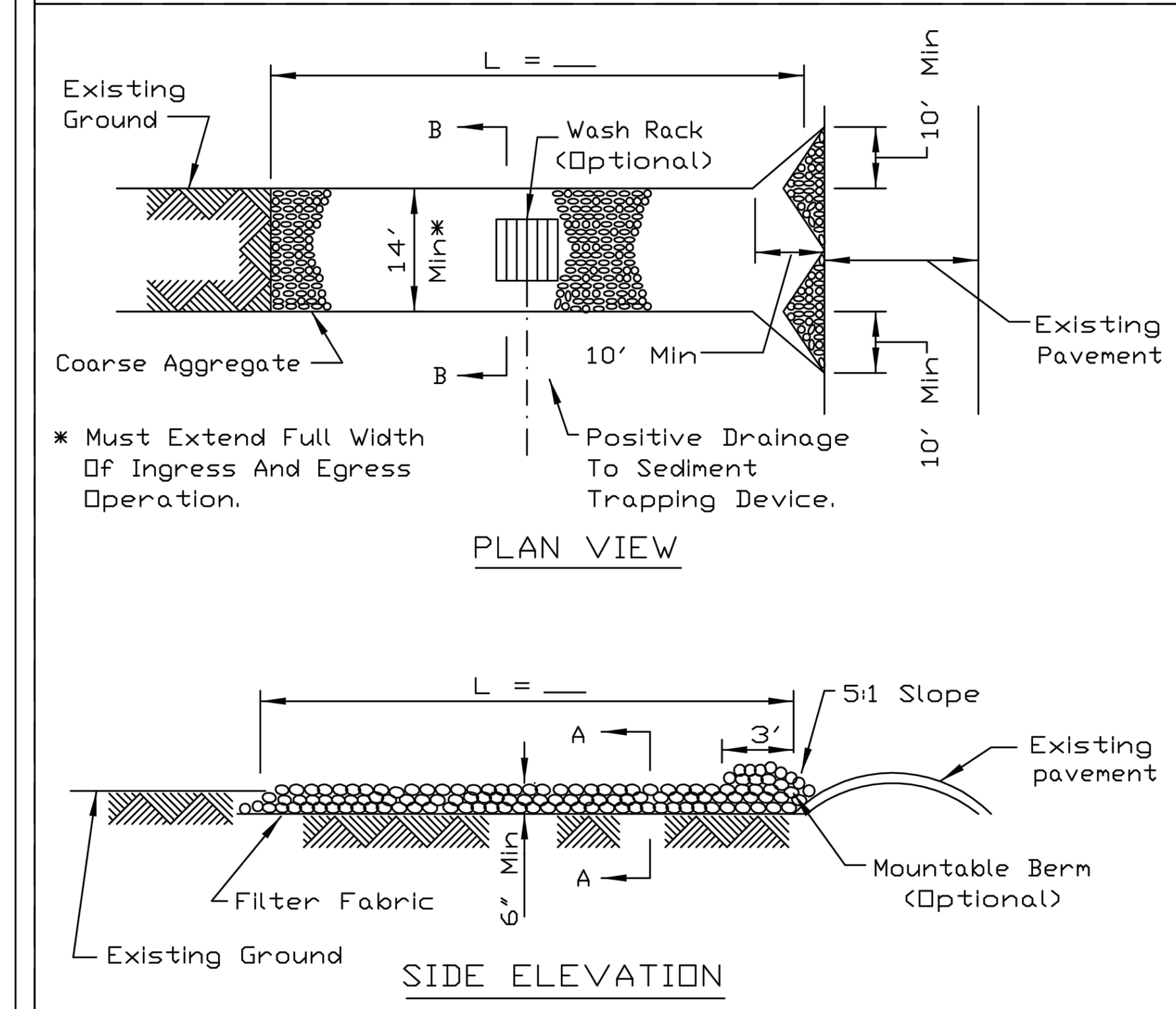
SILT FENCE - SPLICING TWO FENCES



1. Place the end post of the second fence inside the end post of the first fence.
2. Rotate both posts at least 180 degrees in a clockwise direction to create a tight seal with the fabric material.
3. Cut the fabric near the bottom of the stakes to accommodate the 6" flap.
4. Drive both posts a minimum of 18 inches into the ground and bury the flap.
5. Compact backfill (particularly at splices) completely to prevent stormwater piping.

REFERENCE		STANDARD DWG. NO.
Project ______		IUM-620B(W)
Designed ______ Date ______		SHEET 1 OF 1
Checked ______ Date ______		DATE 3-16-2012
Approved ______ Date ______		

STABILIZED CONSTRUCTION ENTRANCE PLAN

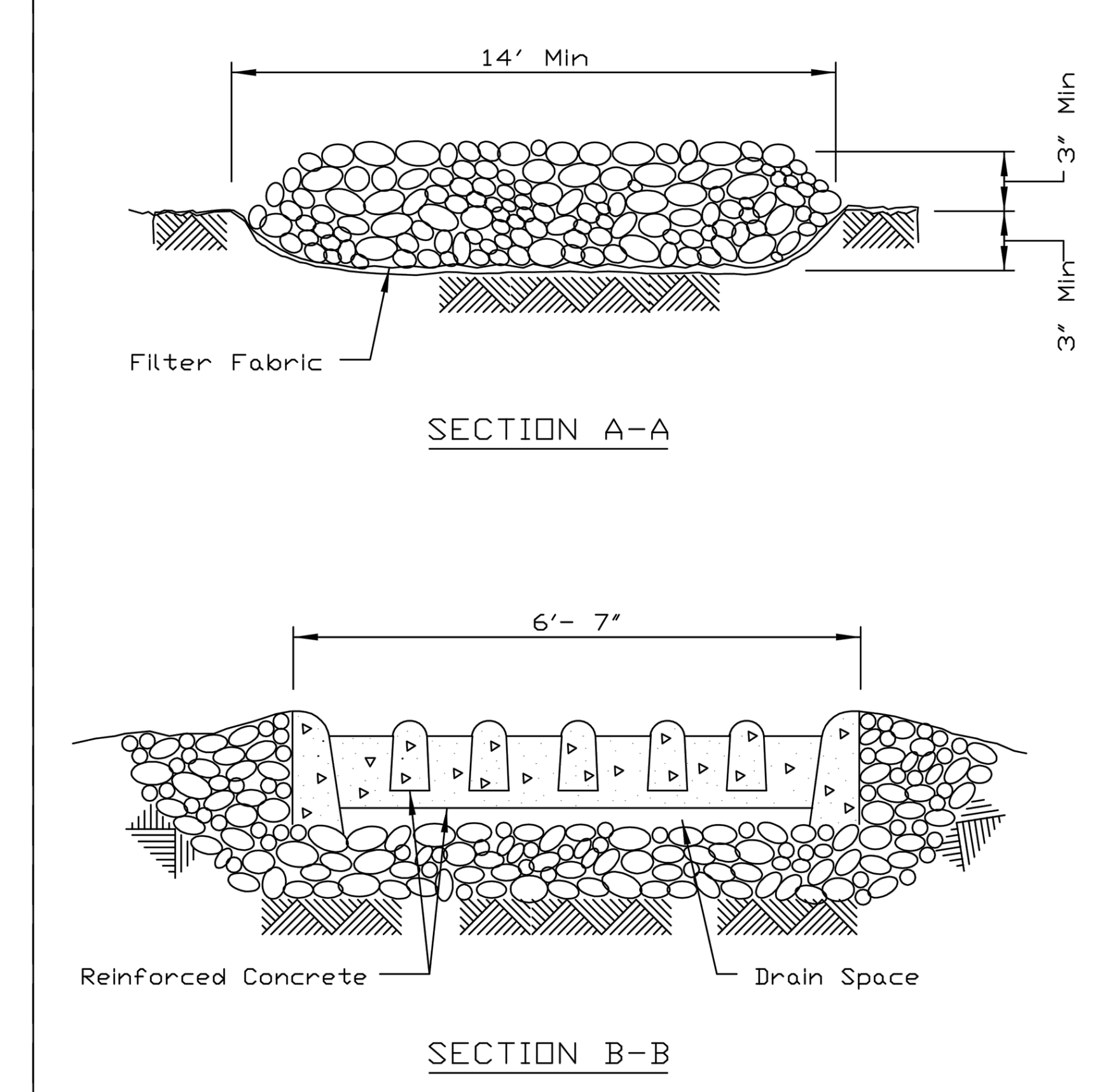


NOTES:

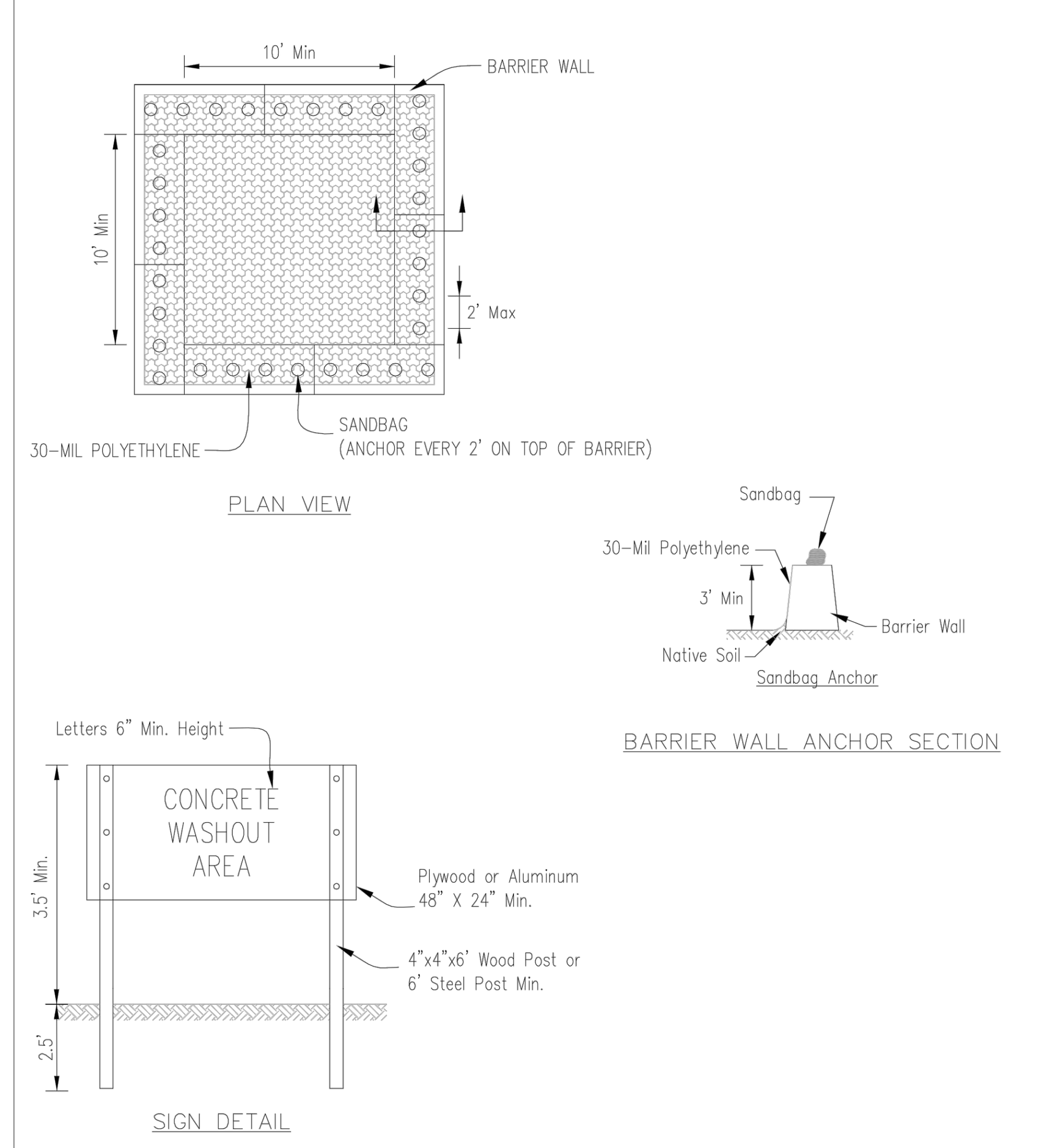
1. Filter fabric shall meet the requirements of material specification 592 GEOTEXTILE, Table I or 2, Class I, II or IV and shall be placed over the cleared area prior to the placing of rock.
2. Rock or reclaimed concrete shall meet one of the following IDOT coarse aggregate gradation, CA-1, CA-2, CA-3 or CA-4 and be placed according to construction specification 25 ROCKFILL using placement Method 1 and Class III compaction.
3. Any drainage facilities required because of washing shall be constructed according to manufacturers specifications.
4. If wash racks are used they shall be installed according to the manufacturer's specifications.

REFERENCE	NRCS Natural Resources Conservation Service	STANDARD DWG. NO.
Project ______		IL-630
Designed ______ Date ______		SHEET 1 OF 2
Checked ______ Date ______		DATE 8-18-94
Approved ______ Date ______		

STABILIZED CONSTRUCTION ENTRANCE PLAN



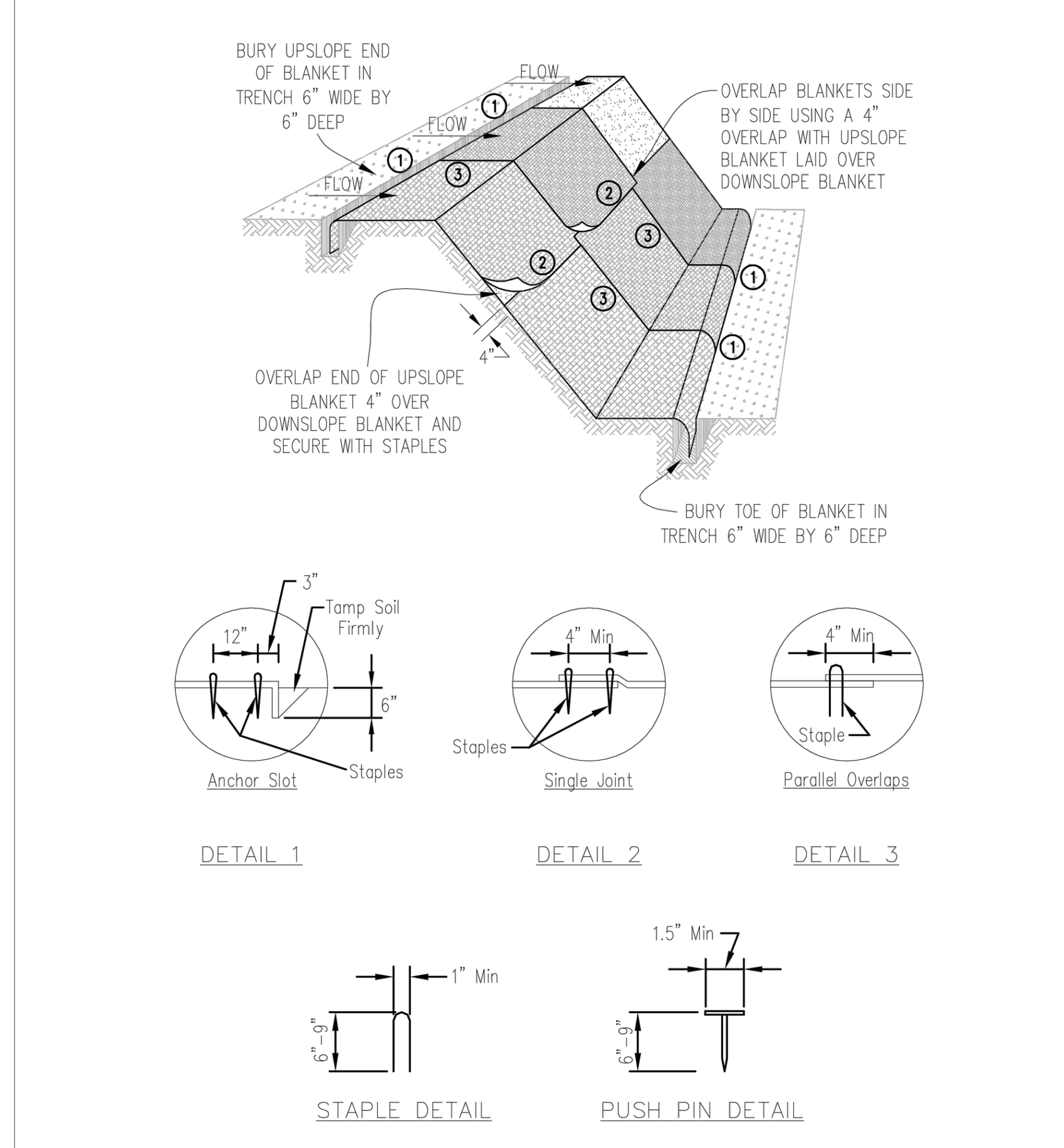
REFERENCE	NRCS Natural Resources Conservation Service	STANDARD DWG. NO.
Project ______		IL-630
Designed ______ Date ______		SHEET 2 OF 2
Checked ______ Date ______		DATE 8-18-94
Approved ______ Date ______		



NOTES:

1. Maintaining temporary concrete washout facilities shall include removing and disposing of hardend concrete and/or slurry and returning the faciliities to a functional condition.
2. Facility shall be cleaned or reconstructed in a new area once washout becomes two-thirds full.

Sheet 3 of 3 | File No. Drawing No. IUM-654BW | TEMPORARY CONCRETE WASHOUT FACILITY – BARRIER WALL | Designed ______ Drawn B. JOHNSON 6/08 Checked ______ Approved ______

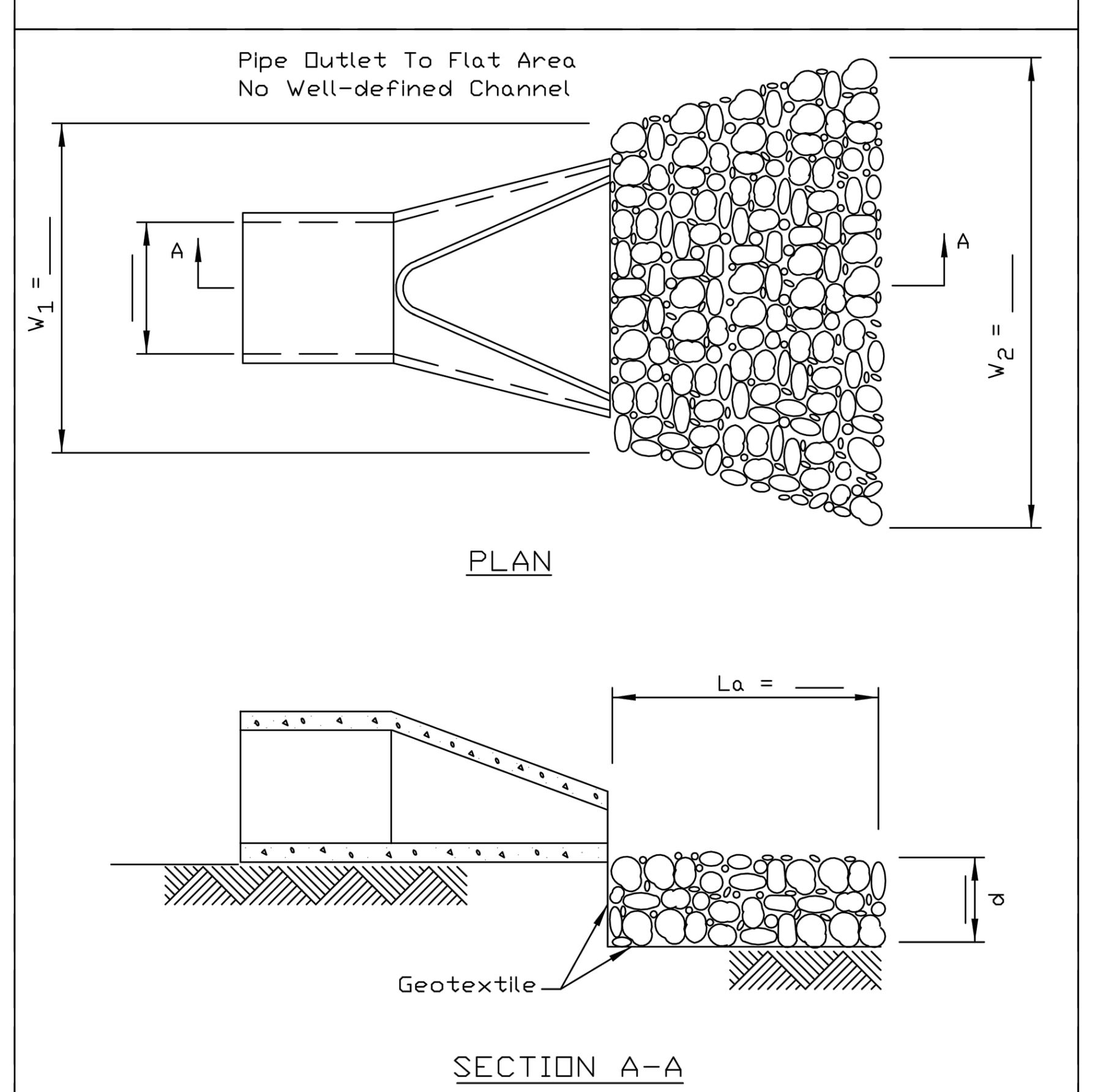


NOTES:

1. Staples shall be placed in a diamond pattern at 2 per s.y. for stiched blankets. Non-stiched shall use 4 staples per s.y. of material. This equates to 200 staples with stiched blanket and 400 stapels with non-stiched blanket per 100 s.y. of material.
2. Staple or push pin lengths shall be selected based on soil type and conditions. (minimum staple length is 6")
3. Erosion control material shall be placed in contact with the soil over a prepared seedbed.
4. All anchor slots shall be stapled at approximately 12" intervals.

Sheet 1 of 1 | File No. Drawing No. IUM-530 | EROSION CONTROL BLANKET INSTALLATION DETAILS | Designed ______ Drawn B. JOHNSON 11/08 Checked ______ Approved ______

PIPE OUTLET TO FLAT AREA

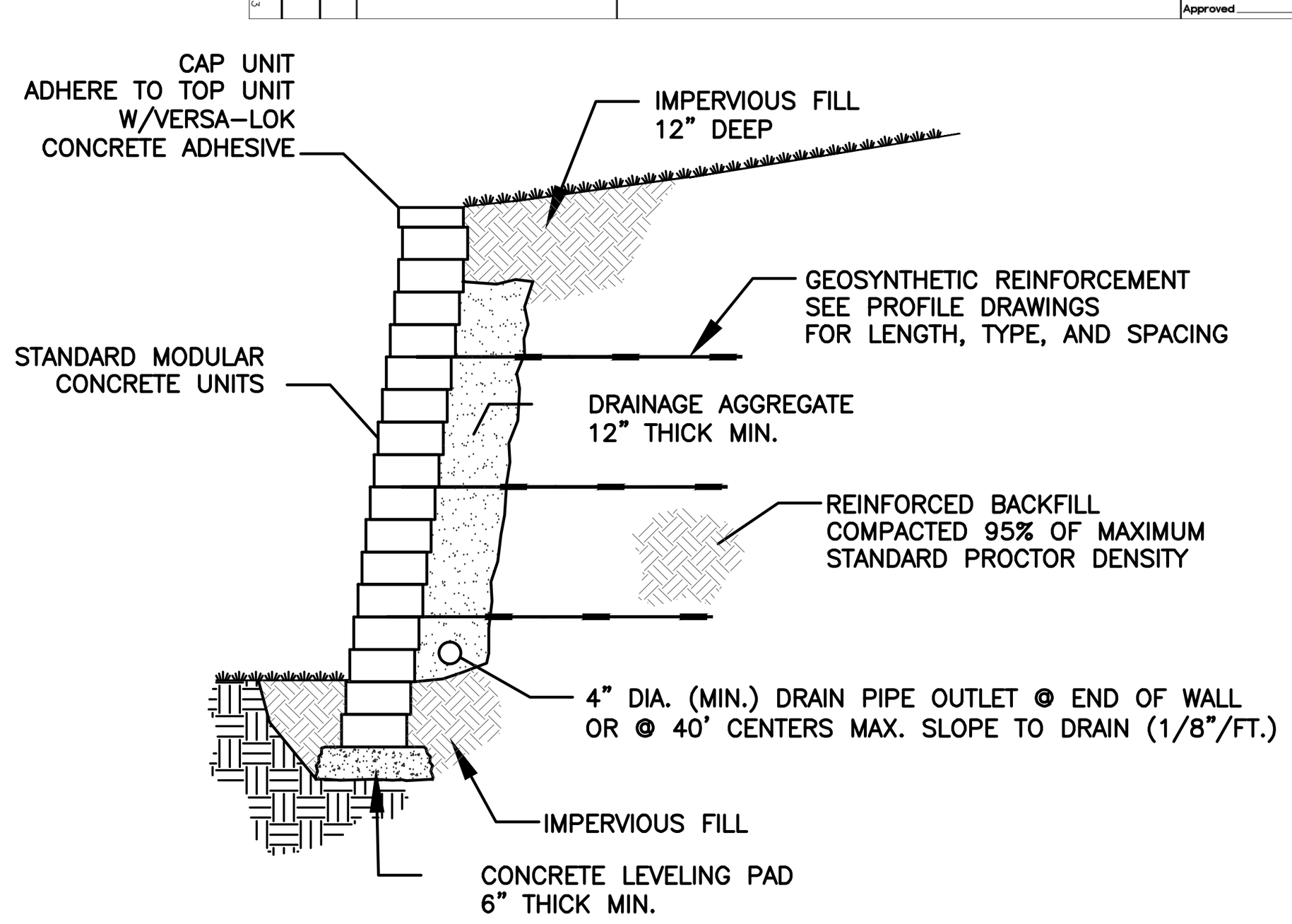


NOTES:

1. The filter fabric shall meet the requirements in material specifications 592 GEOTEXTILE Table 1 or 2, class I, II or III.
2. The rock riprap shall shall meet the IDOT requirements for the following gradation: RR 4 , Quality A .
3. The riprap shall be placed according to construction specification 61 LOOSE ROCK RIPRAP. The rock may be equipment placed.

REFERENCE	NRCS Natural Resources Conservation Service	STANDARD DWG. NO.
Project ______		IL-610
Designed ______ Date ______		SHEET 1 OF 1
Checked ______ Date ______		DATE 9-15-93
Approved ______ Date ______		

RIPRAP OUTLET DIMENSIONS					
STRUCTURE #	PIPE ø	LENGTH La (FT)	WIDTH W1 (FT)	WIDTH W2 (FT)	DEPTH d (FT)
13	24	13	6	15	3.4
24	24	13	6	15	3.4
43	30	16	8	19	3.4
45	12	6	3	7	3.4
46	18	10	5	12	3.4
49	18	10	5	12	3.4
52	24	13	6	15	3.4
55	15	8	4	10	3.4
56	12	6	3	7	3.4
60	12	6	3	7	3.4
65	36	20	9	23	3.4
95	36	20	9	23	3.4
105	36	20	9	23	3.4
108	15	8	4	10	3.4
111	15	8	4	10	3.4
114	15	8	4	10	3.4
117	24	13	6	15	3.4
118	12	6	3	7	3.4
121	15	8	4	10	3.4
122	12	6	3	7	3.4
126	24	13	6	15	3.4
127	12	6	3	7	3.4
131	24	13	6	15	3.4
132	12	6	3	7	3.4
136	24	13	6	15	3.4
141	15	8	4	10	3.4
145	15	8	4	10	3.4
146	18	10	5	12	3.4
147	12	6	3	7	3.4
148	12	6	3	7	3.4
149	12	6	3	7	3.4
34A	18	10	5	12	3.4



TYPICAL SECTION-REINFORCED RETAINING WALL

MODULAR CONCRETE UNIT
SCALE: NONE

ESTIMATED CONSTRUCTION SCHEDULE:

INSTALL E&S CONTROL ITEMS	08/18
CLEARING AND TOPSOIL STRIPPING	08/18
MASS EARTHWORK	08/18
UNDERGROUND IMPROVEMENTS	09/18
BUILDING FOUNDATION	09/18
PAVEMENT & CURBS	04/19
BUILDING CONTRUCTION	04/19
FINAL GRADING	05/19
BMP/BIOSWALE CONSTRUCTION	06/19
FINAL LANDSCAPING	07/19
REMOVE TEMP. E&S CONTROL ITEMS	08/19

NOTE:
THESE DATES AND ACTIVITIES ASSUME ALL IMPROVEMENTS WILL BE COMPLETED JOINTLY. IF THE PROPOSED DEVELOPMENT IS SPLIT INTO SEPARATE PHASES, THIS SCHEDULE SHALL BE USED FOR EACH PHASE.

MAINTENANCE NOTES:

1. SEE THE GENERAL NOTES AND DETAILS SHEETS IN THESE PLANS FOR ADDITIONAL EROSION AND SEDIMENT CONTROL NOTES AND DETAILS.
2. RESPONSIBLE PARTIES: THE CONTRACTOR SHALL BE RESPONSIBLE TO PROVIDE QUALIFIED PERSONELL FOR ALL INSPECTION, MAINTENANCE AND REPAIR OF TEMPORARY AND PERMANENT EROSION AND SEDIMENT CONTROL MEASURES DURING CONSTRUCTION. THE OWNER SHALL BE RESPONSIBLE FOR ALL INSPECTION, MAINTENANCE AND REPAIR OF PERMANENT EROSION CONTROL MEASURES AFTER CONSTRUCTION. QUALIFIED PERSONNEL MEANS A PERSON KNOWLEDGEABLE IN THE PRINCIPLES AND PRACTICES OF EROSION AND SEDIMENT CONTROLS MEASURES, SUCH AS A LICENSED PROFESSIONAL ENGINEER (P.E.), A CERTIFIED PROFESSIONAL IN EROSION AND SEDIMENT CONTROL (CPESC), A CERTIFIED EROSION SEDIMENT AND STORM WATER INSPECTOR (CESSWI) OR OTHER KNOWLEDGEABLE PERSON WHO POSSESSES THE SKILLS TO ASSESS CONDITIONS AT THE CONSTRUCTION SITE THAT COULD IMPACT STORM WATER QUALITY AND TO ASSESS THE EFFECTIVENESS OF ANY SEDIMENT AND EROSION CONTROL MEASURES SELECTED TO CONTROL THE QUALITY OF STORM WATER DISCHARGES FROM THE CONSTRUCTION ACTIVITIES.
3. THE FOLLOWING IS A DESCRIPTION OF PROCEDURES THAT SHOULD BE USED TO MAINTAIN, IN GOOD AND EFFECTIVE OPERATION CONDITIONS, VEGETATION, EROSION AND SEDIMENT CONTROL MEASURES AND OTHER PROTECTIVE MEASURES IDENTIFIED IN THIS PLAN AND THE STANDARD SPECIFICATIONS. ALL EROSION AND SEDIMENT CONTROL MEASURES MUST BE MAINTAINED AND IMMEDIATELY REPLACED AS NEEDED AND AS DIRECTED BY THE ENGINEER. THE CONTRACTOR SHALL INSPECT AND COMPLETE MAINTENANCE OF ALL ITEMS A MINIMUM OF EVERY 7 DAYS AND WITHIN 24 HOURS OF A 0.5-INCH RAINFALL. ALL TEMPORARY EROSION AND SEDIMENT CONTROL ITEMS MUST BE REMOVED WITHIN 30 DAYS AFTER FINAL STABILIZATION IS COMPLETE.
4. STABILIZED CONSTRUCTION ENTRANCE: THE ENTRANCES SHOULD BE MAINTAINED TO PREVENT TRACKING OF SEDIMENT ONTO PUBLIC STREETS. MAINTENANCE INCLUDES TOP DRESSING WITH ADDITIONAL STONE AND REMOVING TOP LAYERS OF STONE AND SEDIMENT. THE SEDIMENT RUN-OFF INTO THE PUBLIC RIGHT-OF-WAY SHOULD BE REMOVED IMMEDIATELY.
5. CONCRETE WASHOUT AREA: EXISTING AREAS SHOULD BE CLEANED OUT, OR NEW FACILITIES SHOULD BE CONSTRUCTED AND OPERATIONAL ONCE THE EXISTING WASHOUT IS 75% FULL. WASHOUT SHOULD BE INSPECTED FREQUENTLY TO ENSURE THAT PLASTIC LININGS ARE INTACT AND SIDEWALLS HAVE NOT BEEN DAMAGED BY CONSTRUCTION ACTIVITIES. WHEN THE WASHOUT AREA IS ADJACENT TO A PAVED ROAD, THE PAVED ROAD SHOULD BE INSPECTED FOR ACCUMULATED CONCRETE WASTE. ANY ACCUMULATED CONCRETE WASTE ON THE ROAD, CURB OR GUTTER SHOULD BE REMOVED AND PROPERLY DISPOSED.
6. SILT FENCE: SILT FENCES SHOULD BE INSPECTED REGULARLY FOR UNDERCUTTING, WHERE THE FENCE MEETS THE GROUND, OVERTOPPING, AND TEARS ALONG THE LENGTH OF THE FENCE. DEFICIENCIES SHOULD BE REPAIRED IMMEDIATELY. REMOVE ACCUMULATED SEDIMENTS FROM THE FENCE BASE WHEN THE SEDIMENT REACHES 50% OF THE FENCE HEIGHT. DURING FINAL STABILIZATION, PROPERLY DISPOSE OF ANY SEDIMENT THAT HAS ACCUMULATED ON THE SILT FENCE. INSTANCES WHEN AREAS OF SILT FENCE CONTINUALLY FAIL, REPLACE SILT FENCE WITH ANOTHER BMP AS SEEN FIT.
7. INLET FILTERS: INLET FILTERS SHOULD BE INSPECTED FOR PROPER FILTERING, IF FILTER BAGS ARE USED, REMOVE SEDIMENT FROM THE FILTER BAGS WHEN 50% OF THE STORAGE VOLUME HAS BEEN FILLED, UNLESS OTHERWISE INSTRUCTED BY THE MANUFACTURER. REMOVE TRASH AND DEBRIS DURING INSPECTIONS. ACCUMULATED MATERIAL IN THE FILTERS SHOULD BE DISPOSED PROPERLY. DO NOT PUNCTURE HOLES IN FILTERS IF PONDING OCCURS.
8. SEDIMENT BASIN/TRAP: THE BOTTOM OF THE PROPOSED DETENTION PONDS SHALL BE USED AS A SEDIMENT BASIN DURING CONSTRUCTION. SEDIMENT SHALL BE REMOVED WHEN BASIN IS 75% FULL. ALL PERFORATED RISERS SHALL BE PERIODICALLY INSPECTED AND CLEANED IF CLOGGED. IMMEDIATELY PRIOR TO END OF CONSTRUCTION, THE BOTTOMS OF PROPOSED DETENTION PONDS SHALL BE EXCAVATED TO THE GRADES AS SHOWN ON THE PLANS.
9. OUTLET PIPE AND RESTRICTOR STRUCTURE: ALL OUTLET PIPES AND RESTRICTOR STRUCTURES SHALL BE CLEANED IF CLOGGED OR PARTIALLY BLOCKED.
10. DEBRIS MANAGEMENT: ALL TRASH, BRUSH, GRASS, CLIPPING DEBRIS ETC. SHOULD BE REMOVED AT LEAST EVERY TWO WEEKS FROM THE EXISTING PROJECT STARTING DATE THROUGHOUT AND DURING THE WHOLE OF THE MAINTENANCE PERIOD. THIS INCLUDES ALL AREAS WITHIN THE PROJECT LIMIT. ALL CONSTRUCTION DEBRIS AND MACHINERY SHALL BE REMOVED FROM THE SITE PRIOR TO FINAL ACCEPTANCE AND PROJECT CLOSE OUT

INSPECTIONS NOTES:

1. THE OWNER SHALL DESIGNATE A QUALIFIED PERSON TO BE RESPONSIBLE FOR SEDIMENT AND EROSION CONTROL OBSERVATION REPORTING. THIS QUALIFIED PERSON SHALL MEET THE REQUIREMENTS NOTED IN THE ILR10 PERMIT CONDITIONS AND/OR THE WMO REGULATIONS. SITE OBSERVATIONS SHOULD OCCUR AT LEAST ONCE EVERY 7 DAYS AND WITHIN 24 HOURS AFTER A RAINFALL OF 0.5-INCHES OR GREATER, OR EQUIVALENT SNOWFALL. SITE OBSERVATION REPORTS SHOULD BE MAINTAINED ONSITE AS PART OF THE SWPPP.

EACH SITE OBSERVATION SHALL INCLUDE:

A. DISTURBED AREAS AND AREAS USED FOR THE STORAGE OF MATERIALS THAT ARE EXPOSED TO PRECIPITATION SHALL BE CHECKED FOR EVIDENCE OF, OR POTENTIAL FOR, POLLUTANTS ENTERING THE DRAINAGE SYSTEM. THE EROSION AND SEDIMENT CONTROL MEASURES IDENTIFIED IN THE PLAN SHALL BE OBSERVED TO ENSURE THAT THEY HAVE BEEN INSTALLED AND ARE OPERATING CORRECTLY. WHERE DISCHARGE POINTS ARE ACCESSIBLE, THEY SHOULD BE CHECKED TO ASCERTAIN WHETHER EROSION CONTROL MEASURES ARE EFFECTIVE IN PREVENTING SIGNIFICANT IMPACTS TO THE RECEIVING WATERS. LOCATIONS WHERE VEHICLES ENTER AND EXIST THE SITE SHOULD BE CHECKED FOR OFF-SITE SEDIMENT TRACKING. ALL PUMPING OPERATIONS AND OTHER POTENTIAL NON-STORM WATER DISCHARGES SHOULD BE OBSERVED.
B. BASED ON THE RESULTS OF THE SITE OBSERVATION, THE DESCRIPTION OF POTENTIAL POLLUTANT SOURCES IDENTIFIED, AND THE POLLUTION PREVENTION MEASURES DESCRIBED IN THIS PLAN SHALL BE REVISED AS APPROPRIATE, AS SOON AS PRACTICABLE AFTER THE OBSERVATION. THE MODIFICATIONS, IF ANY, SHALL PROVIDE FOR TIMELY IMPLEMENTATION OF ANY CHANGES TO THE PLAN WITHIN 7 CALENDAR DAYS FOLLOWING THE SITE OBSERVATION.
C. A REPORT SUMMARIZING THE SCOPE OF THE OBSERVATION, NAME(S) AND QUALIFICATIONS OF PERSONNEL MAKING THE OBSERVATION, THE DATE(S) OF THE OBSERVATION, MAJOR OBSERVATIONS RELATING TO THE IMPLEMENTATION OF THE STORM WATER POLLUTION PREVENTION, AND ACTIONS TAKEN IN ACCORDANCE WITH PARAGRAPH B ABOVE SHALL BE MADE AND RETAINED AS PART OF THE STORM WATER POLLUTION PREVENTION PLAN FOR AT LEAST 3 YEARS FROM THE DATE OF FINAL STABILIZATION OR PERMIT COVERAGE IS TERMINATED. THE REPORT SHALL BE SIGNED IN ACCORDANCE WITH PART VI.G (SIGNATORY REQUIREMENTS) OF THE ILR10 NPDES PERMIT.
D. THE OWNER SHALL NOTIFY THE APPROPRIATE AGENCY FIELD OPERATIONS SECTION OFFICE BY EMAIL AT EPA.SWNONCOMP@ILLINOIS.GOV, TELEPHONE OR FAX WITHIN 24 HOURS OF ANY INCIDENCE OF NONCOMPLIANCE FOR ANY VIOLATION OF THE STORM WATER POLLUTION PREVENTION PLAN OBSERVED DURING A SITE OBSERVATION, OR FOR VIOLATIONS OF ANY CONDITION OF THE PERMIT. THE OWNER SHALL COMPLETE AND SUBMIT WITHIN 5 DAYS OF INCIDENCE OF NONCOMPLIANCE (ION) REPORT FOR ANY VIOLATION OF THE STORM WATER POLLUTION PREVENTION PLAN OBSERVED DURING AN INSPECTION CONDUCTED. SUBMISSION SHALL BE ON FORMS PROVIDED BY THE AGENCY AND INCLUDE SPECIFIC INFORMATION ON THE CAUSE OF NONCOMPLIANCE, ACTIONS WHICH WERE TAKEN TO PREVENT ANY FURTHER CAUSES OF NONCOMPLIANCE, AND A STATEMENT DETAILING ANY ENVIRONMENTAL IMPACT WHICH MAY HAVE RESULTED FROM THE NONCOMPLIANCE.
E. ALL REPORTS OF NONCOMPLIANCE SHALL BE SIGNED BY A RESPONSIBLE AUTHORITY AS DEFINED IN PART VI.G OF THE ILR10 NPDES PERMIT (SIGNATORY REQUIREMENTS)
F. ALL REPORTS OF NONCOMPLIANCE SHALL BE MAILED TO THE AGENCY AT THE FOLLOWING ADDRESS:
   ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
   DIVISION OF WATER POLLUTION CONTROL
   COMPLAINCE ASSURANCE #19
   POST OFFICE BOX 19276
   SPRINGFIELD, IL 62794-9276

JOB NO: 080-020
FIELD BOOK: N/A
FIELD BOOK: N/A
DRAWN BY: MK
CHECKED BY: KEK
COMPLETED: 04/07/18

REVISIONS:
1. 09-18-18: REVISD PER CITY COMMENTS
2. 11-05-18: REVISD PER FPD COMMENTS
3. 01-18-19: REVISD PER CITY COMMENTS
4.
5. 04-19-19: PER CITY COMMENTS

FILE: I/080-020 Cantera Lot 2 Sub Area C/Engineering/Drawings/Final Engineering

PREPARED FOR:
CANTERA DEVELOPMENT HOLDINGS, LLC.
TWO NORTHFIELD PLAZA, SUITE 320
NORTHFIELD, IL 60093
TEL :(847) 562-2001

CONSULTING ENGINEERS
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333 PIERCE ROAD SUITE 200 ITASCA, IL 60143
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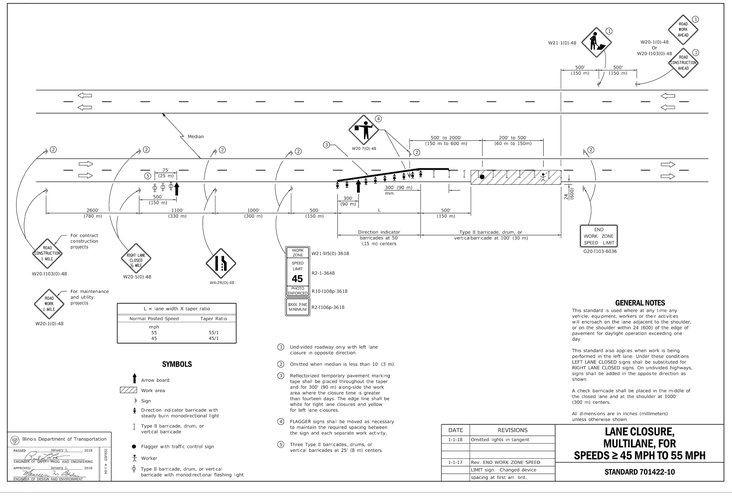
ITASCA * CHICAGO * ALGONQUIN * LAKE GENEVA * SOUTH BEND * INDIANAPOLIS

DETAILS

RIVER VIEW WEST
CITY OF WARRENVILLE, ILLINOIS

Design Firm License No. 184-001129



L = lane width X taper ratio	
Normal Posted Speed	Taper Ratio
40 mph or less	55/1
45 mph	45/1

SYMBOLS

- Arrow board
- Work area
- Sign
- Direction indicator barricade with steady burn monodirectional light
- Type II barricade, drum, or vertical barricade
- Flagger with traffic control sign
- Worker
- Type II barricade, drum, or vertical barricade with monodirectional flashing light

1. Undivided roadway only with left lane closure in opposite direction.
2. Omitted when median is less than 10' (3 m).
3. Reflectorized temporary pavement marking tape shall be placed throughout the taper and for 300' (90 m) along-side the work area where the closure time is greater than fourteen days. The edge line shall be placed on the right measures and yellow for left lane closures.
4. FLAGGER signs shall be moved as necessary to maintain the required spacing between the sign and each separate work activity.
5. Three Type II barricades, drums, or vertical barricades at 25' (8 m) centers

GENERAL NOTES

This standard is used where at any time any vehicle, equipment, workers or ther activities will encroach on the lane adjacent to the shoulder, or on the shoulder within 24 (600) of the edge of pavement for daylight operation exceeding one day.

This standard also applies when work is being performed in the left lane. Under these conditions the ROAD WORK AHEAD sign shall be replaced by RIGHT LANE CLOSED signs. On undivided highways, signs shall be added in the opposite direction as shown.

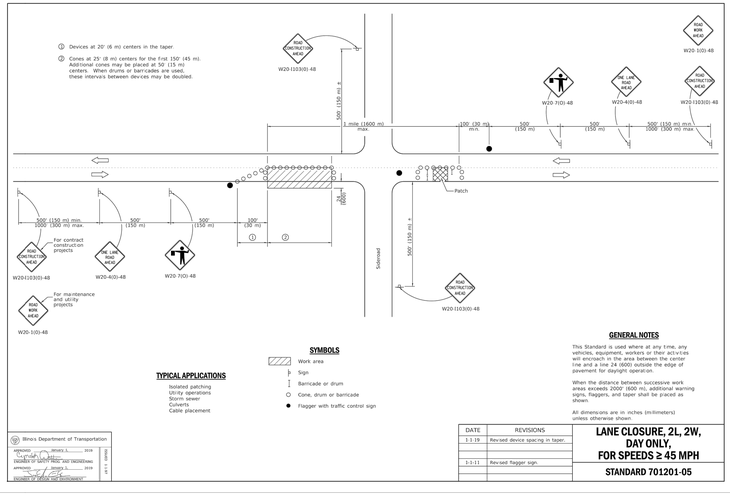
A check barricade shall be placed in the middle of the closed lane and at the shoulder at 1000' (300 m) centers.

All dimensions are in inches (millimeters) unless otherwise shown.

DATE	REVISIONS
1-3-18	Omitted rights in tangent.
1-1-17	Rev. END WORK ZONE SPEED LIMIT sign. Changed device spacing at first arr. tnt.

LANE CLOSURE, MULTILANE, FOR SPEEDS ≥ 45 MPH TO 55 MPH

STANDARD 701422-10



1. Devices at 20' (6 m) centers in the taper.
2. Cones at 25' (8 m) centers for the first 150' (45 m). Additional cones may be placed at 50' (15 m) centers. When drums or barricades are used, these intervals between devices may be doubled.

TYPICAL APPLICATIONS

Isolated patching
Utility operations
Storm sewer
Culverts
Cable placement

SYMBOLS

- Work area
- Sign
- Barricade or drum
- Cone, drum or barricade
- Flagger with traffic control sign

GENERAL NOTES

This Standard is used where at any time, any vehicles, equipment, workers or their activities will encroach in the area between the center line and a line 24 (600) outside the edge of pavement for daylight operation.

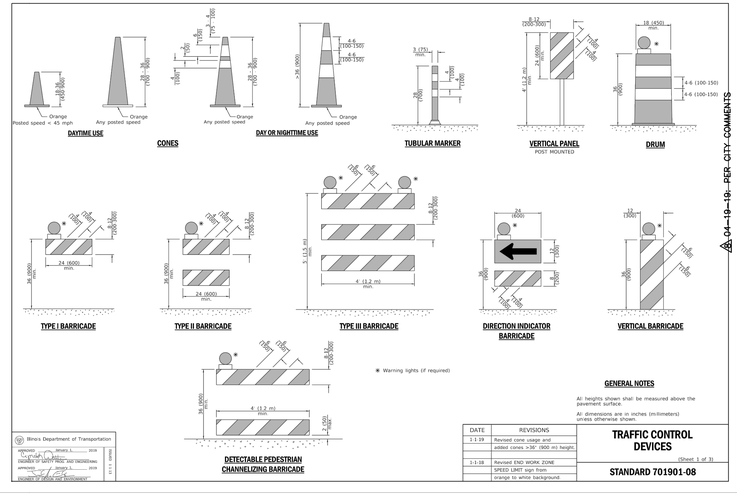
When the distance between successive work areas exceeds 2000' (600 m), additional warning signs, flaggers, and taper shall be placed as shown.

All dimensions are in inches (millimeters) unless otherwise shown.

DATE	REVISIONS
1 1 19	Revised device spacing in taper.
1-1-11	Revised flagger sign.

LANE CLOSURE, 2L, 2W, DAY ONLY, FOR SPEEDS ≥ 45 MPH

STANDARD 701201-05



✱ Warning lights (if required)

GENERAL NOTES

All heights shown shall be measured above the pavement surface.

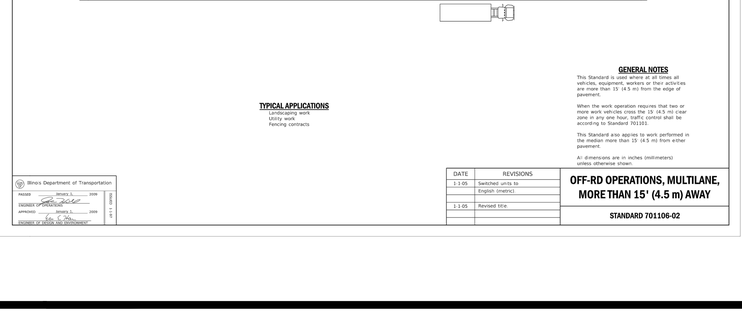
All dimensions are in inches (millimeters) unless otherwise shown.

DATE	REVISIONS
1 1 19	Revised cone usage and added cones >36" (900 m) height.
1-1-18	Revised END WORK ZONE SPEED LIMIT sign from orange to white background.

TRAFFIC CONTROL DEVICES

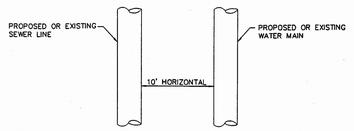
(Sheet 1 of 3)

STANDARD 701901-08


Edge of pavement
White
Yellow
2 (50)
10' (3.05 m)
30' (9.15 m)
2 (50)
4 (100)
4 (100)
2 (50)
2 (50)
2 (50

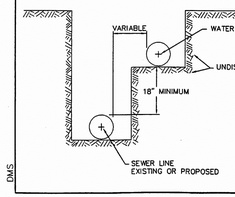
Design Firm License No. 184-001129

WHEN **PROPOSED** SEWER (OR WATER) IS LOCATED 10 FEET OR MORE FROM EXISTING WATER (OR SEWER), NO SPECIAL CONSTRUCTION REQUIRED. SEE SECTION 41-2.01B (1)



PLAN VIEW

WHEN **PROPOSED** SEWER (OR WATER) IS LOCATED **LESS THAN 10 FEET** FROM EXISTING WATER (OR SEWER), DETAILS BELOW SHALL APPLY. SEE SECTION 41-2.01B (2)



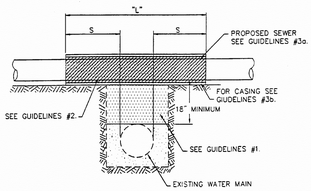
WATER AND SEWER SEPARATION REQUIREMENTS
HORIZONTAL SEPARATION

DMS

DIV.V/STANDARD DRAWING NO.18
DIV: V
PAGE: 160

PROPOSED SEWER LINE **WITH** 18" MINIMUM VERTICAL SEPARATION **ABOVE** EXISTING WATER MAIN.

NOTE: COMPACTION REQUIREMENTS REFER TO 20-2.20B



NOTE: "S" THE LENGTH NECESSARY TO PROVIDE 10 FEET OF SEPARATION AS MEASURED PERPENDICULAR TO TO EXISTING WATER MAIN

GUIDELINES

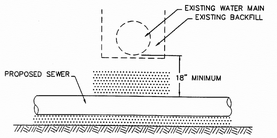
1. IF SELECT GRANULAR BACKFILL EXISTS: REMOVE WITHIN WIDTH OF PROPOSED SEWER TRENCH AND REPLACE WITH SELECT EXCAVATED MATERIAL (CLASS IV) AND COMPACT.
2. OMIT SELECT GRANULAR EMBEDMENT AND GRANULAR BACKFILL TO ONE (1) FOOT OVER TOP OF SEWER AND USE SELECT EXCAVATED MATERIAL (CLASS IV) AND COMPACT THE LENGTH OF "L" FEET.
3. a. CONSTRUCT "L" FEET OF PROPOSED SEWER OF WATER MAIN MATERIAL AND PRESSURE TEST. OR;
   b. USE "L" FEET OF WATER MAIN MATERIAL FOR CASING OF PROPOSED SEWER AND SEAL ENDS OF CASING.

WATER AND SEWER SEPARATION REQUIREMENTS
(VERTICAL SEPARATION)

DMS

DIV.V/STANDARD DRAWING NO.19
DIV: V
PAGE: 162

PROPOSED SEWER LINE **BELOW EXISTING** WATER MAIN WITH 18" MINIMUM VERTICAL SEPARATION.



GUIDELINES

1. PROVIDE ADEQUATE SUPPORT FOR EXISTING WATER MAIN TO PREVENT DAMAGE DUE TO SETTLEMENT OF SEWER TRENCH.

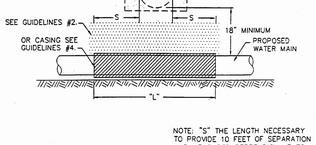
WATER AND SEWER SEPARATION REQUIREMENTS
(VERTICAL SEPARATION)

DMS

DIV.V/STANDARD DRAWING NO.20
DIV: V
PAGE: 164

PROPOSED WATER MAIN **BELOW EXISTING** SEWER LINE WITH 18" MINIMUM VERTICAL SEPARATION.

NOTE: COMPACTION REQUIREMENTS REFER TO 20-2.20B



NOTE: "S" THE LENGTH NECESSARY TO PROVIDE 10 FEET OF SEPARATION AND MEASURED PERPENDICULAR TO EXISTING SEWER LINE.

GUIDELINES

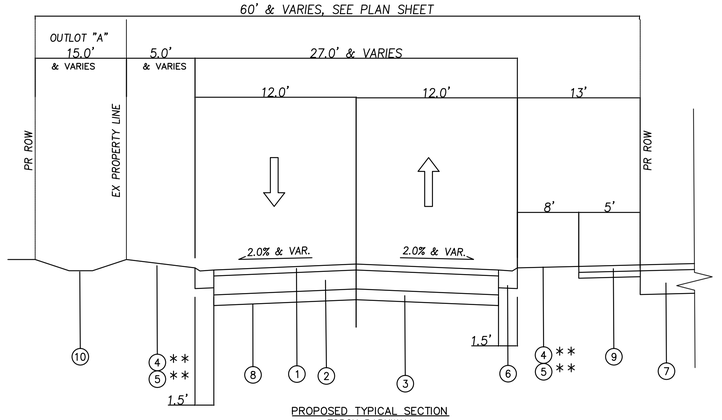
1. OMIT SELECT GRANULAR EMBEDMENT AND GRANULAR BACKFILL TO ONE (1) FOOT OVER TOP OF WATER MAIN AND USE SELECT EXCAVATED MATERIAL (CLASS IV) AND COMPACT THE LENGTH OF "L".
2. IF SELECT GRANULAR BACKFILL EXISTS, REMOVE WITHIN WIDTH OF EXISTING SEWER LINE TRENCH AND REPLACE WITH SELECT EXCAVATED MATERIAL (CLASS IV) AND COMPACT.
3. PROVIDE ADEQUATE SUPPORT FOR EXISTING SEWER LINE TO PREVENT DAMAGE DUE TO SETTLEMENT.
4. USE "L" FEET OF WATER MAIN MATERIAL FOR CASING OF PROPOSED WATER MAIN AND SEAL ENDS OF CASING.

WATER AND SEWER SEPARATION REQUIREMENTS
(VERTICAL SEPARATION)

DMS

DIV.V/STANDARD DRAWING NO.23
DIV: V
PAGE: 170

TORCH PARKWAY
60' & VARIES, SEE PLAN SHEET

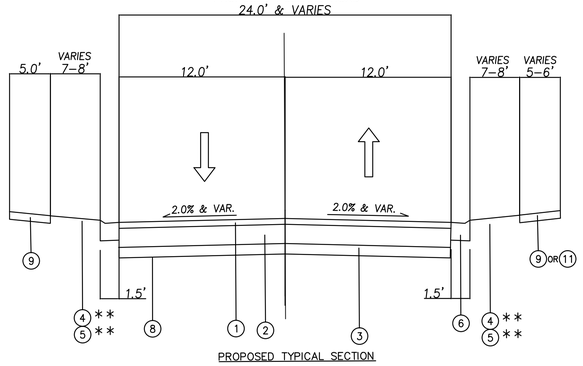


PROPOSED TYPICAL SECTION
TORCH PARKWAY

LEGEND

1. HMA SURFACE COURSE, MIX "D", N50 , 2.0"
2. HMA BINDER COURSE, IL-19.0, N50, 7"
3. SUBBASE GRANULAR MATERIAL, TYPE B, 4"
4. TOPSOIL FURNISH AND PLACE, 6"
5. SODDING, SALT TOLERANT
6. COMBINATION CURB AND GUTTER, B-6.12 (DEPRESSED CURB THROUGH DRIVEWAYS)
7. DRIVEWAY PAVEMENT
8. GEOTECHNICAL FABRIC
9. 5" PCC SIDEWALK ON 4" COMPACTED CA-6 SUBBASE
10. DRAINAGE SWALE (DEPTH VARIES)

PROPOSED POLLARD ROAD
24.0' & VARIES

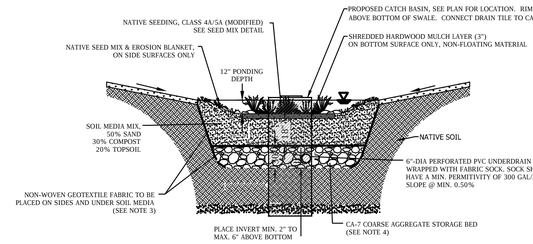


PROPOSED TYPICAL SECTION

LEGEND

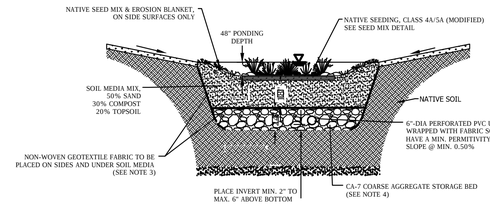
1. HMA SURFACE COURSE, MIX "D", N50 , 2.0"
2. HMA BINDER COURSE, IL-19.0, N50, 7"
3. SUBBASE GRANULAR MATERIAL, TYPE B, 4"
4. TOPSOIL FURNISH AND PLACE, 6"
5. SODDING, SALT TOLERANT
6. COMBINATION CURB AND GUTTER, B-6.12
7. DRIVEWAY PAVEMENT, SEE DRIVEWAY DETAIL
8. GEOTECHNICAL FABRIC
9. 5'- 5" PCC SIDEWALK ON 4" COMPACTED CA-6 SUBBASE
11. 6' - BITUMINOUS PATH

BIOSWALE DETAIL



NOTES:
1. DO NOT COMPACT NATIVE SOIL BENEATH PROPOSED BIOSWALE.
2. AFTER CONSTRUCTING BIOSWALE, CARE MUST BE TAKEN TO PREVENT COMPACTION OF INSTALLED AGGREGATE AND SOIL MEDIA LAYERS FROM EITHER PEDESTRIAN OR MECHANICAL MEANS.
3. NON-WOVEN GEOTEXTILE FABRIC SHALL MEET REQUIREMENTS OF ILLINOIS URBAN MANUAL MATERIAL SPECIFICATION 592 GEOTEXTILE, TABLE 2, CLASS I, WITH A MIN. PERMITIVITY OF 110 GAL/MIN/SF.
4. STONE STORAGE BED AGGREGATE MUST BE CA-7 COARSE AGGREGATE. NO RECYCLED MATERIALS.

BIORETENTION FACILITY DETAIL



NOTES:
1. DO NOT COMPACT NATIVE SOIL BENEATH PROPOSED BIOSWALE.
2. AFTER CONSTRUCTING BIOSWALE, CARE MUST BE TAKEN TO PREVENT COMPACTION OF INSTALLED AGGREGATE AND SOIL MEDIA LAYERS FROM EITHER PEDESTRIAN OR MECHANICAL MEANS.
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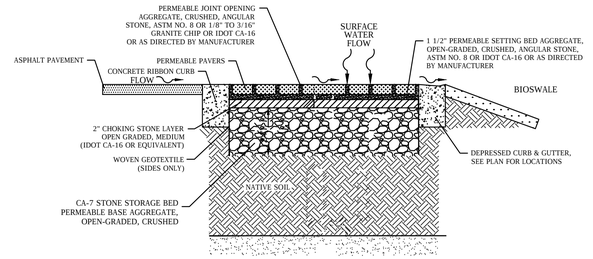
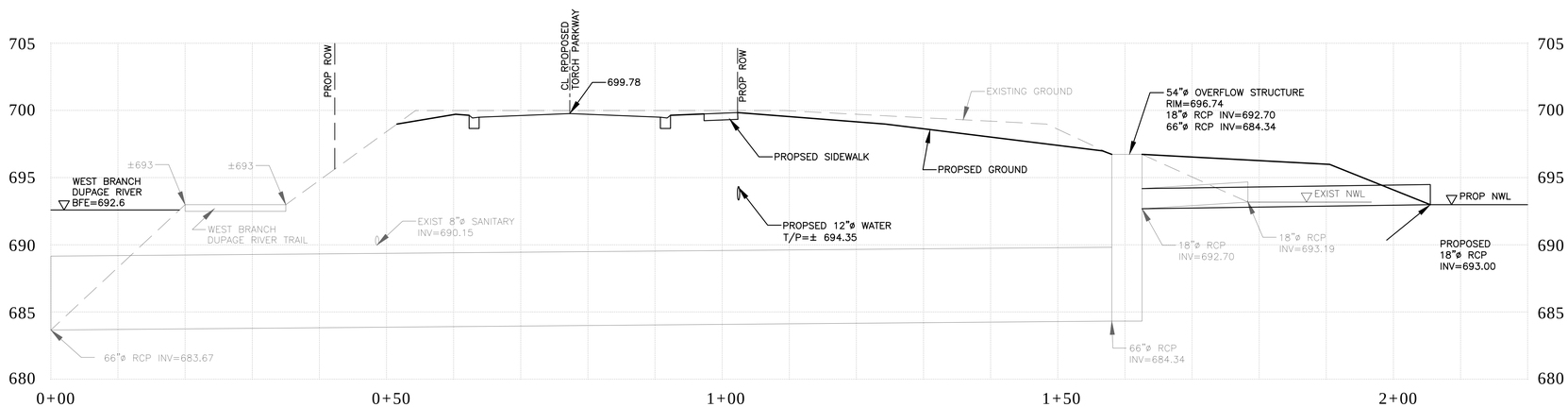
4. STONE STORAGE BED AGGREGATE MUST BE CA-7 COARSE AGGREGATE. NO RECYCLED MATERIALS.

PERMEABLE PAVERS DETAIL



NOTES:
1. WOVEN GEOTEXTILE FABRIC SHALL MEET REQUIREMENTS OF ILLINOIS URBAN MANUAL MATERIAL SPECIFICATION 592 GEOTEXTILE, TABLE 2, CLASS I, WITH A MIN. PERMITIVITY OF 110 GAL/MIN/SF.
2. STONE STORAGE BED AGGREGATE MUST BE CA-7 COARSE AGGREGATE, NO RECYCLED MATERIALS.
3. MAINTENANCE REQUIREMENTS INCLUDE ANNUAL VACUUMING AND LOW-PRESSURE POWER WASHING OF PAVEMENT SURFACE. DO NOT SEALCOAT, SEAL, OR COVER SURFACE OF PAVERS OR JOINTS.
4. CLEANOUTS SHALL BE LOCATED AT ENDS OF UNDERDRAINS AND OUTSIDE OF PAVEMENT AREA.



POND OUTLET PROFILE

04-19-19: PER CITY COMMENTS

REVISIONS:
09-18-18: REVISD PER CITY COMMENTS
11-05-18: REVISD PER FPD COMMENTS
01-18-19: REVISD PER CITY COMMENTS

FILE: V:\080-020 Cantera Lot 2 Sub Area C\Engineering\Drawings

JOB NO: 080-020
FIELD BOOK: N/A
FIELD BOOK: N/A
DRAWN BY: MK
CHECKED BY: KEK
COMPLETED:04/07/19

PREPARED FOR:
CANTERA DEVELOPMENT HOLDINGS, LLC.
TWO NORTHFIELD PLAZA, SUITE 320
NORTHFIELD, IL 60093
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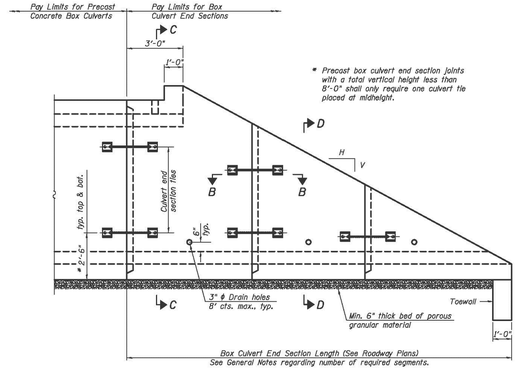
ITASCA * CHICAGO * ALGONQUIN * LAKE GENEVA * SOUTH BEND * INDIANAPOLIS

DETAILS

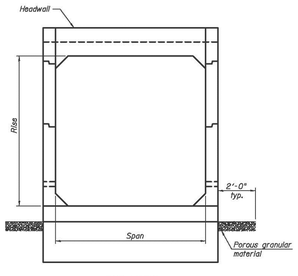
RIVER VIEW WEST
CITY OF WARRENVILLE, ILLINOIS

SHEET NUMBER
41
OF 71

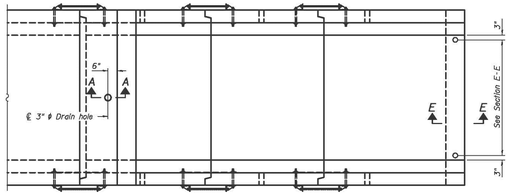
Design Firm License No. 184-001129



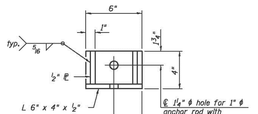
ELEVATION



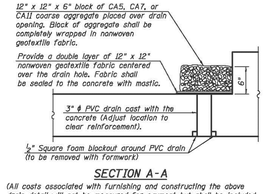
END VIEW



PLAN

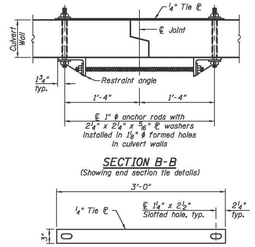


RESTRAINT ANGLE DETAIL



SECTION A-A

(All costs associated with furnishing and constructing the above drain detail will not be measured for payment but shall be included in the contract unit price for the associated work.)



SECTION B-B

(Showing end section tile details)

TIE PLATE DETAIL

GENERAL NOTES

Box Culvert End Sections shall be constructed according to the requirements of Section 540 of the Standard Specifications except as modified herein. This work will be measured for payment as each, with each end of each culvert being one each. End sections will be paid for at the contract unit price per each for Box Culvert End Sections of the culvert number specified.

Typical box section dimensions, materials, and reinforcement details for Box Culvert End Sections shall be according to the requirements of ASTM C 1577 as required for the design of the portion of the culvert within the limits of Precast Concrete Box Culverts except as modified herein.

Number of segments shown in Elevation is for example only. Length and number of precast box sections required to construct Box Culvert End Sections shall be determined by the Contractor.

See roadway plans for embankment slope (V:H).

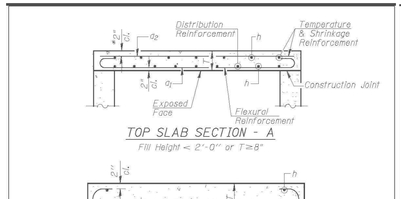
1" ϕ anchor rods for the culvert ties shall conform to the requirements of ASTM F1554, Grade 105. Structural steel for tie plate and restraint angle shall conform to the requirements of Article 1006.04 of the Standard Specifications. All components of the culvert tie detail shall be galvanized according to the requirements of AASHTO M 111 or M 232 as applicable. 2 1/4" x 2 1/4" x 5/16" plate washers shall be provided under each nut required for the anchor rods. Anchor rods connecting precast sections shall be brought to a snug tight condition followed by an additional 1/2 turn on one of the nuts for anchor rods installed in the walls. Match marks shall be provided on the bolt and nut to verify relative rotation between the bolt and the nut. Holes in the walls for the culvert tie assembly may be drilled using core bits in lieu of using formed holes.

All costs associated with furnishing and installing or constructing the toewall and culvert ties will not be measured for payment but shall be included in the contract unit price for Box Culvert End Sections of the culvert number specified.

Drain holes shall conform to the requirements of Article 503.11 of the Standard Specifications unless noted otherwise.

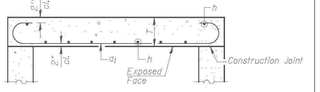
Nonwoven geotextile fabric shall conform to the requirements of Article 1080.01. The minimum weight of the fabric shall be 6 oz. / sq. yd..

For end sections with traversable pipe grate systems, see grate detail sheet for required modifications.



TOP SLAB SECTION - A

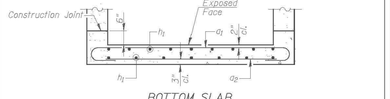
Fill Height < 2'-0" or T ≥ 8"



TOP SLAB SECTION - B

Fill Height ≥ 2'-0" & T < 8"

NOTE: Number of h bars in top slab includes 2 bars in top of the slab as shown.



BOTTOM SLAB

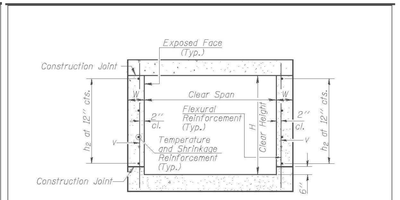
* Provide 2 1/2" cl. ± 1/2" when fill on top slab is zero. and epoxy coat bars in top slab.



a_1 BARS

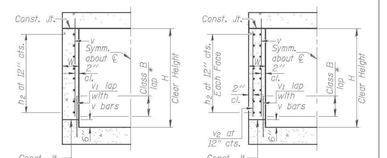
Top slab shown, bottom slab similar
For dimensions A and B, see Table 5.1-1

TOP AND BOTTOM SLAB DETAILS



TYPICAL SECTION - A

H <= 8 ft.



TYPICAL SECTION - B

H > 8 ft. and W <= 10'

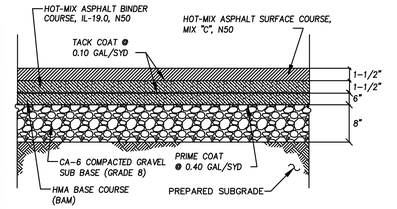
TYPICAL SECTION - C

H > 8 ft. and W > 10'

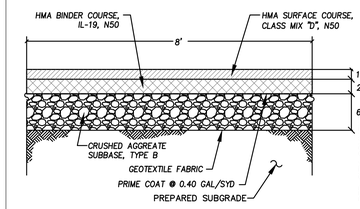
* See Table 5.1-2 for required lap length

SIDEWALL DETAILS

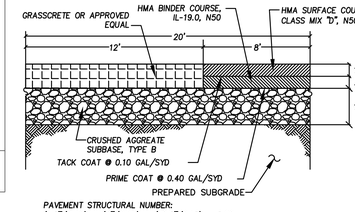
7' CLEAR SPAN BY 5' CLEAR HEIGHT																						
TOP SLAB			a_1 BAR		a_2, h BAR		h_1 BAR		WALL		v BAR			v_2, h_2 BAR			Conc.				
FILL	T	SEC.	SIZE	SPC.	SIZE	SPC.	SIZE	SPC.	W	SEC.	SIZE	SPC.		SIZE	SPC.		Vol.				
ft.	in.		#	in.	#	in.	#	in.	in.		#	in.		#	in.		yd.^{3} / ft.				
0	9.5	A	6	6.5	5	12	5	12	6	A	4	5.5		4	12		0.679				
1	9.5	A	6	6.5	5	12	5	12	6	A	4	5.5		4	12		0.679				
2	9.5	A	6	6.5	5	12	5	12	6	A	4	5.5		4	12		0.679				
3	9.5	A	6	6.5	5	12	5	12	6	A	4	5.5		4	12		0.679				
4	9	A	6	7	5	12	5	12	6	A	4	5.5		4	12		0.654				
5	9	A	6	7	5	12	5	12	6	A	4	5.5		4	12		0.654				
6	9	A	6	7	5	12	5	12	6	A	4	5.5		4	12		0.654				
7	9	A	6	7	5	12	5	12	6	A	4	5.5		4	12		0.654				
8	9.5	A	6	6.5	5	12	5	12	6	A	5	7.5		4	12		0.679				
9	9.5	A	6	6.5	5	12	5	12	6	A	5	7.5		4	12		0.679				
10	10	A	6	6	5	12	5	12	6	A	5	7		4	12		0.704				
11	10	A	6	6	5	12	5	12	6	A	5	7		4	12		0.704				
12	10	A	6	6	5	12	5	12	6	A	5	7		4	12		0.704				
13	10	A	6	6	5	12	5	12	7	A	5	7		4	12		0.725				
14	10	A	6	6	5	12	5	12	7	A	5	7		4	12		0.725				
15	10	A	6	6	5	12	5	12	7	A	5	7		4	12		0.745				
20	12	A	7	7	6	12	6	12	7	A	5	6		4	12		0.821				
25	13	A	7	6	6	12	6	12	8	A	5	6		4	12		0.916				



TYPICAL DRIVEWAY APRON WITHIN COUNTY ROW



TYPICAL BITUMINOUS PATH



PAVEMENT STRUCTURAL NUMBER:
(1.5")(0.40) + (2")(0.40) + (12.5")(0.13) = 3.02

TYPICAL FIRE LANE SECTION

SCB-TES 10-15-2016

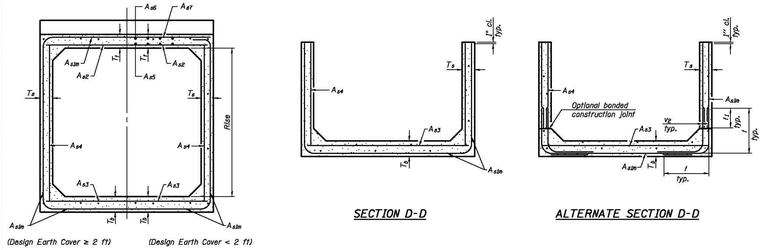
FILE NAME =	USER NAME =	DESIGNED -	REVISED -
		CHECKED -	REVISED -
	PLOT SCALE =	DRAWN -	REVISED -
	PLOT DATE =	CHECKED -	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

SINGLE CELL PRECAST BOX CULVERT TAPERED END SECTIONS
STRUCTURE NO.
SHEET NO. OF SHEETS

F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
		CONTRACT NO.		
		ILLINOIS FED. AID PROJECT		

(Sheet 1 of 2)



(Design Earth Cover ≥ 2 ft) (Design Earth Cover < 2 ft)

SECTION C-C

SECTION D-D

ALTERNATE SECTION D-D

A_{s1-s7} REINFORCEMENT
(in.^{2} / ft)

Rise (ft) / T_s (in.)	2	3	4	5	6	7	8	9	10	11	12
4	0.19	0.17									
5	0.26	0.21	0.18								
6	0.22	0.26	0.23	0.22							
7	0.25	0.33	0.29	0.27	0.28						
8	0.40	0.35	0.41	0.39	0.36	0.34	0.40				
9	0.44	0.39	0.35	0.43	0.40	0.37	0.36	0.48			
10	0.48	0.42	0.38	0.47	0.44	0.41	0.38	0.42	0.56		
11	0.52	0.45	0.54	0.50	0.46	0.44	0.41	0.46	0.50	0.65	
12	0.55	0.49	0.58	0.54	0.50	0.48	0.45	0.46	0.46	0.61	0.75

(A$_{s2m}$ reinforcement based upon welded wire reinforcement conforming to AASHTO M 55 or M 221).

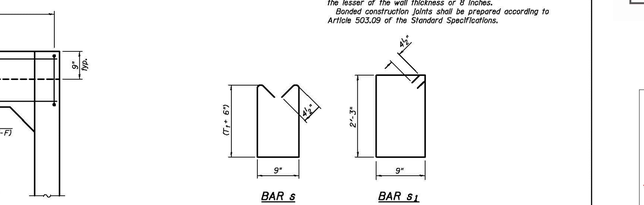
l_1 DIMENSION

#3 bar = 2'-0"
#4 bar = 2'-8"
#5 bar = 3'-4"
#6 bar = 3'-11"

Notes:
Alternate Section D-D is provided to allow the Contractor the option of casting the bottom slab of the end section first followed by construction of the sidewalls using conventional forming methods. Shop drawings that detail slab thickness and reinforcement layout shall be submitted to the Engineer for review and approval when using Alternate Section D-D.

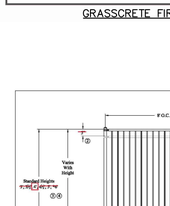
The size and spacing of the v_2 bars shall provide a minimum reinforcement area along each face of the walls ($in.^2$/ft.) equal to $1.10*(A_{s2m})$. v_2 bars may consist of #3 thru #6 size reinforcement bars and the longitudinal spacing shall not exceed the lesser of the wall thickness or 8 inches.

Bonded construction joints shall be prepared according to Article 503.09 of the Standard Specifications.

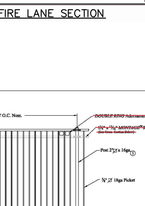


HEADWALL ELEVATION

(Allow sidewall reinforcement to extend into end of headwall.)



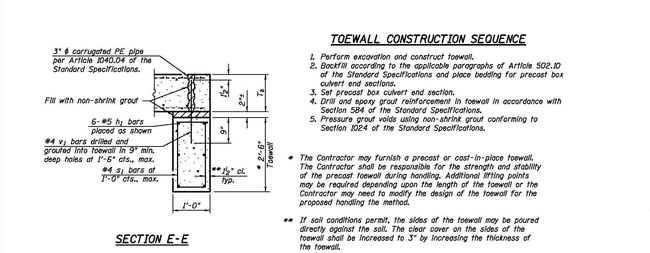
BAR s



BAR s$_1$

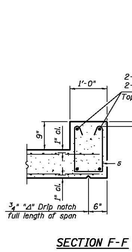
TOEWALL CONSTRUCTION SEQUENCE

1. Perform excavation and construct toewall.
2. Backfill according to the applicable paragraphs of Article 502.10 of the Standard Specifications and place bedding for precast box culvert end sections.
3. Set precast box culvert end section.
4. Drill and epoxy grout reinforcement in toewall in accordance with Section 584 of the Standard Specifications.
5. Pressure grout voids using non-shrink grout conforming to Section 1024 of the Standard Specifications.



* The Contractor may furnish a precast or cast-in-place toewall. The Contractor shall be responsible for the strength and stability of the precast toewall during handling. Additional lifting points may be required depending upon the length of the toewall or the Contractor may need to modify the design of the toewall for the proposed handling the method.

** If soil conditions permit, the sides of the toewall may be poured directly against the soil. The clear cover on the sides of the toewall shall be increased to 3" by increasing the thickness of the toewall.



SECTION E-E

SECTION F-F

SCB-TES 10-15-2016

FILE NAME =	USER NAME =	DESIGNED -	REVISED -
		CHECKED -	REVISED -
	PLOT SCALE =	DRAWN -	REVISED -
	PLOT DATE =	CHECKED -	REVISED -

STATE OF ILLINOIS
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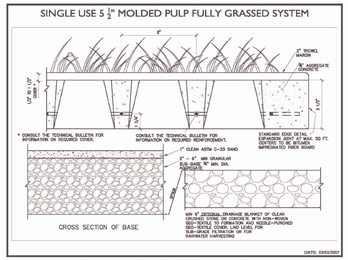
SINGLE CELL PRECAST BOX CULVERT TAPERED END SECTIONS
STRUCTURE NO.
SHEET NO. OF SHEETS

F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
		CONTRACT NO.		
		ILLINOIS FED. AID PROJECT		

(Sheet 2 of 2)

FILE: I:\2080-020 Canters Lot 2 Sub Area 2\Engineering\Drawings\Final Engineering

SINGLE USE 5 1/2" MOLDED PULP FULLY GRASSED SYSTEM



CROSS SECTION OF BASE

GRASSCRETE FIRE LANE SECTION

MONTAGE MAJESTIC 2/3-RAIL

DR. CJ SH. 1of 1 SCALE: DO NOT SCALE
CK: ME Date 7-18-11 REV: -

AMERISTAR
1555 N. Mingo
Tulsa, OK 74116
1-888-333-5422
www.ameristarfence.com

Values shown are nominal and not to be used for installation purposes. See product specifications for installation instructions.

RETAINING WALL FENCE DETAIL

George's Broad Spectrum Prairie																						
Native species per mix	52																					
Native seeds per square foot	108																					
Native FQI NE Illinois	19.83																					
Native FQI Illinois	20.62																					
Native Mean C Value NE Illinois	5.48																					
Native Mean C Value Illinois	4.87																					
Mean W Value NE Illinois	6.66																					
Mean W Value Illinois	6.44																					

An old-school, "ok to seed" mix for big, sunny areas.

Seed rate for ordinary soil is 20 lb. Will not do well in poor soil.

ACRONYM2																						
S&W	ILL	USDA	vPlants	scientific name	common name	seeds/oz	seeds/lb	lb/ac	seeds/ sq ft	seeds/lb												
ANDGER	ANDGER	ANGE	ANGE	*Andropogon gerardii*	Big Bluestem	9.975	150,000	3.500	525,000	12.05												
BOUCUR	BOUCUR	BOCU	BOCU	*Bouteloua curtipendula*	Side Oats Grama	6.565	105,000	2.000	210,000	4.82												
CHEVIR	CHEVIR	CHVI	CHVI	*Chelone virginica*	Shortist Turtlehead	26.875	400,000	0.230	105,500	2.47												
CHEGIG	CHEGIG	CHGI	CHGI	*Chelone glabra*	Clustered Coral Bulge	132.500	1,800,000	0.122	222,000	5.17												
CHOCOP	CHOCOP	CHCO	CHCO	*Chelone obliqua*	Pointed Bloom Tulip	87.500	1,400,000	0.125	172,000	4.02												
CHOVIL	CHOVIL	CHVI	CHVI	*Chelone virginica*	Pine Sedge	97.188	1,555,000	0.300	777,000	17.83												
ELIGRT	ELIGRT	ELIG	ELIG	*Eleocharis glauca*	Bluet Spikerush	131.250	2,100,000	0.122	262,500	6.03												
ELYCAN	ELYCAN	ELCA	ELCA	*Elymus canadensis*	Canada Wild Rye	5.700	120,000	1.000	120,000	2.75												
AGRTEC	AGRTEC	ELTEC	ELTEC	*Elymus trachycaulus (Agropyron t.)*	Slender Wheatgrass	9.975	150,000	1.000	150,000	3.44												
ELYVIR	ELYVIR	ELVI	ELVI	*Elymus virginicus*	Virginia Wild Rye	5.750	92,000	1.000	92,000	2.11												
TYPDUD	TYPDUD	TYDU	TYDU	*Juncus dudleyi*	Dudley Rush	3,750.000	60,000,000	0.060	3,780,000	86.78												
TYPTOR	TYPTOR	TYTO	TYTO	*Juncus torreyi*	Torrey Rush	1,375.000	30,000,000	0.060	2,364,000	54.56												
LEEORY	LEEORY	LEOR	LEOR	*Leersia oryzoides*	Rice Cut Grass	25.625	410,000	0.230	210,000	4.73												
PANVIR	PANVIR	PAVI	PAVI	*Panicum virgatum*	Prairie Switch Grass	19.813	317,000	1.000	317,000	7.28												
ANDGER	SCHSCO	SCSC	SCSC	*Schizachyrium scoparium (Andropogon s.)*	Little Bluestem	15.625	250,000	2.000	500,000	11.48												
SCHTA	SCHTA	SCAT	SCAT	*Scirpus atrovirens*	Dark Green Bulrush	581.250	9,300,000	0.122	1,362,500	26.69												
SCYCYP	SCYCYP	SCCY	SCCY	*Scirpus cyperinus*	Wool Grass	137.500	2,200,000	0.060	138,600	3.18												
SORNUT	SORNUT	SONU	SONU	*Sorghastrum nutans*	Indian Grass	12.188	195,000	3.000	585,000	13.43												
SPAPEC	SPAPEC	SPPE	SPPE	*Spartina pectinata*	Prairie Cord Grass	10.875	174,000	0.230	41,500	1.00												
						Totals or Average			11,470,100	270.												

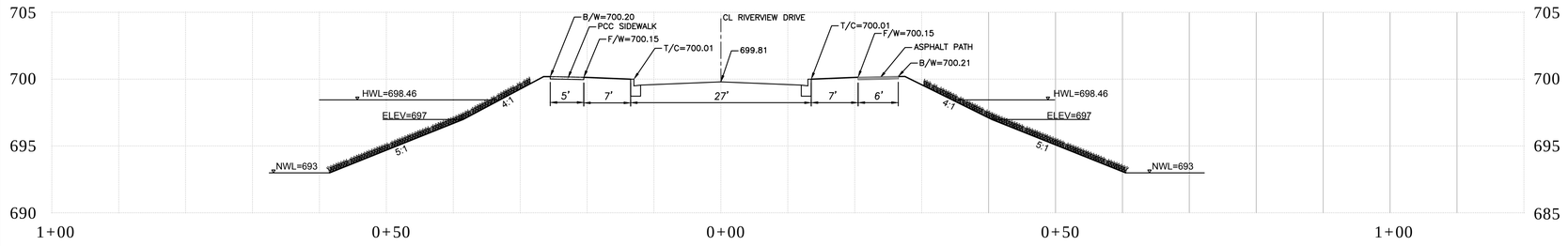
Forbs																						
ACRONYM2																						
S&W	ILL	USDA	vPlants	scientific name	common name	seeds/oz	seeds/lb	lb/ac	seeds/ sq ft	seeds/lb												
ASCINC	ASCINC	ASIN	ASIN	*Asclepias incarnata*	Swamp Milkweed	5.625	90,000	0.230	21,500	0.52												
ASCSUL	ASCSUL	ASSU	ASSU	*Asclepias sullivantii*	Prairie Milkweed	5.000	80,000	0.125	10,000	0.23												
ASTNOR	ASTNOR	ASNO	ASNO	*Astragalus canadensis*	Canada Milkvetch	17.500	280,000	0.125	35,000	0.80												
BAPLEA	BAPLAC	BALE2	BALM	*Baptisia lacea *(Baptisia minor)*	White Indigo	1.875	30,000	0.125	3,750	0.09												
COREAR	COREAR	COAR	COAR	*Coreopsis lanceolata*	Sand Coreopsis	11.875	190,000	0.350	47,500	1.08												
COETRI	COETRP	COTR	COTR	*Coreopsis tripteris*	Tall Coreopsis	15.750	252,000	0.122	31,500	0.72												
EPIAGE	DALAGE	DAAG	DAAG	*Dalea aurea (Petalostemum a.)*	White Prairie Clover	27.500	440,000	0.122	53,000	1.24												
DALPUR	DALPUR	DAPU	DAPU	*Dalea purpurea (Petalostemum p.)*	Purple Prairie Clover	18.750	300,000	0.230	71,000	1.72												
ECHPAL	ECHPAL	ECPA	ECPA	*Echinacea pallida*	Pale Purple Coneflower	6.250	100,000	0.230	23,000	0.55												
ECHPUR	ECHPUR	ECPU	ECPU	*Echinacea purpurea*	Purple Coneflower	7.188	115,000	0.300	33,500	1.32												
ERYYUC	ERYYUC	ERYU	ERYU	*Eryngium yuccifolium*	Rattlesnake Master	8.875	142,000	0.230	33,000	0.80												
HELHEL	HELHEL	HEHE	HEHE	*Helianthus helianthoides*	Sawtooth Sunflower	10.938	175,000	0.125	21,500	0.52												
LEPCAM	LEPCAM	LECA	LECA	*Lespedeza capitata*	Roundhead Bushclover	15.500	248,000	0.015	3,720	0.09												
LIAASP	LIAASP	LIAS	LIAS	*Liatris aspera*	Button Blazing Star	15.500	248,000	0.015	3,720	0.09												
SOLRIG	SOLRIG	OLRI	SORI1	*Oligoneuron rigidum (Solidago r.)*	Stiff Goldenrod	40.625	650,000	0.125	81,250	1.87												
PARPAT	PARPAT	PAPA3	PAPA3	*Parthenium integrifolium*	Wild Quinine	12.500	200,000	0.125	25,000	0.57												
PENDIG	PENDIG	PEDI	PEDI	*Penstemon digitalis*	Eggplant Beardtongue	11.500	184,000	0.125	23,000	0.53												
PYCTEN	PYCTEN	PYTE	PYTE	*Pycnanthemum tenuifolium*	Slender Mt. Mint	481.250	7,700,000	0.031	238,700	5.48												
RUDHIR	RUDHIR	RUHI	RUHI	*Rudbeckia hirta*	Blackeyed Susan	93.750	1,500,000	0.230	345,000	7.92												
RUDSUB	RUDSUB	RUSU	RUSU	*Rudbeckia subtomentosa*	Sweet Coneflower	46.250	740,000	0.015	11,100	0.25												
CALMAR	CALMAR	EHMA1	EHMA1	*Senna marilandica (Cassia m)*	Maryland Senna	1.700	27,200	0.063	1,714	0.04												
SILINT	SILINT	SIIN1	SIIN1	*Silphium integrifolium*	Rosinweed	1.875	30,000	0.125	3,750	0.09												
SOLRIH	SOLRIH	SORI	SORI	*Solidago riddellii*	Riddell's Goldenrod	206.250	3,300,000	0.060	131,300	3.48												
ASTLAE	ASTLAE	SYLA15	ASLA5	*Symphyotrichum laeve (Aster l.)*	Smooth Aster	68.750	1,100,000	0.060	65,500	1.59												
ASTNOV	ASTNOV	SYNO2	ASNO	*Symphyotrichum novae-angliae (Aster n.)*	New England Aster	87.500	1,400,000	0.060	83,100	2.02												
ASTAZU	ASTAZU	SYOOO	ASOO4	*Symphyotrichum oolentangiense (Aster azureus) *(A.o.)*	Azure Aster	87.500	1,400,000	0.060	83,100	2.02												
VERBRA	VERBRA	VEBR	VEBR4	*Verbena brasiliensis*	Brazilian Vervain	112.500	1,800,000	0.500	900,000	20.66												
VERHAS	VERHAS	VEHA2	VEHA2	*Verbena hastata*	Blue Vervain	112.500	1,800,000	0.125	225,000	5.17												
VERSTR	VERSTR	VEST	VEST	*Verbena stricta*	Hoary Vervain	28.125	450,000	0.060	59,400	1.36												
ZIZAUR	ZIZAUR	ZIAU	ZIAU	*Zizia aurea*	Golden Alexander	13.500	200,000	0.060	11,600	0.29												
						Forbs total			4,094,114	94.												
						Ornamental & forb totals			23,379	15,607,368	370.											

Tough Native Shoreline	
Native species per mix	24
Native seeds per square foot	514
Native FQI NE Illinois	19.60
Native FQI Illinois	16.48
Native Mean C Value NE Illinois	4.91
Native Mean C Value Illinois	3.36
Mean W Value NE Illinois	6.83
Mean W Value Illinois	6.43

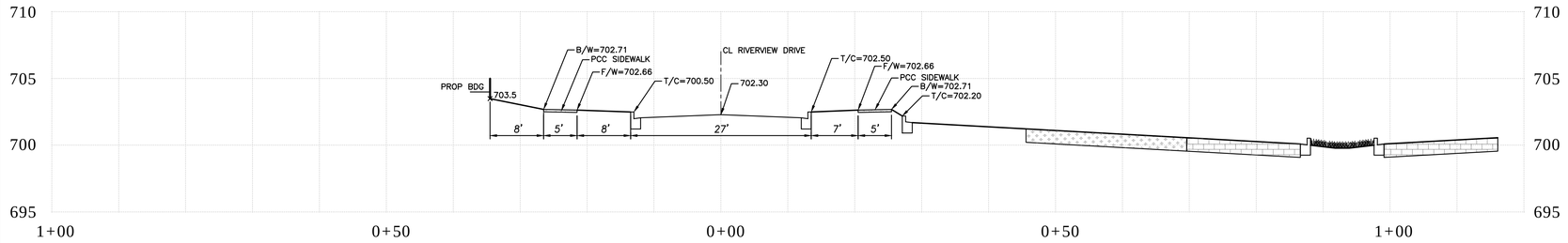
A mix of wetland grasses, as many species tolerant of per dystrophic (brown) seed. 31 the seeding rate

Recommended for dry, sandy, gravelly or rocky areas																						
ACRONYM3																						
S&W	ILL	USDA	vPlants	scientific name	common name	seeds/oz	seeds/lb	lb/ac	seeds/ sq ft	seeds/lb												
ALLUR	ALLURB	ALUR	ALUR	*Allium burdickii*	Wild Onion	8.000	128,000	0.125	16,000	0.37												
ALLCER	ALLCER	ALCE	ALCE	*Allium cernuum*	Nodding Onion	8.000	128,000	0.125	16,000	0.37												
AMOCAN	AMOCAN	AMCA	AMCA	*Amorpha canescens*	Lead plant	18.375	294,000	0.125	38,250	0.89												
ASCCYL	ASCCYL	ASCY	ASCY	*Asclepias cryptoceras*	Pallid Milkweed	31.250	500,000	0.063	31,500	0.72												
ASCTUB	ASCTUB	ASTU	ASTU	*Asclepias tuberosa*

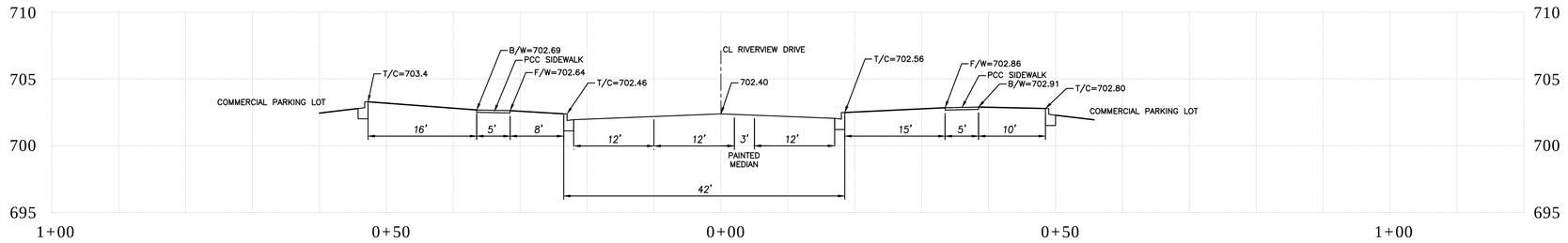
Design Firm License No. 184-001129



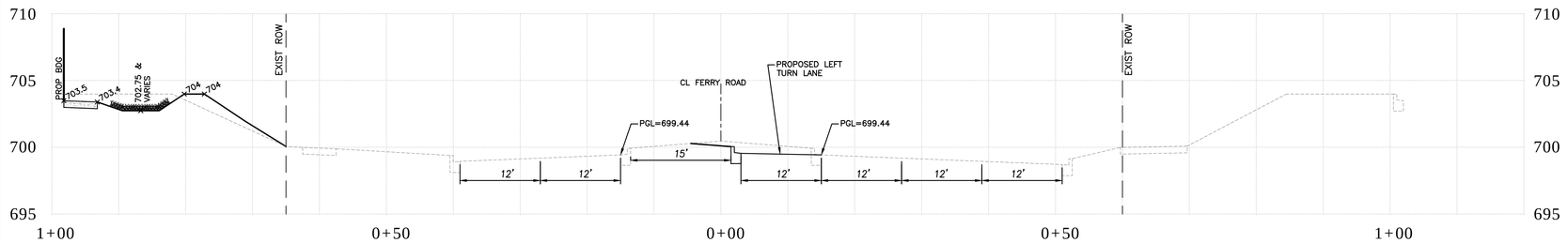
POLLARD ROAD STA 9+00



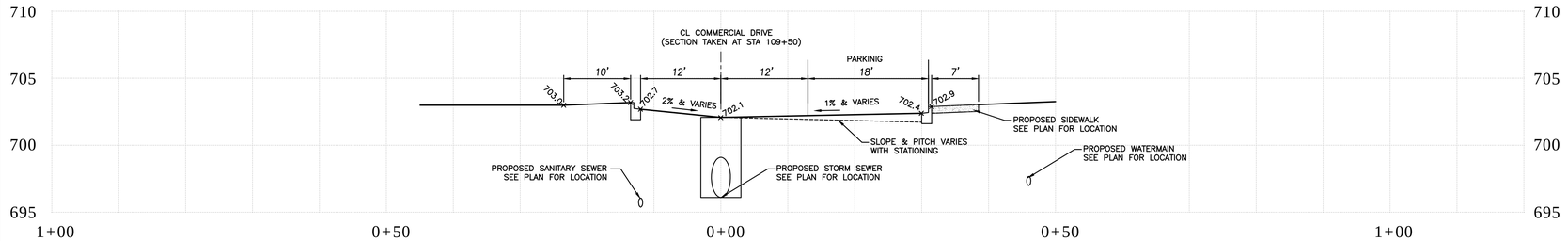
POLLARD ROAD STA 5+00



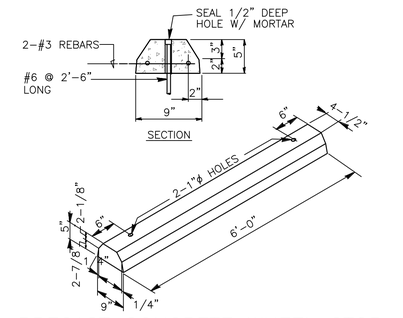
POLLARD ROAD STA 1+00



FERRY ROAD STA 129+50

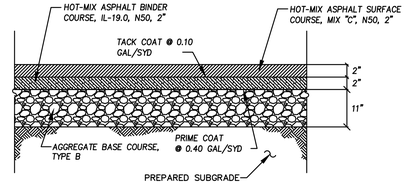


TYPICAL COMMERCIAL DRIVE SECTION



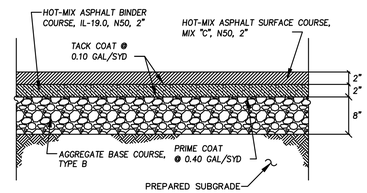
PRECAST CONCRETE WHEEL STOP

N.T.S.



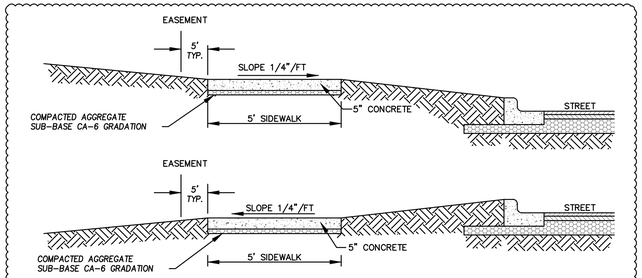
PAVEMENT STRUCTURAL NUMBER:
(2")(0.40) + (2")(0.33) + (11")(0.13) = 2.89

TYPICAL HEAVY DUTY PARKING LOT PAVEMENT SECTION



PAVEMENT STRUCTURAL NUMBER:
(2")(0.40) + (2")(0.33) + (8")(0.13) = 2.50

TYPICAL PARKING LOT PAVEMENT SECTION



GENERAL NOTES:

1. CONCRETE SHALL BE CLASS SI.
2. MINIMUM SIDEWALK THICKNESS SHALL BE FIVE INCHES (5").
3. SIDEWALK THICKNESS ACROSS DRIVEWAYS SHALL BE SEVEN INCHES (7") MINIMUM FOR RESIDENTIAL DRIVEWAYS, AND EIGHT INCHES (8") MINIMUM FOR NON-RESIDENTIAL DRIVEWAYS.
4. MAXIMUM LONGITUDINAL SLOPE SHALL NOT EXCEED 5% (20:1).
5. MAXIMUM TRANSVERSE CROSS SLOPE SHALL BE NO GREATER THAN 1/4"/FT. (2%) TYPICAL.
6. A TWO INCH (2") MINIMUM AGGREGATE SUB-BASE (CA-6 GRADATION) SHALL BE PROVIDED (FOUR INCHES (4" MINIMUM) THROUGH NON-RESIDENTIAL DRIVEWAYS).
7. AGGREGATE SUB-BASE COURSE SHALL BE MECHANICALLY COMPACTED.
8. ALL SIDEWALK SHALL BE PROMPTLY BACKFILLED AND PROTECTED FROM DAMAGE.
9. ALL SIDEWALK ALONG TORCH PARKWAY SHALL BE A MINIMUM OF 7" THICK.
10. ALL SIDEWALK THROUGH INTERSECTIONS ON RIVERVIEW DRIVE SHALL BE A MINIMUM OF 7" THICK.

SIDEWALK DETAIL

04-19-19: PER CITY COMMENTS

REVISIONS:
09-18-18: REVISD PER CITY COMMENTS
11-05-18: REVISD PER FPD COMMENTS
01-18-19: REVISD PER CITY COMMENTS
FILE: I:\080-020 Cantera Lot 2 Sub Area C\Engineering\Drawings\Final Engineering

JOB NO: 080-020
FIELD BOOK: N/A
FIELD BOOK: N/A
DRAWN BY: MK
CHECKED BY: KEK
COMPLETED:04/07/19

PREPARED FOR:
CANTERA DEVELOPMENT HOLDINGS, LLC.
TWO NORTHFIELD PLAZA, SUITE 320
NORTHFIELD, IL 60093
TEL: (847) 562-2001

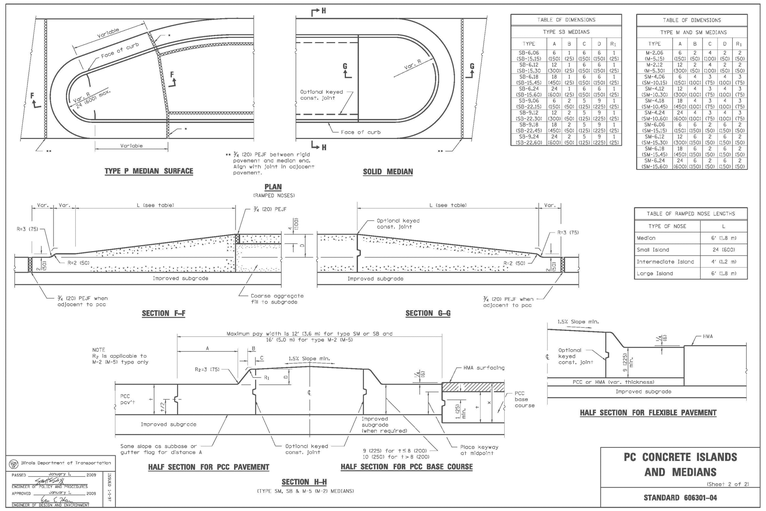
Bollinger, Lach & Associates, Inc.
CONSULTING ENGINEERS
333 PIERCE ROAD SUITE 200 ITASCA, IL 60143
P:(630) 436 6400 F:(630) 436 6444 www.bollingerlach.com
ITASCA * CHICAGO * ALGONQUIN * LAKE GENEVA * SOUTH BEND * INDIANAPOLIS

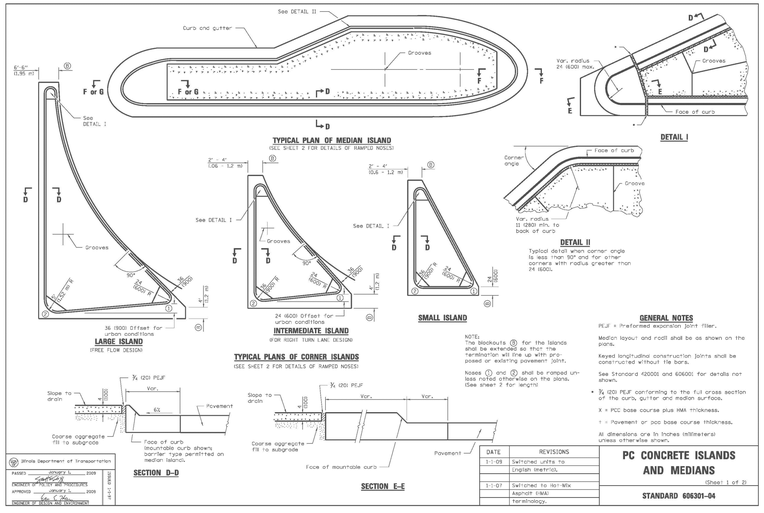
DETAILS

RIVER VIEW WEST
CITY OF WARRENVILLE, ILLINOIS

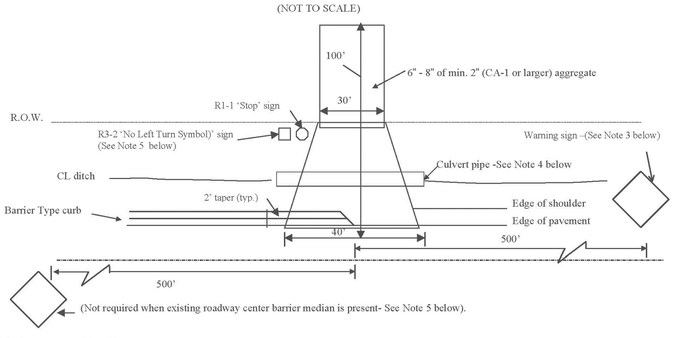
SHEET NUMBER
43
OF 71

Design Firm License No. 184-001129





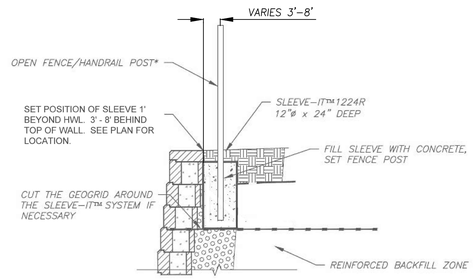
DuPage County Division of Transportation- Temporary Construction Entrance Standard

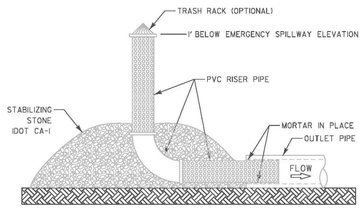


Construction requirements/conditions:

1. Pavement, curb/gutter and storm structures shall be maintained free of mud/debris at all times during construction. Rubber tired equipment and a street sweeper shall be kept on call on an "as needed" basis at all times.
2. The petitioner is solely responsible for any repairs and associated costs necessary for the replacement of any pavement, curb/gutter or sidewalks adjacent to the temporary construction entrance/haul road damaged due to the permitted work.
3. The petitioner is responsible to erect and maintain the black on orange warning signage until the time that the temporary entrance is removed. Signage shall state either: "Construction Entrance 500' " or "Trucks Entering and Leaving Highway" according to the M.U.T.C.D. Signs shall be sand bagged at all times.
4. Culvert pipe shall be a min. 15" dia. x min. 30' length. Side slopes within right of way shall not exceed 3:1.
5. Barrier median on roadway will require that the petitioner/contractor install an R3-2 'No Left Turn (symbol)' sign (per the M.U.T.C.D.) to prevent outbound cross median traffic movements.
6. Disturbed areas of the right of way shall be dressed with a minimum of 6" topsoil and seed with erosion control blanket, hydro-seeded or sod (salt tolerant and staked in place). Erosion control measures shall comply with the minimum requirements of the DuPage County Stormwater and Floodplain Ordinance specifications at all times.

(TempConstStd.doc), rjk (12/16/04 Rev. R.K.)





PVC RISER SHALL HAVE 1" HOLES EVENLY SPACED AROUND THE CIRCUMFERENCE OF THE PIPE AS FOLLOWS:

PIPE DIA (IN)	NUMBER OF 1" HOLES PER LIN FT OF PIPE
5	25
6	30
8	40
10	50
12	60
18	70

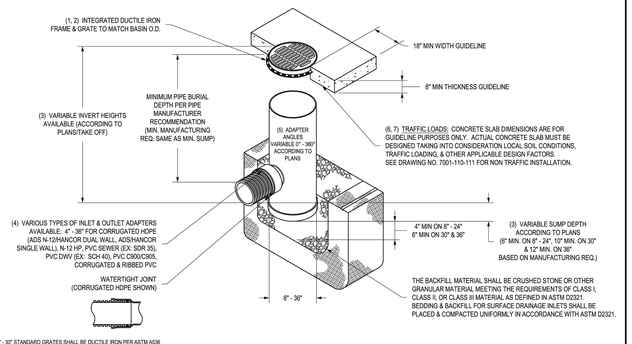
PVC RISER PIPE SHALL BE LOOSELY DOUBLE OR TRIPLE WRAPPED WITH CHICKEN WIRE OR ¼" HARDWARE CLOTH AROUND BOTH MEMBERS AND WRAPPED ON THE OUTSIDE WITH A WOVEN MONOFILAMENT GEOTEXTILE.

PLACE SUFFICIENT CA-1 STONE TO HOLD THE RISER PIPE IN PLACE.

IF TRASH RACK IS PROVIDED, IT SHALL BE SECURELY FASTENED TO THE INLET. TRASH GUARD MAY BE FABRICATED FROM METAL RODS (¼" DIA MIN) OR GALVANIZED WELDED WIRE FABRIC (16 GAGE MIN). THE SPACING BETWEEN VERTICAL MEMBERS SHOULD BE 1 INCH.

PERFORATED RISER DETAIL

NYLOPLAST DRAIN BASIN WITH STANDARD GRATE



1 - 8" - 30" STANDARD GRATES SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05.
2 - 12" - 30" FRAMES SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05. 8" & 10" STANDARD GRATES FIT DIRECTLY ONTO DRAIN BASINS WITH THE USE OF A PVC BODY TOP. SEE DRAWING NO. 7001-110-045.
3 - DRAIN BASIN TO BE CUSTOM MANUFACTURED ACCORDING TO PLAN DETAILS. RISERS ARE NEEDED FOR BASINS OVER 84" DUE TO SHIPPING RESTRICTIONS. SEE DRAWING NO. 7001-110-065.
4 - DRAINAGE CONNECTION STUB JOINT TIGHTNESS SHALL CONFORM TO ASTM D3212 FOR CORRUGATED HDPE (ADS N-12/HANCOR DUAL WALL), N-12 HP, & PVC SEWER (4" - 36").
5 - ADAPTERS CAN BE MOUNTED ON ANY ANGLE 0° TO 360°. TO DETERMINE MINIMUM ANGLE BETWEEN ADAPTERS SEE DRAWING NO. 7001-110-012.
6 - 12" - 30" STANDARD GRATES SHALL MEET H-20 LOAD RATING.
7 - 8" & 10" STANDARD GRATES ARE RATED FOR LIGHT DUTY APPLICATIONS ONLY; NO CONCRETE COLLAR NEEDED FOR LIGHT DUTY RATING.

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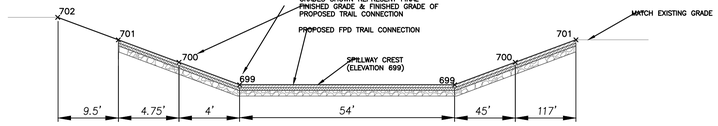
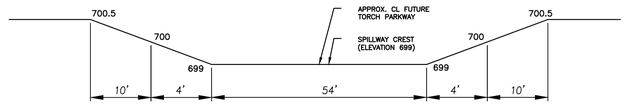
DRAWN BY	ESC	MATERIAL	
DATE	1-23-06		
REVISED BY	NMH	PROJECT NO./NAME	
DATE	06-12-18		
DWG SIZE	A	SCALE 1:40	SHEET 1 OF 1

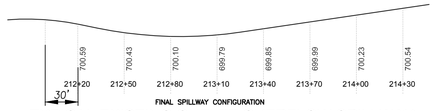
Nyloplast
3130 VERONA AVE
BUFORD, GA 30518
PHN (770) 932-2443
FAX (770) 932-2490
www.nyloplast-us.com
TITLE
DRAIN BASIN WITH STANDARD GRATE
QUICK SPEC INSTALLATION DETAIL
DWG NO. 7001-110-144 REV J



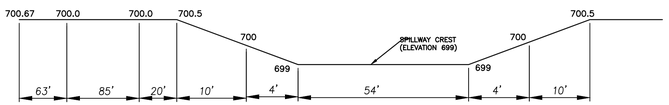
TYPICAL OUTLOT "A" OVERFLOW SPILLWAY TO WEST BRANCH OF DUPAGE RIVER



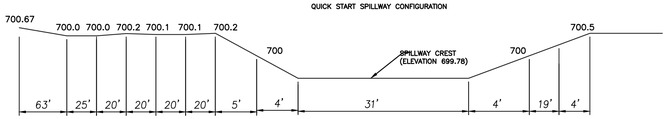
TYPICAL EXISTING OUTLET OVERFLOW SPILLWAY



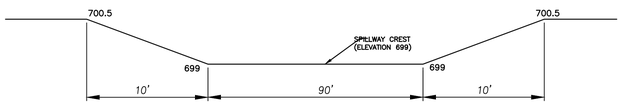
TYPICAL EXISTING OUTLET OVERFLOW SPILLWAY



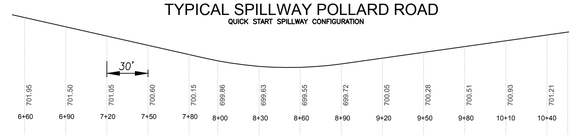
TYPICAL EAST PROPERTY SPILLWAY OVER BIKE PATH
QUICK START SPILLWAY CONFIGURATION



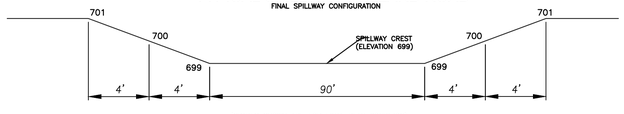
TYPICAL EAST PROPERTY SPILLWAY OVER BIKE PATH
FINAL CONDITIONS SPILLWAY CONFIGURATION



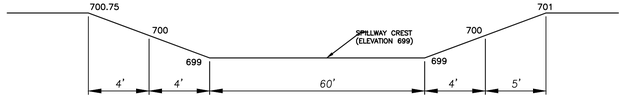
TYPICAL SPILLWAY POLLARD ROAD
QUICK START SPILLWAY CONFIGURATION



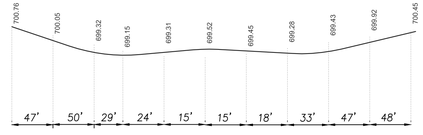
TYPICAL SPILLWAY POLLARD ROAD
FINAL SPILLWAY CONFIGURATION



(GRADES SHOWN ARE FOR FINAL PLAN CONDITION)
TYPICAL SPILLWAY WEST OF TORCH PARKWAY



TYPICAL SPILLWAY EAST OF SOUTHERN TOWNHOMES



REVISIONS:
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△ 11-05-18: REVISD PER FPD COMMENTS
△ 01-18-19: REVISD PER CITY COMMENTS

ASB NO.: 080-020
FIELD BOOK: N/A
FIELD BOOK: N/A
DRAWN BY: MK
CHECKED BY: KEK
COMPLETED: 04/07/18

FILE: V:\080-020 Cantera Lot 2 Sub Area C\Engineering\Drawings\Final Engineering

PREPARED FOR:
CANTERA DEVELOPMENT HOLDINGS, LLC.
TWO NORTHFIELD PLAZA, SUITE 320
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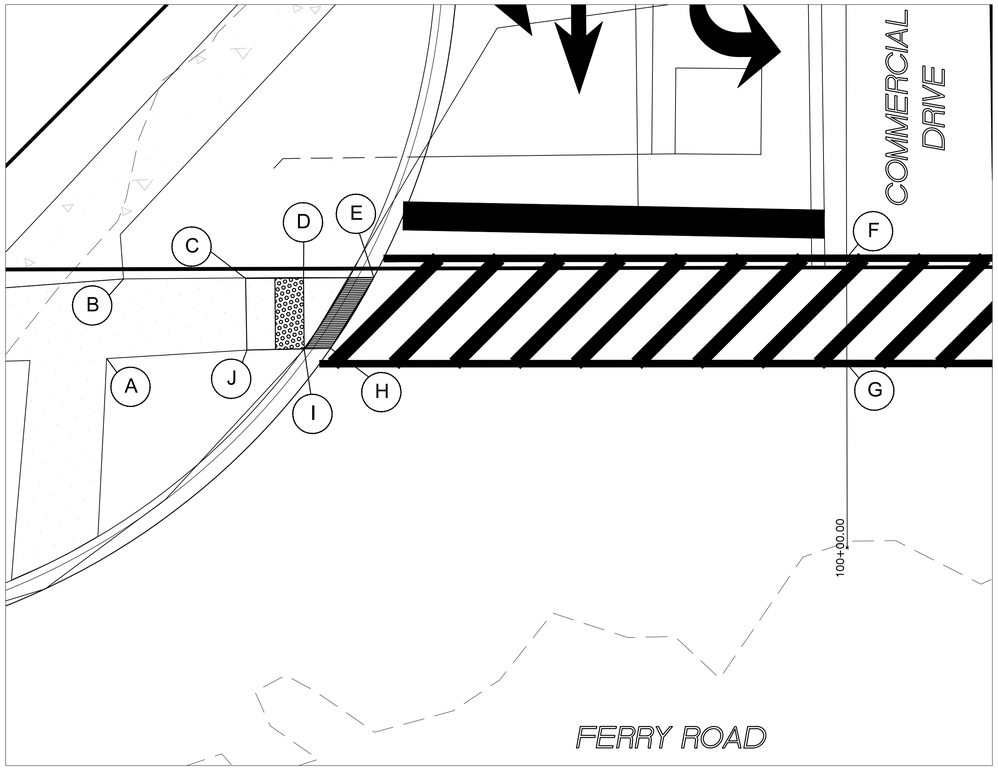
DETAILS

RIVER VIEW WEST
CITY OF WARRENVILLE, ILLINOIS

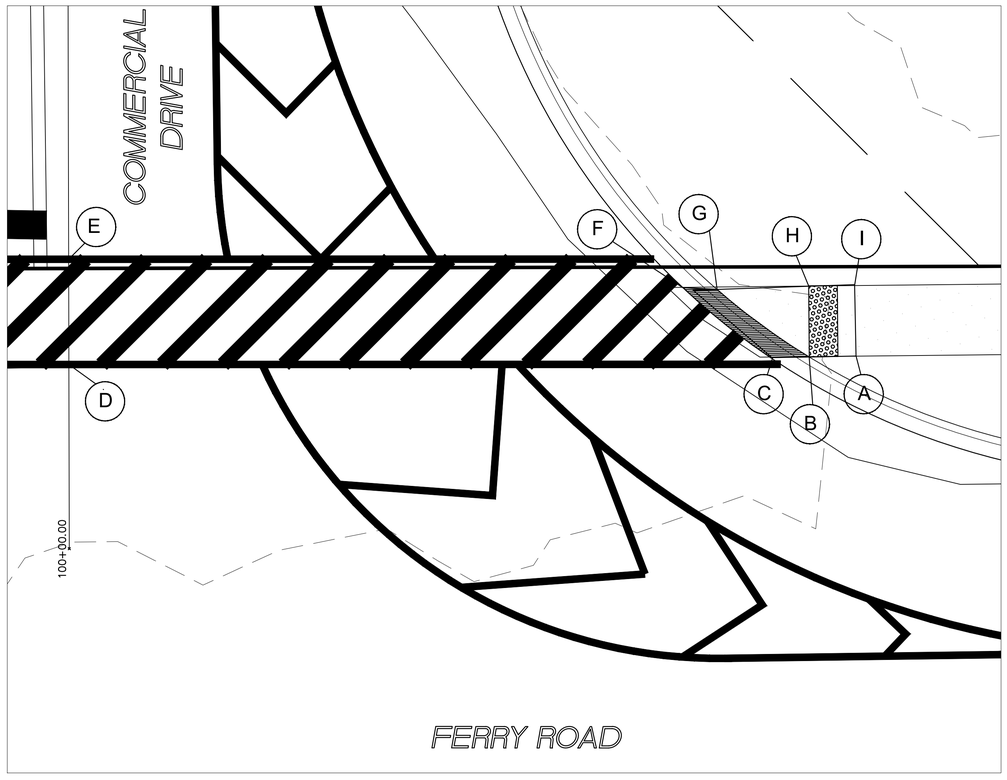
SHEET NUMBER
44
OF 71



STA 100+16.4, 34.5' LT

GRAPHIC SCALE
5' 0 2.5' 5'
(IN FEET)
1 inch = 5' ft.

	STATION	OFFSET	ELEVATION
A	100+13.33	51.71 L	700.00
B	100+18.90	50.52 L	700.00
C	100+18.91	42 L	700.18
D	100+18.93	37.9 L	700.14
E	100+19	33 L	700.10
F	100+20.27	0 L	700.43
G	100+12.90	36 L	700.26
H	100+14	36 L	700.00
I	100+13.98	37.9 L	700.07
J	100+13.91	42 L	700.09



STA 101+16.3, 45' RT

GRAPHIC SCALE
5' 0 2.5' 5'
(IN FEET)
1 inch = 5' ft.

	STATION	OFFSET	ELEVATION
A	100+13.3	55' R	700.09
B	100+13.3	52' R	700.07
C	100+13.3	49' R	700.00
D	100+12.9	0'R	700.26
E	100+20.9	0'R	700.43
F	100+18.16	42.92'R	700.10
G	100+18.04	45.29'R	700.17
H	100+18.26	57.7'R	700.18
I	100+18.34	54.91'R	700.18

LEGEND

- PROPOSED CONCRETE WALK
- PROPOSED DETECTABLE WARNING PANEL
- PROPOSED DEPRESSED CURB & GUTTER
- PROPOSED BITUMINOUS PATH
- EXISTING FERRY ROAD WALK
- PROPOSED CURB & GUTTER

NOTE:
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2) REFER TO DETAIL SHEETS FOR ADA RAMP DETAIL

04-19-19: PER CITY COMMENTS 03-15-19: PER DUDOT COMMENTS
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02-18-19: REVISED PER CITY COMMENTS

JOB NO: 080-020
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CHECKED BY: KEK
COMPLETED: 04/07/18

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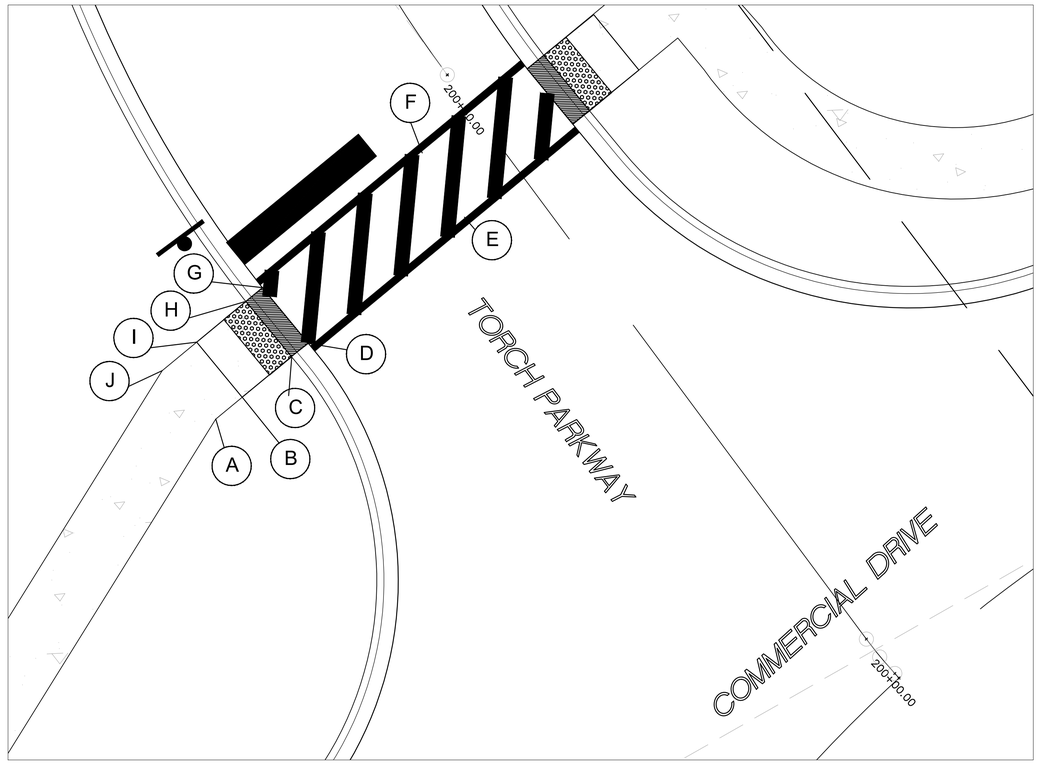
ADA RAMP GRADING PLANS

RIVER VIEW WEST
CITY OF WARRENVILLE, ILLINOIS

SHEET NUMBER
45
OF 71

Design Firm License No. 184-001129
FILE: I:/080-020 Cantera Lot 2 Sub Area C/Engineering/Drawings/Final Engineering

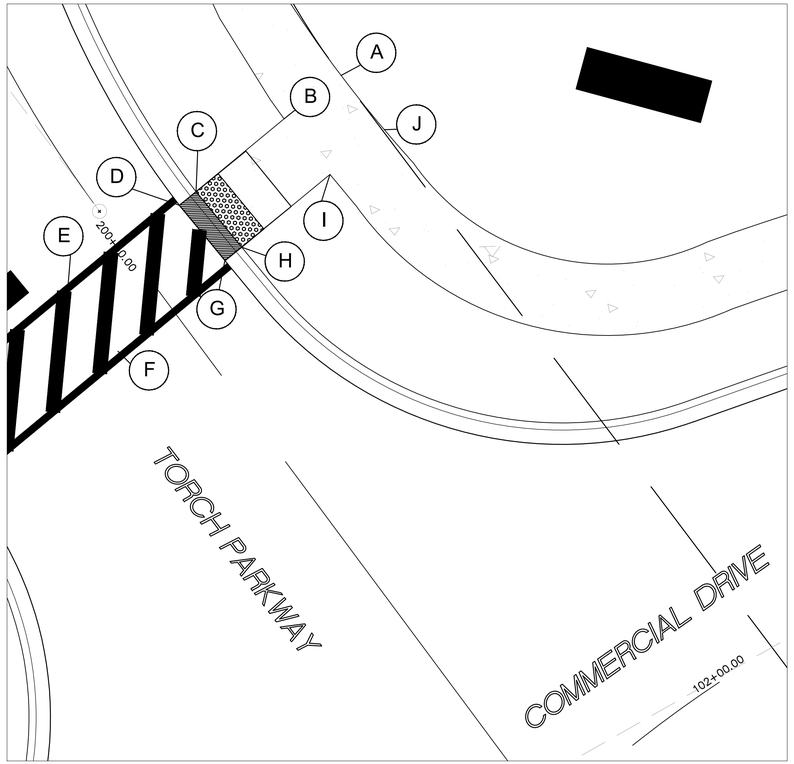
Design Firm License No. 184-001129



STA 200+45.6, 12' LT

GRAPHIC SCALE
5' 0 2.5' 5'
(IN FEET)
1 inch = 5' ft.

	STATION	OFFSET	ELEVATION
A	200+43.00	27.34'L	699.21
B	200+43.12	24.94'L	699.13
C	200+43.33	20.48'L	698.98
D	200+43.33	19'L	698.91
E	200+43.6	7'L	699.07
F	200+49.6	7.26'L	699.06
G	200+48.0	19..24'L	69887.00
H	200+48.35	20.74'L	699.04
I	200+48.11	25.2'L	699.20
J	200+47.90	28.32'L	699.29



STA 200+45.6, 12' RT

GRAPHIC SCALE
5' 0 2.5' 5'
(IN FEET)
1 inch = 5' ft.

	STATION	OFFSET	ELEVATION
A	200+50.43	19.2'R	699.33
B	200+50.17	14.20'R	699.28
C	200+49.75	6.23'R	699.04
D	200+49.56	4.7'R	699.87
E	200+49.6	7.28'R	699.06
F	200+43.6	7.0'R	699.07
G	200+44.7	5.0'R	698.91
H	200+44.7	6.5'R	699.98
I	200+45.1	14.5'R	699.37
J	200+45.3	19.4'R	699.43

LEGEND
- PROPOSED CONCRETE WALK
- PROPOSED DETECTABLE WARNING PANEL
- PROPOSED DEPRESSED CURB & GUTTER
- PROPOSED BITUMINOUS PATH
- EXISTING FERRY ROAD WALK
- PROPOSED CURB & GUTTER

NOTE:
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2) REFER TO DETAIL SHEETS FOR ADA RAMP DETAIL

03-25-19: PER FPD COMMENTS
03-15-19: PER DUDOT COMMENTS
02-25-19: PER INTERNAL COORDINATION

PREPARED FOR:
CANTERA DEVELOPMENT HOLDINGS, LLC.
TWO NORTHFIELD PLAZA, SUITE 320
NORTHFIELD, IL 60093
TEL: (847) 562-2001

REVISIONS:
- 09-18-18: REVISED PER CITY COMMENTS
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- 01-18-19: REVISED PER CITY COMMENTS
- 02-18-19: REVISED PER CITY COMMENTS

JOB NO: 080-020
FIELD BOOK: N/A
FIELD BOOK: N/A
DRAWN BY: MK
CHECKED BY: KEK
COMPLETED: 04/07/18
FILE: I:\080-020 Cantera Lot 2 Sub Area 5\Engineering\Drawings\Final Engineering

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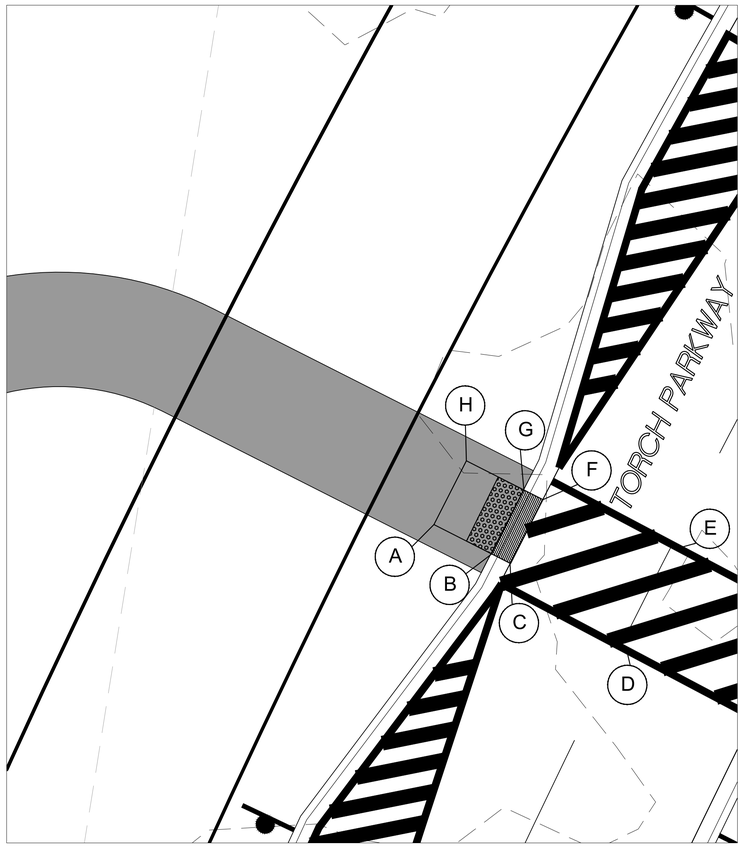
ADA RAMP GRADING PLANS

RIVER VIEW WEST
CITY OF WARRENVILLE, ILLINOIS

SHEET NUMBER
46
OF 71

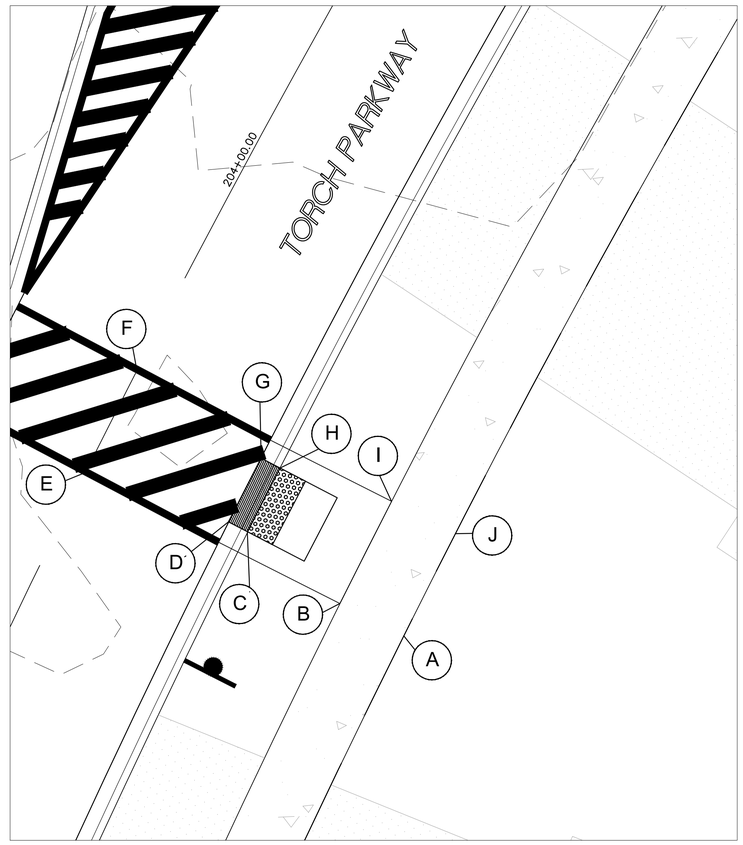
Design Firm License No. 184-001129



STA 203+80, 9.5' LT

GRAPHIC SCALE
5′ 0 2.5′ 5′
(IN FEET)
1 inch = 5′ ft.

	STATION	OFFSET	ELEVATION
A	203+77.5	15.5'L	701.11
B	203+77.4	12.9'L	701.09
C	203+77.4	9.5'L	701.00
D	203+75.7	0.5'L	701.14
E	203+83.7	0.5'L	701.17
F	203+82.4	9.5'L	701.00
G	203+82.4	12.97'L	701.08
H	203.22.4	15.5'L	701.09



STA 203+80, 10.5' RT

GRAPHIC SCALE
5′ 0 2.5′ 5′
(IN FEET)
1 inch = 5′ ft.

	STATION	OFFSET	ELEVATION
A	203+75.3	25'R	701.18
B	203+75.3	20'R	701.13
C	203+77	12'R	700.97
D	203+77	1050'R	700.90
E	203+75.7	0.5'R	701.14
F	203+83.7	0.5'R	701.17
G	203+82.1	10.5'R	700.93
H	203+82.0	12'R	701.00
I	203+83.5	20'R	701.16
J	203+83.6	25'R	701.21

LEGEND

- PROPOSED CONCRETE WALK
- PROPOSED DETECTABLE WARNING PANEL
- PROPOSED DEPRESSED CURB & GUTTER
- PROPOSED BITUMINOUS PATH
- EXISTING FERRY ROAD WALK
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TWO NORTHFIELD PLAZA, SUITE 320
NORTHFIELD, IL 60093
TEL: (847) 562-2001

REVISIONS:	JOB NO: 080-020
△09-18-18: REVISED PER CITY COMMENTS	FIELD BOOK: N/A
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△01-18-19: REVISED PER CITY COMMENTS	DRAWN BY: MK
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FILE: I:\080-020 Cantera Lot 2 Sub Area C\Engineering\Drawings	COMPLETED:04/07/19

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ADA RAMP GRADING PLANS

RIVER VIEW WEST
CITY OF WARRENVILLE, ILLINOIS

SHEET NUMBER
47
OF 71

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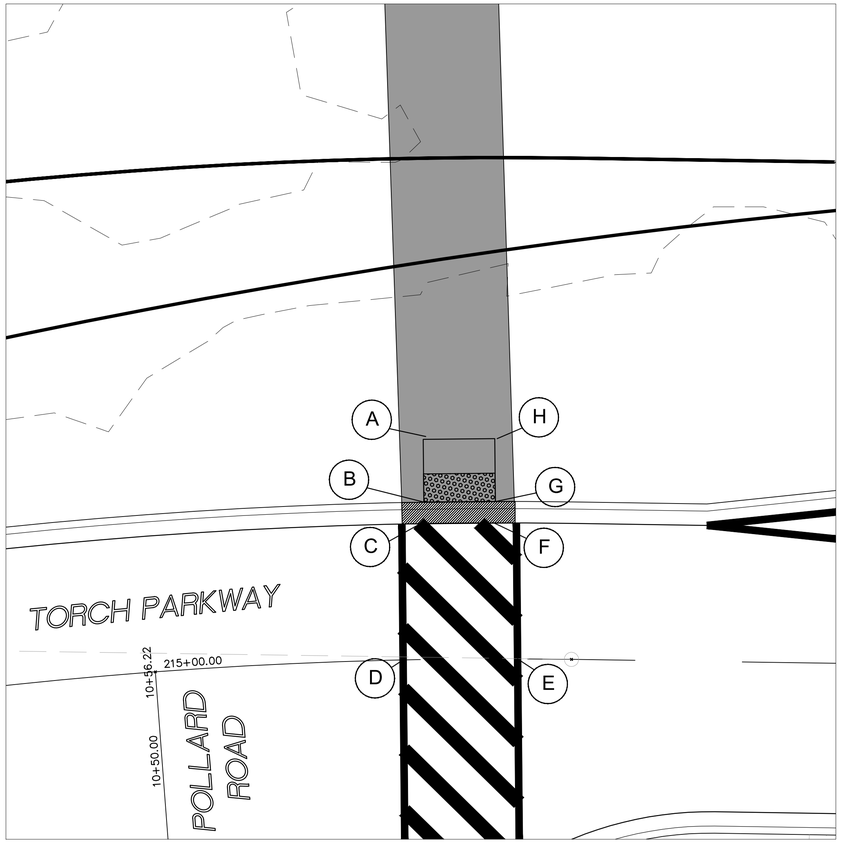
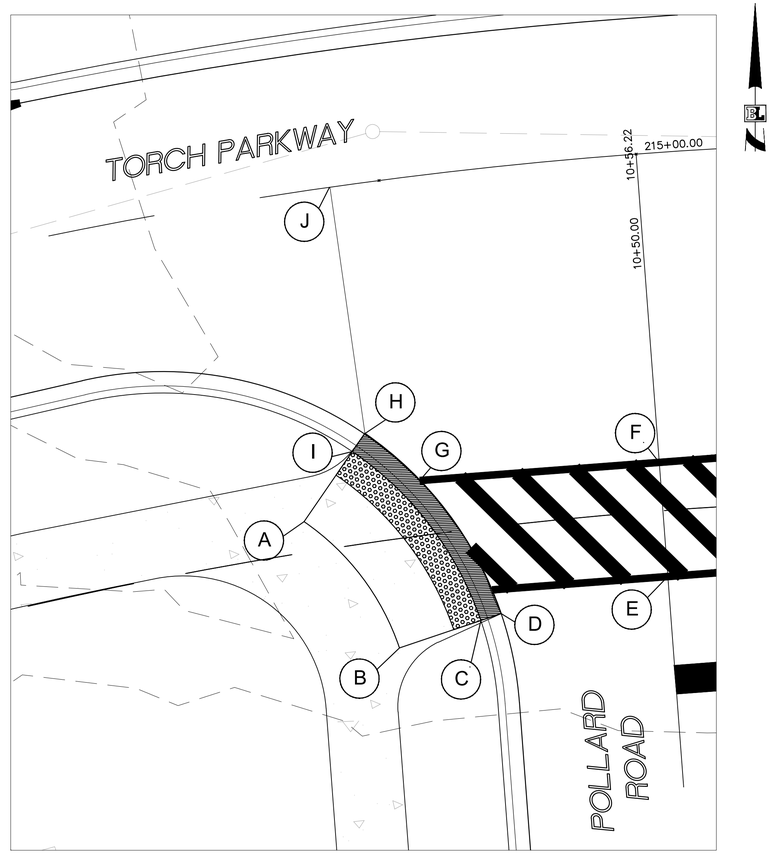


STA 215+18.7, 9.5' LT

GRAPHIC SCALE
5' 0 2.5' 5'
(IN FEET)
1 inch = 5' ft.

	STATION	OFFSET	ELEVATION
A	215+16.33	15.4'L	701.31
B	215+16.3	11.0'L	701.26
C	215+16.3	9.5'L	701.19
D	215+14.7	0'L	701.38
E	215+22.7	0'L	701.44
F	215+21.02	9.5'L	701.25
G	215+21.14	11'L	701.32
H	215+21.10	15.4'L	701.37



STA 10+31.45, 14.6' LT

GRAPHIC SCALE
5' 0 2.5' 5'
(IN FEET)
1 inch = 5' ft.

	STATION	OFFSET	ELEVATION
A	10+32.3	25.1'R	700.96
B	10+23.05	19.1'R	700.89
C	10+24.5	13.3'R	700.83
D	10+24.9	11.8'R	700.76
E	10+26.62	0'R	701.00
F	10+34.6	0'R	701.07
G	10+34.6	16'R	700.81
H	10+38.14	20.4'R	700.85
I	10+36.97	21.33'R	700.92
J	214+75.83	0'R	701.03

LEGEND

- PROPOSED CONCRETE WALK
- PROPOSED DETECTABLE WARNING PANEL
- PROPOSED DEPRESSED CURB & GUTTER
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- EXISTING FERRY ROAD WALK
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NOTE:
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ADA RAMP GRADING PLANS

RIVER VIEW WEST
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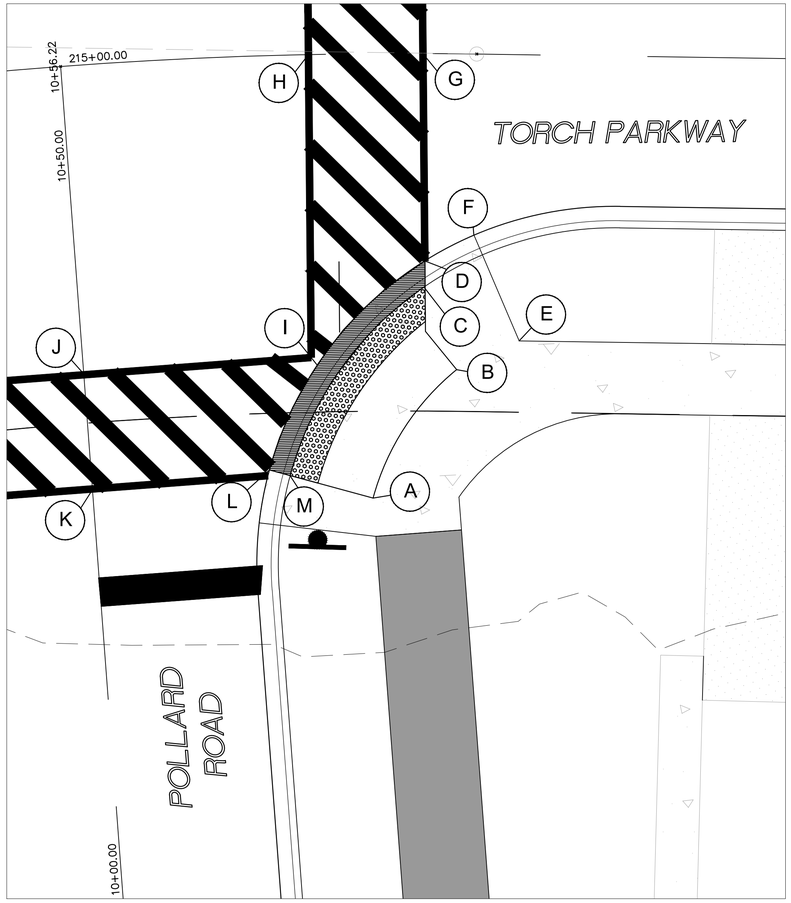
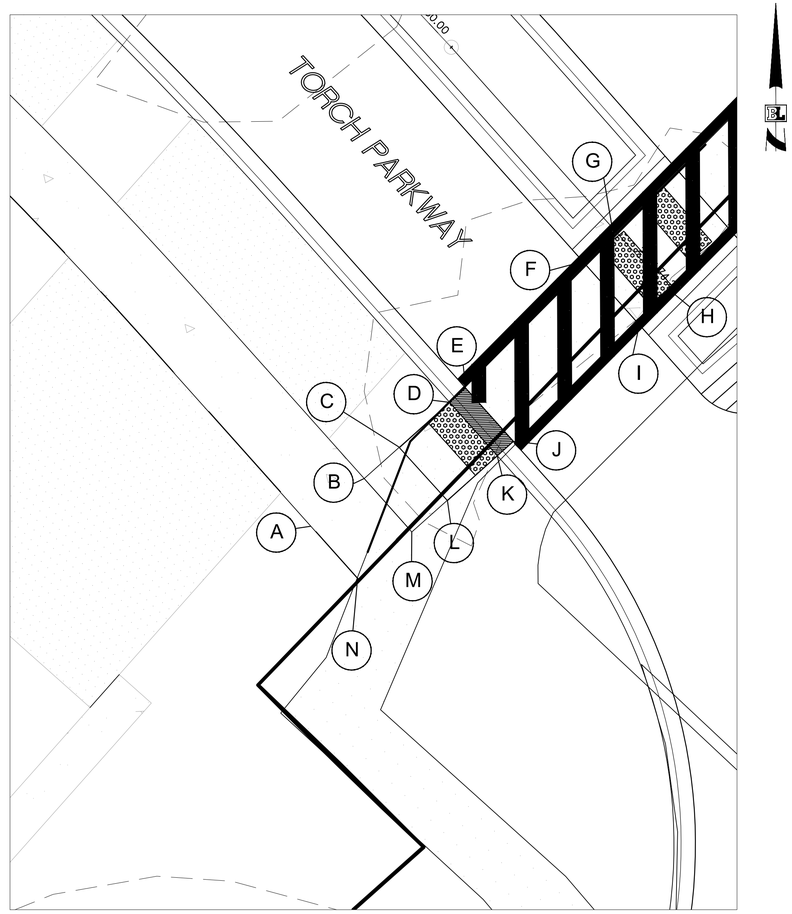


STA 10+33.8, 16.1' LT

GRAPHIC SCALE
5' 0 2.5' 5'
(IN FEET)
1 inch = 5' ft.

	STATION	OFFSET	ELEVATION
A	10+24.5	19.5'L	701.00
B	10+33.0	26'L	701.10
C	10+39.0	24.24'L	701.08
D	10+40.77	24.4'L	701.01
E	215+29.70	20.0'L	701.20
F	215+26.4	12.7'L	701.18
G	215+22.7	0'L	701.44
H	215+14.7	0'L	701.38
I	10+34.0	16.33'L	700.83
J	10+34.0	0.43'L	701.07
K	10+26.6	0'L	701
L	10+27.0	12.44'L	700.75
M	10+26.5	13.86'L	700.82



STA 219+74, 15.11' RT

GRAPHIC SCALE
5' 0 2.5' 5'
(IN FEET)
1 inch = 5' ft.

	STATION	OFFSET	ELEVATION
A	219+71.44	29.6'R	704.00
B	219+71.44	24.6'R	703.95
C	219+71.44	21.3'R	703.85
D	219+71.44	16.6'R	703.71
E	219+71.44	15.11'R	703.64
F	219+70.2	3.11'R	703.88
G	219+70.1	0'R	703.94
H	219+76.2	0'R	704.20
I	219+76.16	3.2'R	703.96
J	219+76.26	15.25'R	703.72
K	219+76.26	16.6'R	703.79
L	219+76.26	21.3'R	70391
M	219+76.26	24.6'R	704
N	219+76.26	29.61'R	704.05

LEGEND

- PROPOSED CONCRETE WALK
- PROPOSED DETECTABLE WARNING PANEL
- PROPOSED DEPRESSED CURB & GUTTER
- PROPOSED BITUMINOUS PATH
- EXISTING FERRY ROAD WALK
- PROPOSED CURB & GUTTER

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01-18-19: REVISED PER CITY COMMENTS
02-18-19: REVISED PER CITY COMMENTS

JOB NO: 080-020
FIELD BOOK: N/A
FIELD BOOK: N/A
DRAWN BY: MK
CHECKED BY: KEK
COMPLETED:04/07/18

PREPARED FOR:
CANTERA DEVELOPMENT HOLDINGS, LLC.
TWO NORTHFIELD PLAZA, SUITE 320
NORTHFIELD, IL 60093
TEL :(847) 562-2001

Bollinger, Lach & Associates, Inc.
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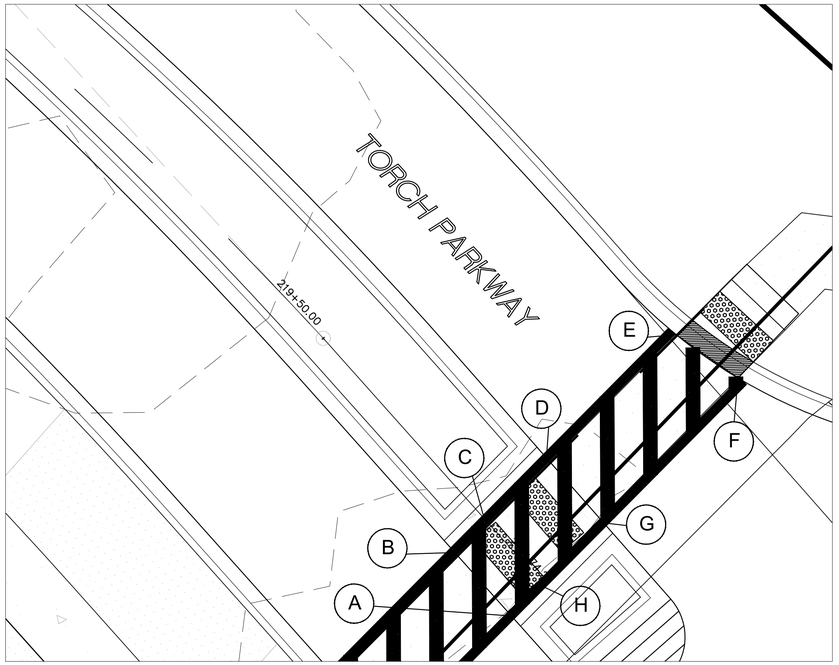
ITASCA * CHICAGO * ALGONQUIN * LAKE GENEVA * SOUTH BEND * INDIANAPOLIS
CONSULTING ENGINEERS

ADA RAMP GRADING PLANS

RIVER VIEW WEST
CITY OF WARRENVILLE, ILLINOIS

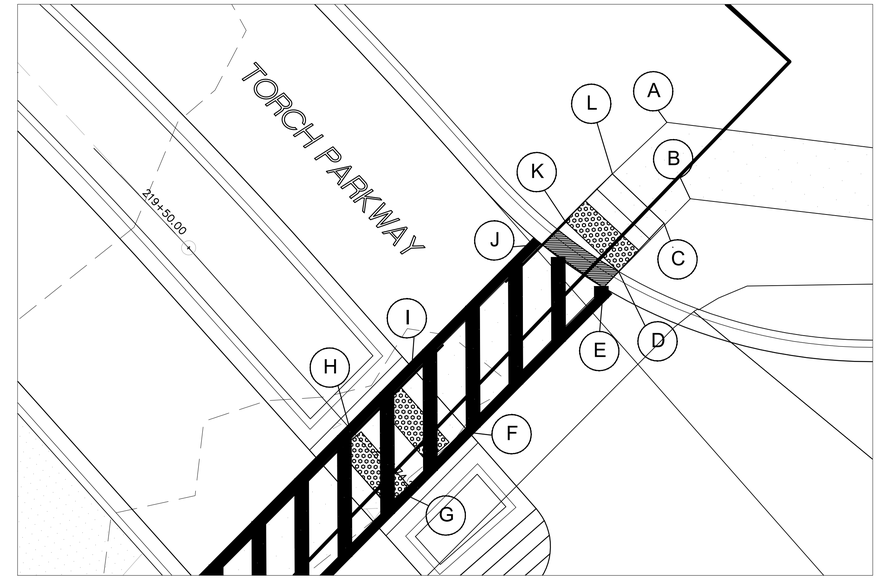
SHEET NUMBER
49
OF 71

Design Firm License No. 184-001129
FILE: I:/080-020 Cantera Lot 2 Sub Area C/Engineering/Drawings/Final Engineering



STA 219+73, 3' LT

	STATION	OFFSET	ELEVATION
A	219+76.24	3.1'L	703.96
B	219+70.16	3.1'L	703.88
C	219+70.0	0'L	703.94
D	219+70.0	6.1'L	703.82
E	219+69.2	18.57'L	703.57
F	219+74.35	19.7'L	703.63
G	219+75.66	6.1'L	703.90
H	219+76.0	0'L	704.02



GRAPHIC SCALE
5' 0 2.5' 5'
(IN FEET)
1 inch = 5' ft.

STA 219+72, 19.2' LT

	STATION	OFFSET	ELEVATION
A	219+687	30.79'L	703.73
B	219+73.8	28.39'L	703.78
C	219+73.87	25.86'L	703.75
D	219+74.3	21.22'L	703.70
E	219+74.4	19.7'L	703.63
F	219+74.7	6.1'L	703.90
G	219+76.0	0'L	704.02
H	219+70.0	0'L	703.94
I	219+70.0	6.1'L	703.82
J	219+69.22	8.57'L	703.57
K	219+69.0	20.9'L	703.58
L	219+68.8	25.53'L	703.63

LEGEND

- PROPOSED CONCRETE WALK
- PROPOSED DETECTABLE WARNING PANEL
- PROPOSED DEPRESSED CURB & GUTTER
- PROPOSED BITUMINOUS PATH
- EXISTING FERRY ROAD WALK
- PROPOSED CURB & GUTTER

NOTE:
1) SCALE FOR ADA GRADING VEW IS 1"=5'
2) REFER TO DETAIL SHEETS FOR ADA RAMP DETAIL

04-19-19: PER CITY COMMENTS 03-15-19: PER DUDOT COMMENTS
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ADA RAMP GRADING PLANS

RIVER VIEW WEST
CITY OF WARRENVILLE, ILLINOIS

SHEET NUMBER
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OF 71

Design Firm License No. 184-001129

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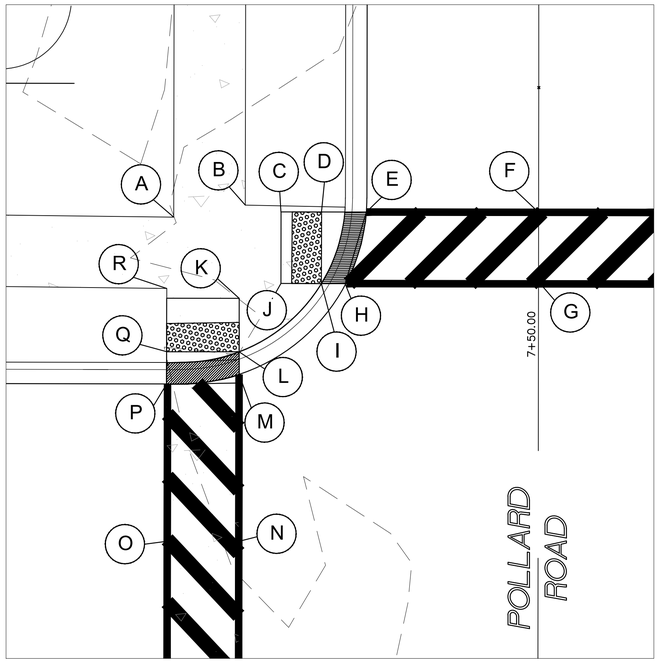
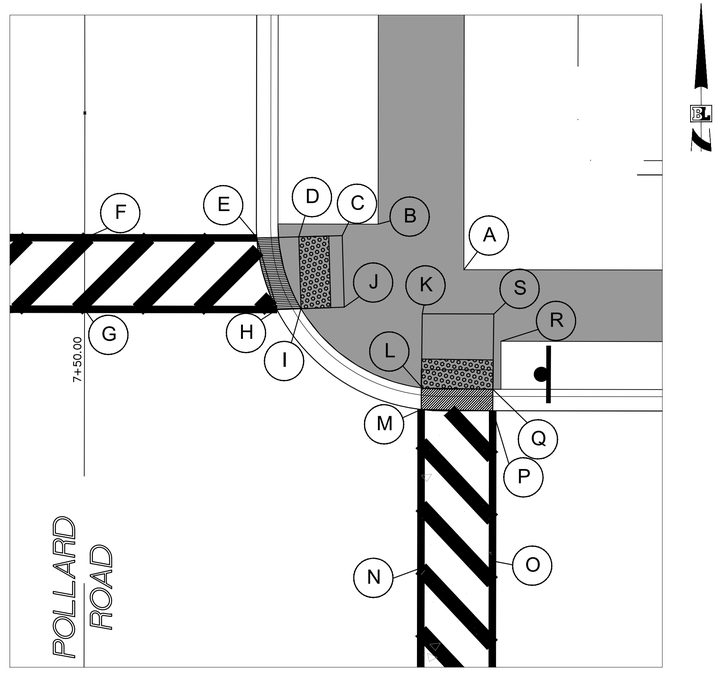


STA 7+56.2, 12.77' LT
STA 7+46.5, 23.45' LT

GRAPHIC SCALE
5' 0 2.5' 5'
(IN FEET)
1 inch = 5' ft.

	STATION	OFFSET	ELEVATION
A	7+58.14	25.5'L	700.55
B	7+59.0	20.50'L	700.50
C	7+5852	18.0'L	700.42
D	7+5852	15.17'L	700.33
E	7+5852	12.0'L	700.23
F	7+5852	0'L	700.47
G	7+53.52	0'L	700.55
H	7+53.52	13.45'L	700.28
I	7+53.52	15.15'L	700.35
J	7+53.52	18.0'L	700.44
K	7+52.48	20.92'L	700.5
L	7+48.74	20.91'L	700.67
M	7+47.15	20.91'L	700.6
N	7+35.5	20.91'L	700.82
O	7+35.5	25.91'L	700.92
P	7+46.49	25.98'L	700.7
Q	7+48.74	25.98'L	700.77
R	7+53.16	25.98'L	700.55



STA 7+56.02, 12.74' RT
STA 7+46.5, 26' RT

GRAPHIC SCALE
5' 0 2.5' 5'
(IN FEET)
1 inch = 5' ft.

	STATION	OFFSET	ELEVATION
A	7+56.33	26.50'R	700.55
B	7+59.51	18.0'R	700.50
C	7+58.52	18.0'R	700.42
D	7+58.52	15.0'R	700.33
E	7+58.52	12.0'R	700.20
F	7+58.52	0'R	700.47
G	7+53.52	0'R	700.55
H	7+53.52	13.44'R	700.28
I	7+53.52	15.13'R	700.35
J	7+53.52	18.14'R	700.44
K	7+53.24	23.60'R	700.5
L	7+48.07	23.53'R	700.57
M	7+46.56	23.53'R	700.5
N	7+35.48	23.53'R	700.82
O	7+35.48	28.53'R	700.82
P	7+46.56	28.54'R	700.6
Q	7+47.98	28.54'R	700.67
R	7+51.33	291.'R	700.57
S	7+53.2	28.6'R	700.5

LEGEND

- PROPOSED CONCRETE WALK
- PROPOSED DETECTABLE WARNING PANEL
- PROPOSED DEPRESSED CURB & GUTTER
- PROPOSED BITUMINOUS PATH
- EXISTING FERRY ROAD WALK
- PROPOSED CURB & GUTTER

NOTE:
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CHECKED BY: KEK
COMPLETED: 04/07/18

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ADA RAMP GRADING PLANS

RIVER VIEW WEST
CITY OF WARRENVILLE, ILLINOIS

SHEET NUMBER
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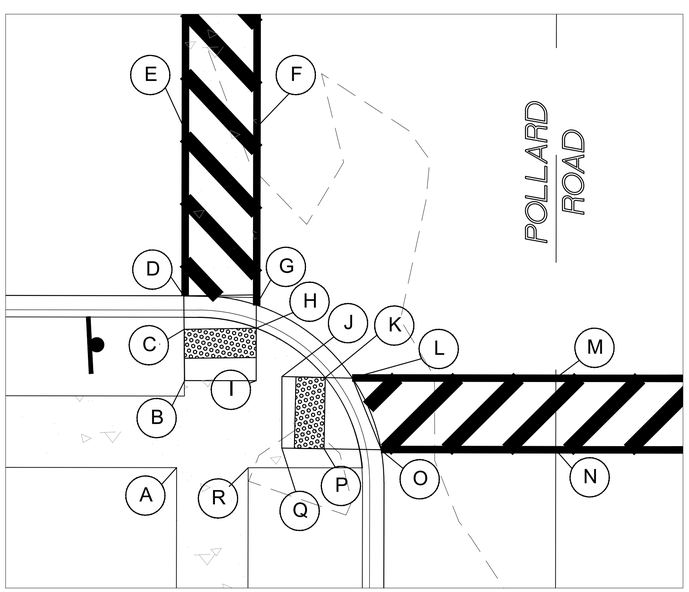
OF 71

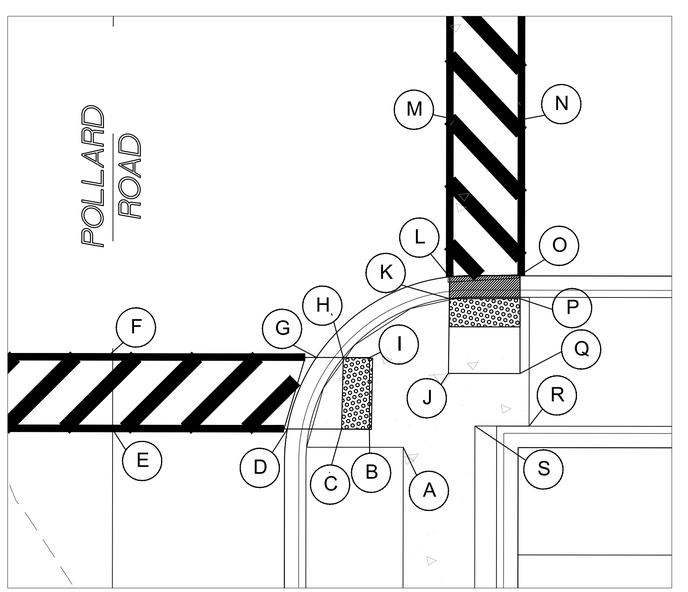
Design Firm License No. 184-001129



STA 7+24.5, 23.5' LT
STA 7+16.25, 13.2' LT

GRAPHIC SCALE
5' 0 2.5' 5'
(IN FEET)
1 inch = 5' ft.

	STATION	OFFSET	ELEVATION
A	7+12.2	26.76'L	701.20
B	7+18.57	25.94'L	701.19
C	7+22.15	25.98'L	701.19
D	7+24.48	25.91'L	701.12
E	7+35.5	25.91'L	700.92
F	7+35.5	20.91'L	700.82
G	7+23.84	20.94'L	701.02
H	7+22.23	20.94'L	701.09
I	7+18.57	20.94'L	701.09
J	7+18.86	19.14'L	701.05
K	7+18.79	16.11'L	700.9
L	7+18.75	14.21'L	700.83
M	7+18.77	0'L	701.07
N	7+13.77	0'L	701.14
O	7+13.77	12.19'L	700.9
P	7+13.77	16.19'L	700.97
Q	7+13.86	19.14'L	701.06
R	7+12.48	21.49'L	701.12



STA 7+24.2, 25.94' RT
STA 7+16.25, 12.7' RT

GRAPHIC SCALE
5' 0 2.5' 5'
(IN FEET)
1 inch = 5' ft.

	STATION	OFFSET	ELEVATION
A	7+12.48	20.31'R	701.15
B	7+13.73	18.08'R	701.10
C	7+13.73	16.0'R	701.05
D	7+13.75	12.21'R	700.98
E	7+13.77	0'R	701.14
F	7+18.77	0'R	701.07
G	7+18.75	14.24'R	700.93
H	7+18.75	16.11'R	701.00
I	7+18.71	18.15'R	701.06
J	7+17.65	23.45'R	701.15
K	7+22.88	23.51'R	701.11
L	7+24.39	23.53'R	701.04
M	7+35.48	23.53'R	700.82
N	7+35.48	28.53'R	700.82
O	7+24.54	28.45'R	701.04
P	7+22.88	28.45'R	701.11
Q	7+17.65	28.45'R	701.21
R	7+13.99	29.10'R	701.26
S	7+13.98	25.31'R	701.2

LEGEND

- PROPOSED CONCRETE WALK
- PROPOSED DETECTABLE WARNING PANEL
- PROPOSED DEPRESSED CURB & GUTTER
- PROPOSED BITUMINOUS PATH
- EXISTING FERRY ROAD WALK
- PROPOSED CURB & GUTTER

NOTE:
1) SCALE FOR ADA GRADING VEW IS 1"=5'
2) REFER TO DETAIL SHEETS FOR ADA RAMP DETAIL

△ 04-19-19: PER CITY COMMENTS △ 03-15-19: PER DUDOT COMMENTS
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PREPARED FOR:
CANTERA DEVELOPMENT HOLDINGS, LLC.
TWO NORTHFIELD PLAZA, SUITE 320
NORTHFIELD, IL 60093
TEL.:(847) 562-2001

REVISIONS:	JOB NO: 080-020
△ 09-18-18: REVISED PER CITY COMMENTS	FIELD BOOK: N/A
△ 11-05-18: REVISED PER FPD COMMENTS	FIELD BOOK: N/A
△ 01-18-19: REVISED PER CITY COMMENTS	DRAWN BY: MK
△ 02-18-19: REVISED PER CITY COMMENTS	CHECKED BY: KEK
FILE: I:\080-020 Cantera Lot 2 Sub Area C\Engineering\Drawings\Final Engineering	COMPLETED: 04/07/18

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ADA RAMP GRADING PLANS

RIVER VIEW WEST
CITY OF WARRENVILLE, ILLINOIS

SHEET NUMBER
52
OF 71

FILE: I:\080-020 Cantera Lot 2 Sub Area C\Engineering\Drawings\Final Engineering

Design Firm License No. 184-001129

STA 4+20, 12' LT
STA 3+99, 24' LT

GRAPHIC SCALE
5' 0 2.5' 5'
(IN FEET)
1 inch = 5' ft.

	STATION	OFFSET	ELEVATION
A	4+09.43	26.48'L	702.70
B	4+05.1	26.48'L	702.65
C	4+01.05	26.48'L	702.62
D	3+99.0	26.48'L	702.55
E	3+87.0	26.72'L	702.43
F	3+87.05	21.22'L	702.34
G	3+99.50	21.48'L	702.46
H	4+01.05	21.48'L	702.53
I	4+05.09	21.48'L	702.58
J	4+17.50	21.46'L	702.50
K	4+1750	17.95'L	702.34
L	4+1754	13.5'L	702.19
M	4+17.54	12.0'L	702.12
N	4+17.54	0'L	702.36
O	4+22.50	0'L	702.31
P	4+22.45	12.00'L	702.07
Q	4+22.49	13.50'L	702.14
R	4+22.49	17.93'L	702.34
S	4+22.49	21.46'L	702.5
T	4+22.57	26.46'L	702.5

STA 4+20, 12' RT
STA 3+99, 23' RT

GRAPHIC SCALE
5' 0 2.5' 5'
(IN FEET)
1 inch = 5' ft.

	STATION	OFFSET	ELEVATION
A	4+22.50	25.3'R	702.33
B	4+22.50	20.3'R	702.28
C	4+22.50	18.0'R	702.22
D	4+22.50	12.0'R	702.07
E	4+22.50	0'R	702.31
F	4+17.50	0'R	702.36
G	4+17.50	12.0'R	702.12
H	4+17.50	18.0'R	702.27
I	4+17.50	20.30'R	702.38
J	4+50.70	20.25'R	702.20
K	4+0170	20.25'R	702.12
L	3+99.98	20.25'R	702.05
M	3+87.0	20.0'R	702.29
N	3+99.98	25.50'R	702.26
O	4+01.70	25.25'R	702.02
P	4+01.70	25.25'R	702.09
Q	4+05.70	25.25'R	702.2

LEGEND
- PROPOSED CONCRETE WALK
- PROPOSED DETECTABLE WARNING PANEL
- PROPOSED DEPRESSED CURB & GUTTER
- PROPOSED BITUMINOUS PATH
- EXISTING FERRY ROAD WALK
- PROPOSED CURB & GUTTER

NOTE:
1) SCALE FOR ADA GRADING VEW IS 1"=5'
2) REFER TO DETAIL SHEETS FOR ADA RAMP DETAIL

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JOB NO: 080-020
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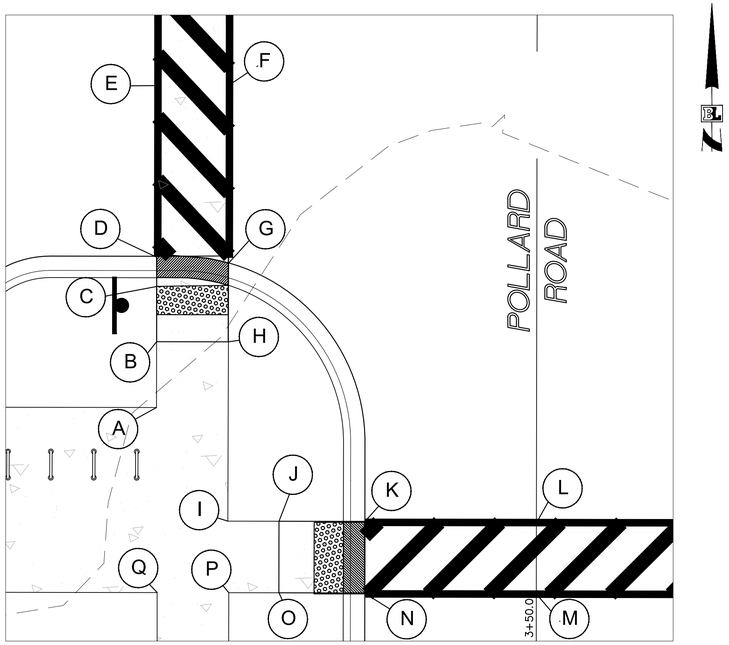
RIVER VIEW WEST
CITY OF WARRENVILLE, ILLINOIS

SHEET NUMBER
53
OF 71

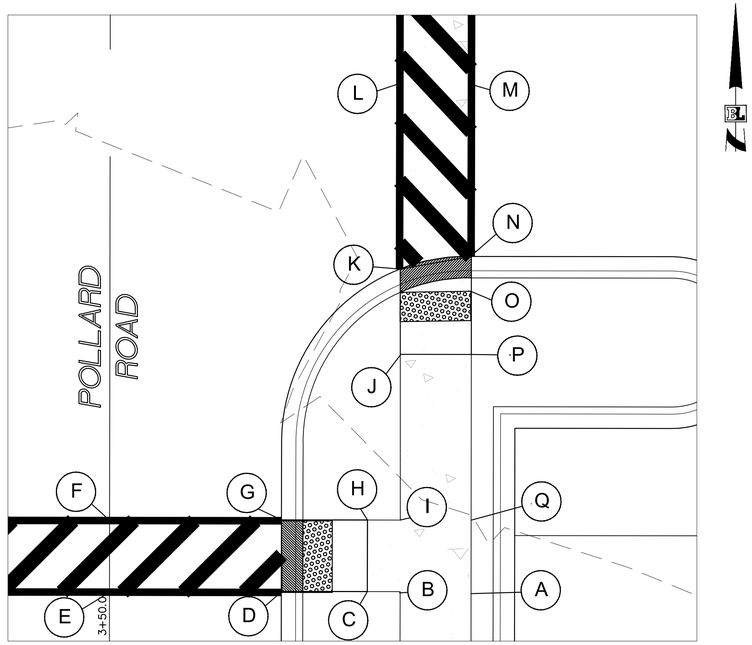
FILE: I:\080-020 Cantera Lot 3 Sub Area C\Engineering\Drawings\Final Engineering



STA 3+75, 24' LT
STA 3+54, 12' LT

GRAPHIC SCALE
5' 0 2.5' 5'
(IN FEET)
1 inch = 5' ft.

	STATION	OFFSET	ELEVATION
A	3+64.4	26.6	702.70
B	3+69.0	26.6	702.65
C	3+72.9	26.6	702.62
D	3+75.0	26.6	702.55
E	3+87.05	26.72	702.43
F	3+87.7	21.22	702.34
G	3+74.54	21.55	702.46
H	3+69.04	21.55	702.58
I	3+56.61	21.55	702.50
J	3+56.61	18	702.36
K	3+56.61	12	702.16
L	3+56.61	0	702.4
M	3+51.51	0	702.34
N	3+51.51	12	702.1
O	3+51.51	18	702.36
P	3+51.51	21.49	702.5
Q	3+51.51	26.49	702.55



STA 3+74.5, 23' RT
STA 3+54, 12' RT

GRAPHIC SCALE
5' 0 2.5' 5'
(IN FEET)
1 inch = 5' ft.

	STATION	OFFSET	ELEVATION
A	3+51.51	25.3	702.42
B	3+51.51	20.3	702.37
C	3+51.51	18	702.32
D	3+51.51	12	702.10
E	3+51.51	0	702.34
F	3+56.51	0	702.40
G	3+56.51	12	702.16
H	3+56.51	18	702.32
I	3+56.51	20.3	70237.00
J	3+68.08	20.2	702.16
K	3+74.04	20.2	70205
L	3+87.05	20	702.29
M	3+87.05	25.25	702.26
N	3+74.93	25.25	702.02
O	3+72.49	25.25	702.1
P	3+68.08	25.25	702.16
Q	3+56.50	25.3	702.42

LEGEND

- PROPOSED CONCRETE WALK
- PROPOSED DETECTABLE WARNING PANEL
- PROPOSED DEPRESSED CURB & GUTTER
- PROPOSED BITUMINOUS PATH
- EXISTING FERRY ROAD WALK
- PROPOSED CURB & GUTTER

NOTE:
1) SCALE FOR ADA GRADING VEW IS 1"=5'
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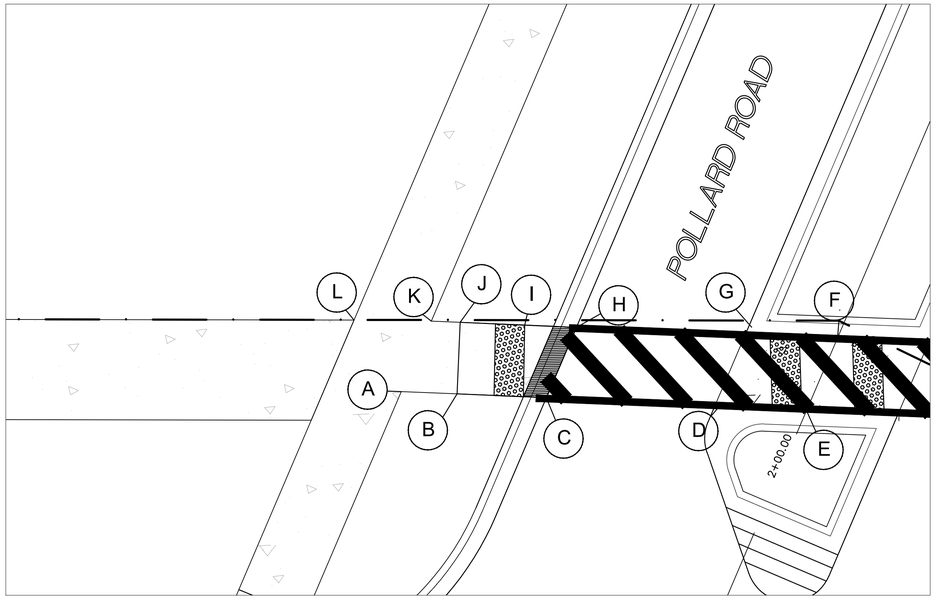
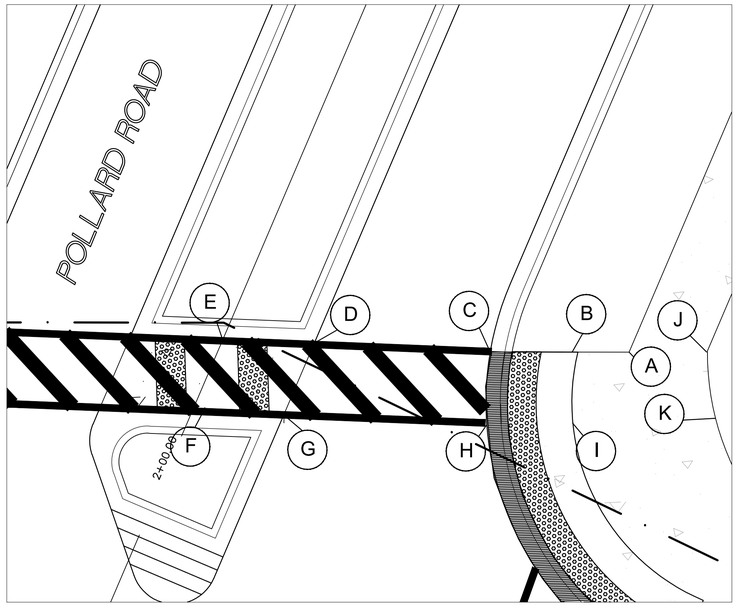


STA 2+00, 17.1' LT

GRAPHIC SCALE
5′ 0 2.5′ 5′
(IN FEET)
1 inch = 5′ ft.

	STATION	OFFSET	ELEVATION
A	1+93.74	26.56	702.27
B	1+95.13	22.91	702.16
C	1+97.26	12.09	701.96
D	2+01.42	6.02	702.18
E	2+03.65	0	702.30
F	2+09.11	0	702.24
G	2+06.19	6.02	702.12
H	2+02.67	17.07	701.90
I	2+01.46	20.45	701.99
J	1+99.18	24.67	702.16
K	1+99.18	26.56	702.22
L	1+97.05	31.56	702.27



STA 2+06, 0' RT

GRAPHIC SCALE
5′ 0 2.5′ 5′
(IN FEET)
1 inch = 5′ ft.

	STATION	OFFSET	ELEVATION
A	2+19.55	26.45	702.21
B	2+15.00	22.79	72.09
C	2+15.64	19.27	701.85
D	2+11.45	5.98	702.12
E	2+09.11	0	702.24
F	2+03.65	0	702.30
G	2+05.86	5.98	702.18
H	2+11.01	19.28	701.91
I	2+11.79	20.99	702.15
J	2+13.39	24.75	72.25
K	2+16.61	32.67	702.25

LEGEND

- PROPOSED CONCRETE WALK
- PROPOSED DETECTABLE WARNING PANEL
- PROPOSED DEPRESSED CURB & GUTTER
- PROPOSED BITUMINOUS PATH
- EXISTING FERRY ROAD WALK
- PROPOSED CURB & GUTTER

NOTE:
1) SCALE FOR ADA GRADING VEW IS 1"=5'
2) REFER TO DETAIL SHEETS FOR ADA RAMP DETAIL

△ 04-19-19: PER CITY COMMENTS △ 03-15-19: PER DUDOT COMMENTS
△ 03-25-19: PER FPD COMMENTS △ 02-25-19: PER INTERNAL COORDINATION

REVISIONS:

△ 09-18-18: REVISED PER CITY COMMENTS	JOB NO: 080-020
△ 11-05-18: REVISED PER FPD COMMENTS	FIELD BOOK: N/A
△ 01-18-19: REVISED PER CITY COMMENTS	FIELD BOOK: N/A
△ 02-18-19: REVISED PER CITY COMMENTS	DRAWN BY: MK
FILE: I:\080-020 Cantera Lot 3 Sub Area C\Engineering\Drawings	CHECKED BY: KEK
	COMPLETED: 04/07/19

PREPARED FOR:
CANTERA DEVELOPMENT HOLDINGS, LLC.
TWO NORTHFIELD PLAZA, SUITE 320
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CONSULTING ENGINEERS

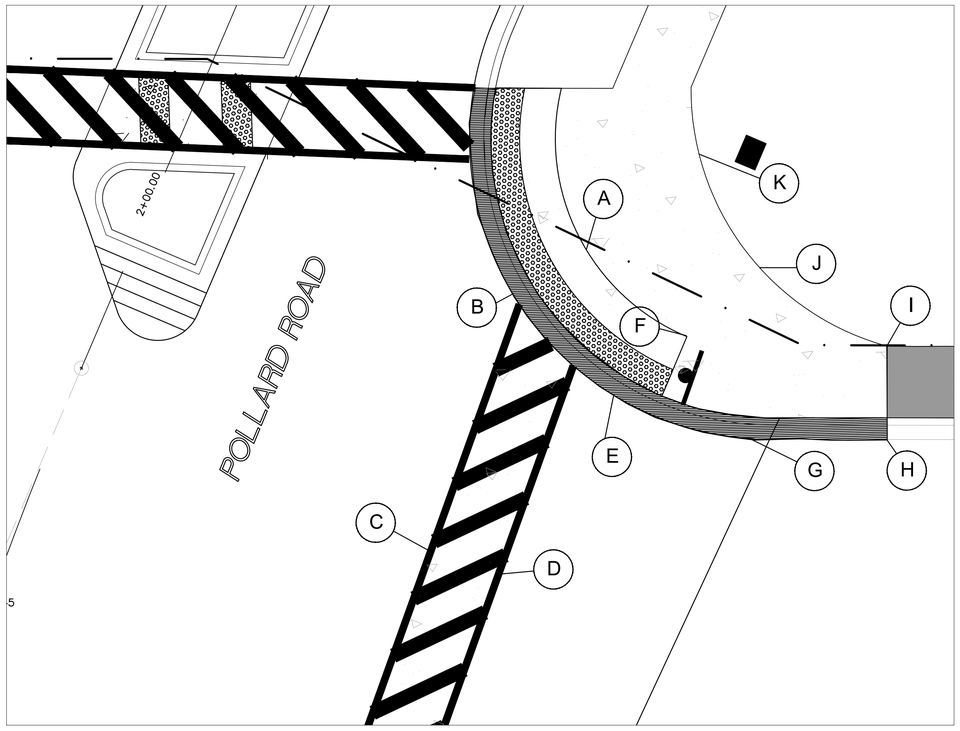
ADA RAMP GRADING PLANS

RIVER VIEW WEST
CITY OF WARRENVILLE, ILLINOIS

SHEET NUMBER
55
OF 71

FILE: I:\080-020 Cantera Lot 3 Sub Area C\Engineering\Drawings\Final Engineering

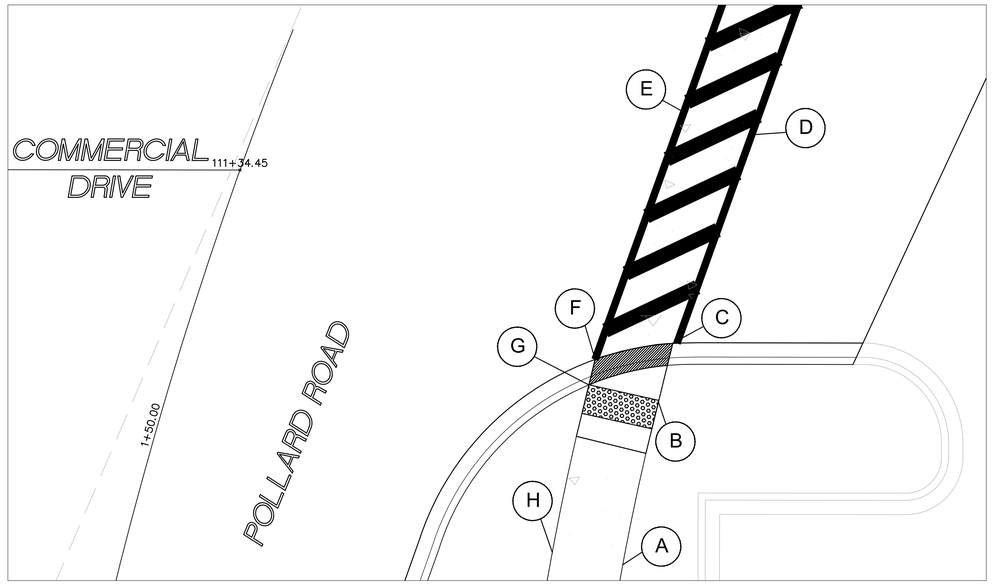
Design Firm License No. 184-001129



STA 2+13.4, 18.27' RT
STA 2+02, 28.16' RT

GRAPHIC SCALE
5' 0 2.5' 5'
(IN FEET)
1 inch = 5' ft.

	STATION	OFFSET	ELEVATION
A	2+08.47	29.2	702.21
B	2+03.57	25.7	702.11
C	1+79.76	27.65	702.22
D	1+81.96	32.58	702.38
E	1+99.84	34.9	702.31
F	2+05.63	38.63	702.37
G	2+00.74	45.07	702.51
H	2+04.50	53.74	702.70
I	2+10.54	51.14	702.80
J	2+12.06	40.88	702.45
K	2+17.64	33.86	702.25



STA 1+66.6, 30.9' RT

GRAPHIC SCALE
5' 0 2.5' 5'
(IN FEET)
1 inch = 5' ft.

	STATION	OFFSET	ELEVATION
A	1+48.73	34.18	702.62
B	1+62.92	32.92	702.40
C	1+67.48	32.51	702.35
D	1+81.96	32.58	702.38
E	1+79.76	27.65	702.22
F	1+64.37	27.79	702.30
G	1+62.34	27.95	702.33
H	1+47.61	29.07	702.54

LEGEND

- PROPOSED CONCRETE WALK
- PROPOSED DETECTABLE WARNING PANEL
- PROPOSED DEPRESSED CURB & GUTTER
- PROPOSED BITUMINOUS PATH
- EXISTING FERRY ROAD WALK
- PROPOSED CURB & GUTTER

NOTE:
1) SCALE FOR ADA GRADING VEW IS 1"=5'
2) REFER TO DETAIL SHEETS FOR ADA RAMP DETAIL

04-19-19: PER CITY COMMENTS
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02-25-19: PER INTERNAL COORDINATION

REVISIONS:
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11-05-18: REVISED PER FPD COMMENTS
01-18-19: REVISED PER CITY COMMENTS
02-18-19: REVISED PER CITY COMMENTS

JOB NO: 085-020
FIELD BOOK: N/A
FIELD BOOK: N/A
DRAWN BY: MK
CHECKED BY: KEK
COMPLETED: 04/07/18

FILE: I:\085-020 Cantera Lot 2 Sub Area C\Engineering\Drawings

PREPARED FOR:
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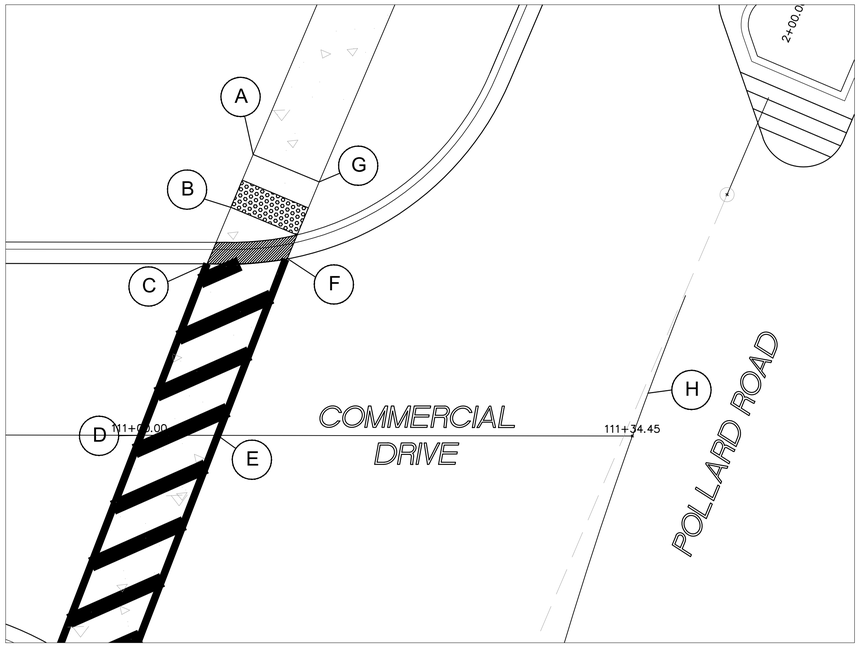
ADA RAMP GRADING PLANS

RIVER VIEW WEST
CITY OF WARRENVILLE, ILLINOIS

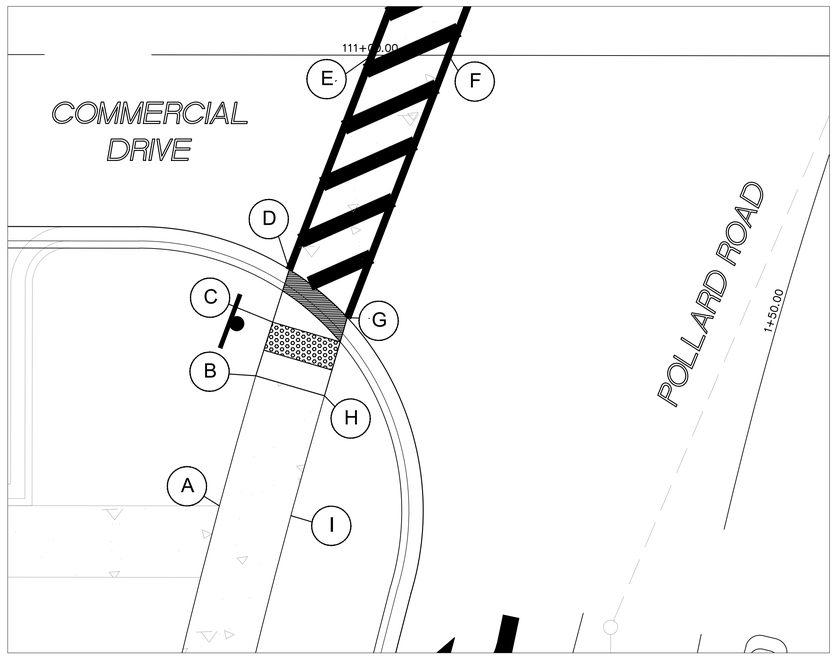
SHEET NUMBER
56
OF 71



STA 111+07.5, 12' LT

GRAPHIC SCALE
5' 0 2.5' 5'
(IN FEET)
1 inch = 5' ft.

	STATION	OFFSET	ELEVATION
A	111+07.92	19.63	702.77
B	111+06.37	15.93	702.76
C	111+04.72	12	702.68
D	111+00.12	0	702.57
E	111+05.47	0	702.51
F	111+10.0	12.33	702.60
G	111+12.54	17.33	702.69
H	111+34.45	0	702.70



STA 110+96.5, 16.56' RT

GRAPHIC SCALE
5' 0 2.5' 5'
(IN FEET)
1 inch = 5' ft.

	STATION	OFFSET	ELEVATION
A	110+89.50	31.52	702.81
B	110+92.03	22.42	702.75
C	110+93.21	18.67	702.67
D	110+94.36	15	702.60
E	110+00.12	0	702.57
F	110+05.12	0	702.51
G	110+96.84	18.36	702.52
H	110+96.84	22.42	702.59
I	110+94.68	31.52	702.71

LEGEND

- PROPOSED CONCRETE WALK
- PROPOSED DETECTABLE WARNING PANEL
- PROPOSED DEPRESSED CURB & GUTTER
- PROPOSED BITUMINOUS PATH
- EXISTING FERRY ROAD WALK
- PROPOSED CURB & GUTTER

NOTE:
1) SCALE FOR ADA GRADING VEW IS 1"=5'
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Design Firm License No. 184-001129

FILE: I:/080-020 Cantera Lot 2 Sub Area C/Engineering/Drawings/Final Engineering

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JOB NO: 080-020
FIELD BOOK: N/A
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DRAWN BY: MK
CHECKED BY: KEK
COMPLETED: 04/07/18

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ADA RAMP GRADING PLANS

RIVER VIEW WEST
CITY OF WARRENVILLE, ILLINOIS

SHEET NUMBER
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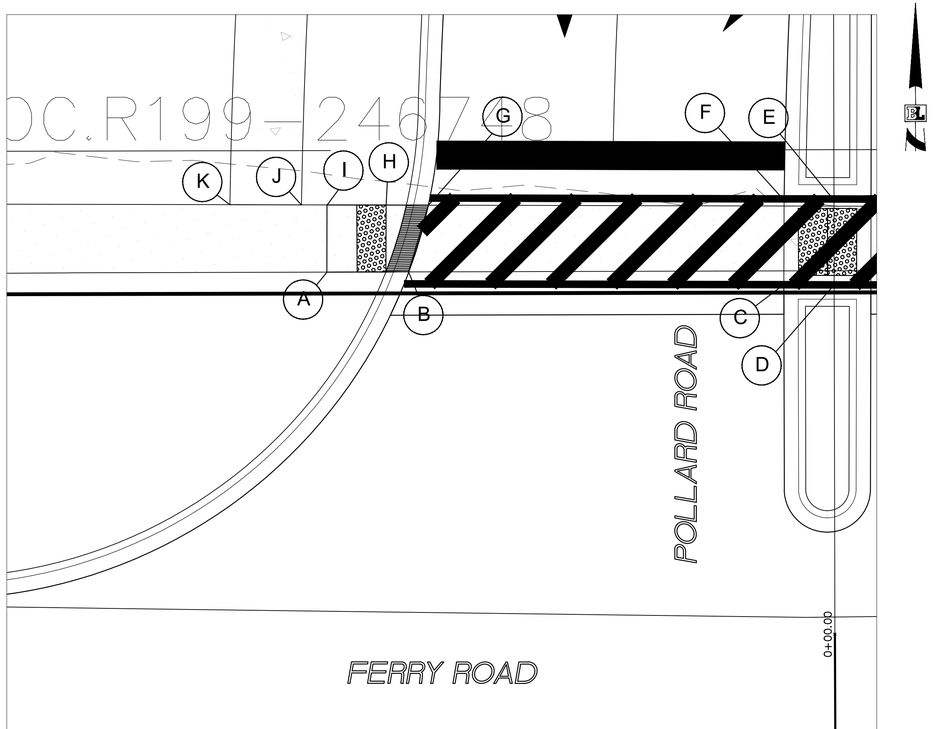
OF 71

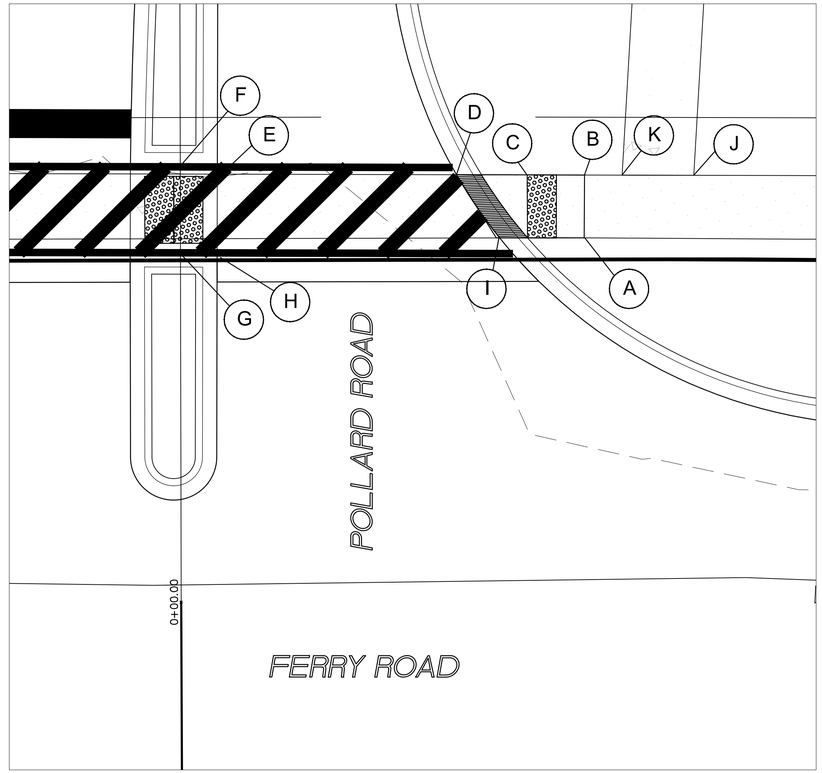
Design Firm License No. 184-001129



STA 0+27.7, 29.03' LT

GRAPHIC SCALE
5' 0 2.5' 5'
(IN FEET)
1 inch = 5' ft.

	STATION	OFFSET	ELEVATION
A	0+25.38	35.41	701.93
B	0+25.38	29.71	701.75
C	0+24.41	3.5	702.24
D	0+24.41	0	702.31
E	0+30.41	0	702.40
F	0+30.41	3.5	702.33
G	0+30.41	28.34	701.83
H	0+30.04	31.29	701.90
I	0+30.04	35.42	701.98
J	0+30.04	37.22	702.02
K	0+30.04	42.2	702.07



STA 0+27.7, 0' RT

GRAPHIC SCALE
5' 0 2.5' 5'
(IN FEET)
1 inch = 5' ft.

	STATION	OFFSET	ELEVATION
A	0+25.40	28.21	702.11
B	0+29.80	28.24	702.16
C	0+29.80	24.24	702.08
D	0+29.30	19.3	702.01
E	0+30.41	3.5	702.33
F	0+30.41	0	702.41
G	0+24.41	0	702.31
H	0+24.41	3.5	702.24
I	0+25.40	22.3	701.96
J	0+29.80	35.87	702.25
K	0+29.80	30.87	702.7

LEGEND

- PROPOSED CONCRETE WALK
- PROPOSED DETECTABLE WARNING PANEL
- PROPOSED DEPRESSED CURB & GUTTER
- PROPOSED BITUMINOUS PATH
- EXISTING FERRY ROAD WALK
- PROPOSED CURB & GUTTER

NOTE:
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2) REFER TO DETAIL SHEETS FOR ADA RAMP DETAIL

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△ 02-18-19: REVISED PER CITY COMMENTS

JOB NO: 086-020
FIELD BOOK: N/A
FIELD BOOK: N/A
DRAWN BY: MK
CHECKED BY: KEK
COMPLETED:04/07/18

PREPARED FOR:
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CONSULTING ENGINEERS

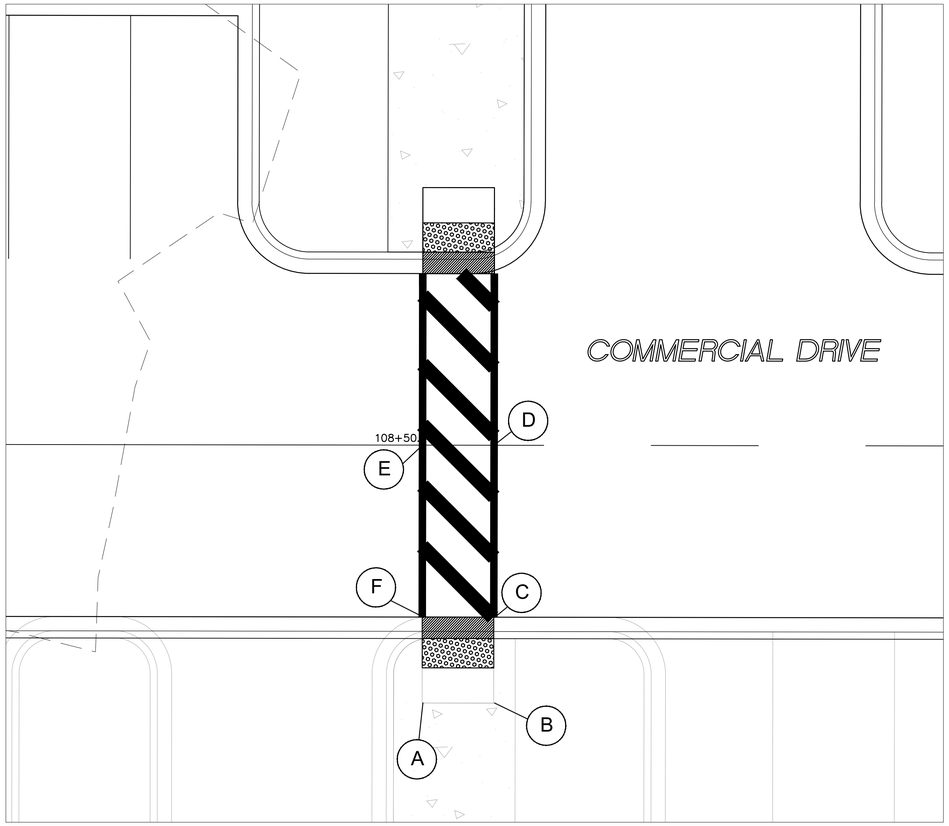
ADA RAMP GRADING PLANS

RIVER VIEW WEST
CITY OF WARRENVILLE, ILLINOIS

SHEET NUMBER
58
OF 71

FILE: I:\086-020 Cantera Lot 2 Sub Area C\Engineering\Drawings\Final Engineering

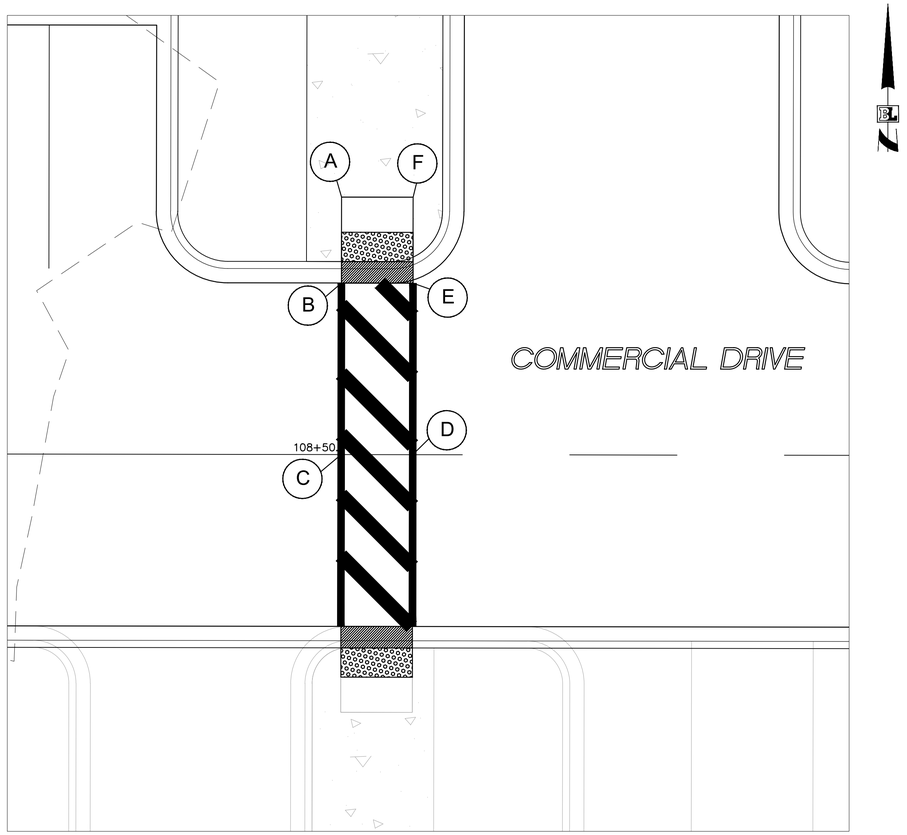
Design Firm License No. 184-001129



STA 108+54, 12' RT

GRAPHIC SCALE
5' 0 2.5' 5'
(IN FEET)
1 inch = 5' ft.

	STATION	OFFSET	ELEVATION
A	108+51.25	18	702.60
B	108+56.25	18	702.60
C	108+56.25	12	702.36
D	108+56.25	0	702.20
E	108+51.25	0	702.25
F	108+51.25	12	702.36



STA 108+53, 12' LT

GRAPHIC SCALE
5' 0 2.5' 5'
(IN FEET)
1 inch = 5' ft.

	STATION	OFFSET	ELEVATION
A	108+51.25	18	702.55
B	108+51.25	12	702.34
C	108+51.25	0	702.20
D	108+56.25	0	702.20
E	108+56.25	12.2	702.30
F	108+56.25	18.3	702.57

LEGEND

- PROPOSED CONCRETE WALK
- PROPOSED DETECTABLE WARNING PANEL
- PROPOSED DEPRESSED CURB & GUTTER
- PROPOSED BITUMINOUS PATH
- EXISTING FERRY ROAD WALK
- PROPOSED CURB & GUTTER

NOTE:
1) SCALE FOR ADA GRADING VEW IS 1"=5'
2) REFER TO DETAIL SHEETS FOR ADA RAMP DETAIL

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REVISIONS:
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△ 11-05-18: REVISED PER FPD COMMENTS
△ 01-18-19: REVISED PER CITY COMMENTS
△ 02-18-19: REVISED PER CITY COMMENTS
FILE: I:\2018-080 Cantera Lot 2 Site Area 12\Engineering\Drawings\Final Engineering

JOB NO: 080-020
FIELD BOOK: N/A
FIELD BOOK: N/A
DRAWN BY: MK
CHECKED BY: KEK
COMPLETED: 04/07/18

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ADA RAMP GRADING PLANS

RIVER VIEW WEST
CITY OF WARRENVILLE, ILLINOIS

SHEET NUMBER
59
OF 71

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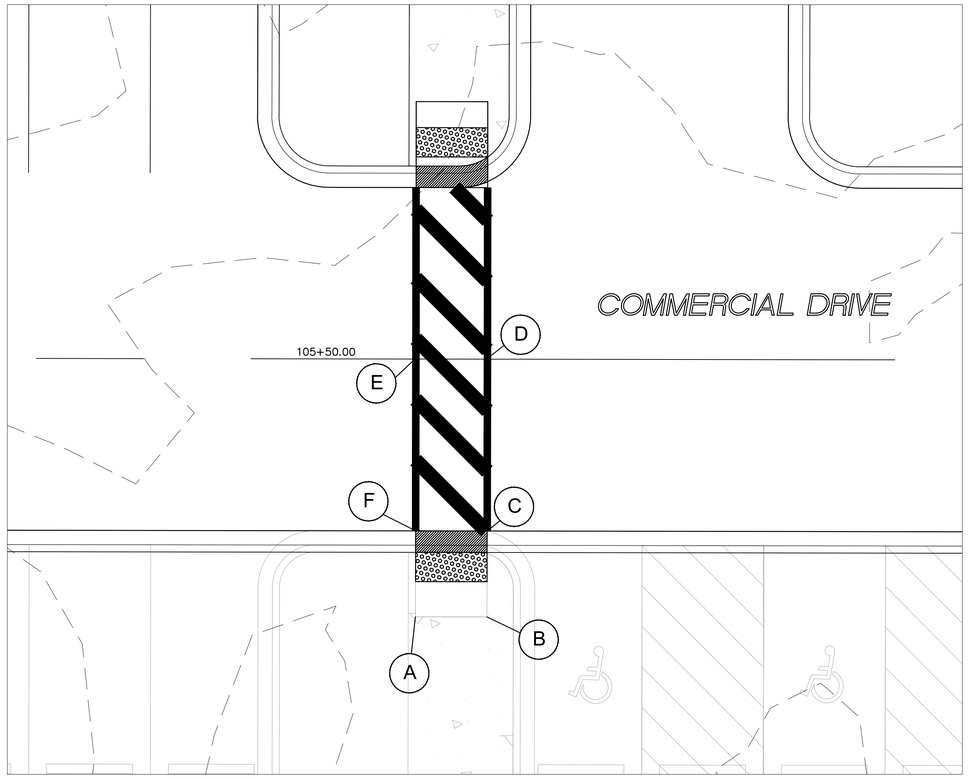
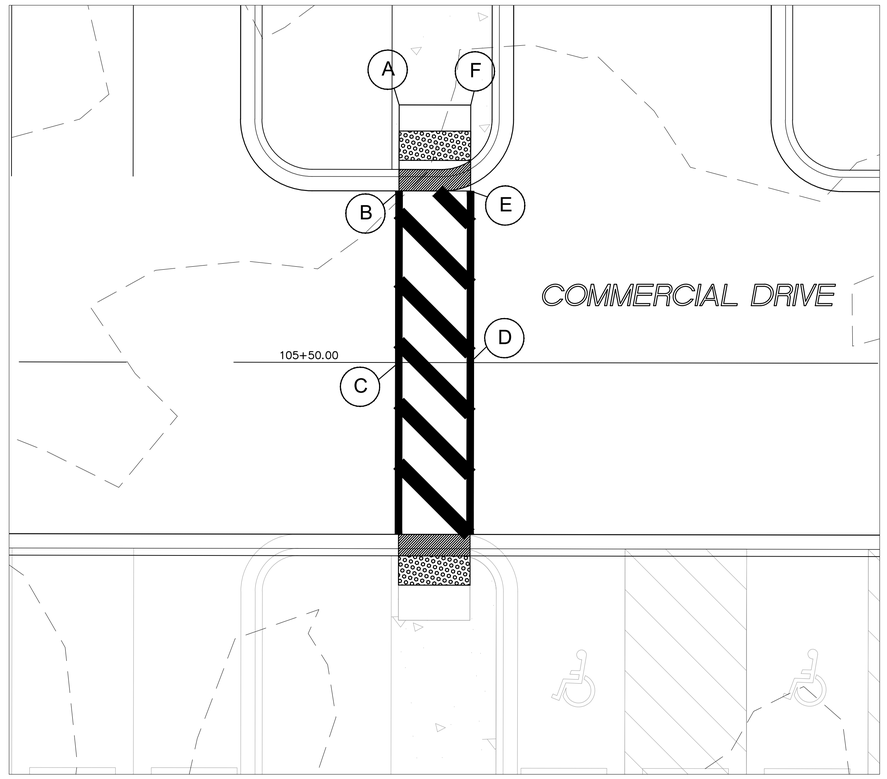


STA 105+58.2, 12' RT

GRAPHIC SCALE
5' 0 2.5' 5'
(IN FEET)
1 inch = 5' ft.

	STATION	OFFSET	ELEVATION
A	105+56.26	18	702.80
B	105+61.26	18	702.80
C	105+61.26	12	702.50
D	105+61.26	0	702.10
E	105+56.25	0	702.10
F	105+56.25	12	702.50



STA 105+58.2, 12' LT

GRAPHIC SCALE
5' 0 2.5' 5'
(IN FEET)
1 inch = 5' ft.

	STATION	OFFSET	ELEVATION
A	105+56.26	18	701.80
B	105+56.26	12	701.74
C	105+56.26	0	702.10
D	105+61.26	0	702.10
E	105+61.26	12	701.74
F	105+61.26	18	701.80

LEGEND

- PROPOSED CONCRETE WALK
- PROPOSED DETECTABLE WARNING PANEL
- PROPOSED DEPRESSED CURB & GUTTER
- PROPOSED BITUMINOUS PATH
- EXISTING FERRY ROAD WALK
- PROPOSED CURB & GUTTER

NOTE:
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2) REFER TO DETAIL SHEETS FOR ADA RAMP DETAIL

04-19-19: PER CITY COMMENTS 03-15-19: PER DUDOT COMMENTS
03-25-19: PER PDD COMMENTS 02-25-19: PER INTERNAL COORDINATION

REVISIONS:
09-18-18: REVISED PER CITY COMMENTS
11-05-18: REVISED PER PDD COMMENTS
01-18-19: REVISED PER CITY COMMENTS
02-18-19: REVISED PER CITY COMMENTS

FILE: I:\086-020 Canters Lot 2 Sub Area C\Engineering\Drawings\Final Engineering

JOB NO: 086-020
FIELD BOOK: N/A
FIELD BOOK: N/A
DRAWN BY: MK
CHECKED BY: KEK
COMPLETED:04/07/18

PREPARED FOR:
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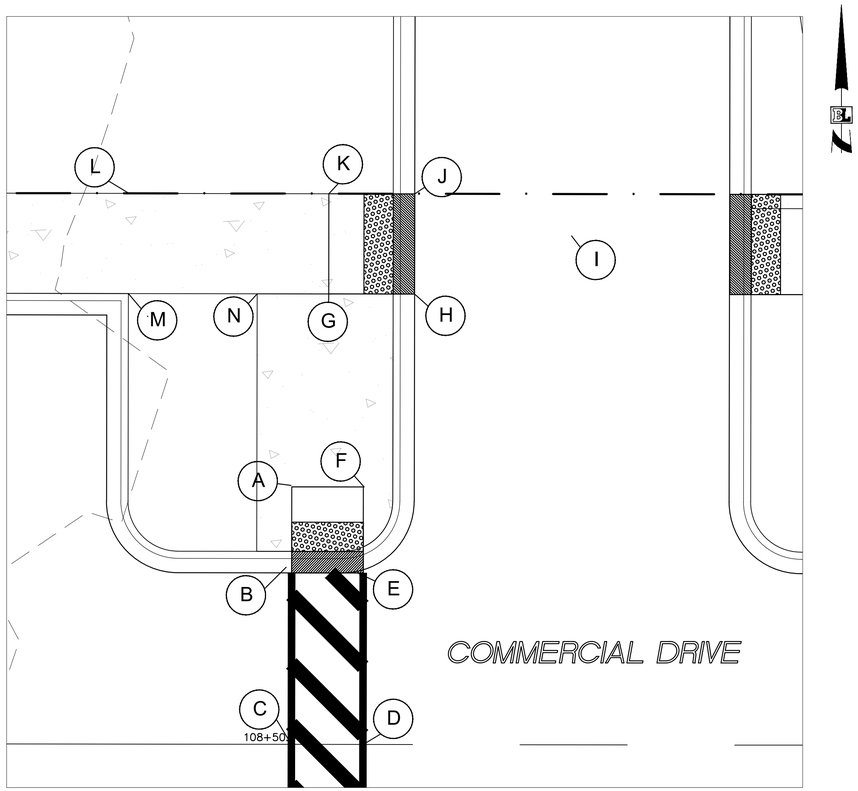
ADA RAMP GRADING PLANS

RIVER VIEW WEST
CITY OF WARRENVILLE, ILLINOIS

SHEET NUMBER
60
OF 71

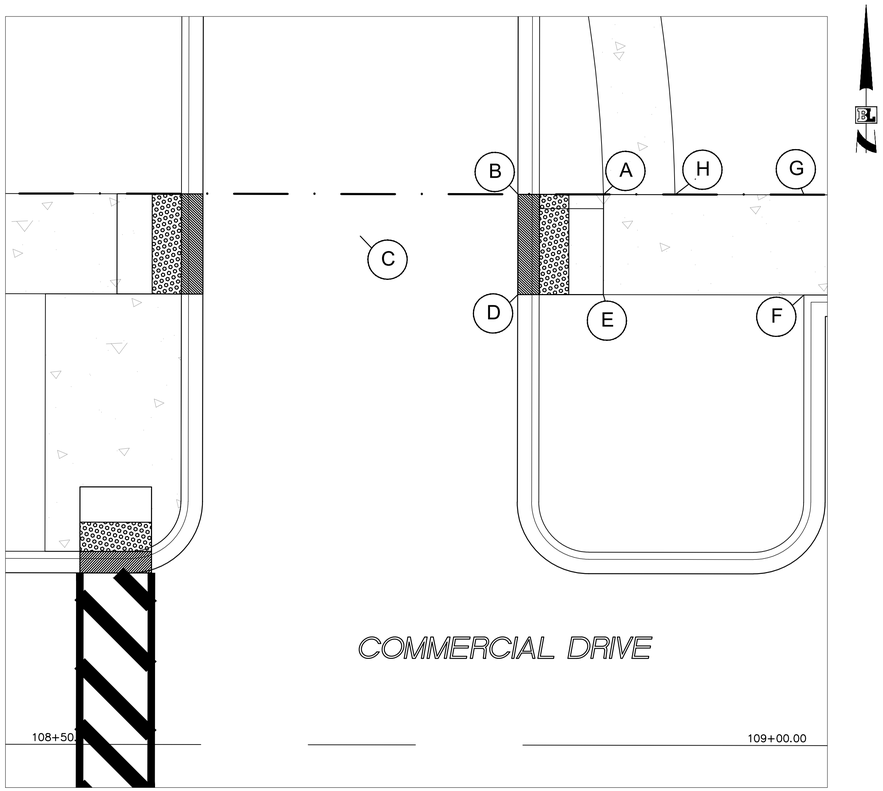
Design Firm License No. 184-001129



STA 108+58, 35' LT

GRAPHIC SCALE
5' 0 2.5' 5'
(IN FEET)
1 inch = 5' ft.

	STATION	OFFSET	ELEVATION
A	108+51.25	18	702.55
B	108+51.25	12	702.34
C	108+51.25	0	702.25
D	108+56.25	0	702.20
E	108+56.25	12	702.30
F	108+56.25	18	702.57
G	108+53.81	31.49	702.68
H	108+59.81	31.49	702.38
I	108+70.81	34.99	702.60
J	108+59.81	38.49	702.43
K	108+53.81	38.99	702.73
L	108+39.81	38.5	703.2
M	108+39.81	31.5	703.1
N	108+48.81	31.5	703.78



STA 108+83.4, 35' LT

GRAPHIC SCALE
5' 0 2.5' 5'
(IN FEET)
1 inch = 5' ft.

	STATION	OFFSET	ELEVATION
A	108+87.79	38.49	702.65
B	108+81.81	38.49	702.43
C	108+70.81	34.99	702.60
D	108+8181	31.47	702.38
E	108+87.79	31.47	702.60
F	109+01.03	31.47	702.90
G	109+01.83	38.49	703.00
H	108+92.79	38.49	702.70

LEGEND

- PROPOSED CONCRETE WALK
- PROPOSED DETECTABLE WARNING PANEL
- PROPOSED DEPRESSED CURB & GUTTER
- PROPOSED BITUMINOUS PATH
- EXISTING FERRY ROAD WALK
- PROPOSED CURB & GUTTER

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FILE: I:\080-020 Cantera Lot 2 Sub Area C\Engineering\Drawings\Final Engineering

Bollinger, Lach & Associates, Inc.
333 PIERCE ROAD SUITE 200 ITASCA, IL 60143
P: (630) 438 6400 F: (630) 438 6444 www.bollingerlach.com
ITASCA * CHICAGO * ALGONQUIN * LAKE GENEVA * SOUTH BEND * INDIANAPOLIS
CONSULTING ENGINEERS

ADA RAMP GRADING PLANS

RIVER VIEW WEST
CITY OF WARRENVILLE, ILLINOIS

SHEET NUMBER
61
OF 71

Design Firm License No. 184-001129

60 0 30 60
1 inch = 60 Ft.

WEST BRANCH DUPAGE RIVER

TORCH PARKWAY

FERRY ROAD

364 UNITS MULTIFAMILY BUILDING W/ GARAGE

COMED HANDHOLE

METER BANK

4"ø ELEC CONDUIT

EXISTING 15"ø SANITARY SEWER

EXISTING 12"ø WATER MAIN

EXISTING ROW

10' SIDEWALK EASEMENT PER DOC R199-046748

PREPARED FOR:
CANTERA DEVELOPMENT HOLDINGS, LLC.
TWO NORTHFIELD PLAZA, SUITE 320
NORTHFIELD, IL 60093
TEL.:(847) 562-2001

REVISIONS:	
09-18-18:	REVISED PER CITY COMMENTS
11-05-18:	REVISED PER FPD COMMENTS
01-18-19:	REVISED PER CITY COMMENTS
02-18-19:	REVISED PER CITY COMMENTS
03-25-19:	PER FPD COMMENTS
04-19-19:	PER DUDOT COMMENTS
03-15-19:	PER DUDOT COMMENTS
02-25-19:	PER INTERNAL COORDINATION

JOB NO: 080-020
FIELD BOOK: N/A
FIELD BOOK: N/A
DRAWN BY: MK
CHECKED BY: KEK
COMPLETED: 04/07/18

FILE: I:\080-020 Cantera Lot 3 Sub Area 4\Engineering\Drawings\

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DRY UTILITY PLAN

RIVER VIEW WEST
CITY OF WARRENVILLE, ILLINOIS

SHEET NUMBER
62
OF 71

Design Firm License No. 184-001129

100 0 50 100
1 inch = 100 Ft.

WEST BRANCH DUPAGE RIVER

TORCH PARKWAY

POLLARD ROAD:
280 LF INTERSECTION SIGHT
DISTANCE FOR 25 MPH DESIGN
SPEED FROM CITY ORDINANCE
TABLE 10-1 & ILLUSTRATION 10-A

TORCH PARKWAY:
335 LF INTERSECTION SIGHT
DISTANCE FOR 30 MPH DESIGN
SPEED FROM CITY ORDINANCE
TABLE 10-1 & ILLUSTRATION 10-A

POLLARD ROAD:
280 LF INTERSECTION SIGHT
DISTANCE FOR 25 MPH DESIGN
SPEED FROM CITY ORDINANCE
TABLE 10-1 & ILLUSTRATION 10-A

POLLARD ROAD:
280 LF INTERSECTION SIGHT
DISTANCE FOR 25 MPH DESIGN
SPEED FROM CITY ORDINANCE
TABLE 10-1 & ILLUSTRATION 10-A

TORCH PARKWAY:
335 LF INTERSECTION SIGHT
DISTANCE FOR 30 MPH DESIGN
SPEED FROM CITY ORDINANCE
TABLE 10-1 & ILLUSTRATION 10-A

FERRY ROAD:
500LF INTERTSECTION SIGHT
DISTANCE FOR 45 MPH DESIGN
SPEED FROM CITY ORDINANCE
TABLE 10-1 & ILLUSTRATION 10-A

DECISION SIGHT
DISTANCE

INTERSECTION STOPPING
SIGHT DISTANCE

INTERSECTION STOPPING
SIGHT DISTANCE

-0+40.46 CL POLLARD ROAD =
131+24.62 CL FERRY ROAD

FERRY ROAD

WINFIELD ROAD

NOTE:
1) INTERSECTION SIGHT DISTANCE AND DECISION SIGHT DISTANCE VALUES SHOWN FOR THE PROPOSED POLLARD ROAD AND FERRY ROAD INTERSECTION USED THE IDOT BDE MANUAL GUIDELINES (CHAPTER 36 - INTERSECTIONS) AND A DESIGN SPEED OF 45 MPH.
2) SIGHT DISTANCE VALUES SHOWN FOR THE COMMERCIAL DRIVE AND FERRY ROAD INTERSECTION REFLECT THE CITY OF WARRENVILLE VALUES DUE TO THE EXISTING TRAFFIC SIGNAL.

REVISIONS:
- 04-19-19: PER CITY COMMENTS
- 03-25-19: PER FPD COMMENTS
- 03-15-19: PER IDOT COMMENTS
- 02-25-19: PER INTERNAL COORDINATION

09-18-18: REVISED PER CITY COMMENTS
11-05-18: REVISED PER FPD COMMENTS
01-18-19: REVISED PER CITY COMMENTS
02-18-19: REVISED PER CITY COMMENTS
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SIGHT DISTANCE PLAN

RIVER VIEW WEST
CITY OF WARRENVILLE, ILLINOIS

SHEET NUMBER
63
OF 71

P:\080-020 Cantera Lot 2 Sub Area C\Engineering\Drawings\Final Engineering

Design Firm License No. 184-001129

60 0 30 60
1 inch = 60 Ft.

NOTE:
1) ACCUMULATED AND STORED SNOW SHALL BE PLACED IN A MANNER TO ALLOW POSITIVE DRAINAGE AT ALL TIMES. DRAINAGE STRUCTURES AND SWALES SHALL BE FREE MELTWATER AND RAIN AT ALL TIMES.

WEST BRANCH DUPAGE RIVER

TORCH PARKWAY PROPOSED SNOW STORAGE LOCATION.

TORCH PARKWAY

FERRY ROAD

EXISTING ROW

PROPOSED SNOW STORAGE LOCATION FOR FIRE LANE ACCESS. FIRE ACCESS TO BE PASSABLE AT ALL TIMES.

364 UNITS MULTIFAMILY BUILDING W/ GARAGE
FF=704.00

PROPOSED SNOW STORAGE LOCATIONS.

ADDITIONAL STORAGE TO BE PROVIDED IN NORTHERN PARKING LOT AS NECESSARY. DRAINAGE SWALES TO REMAIN FREE AND FUNCTIONAL AT ALL TIMES.

ACCUMULATED SNOW ON PARKING GARAGE UPPER DECK TO BE LOADED INTO THE PROPOSED SNOW CHUTE AND MOVED TO THE DESIGNATED SNOW STORAGE LOCATIONS IN THE EASTERN PARKING LOT (TYP.).

PROPOSED SNOW STORAGE LOCATIONS. DRAINGE STUCTURES TO REMAIN FREE AND FUNCTIONAL AT ALL TIMES (TYP.)

PROPOSED SNOW STORAGE LOCATIONS. DRAINGE STRUCTURES TO REMAIN FREE AND FUNCTIONAL AT ALL TIMES (TYP.)

PROPOSED SNOW STORAGE LOCATION.

PROPOSED SNOW STORAGE LOCATION.

PROPOSED SNOW STORAGE LOCATION FOR FIRE LANE ACCESS. FIRE ACCESS TO BE PASSABLE AT ALL TIMES.

PROPOSED SNOW STORAGE LOCATION.

PROPOSED SNOW STORAGE LOCATION.

PROPOSED SNOW STORAGE LOCATION.

PROPOSED SNOW STORAGE LOCATION.

TORCH PARKWAY PROPOSED SNOW STORAGE LOCATION.

TORCH PARKWAY PROPOSED SNOW STORAGE LOCATION.

TORCH PARKWAY PROPOSED SNOW STORAGE LOCATION.

TORCH PARKWAY PROPOSED SNOW STORAGE LOCATION.

WALK EASEMENT PER DOC.R1994-0...

EXISTING 15"ø SANITARY SEWER

EXISTING 12"ø WATER MAIN

EXISTING 36"ø RCP

EXISTING 12"ø RCP

EXISTING 15"ø RCP

EXISTING 24"ø RCP

EXISTING 30"ø RCP

EXISTING 18"ø RCP

EXISTING 10"ø RCP

EXISTING 8"ø RCP

EXISTING 6"ø RCP

EXISTING 4"ø RCP

EXISTING 2"ø RCP

EXISTING 1"ø RCP

EXISTING 3"ø RCP

EXISTING 5"ø RCP

EXISTING 7"ø RCP

EXISTING 9"ø RCP

EXISTING 11"ø RCP

EXISTING 13"ø RCP

EXISTING 14"ø RCP

EXISTING 16"ø RCP

EXISTING 17"ø RCP

EXISTING 18"ø RCP

EXISTING 19"ø RCP

EXISTING 20"ø RCP

EXISTING 21"ø RCP

EXISTING 22"ø RCP

EXISTING 23"ø RCP

EXISTING 24"ø RCP

EXISTING 25"ø RCP

EXISTING 26"ø RCP

EXISTING 27"ø RCP

EXISTING 28"ø RCP

EXISTING

Design Firm License No. 184-001129

MAINTENANCE NOTES:

1. SEE THE GENERAL NOTES AND DETAILS SHEETS IN THESE PLANS FOR ADDITIONAL EROSION AND SEDIMENT CONTROL NOTES AND DETAILS.

2. RESPONSIBLE PARTIES: THE CONTRACTOR SHALL BE RESPONSIBLE TO PROVIDE QUALIFIED PERSONELL FOR ALL INSPECTION, MAINTENANCE AND REPAIR OF TEMPORARY AND PERMANENT EROSION AND SEDIMENT CONTROL MEASURES DURING CONSTRUCTION. THE OWNER SHALL BE RESPONSIBLE FOR ALL INSPECTION, MAINTENANCE AND REPAIR OF PERMANENT EROSION CONTROL MEASURES AFTER CONSTRUCTION. QUALIFIED PERSONNEL MEANS A PERSON KNOWLEDGEABLE IN THE PRINCIPLES AND PRACTICES OF EROSION AND SEDIMENT CONTROLS MEASURES, SUCH AS A LICENSED PROFESSIONAL ENGINEER (P.E.), A CERTIFIED PROFESSIONAL IN EROSION AND SEDIMENT CONTROL (CPESC), A CERTIFIED EROSION SEDIMENT AND STORM WATER INSPECTOR (CESSWI) OR OTHER KNOWLEDGEABLE PERSON WHO POSSESSES THE SKILLS TO ASSESS CONDITIONS AT THE CONSTRUCTION SITE THAT COULD IMPACT STORM WATER QUALITY AND TO ASSESS THE EFFECTIVENESS OF ANY SEDIMENT AND EROSION CONTROL MEASURES SELECTED TO CONTROL THE QUALITY OF STORM WATER DISCHARGES FROM THE CONSTRUCTION ACTIVITIES.

3. THE FOLLOWING IS A DESCRIPTION OF PROCEDURES THAT SHOULD BE USED TO MAINTAIN, IN GOOD AND EFFECTIVE OPERATION CONDITIONS, VEGETATION, EROSION AND SEDIMENT CONTROL MEASURES AND OTHER PROTECTIVE MEASURES IDENTIFIED IN THIS PLAN AND THE STANDARD SPECIFICATIONS. ALL EROSION AND SEDIMENT CONTROL MEASURES MUST BE MAINTAINED AND IMMEDIATELY REPLACED AS NEEDED AND AS DIRECTED BY THE ENGINEER. THE CONTRACTOR SHALL INSPECT AND COMPLETE MAINTENANCE OF ALL ITEMS A MINIMUM OF EVERY 7 DAYS AND WITHIN 24 HOURS OF A 0.5-INCH RAINFALL. ALL TEMPORARY EROSION AND SEDIMENT CONTROL ITEMS MUST BE REMOVED WITHIN 30 DAYS AFTER FINAL STABILIZATION IS COMPLETE.

4. STABILIZED CONSTRUCTION ENTRANCE: THE ENTRANCES SHOULD BE MAINTAINED TO PREVENT TRACKING OF SEDIMENT ONTO PUBLIC STREETS. MAINTENANCE INCLUDES TOP DRESSING WITH ADDITIONAL STONE AND REMOVING TOP LAYERS OF STONE AND SEDIMENT. THE SEDIMENT RUN-OFF INTO THE PUBLIC RIGHT-OF-WAY SHOULD BE REMOVED IMMEDIATELY.

5. CONCRETE WASHOUT AREA: EXISTING AREAS SHOULD BE CLEANED OUT, OR NEW FACILITIES SHOULD BE CONSTRUCTED AND OPERATIONAL ONCE THE EXISTING WASHOUT IS 75% FULL. WASHOUT SHOULD BE INSPECTED FREQUENTLY TO ENSURE THAT PLASTIC LININGS ARE INTACT AND SIDEWALLS HAVE NOT BEEN DAMAGED BY CONSTRUCTION ACTIVITIES. WHEN THE WASHOUT AREA IS ADJACENT TO A PAVED ROAD, THE PAVED ROAD SHOULD BE INSPECTED FOR ACCUMULATED CONCRETE WASTE. ANY ACCUMULATED CONCRETE WASTE ON THE ROAD, CURB OR GUTTER SHOULD BE REMOVED AND PROPERLY DISPOSED.

6. SILT FENCE: SILT FENCES SHOULD BE INSPECTED REGULARLY FOR UNDERCUTTING, WHERE THE FENCE MEETS THE GROUND, OVERTOPPING, AND TEARS ALONG THE LENGTH OF THE FENCE. DEFICIENCIES SHOULD BE REPAIRED IMMEDIATELY. REMOVE ACCUMULATED SEDIMENTS FROM THE FENCE BASE WHEN THE SEDIMENT REACHES 50% OF THE FENCE HEIGHT. DURING FINAL STABILIZATION, PROPERLY DISPOSE OF ANY SEDIMENT THAT HAS ACCUMULATED ON THE SILT FENCE. INSTANCES WHEN AREAS OF SILT FENCE CONTINUALLY FAIL, REPLACE SILT FENCE WITH ANOTHER BMP AS SEEN FIT.

7. INLET FILTERS: INLET FILTERS SHOULD BE INSPECTED FOR PROPER FILTERING, IF FILTER BAGS ARE USED, REMOVE SEDIMENT FROM THE FILTER BAGS WHEN 50% OF THE STORAGE VOLUME HAS BEEN FILLED, UNLESS OTHERWISE INSTRUCTED BY THE MANUFACTURER. REMOVE TRASH AND DEBRIS DURING INSPECTIONS. ACCUMULATED MATERIAL IN THE FILTERS SHOULD BE DISPOSED PROPERLY. DO NOT PUNCTURE HOLES IN FILTERS IF PONDING OCCURS.

8. SEDIMENT BASIN/TRAP: THE BOTTOM OF THE PROPOSED DETENTION PONDS SHALL BE USED AS A SEDIMENT BASIN DURING CONSTRUCTION. SEDIMENT SHALL BE REMOVED WHEN BASIN IS 75% FULL. ALL PERFORATED RISERS SHALL BE PERIODICALLY INSPECTED AND CLEANED IF CLOGGED. IMMEDIATELY PRIOR TO END OF CONSTRUCTION, THE BOTTOMS OF PROPOSED DETENTION PONDS SHALL BE EXCAVATED TO THE GRADES AS SHOWN ON THE PLANS.

9. OUTLET PIPE AND RESTRICTOR STRUCTURE: ALL OUTLET PIPES AND RESTRICTOR STRUCTURES SHALL BE CLEANED IF CLOGGED OR PARTIALLY BLOCKED.

10. DEBRIS MANAGEMENT: ALL TRASH, BRUSH, GRASS, CLIPPING DEBRIS ETC. SHOULD BE REMOVED AT LEAST EVERY TWO WEEKS FROM THE EXISTING PROJECT STARTING DATE THROUGHOUT AND DURING THE WHOLE OF THE MAINTENANCE PERIOD. THIS INCLUDES ALL AREAS WITHIN THE PROJECT LIMIT. ALL CONSTRUCTION DEBRIS AND MACHINERY SHALL BE REMOVED FROM THE SITE PRIOR TO FINAL ACCEPTANCE AND PROJECT CLOSE OUT

INSPECTIONS NOTES:

1. THE OWNER SHALL DESIGNATE A QUALIFIED PERSON TO BE RESPONSIBLE FOR SEDIMENT AND EROSION CONTROL OBSERVATION REPORTING. THIS QUALIFIED PERSON SHALL MEET THE REQUIREMENTS NOTED IN THE ILR10 PERMIT CONDITIONS AND/OR THE WMO REGULATIONS. SITE OBSERVATIONS SHOULD OCCUR AT LEAST ONCE EVERY 7 DAYS AND WITHIN 24 HOURS AFTER A RAINFALL OF 0.5-INCHES OR GREATER, OR EQUIVALENT SNOWFALL. SITE OBSERVATION REPORTS SHOULD BE MAINTAINED ONSITE AS PART OF THE SWPPP.

EACH SITE OBSERVATION SHALL INCLUDE:

A. DISTURBED AREAS AND AREAS USED FOR THE STORAGE OF MATERIALS THAT ARE EXPOSED TO PRECIPITATION SHALL BE CHECKED FOR EVIDENCE OF, OR POTENTIAL FOR, POLLUTANTS ENTERING THE DRAINAGE SYSTEM. THE EROSION AND SEDIMENT CONTROL MEASURES IDENTIFIED IN THE PLAN SHALL BE OBSERVED TO ENSURE THAT THEY HAVE BEEN INSTALLED AND ARE OPERATING CORRECTLY. WHERE DISCHARGE POINTS ARE ACCESSIBLE, THEY SHOULD BE CHECKED TO ASCERTAIN WHETHER EROSION CONTROL MEASURES ARE EFFECTIVE IN PREVENTING SIGNIFICANT IMPACTS TO THE RECEIVING WATERS. LOCATIONS WHERE VEHICLES ENTER AND EXIST THE SITE SHOULD BE CHECKED FOR OFF-SITE SEDIMENT TRACKING. ALL PUMPING OPERATIONS AND OTHER POTENTIAL NON-STORM WATER DISCHARGES SHOULD BE OBSERVED.

B. BASED ON THE RESULTS OF THE SITE OBSERVATION, THE DESCRIPTION OF POTENTIAL POLLUTANT SOURCES IDENTIFIED, AND THE POLLUTION PREVENTION MEASURES DESCRIBED IN THIS PLAN SHALL BE REVISED AS APPROPRIATE, AS SOON AS PRACTICABLE AFTER THE OBSERVATION. THE MODIFICATIONS, IF ANY, SHALL PROVIDE FOR TIMELY IMPLEMENTATION OF ANY CHANGES TO THE PLAN WITHIN 7 CALENDAR DAYS FOLLOWING THE SITE OBSERVATION.

C. A REPORT SUMMARIZING THE SCOPE OF THE OBSERVATION, NAME(S) AND QUALIFICATIONS OF PERSONNEL MAKING THE OBSERVATION, THE DATE(S) OF THE OBSERVATION, MAJOR OBSERVATIONS RELATING TO THE IMPLEMENTATION OF THE STORM WATER POLLUTION PREVENTION, AND ACTIONS TAKEN IN ACCORDANCE WITH PARAGRAPH B ABOVE SHALL BE MADE AND RETAINED AS PART OF THE STORM WATER POLLUTION PREVENTION PLAN FOR AT LEAST 3 YEARS FROM THE DATE OF FINAL STABILIZATION OR PERMIT COVERAGE IS TERMINATED. THE REPORT SHALL BE SIGNED IN ACCORDANCE WITH PART VI.G (SIGNATORY REQUIREMENTS) OF THE ILR10 NPDES PERMIT.

INSPECTIONS NOTES (CONTINUED):

D. THE OWNER SHALL NOTIFY THE APPROPRIATE AGENCY FIELD OPERATIONS SECTION OFFICE BY EMAIL AT EPA.SWNONCOMP@ILLINOIS.GOV, TELEPHONE OR FAX WITHIN 24 HOURS OF ANY INCIDENCE OF NONCOMPLIANCE FOR ANY VIOLATION OF THE STORM WATER POLLUTION PREVENTION PLAN OBSERVED DURING A SITE OBSERVATION, OR FOR VIOLATIONS OF ANY CONDITION OF THE PERMIT. THE OWNER SHALL COMPLETE AND SUBMIT WITHIN 5 DAYS OF INCIDENCE OF NONCOMPLIANCE (ION) REPORT FOR ANY VIOLATION OF THE STORM WATER POLLUTION PREVENTION PLAN OBSERVED DURING AN INSPECTION CONDUCTED. SUBMISSION SHALL BE ON FORMS PROVIDED BY THE AGENCY AND INCLUDE SPECIFIC INFORMATION ON THE CAUSE OF NONCOMPLIANCE, ACTIONS WHICH WERE TAKEN TO PREVENT ANY FURTHER CAUSES OF NONCOMPLIANCE, AND A STATEMENT DETAILING ANY ENVIRONMENTAL IMPACT WHICH MAY HAVE RESULTED FROM THE NONCOMPLIANCE.

E. ALL REPORTS OF NONCOMPLIANCE SHALL BE SIGNED BY A RESPONSIBLE AUTHORITY AS DEFINED IN PART VI.G OF THE ILR10 NPDES PERMIT (SIGNATORY REQUIREMENTS)

F. ALL REPORTS OF NONCOMPLIANCE SHALL BE MAILED TO THE AGENCY AT THE FOLLOWING ADDRESS:
ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
DIVISION OF WATER POLLUTION CONTROL
COMPLAINCE ASSURANCE #19
POST OFFICE BOX 19276
SPRINGFIELD, IL 62794-9276

NPDES PERMIT NO. ILR10 CONTENTS OF PLAN.

1. SITE DESCRIPTION. EACH PLAN SHALL PROVIDE A DESCRIPTION OF THE FOLLOWING:

   a. A DESCRIPTION OF THE NATURE OF THE CONSTRUCTION ACTIVITY OR DEMOLITION WORK;

PROPOSED CONSTRUCTION INCLUDES SITE CLEARING AND GRUBBING, INSTALLATION OF EROSION AND SEDIMENT CONTROL MEASEURES AS INDICATED ON THE PLAN, MASS GRADING, CONSTRUCTION OF APPROXIMATELY ±1,186 LF OF RETAINING WALL SYSTEM, INSTALLATION OF STORM SEWER, RECONFIGURATION OF AN EXISTING STORMWATER MANAGEMENT FACILITY, INSTALLATION OF STORMWATER CULVERTS, FINAL SEEDING AND STABILIZATION OF POND EDGES AND SWALES, AND TEMPORARY SEEDING OF AREAS DISTURBED BY CONSTRUCTION. THE PROPOSED IMPROVEMENTS ARE DEPICTED ON THE PLAN.

   b. A DESCRIPTION OF THE INTENDED SEQUENCE OF MAJOR ACTIVITIES WHICH DISTURB SOILS FOR MAJOR PORTIONS OF THE SITE (E.G. CLEARING, GRUBBING, EXCAVATION, GRADING, ON-SITE OR OFF-SITE STOCKPILING OF SOILS, ON-SITE OR OFF-SITE STORAGE OF MATERIALS);

1.	INSTALL E&S CONTROL ITEMS	10/20/18
2.	CLEARING AND TOPSOIL STRIPPING	10/21/18
3.	COFFERDAMS & DEWATERING	04/15/19
4.	MASS EARTHWORK	04/25/19
5.	RETAINAING WALL CONSTRUCTION	06/15/19
6.	UNDERGROUND IMPROVEMENTS	07/15/19
7.	BMP/BIOSWALE CONSTRUCTION	08/15/19
8.	SUB-BASE PREPARATION	08/01/19
9.	SITE PAVING	09/01/19
10.	TEMPORARY SEEDING / MULCH	11/15/19
11.	SIDEWALKS / SIGNS /LIGHTING	04/15/20
12.	FINAL LANDSCAPING	05/15/20
13.	REMOVE TEMP. E&S CONTROL ITEMS	07/15/20

   c. AN ESTIMATE OF THE TOTAL AREA OF THE SITE AND THE TOTAL AREA OF THE SITE THAT IS EXPECTED TO BE DISTURBED BY CLEARING, GRUBBING, EXCAVATION, GRADING, ON-SITE OR OFF-SITE STOCKPILING OF SOILS AND STORAGE OF MATERIALS, OR OTHER ACTIVITIES;

LOT 1 SITE AREA = 4.40 ACRES
LOT 1 DISTURBED AREA=4.40 ACRES
LOT 2 SITE AREA = 17.71 ACRES
LOT 2 DISTURBED AREA=11.76 ACRES
LOT 3 SITE AREA = 3.37 ACRES
LOT 3 DISTURBED AREA=3.37 ACRES
TORCH PKWY ROW AREA = 3.05 ACRES
TORCH PKWY ROW AREA=3.05 ACRES
OUTLOT A SITE AREA= 3.83 ACRES
OUTLOT A DISTURBED AREA = 1.47 ACRES

   d. AN ESTIMATE OF THE RUNOFF COEFFICIENT OF THE SITE AFTER CONSTRUCTION ACTIVITIES ARE COMPLETED AND EXISTING DATA DESCRIBING THE SOIL OR THE QUALITY OF ANY DISCHARGE FROM THE SITE;

LOT 1 EXISTING CN=0.55
LOT 1 PROPOSED CN=0.82
LOT 2 EXISTING CN=0.64
LOT 2 PROPOSED CN=0.86
LOT 3 EXISTING CN=0.55
LOT 3 PROPOSED CN=0.77
TORCH PKWY ROW EXISTING CN=0.45
TORCH PKWY ROW PROPOSED CN=0.78
OUTLOT A EXISTING CN=0.66
OUTLOT A PROPOSED CN=0.80

NPDES PERMIT NO. ILR10 CONTENTS OF PLAN (CONTINUED)

   e. A SITE MAP INDICATING DRAINAGE PATTERNS AND APPROXIMATE SLOPES ANTICIPATED BEFORE AND AFTER MAJOR GRADING ACTIVITIES, LOCATIONS WHERE VEHICLES ENTER OR EXIT THE SITE AND CONTROLS TO PREVENT OFFSITE SEDIMENT TRACKING, AREAS OF SOIL DISTURBANCE, THE LOCATION OF MAJOR STRUCTURAL AND NONSTRUCTURAL CONTROLS IDENTIFIED IN THE PLAN, THE LOCATION OF AREAS WHERE STABILIZATION PRACTICES ARE EXPECTED TO OCCUR, LOCATIONS OF ON-SITE OR OFF- SITE SOIL STOCKPILING OR MATERIAL STORAGE, SURFACE WATERS (INCLUDING WETLANDS), AND LOCATIONS WHERE STORM WATER IS DISCHARGED TO A SURFACE WATER; AND

SEE SWPPP AND EROSIOIN CONTROL DRAWINGS

   f. THE NAME OF THE RECEIVING WATER(S) AND THE ULTIMATE RECEIVING WATER(S), AND AREAL EXTENT OF WETLAND ACREAGE AT THE SITE.

IMMEDIATE RECEIVEING WATERS ARE AN EXISTING ON-SITE STORMWATER RETENTION FACILITY. DOWNSTREAM RECEIVING WATERS ARE THE WEST BRANCH OF THE DUPAGE RIVER. THERE ARE NO WETLANDS PRESENT ON THE SUBJECT SITE.

CONTROLS:
EROSION AND SEDIMENT CONTROLS ARE PROPOSED AS DESCRIBED ON THIS SWPPP AND DEPICTED ON THE EROSION CONTROL PLANS AND SWPPP.

STABILIZATION PRACTICES:
STABILIZATION PRACTICES ARE PROPOSED AS DESCRIBED ON THIS SWPPP AND DEPICTED ON THE EROSION CONTROL PLANS AND SWPPP.

STRUCTURAL PRACTICES:
STRUCTURAL PRACTICES ARE PROPOSED AS DESCRIBED ON THIS SWPPP AND DEPICTED ON THE EROSION CONTROL PLANS AND SWPPP.

USE OF TREATMENT CHEMICALS:
THERE ARE CURRENTLY NO POLYMER FLOCCULANT OR TREATMENET CHEMICALS PROPOSED. THE USE OF FERTILIZERS FOR SEEDING AREAS IS NOT PROPOSED. ALL VEHICLE FUELING WILL BE DELIVERED TO THE SITE AND FUELING WILL BE PERFORMED INT THE EQUIPMENT STORAGE AREAS. NO VEHICLE FUELS WILL BE STORED ON SITE.

BEST MANAGEMENT PRACTICES:
BMPS ARE PROPOSED THROUGH NATIVE SEEDING, VEGETATED SWALES, AND RUNOFF VOLUME RETENTION. THE EXISTNING RETENTION PONDS WILL BE USED AS SEDIMENT BASINS FOR THE MASS GRADING OPERATIONS.

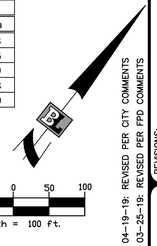
POLLUTION PREVENTION:
CONCRETE WASHOUTS ARE PROPOSED FOR ALL CONCETE WORK, VEHICLE AND MATERIAL STORAGE AREAS HAVE BEEN DESIGNATED ON THE PLANS, ALL BUILDING MATERAS AND EQUIPMENT WILL BE STORED IN LOCKED STORAGE UNITS OR IN APPROPRIATE STORAGE CONTAINMENT UNITS. PORTABLE SANITARY FACILITIES ARE DEISGNATED ON THE PLAN.

POST CONSTRUCTION BEST MANAGEMENT PRACTICES:
PCBMPS ARE PROVIDED THROUGH RUNOFF VOLUME RETENTION, NATIVE VEGATATION ON THE POND SIDE SLOPES AND VEGETATED SWALES. ADDITIONAL PCBNPS ARE DEPICTED ON THE PHASE 1 IMPROVEMENT PLANS.

NATURAL BUFFERS:
NATURAL BUFFERS ARE MAINTAINED BETWEEN THE CONSTRUCTION ACTIVITIES AND THE WEST BRANCH OF THE DUPAGE RIVER. ON-SITE BUFFERS DISTURBED BY CONSTRUCTION ACTIVITIES SHALL BE REPLACED THROUGH NATIVE SEEDING OF POND SHORELINES.

MAINTENANCE:
MAINTENANCE SHALL BE AS DESCRIBED ON THIS SHEET AND IN THE SWPPP.

Existing Conditions									
Lot 1	Area	Lot 2	Area	Lot 3	Area	Torch Parkway ROW	Area	Outlot A	Area
Total Area	4.40	Total Area	17.71	Total Area	3.37	Total Area	3.05	Total Area	4.62
Pond Area	0.65	Pond Area	6.14	Pond Area	0.60	Pond Area	0.00	Pond Area	1.76
Impervious Area	0.13	Impervious Area	0.03	Impervious Area	0.00	Impervious Area	0.02	Impervious Area	0.00
Pervious Area	3.62	Pervious Area	11.54	Pervious Area	2.77	Pervious Area	3.04	Pervious Area	2.86
Weighted C	0.55	Weighted C	0.64	Weighted C	0.55	Weighted C	0.45	Weighted C	0.66
Proposed Conditions									
Lot 1	Area	Lot 2	Area	Lot 3	Area	Torch Parkway ROW	Area	Outlot A	Area
Total Area	4.40	Total Area	17.71	Total Area	3.37	Total Area	3.05	Total Area	3.83
Pond Area	0.00	Pond Area	5.95	Pond Area	0.00	Pond Area	0.00	Pond Area	2.36
Impervious Area	3.29	Impervious Area	7.87	Impervious Area	2.13	Impervious Area	1.99	Impervious Area	0.09
Pervious Area	1.11	Pervious Area	3.89	Pervious Area	1.24	Pervious Area	1.06	Pervious Area	1.38
Weighted C	0.82	Weighted C	0.86	Weighted C	0.77	Weighted C	0.78	Weighted C	0.80



NOTE:

1. SEE THE GENERAL NOTES AND DETAILS SHEETS IN THESE PLANS FOR EROSION AND SEDIMENT CONTROL NOTES, MAINTENANCE, INSPECTIONS AND DETAILS.
2. NATIVE SEEDING SHALL BE PER THE SEEDING MIX TABLES CONTAINED IN THE DETAIL SHEETS.
3. TEMPORARY SEEDING SHALL BE PER IDOT SECTION 250 & SEEDING CLASS 2A.
4. AREAS INDICATED AS FUTURE DEVELOPMENT SHALL RECEIVE TEMPORARY SEEDING AND MULCH OR HYDROSEED UPON COMPLETION OF MASS GRADING OPERATIONS

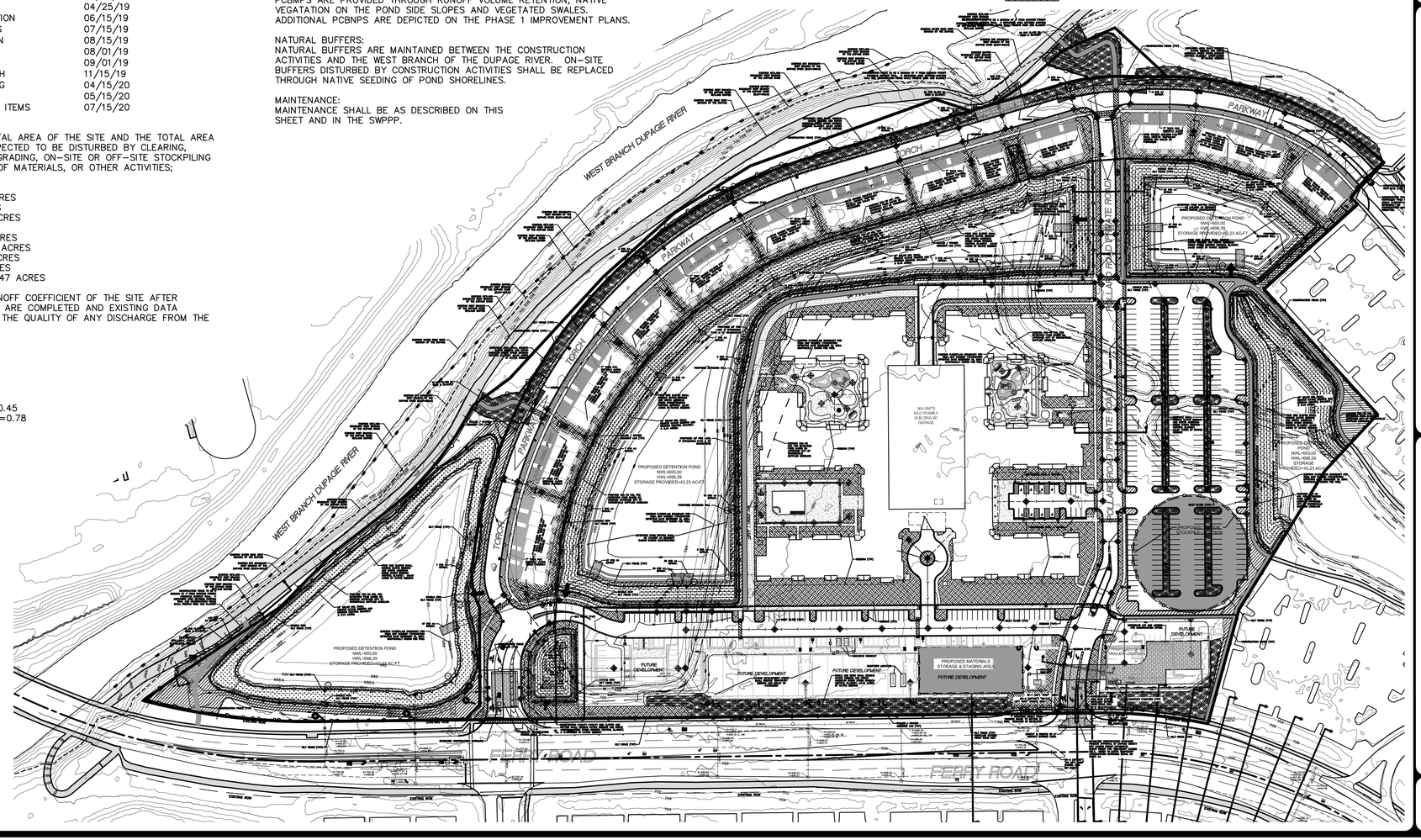
NATIVE SEEDING AND EROSION CONTROL BLANKET BROAD SPECTRUM PRAIRIE W/ FLOWER MIX

NATIVE SEEDING AND EROSION CONTROL BLANKET LOW PROFILE DRY MESIC PRAIRIE W/ FLOWER MIX

NATIVE SEEDING AND EROSION CONTROL BLANKET TOUGH SHORELINE MIX

SODDING

TEMPORARY SEEDING AND MULCH OR HYDROSEED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PARKWAY
TORCH
PROPOSED DETENTION POND
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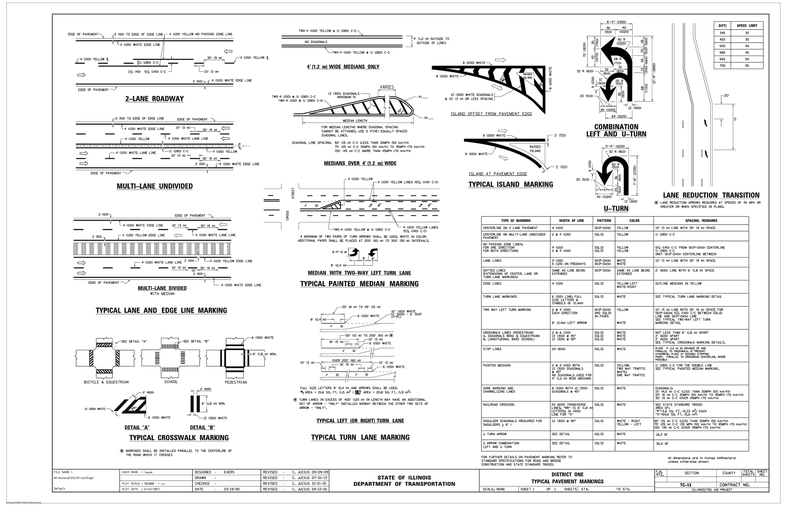
HWL=698.39
STORAGE PROVIDED=42.23 AC-FT
364 UNITS MULTI-FAMILY BUILDING W/ GARAGE
PROPOSED MATERIALS STORAGE & STAGING AREA
FUTURE DEVELOPMENT
PROPOSED DETENTION POND
NWL=693.00
HWL=698.39
STORAGE PROVIDED=42.23 AC-F

Design Firm License No. 184-001129



TYPE OF MARKING	WIDTH OF LINE	PATTERN	COLOR	SPACING / REMARKS
CENTERLINE ON 2 LANE PAVEMENT	4 (100)	SKIP-DASH	YELLOW	10' (3 m) ON 30' (9 m) SPACE
CENTERLINE ON MULTI-LANE UNDIVIDED PAVEMENT	6 (150)	SOLID	YELLOW	5 (900) C-C
NO PASSING ZONE LINES FOR BOTH DIRECTIONS	4 (100) 4 (100)	SOLID SOLID	YELLOW YELLOW	SOLID LINE 4 (100) FROM SKIP-DASH CENTERLINE 4 (100) BETWEEN SOLID CENTERLINE BETWEEN
LANE LINES	4 (100) 6 (150) ON FREEWAYS	SKIP-DASH SKIP-DASH	WHITE WHITE	10' (3 m) ON 30' (9 m) SPACE
DIVIDED LINES (CENTERLINE OR CENTER LANE OR DIRECTIONAL ROADWAYS)	6 (150)	SKIP-DASH	YELLOW	3' (900) LINE WITH 9' (2.8 m) SPACE
EDGE LINES	4 (100)	SOLID	YELLOW LEFT WHITE RIGHT	OUTLINE MEDIANS IN YELLOW
TURN LANE MARKINGS	6 (150) (150) (12) (300) (24) (600) 24" (600) 8' (2.4 m)	SOLID	WHITE	SEE TYPICAL TURN LANE MARKING DETAIL
TWO WAY LEFT TURN MARKING	4 & 4 (100) (100) 4" (100)	SKIP-DASH SOLID	YELLOW WHITE	10' (3 m) ON 30' (9 m) SPACE FOR 12' (3.6 m) LANE WITH 4' (1.2 m) SPACE BETWEEN 4" (100) LINES. 2'-0" (600) ARROW WITH 4' (1.2 m) TURN BAR WITH 2'-0" (600) SPACE BETWEEN ARROW AND BAR
CROSSWALK LINES (PEDESTRIAN & PEDALCYCLE) AND X (INDIRECTIONAL BIKE CROSSING)	12" (300) 6 (150) 4" (100)	SOLID SOLID	WHITE WHITE	SEE TYPICAL CROSSWALK MARKING DETAILS.
STOP LINES	24 (600)	SOLID	WHITE	PLACE 4' (1.2 m) MINIMUM IN ADVANCE OF CROSSWALK LINE
PAINTED MEDIANS	6 & 6 (150) (150) 4" (100)	SOLID	YELLOW WHITE	2' (600) TAPER & 40' (12 m) 2' (600) POINTED MEDIAN MARKING
LANE ASSIGN AND CHANNELIZING LINES	4" (100)	SOLID	WHITE	SEE TYPICAL TURN LANE MARKING DETAIL
RAILROAD CROSSING	24 (600) CROSSBUCK 6 (150) WIDE BAR ON EACH SIDE OF TRACKS		WHITE	SEE STATE STANDARD 780001 FOR DETAILS
SHOULDER DIAGONALS MEASURED FOR SHOULDERS 8' (2.4 m) OR WIDER	4" (100) & 40'	SOLID	WHITE - RIGHT YELLOW - LEFT	10' (3 m) C-C (100) THICK DIAPER (12) WIDE AT 45° ANGLE TO ROADWAY (24) (600) ON (12) (300) SHOULDER WIDTH TO MAINTAIN
U-TURN ARROW	SEE DETAIL	SOLID	WHITE	ALS 3'
1 ARROW COMBINATION LEFT AND U-TURN	SEE DETAIL	SOLID	WHITE	ALS 3'

FOR FURTHER DETAILS ON PAVEMENT MARKING REFER TO STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION AND STATE STANDARD 780001

All dimensions are in inches (millimeters) unless otherwise shown.

DATE	REVISIONS
4-1-16	Omitted orange safety fence from standard as this is covered in the std. spec.
1-1-12	Added SIDEWALK DIVERSION
	Modified appearance of plan views. Renamed Std

SIDEWALK, CORNER OR CROSSWALK CLOSURE

(Sheet 1 of 2)

STANDARD 701801-06

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

DISTRICT ONE
TYPICAL PAVEMENT MARKINGS

SCALE: NONE | SHEET 1 OF 1 SHEETS | STA. | TO STA.

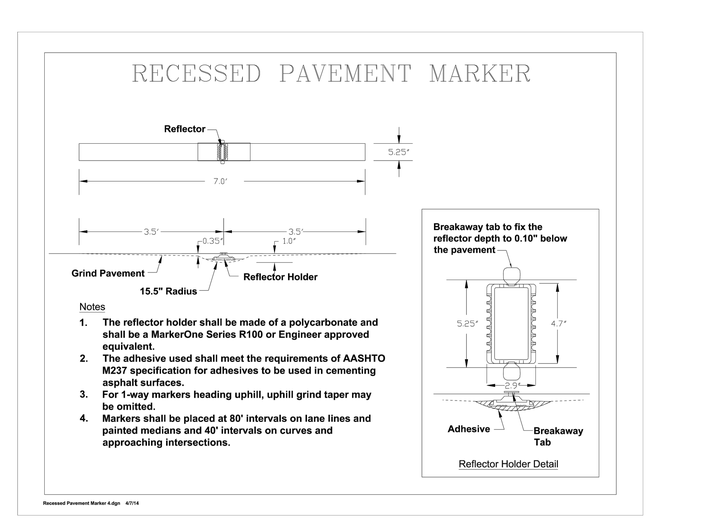
F.A.S. | SECTION | COUNTY | TOTAL SHEET SHEETS | SHEET NO.

CONTRACT NO.

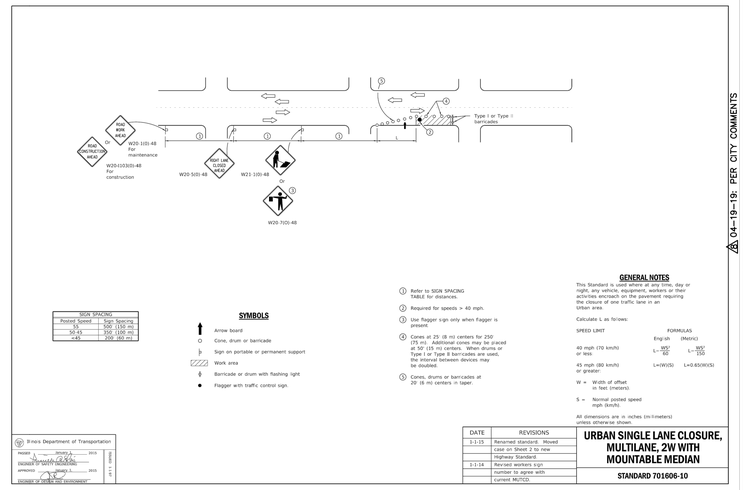
ILLINOIS FED. PROJECT

FILE NAME = N:\Standard\SIGNS\Signs

	DESIGNED	EDCPS	REVISED	C. AUGUS. 09-09-08
	DRAWN		REVISED	C. AUGUS. 07-10-13
	PLOT SCALE = 50.000 ' / in.	CHECKED	REVISED	C. AUGUS. 12-31-15
Default	PLOT DATE = 4/15/2021	DATE	REVISED	C. AUGUS. 04-13-16



Recessed Pavement Marker 4.dgn 4/7/14



SIGN SPACING	
Posted Speed mph	Sign Spacing
30-35	500' (150 m)
40-45	350' (100 m)
50-55	200' (60 m)

SYMBOLS

- Arrow board
- Cone, drum or barricade
- Sign on portable or permanent support
- Work area
- Barricade or drum with flashing light
- Flagger with traffic control sign.

1. Refer to SIGN SPACING TABLE for distances.
2. Required for speeds > 40 mph.
3. Use flagger sign only when flagger is present
4. Cones at 25 (8 m) centers for 250 (75 m) - Additional cones may be placed at 50' (15 m) centers. Where only a Type I or Type II barricades are used, the interval between devices may be doubled.
5. Cones, drums or barricades at 20' (6 m) centers in taper.

GENERAL NOTES

This Standard is used where at any time, day or night, any vehicle, equipment, workers or their activities encroach on the pavement requiring the closure of one traffic lane in an Urban area.

Calculate L as follows:

SPEED LIMIT — FORMULAS

	English	(Metric)
40 mph (70 km/h) or less	$L=\frac{WS^2}{60}$	$L=\frac{WS^2}{150}$
45 mph (80 km/h) or greater.	$L=W(S)$	$L=0.65(W)(S)$

W = Width of offset in feet (meters).

S = Nominal posted speed mph (km/h).

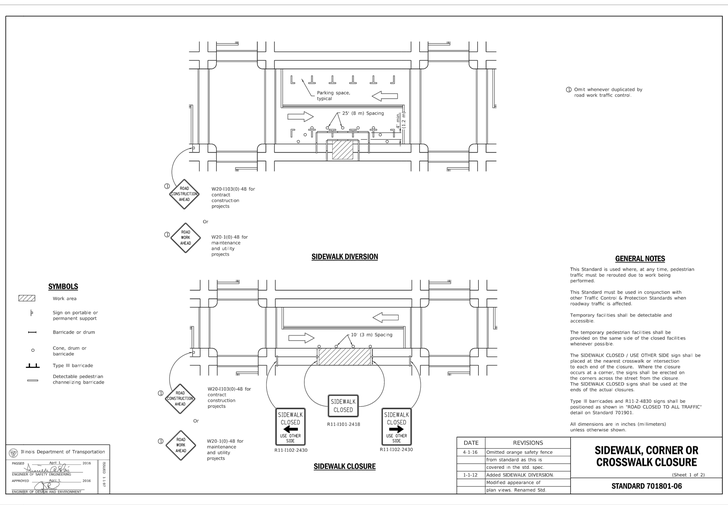
All dimensions are in inches (m-t-meters) unless otherwise shown.

DATE	REVISIONS
1-1-15	Renamed standard. Moved case on Sheet 2 to new Highway Standard
1-1-14	Revised workers sign number to agree with current MUTCD.

URBAN SINGLE LANE CLOSURE, MULTILANE, 2W WITH MOUNTABLE MEDIAN

STANDARD 701606-10

Illinois Department of Transportation
PASSED January 1, 2015
ENGINEER OF POLICY AND PROCEDURES
APPROVED January 1, 2015
ENGINEER OF DESIGN AND ENVIRONMENT



GENERAL NOTES

This Standard is used where, at any time, pedestrian traffic must be rerouted due to work being performed.

This Standard must be used in conjunction with other Traffic Control & Protection Standards when roadway traffic is affected.

Temporary facilities shall be detectable and accessible.

The temporary pedestrian facilities shall be provided on the same side of the closed facilities wherever possible.

The SIDEWALK CLOSED / USE OTHER SIDE sign shall be placed at the nearest crosswalk or intersection to each end of the closure. Where the closure occurs at a corner, the signs shall be erected on the crosswalk perpendicular to the closed walk. The SIDEWALK CLOSED signs shall be used at the ends of the actual closures.

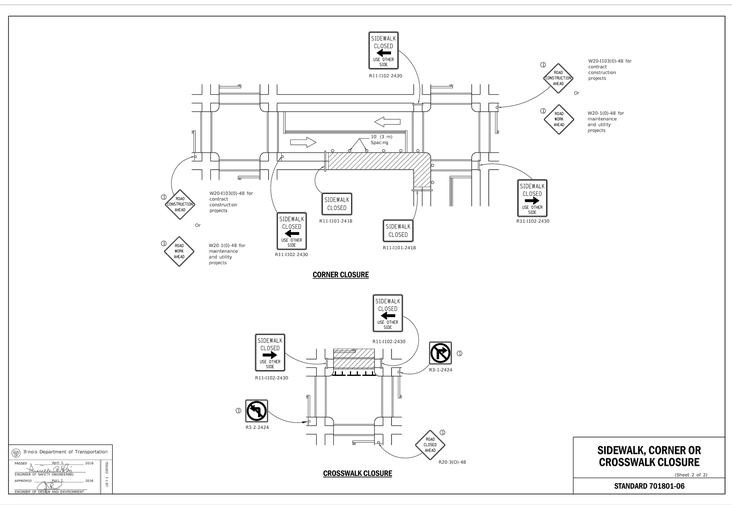
Type II barricades and R11-2-4830 signs shall be installed at the "SIDEWALK CLOSED TO ALL TRAFFIC" detail on Standard 701801.

All dimensions are in inches (m-limeters) unless otherwise shown.

DATE	REVISIONS
1-1-09	Switched units to English (metric)
1-1-02	Renum. Standard 846001.

DETECTOR LOOP INSTALLATIONS

STANDARD 886001-01



SIDEWALK, CORNER OR CROSSWALK CLOSURE

(Sheet 2 of 2)

STANDARD 701801-06

Illinois Department of Transportation
PASSED January 1, 2015
ENGINEER OF POLICY AND PROCEDURES
APPROVED January 1, 2015
ENGINEER OF DESIGN AND ENVIRONMENT

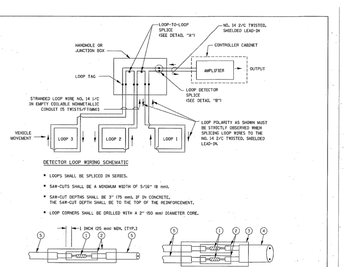
LOOP DETECTOR NOTES

1. EACH PAIR OF LOOP WIRES SHALL BE PLACED IN A SEPARATE EMPTY COILABLE NONMETALLIC CONDUIT FROM THE EDGE OF PAVEMENT TO THE HANDHOLE. SPACING BETWEEN THE HOLES DRILLED IN THE PAVEMENT SHALL NOT BE LESS THAN 6" (150 mm). EMPTY COILABLE NONMETALLIC CONDUIT SHALL BE INCLUDED IN THE COST OF THE LOOP WIRE.
2. THE NUMBER OF LOOP TURNS SHALL BE AS RECOMMENDED BY THE AMPLIFIER MANUFACTURER. ALL ADJACENT SIDES OF THE LOOPS SHALL BE INSTALLED IN SUCH A WAY THAT THE CURRENT FLOW IS IN THE SAME DIRECTION TO REINFORCE ITS MAGNETIC FIELDS FOR SMALL VEHICLE DETECTION.
3. EACH LOOP LEAD-IN SHALL BE IDENTIFIED AND PERMANENTLY TAGGED IN THE HANDHOLE. EACH LEAD-IN CABLE TAG SHALL INDICATE THE LOCATION OF THE LOOP, LOOP ROTATION (CLOCKWISE/COUNTERCLOCKWISE), LOOP LEAD-IN DIRECTION (IN OR OUT), LOOP CABLE NUMBER AND LOCATION IN CABINET, AND NUMBER OF TURNS IN THE DETECTOR LOOPS IN WATER PROOF INK AS INDICATED ON THE DISTRICT 1 STANDARD TRAFFIC SIGNAL DESIGN DETAIL. THE CONTRACTOR SHALL MARK LOOP LOCATIONS ON RECORD DRAWINGS AND PRESENT TO THE ENGINEER AFTER FINAL INSPECTION. LOOPS SHALL BE MARKED BY LANE AND LOOP NUMBER. SEE DETAIL BELOW.
4. ALL LOOP CABLE SHALL BE FASTENED WITH PLASTIC TIE WRAP TO THE HANDHOLE HOOKS.
5. IN ASPHALT PAVEMENT, LOOPS SHOULD BE PLACED IN THE BINDER AND SEVEALS MARKED AT THE CURB WITH A SAW-CUT. THE SAW-CUT SHALL BE CUT IN ACCORDANCE WITH LOCAL AND E.P.A. DUST CONTROL REQUIREMENTS. DETECTOR LOOPS SHALL NOT BE INSTALLED IN WET CONDITIONS AND THE SAW-CUTS MUST BE FREE OF DEBRIS AND RESIDUE SUCH AS DUST AND WATER WHICH IS TO BE ACHIEVED BY THE USE OF COMPRESSED AIR, WIRE BRUSHING AND HEAT DRYING ACCORDING TO SEALANT MANUFACTURER REQUIREMENTS. THE DETECTOR WIRE SHALL BE SECURED IN PLACE BY THE USE OF FORM WEDGES. WEDGES SHALL BE SPACED NO MORE THAN 18" (450 mm) APART.
6. LOOP SPLICES SHALL BE SOLDERED USING A SOLDERING IRON. BLOW TORCHES OR OTHER DEVICES WHICH OXIDIZE COPPER CABLE SHALL NOT BE ALLOWED FOR SOLDERING OPERATIONS. SEE DETAIL BELOW RIGHT.
7. PREFORMED DETECTOR LOOPS SHALL BE USED, AS SHOWN ON THE PLANS, WHERE NEW CONCRETE PAVEMENT IS PROPOSED. THE INSTALLATION OF PREFORMED LOOPS SHALL BE IN ACCORDANCE WITH THE DISTRICT 1 SPECIFICATIONS OR AS DIRECTED BY THE ENGINEER.

LOOP LEAD-IN CABLE TAG

LANE (1) LOOP (2)
LOOP DIRECTION (3)
LOOP ROTATION (4)

A. LANE 1 IS THE LANE CLOSEST TO THE CENTERLINE OF THE ROADWAY
B. LOOP #1 IS THE LOOP IN THE LANE CLOSEST TO THE INTERSECTION.
C. LABEL LOOP CABLE "IN" OR LOOP CABLE "OUT".
D. LABEL LOOP CABLE CLOCKWISE OR LOOP CABLE COUNTERCLOCKWISE.



DATE	REVISIONS
1-1-09	Switched units to English (metric)
1-1-02	Renum. Standard 886006.

TYPICAL LAYOUTS FOR DETECTION LOOPS

STANDARD 886006-01

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

DISTRICT ONE
STANDARD TRAFFIC SIGNAL DESIGN DETAILS

SCALE: NONE | SHEET NO. 1 OF 1 SHEETS | STA. | TO STA.

F.A.S. | SECTION | COUNTY | TOTAL SHEET SHEETS | SHEET NO.

CONTRACT NO.

ILLINOIS FED. PROJECT

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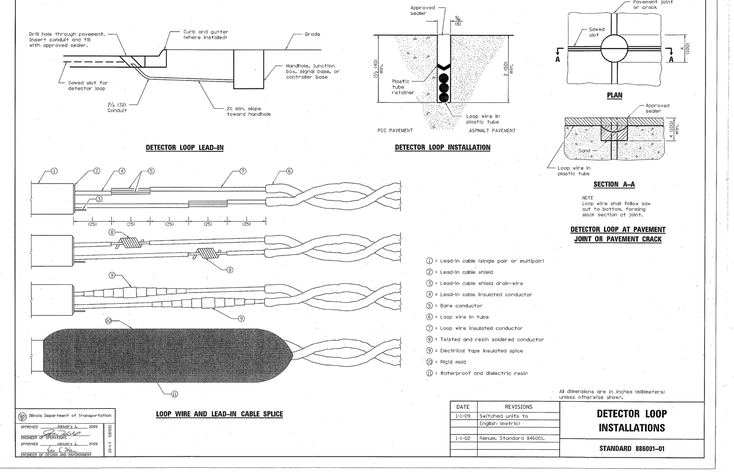
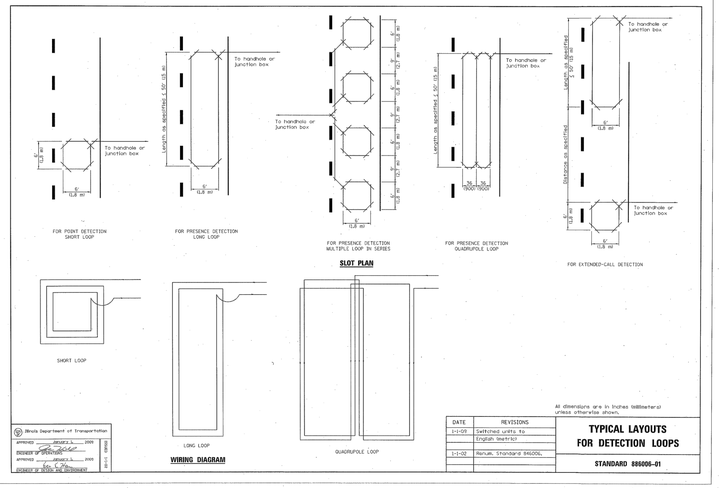


DATE	REVISIONS
1-1-09	Switched units to English (metric)
1-1-02	Renum. Standard 886005.

DETECTOR LOOP INSTALLATIONS

STANDARD 886001-01

Illinois Department of Transportation
APPROVED January 1, 2009
ENGINEER OF DESIGN AND ENVIRONMENT
APPROVED January 1, 2009
ENGINEER OF POLICY AND PROCEDURES



All dimensions are in inches (millimeters) unless otherwise shown.

LOOPS NEXT TO SHOULDERS	LEFT TURN LANES WITH MEDIANS VOLUME DENSITY ("FAR OUT" DETECTION) ON SAME APPROACH (PROTECTED / PERMITTED LEFT TURN PHASING)	LEFT TURN LANES WITHOUT MEDIANS VOLUME DENSITY ("FAR OUT" DETECTION) ON SAME APPROACH (PROTECTED / PERMITTED LEFT TURN PHASING)

NOTES:

VEHICLES LOOP DETECTORS

- ALL LEAD IN CABLE SHALL BE TWO CONDUCTOR NO. 14 TWISTED, SHIELDED.
- EACH DETECTOR LOOP SHALL HAVE ITS OWN SAW CUT FROM THE LOOP TO THE EDGE OF PAVEMENT OR TO A HANDHOLE IN THE PAVEMENT.
- EACH DETECTOR LOOP SHALL HAVE ITS OWN ONE INCH (25 mm) UNIT DUCT BETWEEN THE EDGE OF PAVEMENT AND THE FIRST HANDHOLE OR JUNCTION BOX. EACH UNIT DUCT RUN SHALL BE SHOWN ON THE PLANS BY THE DESIGNER, BUT SHALL NOT BE PAID FOR SEPARATELY, THIS ITEM IS INCIDENTAL TO THE PAY ITEM FOR DETECTOR LOOPS.
- ONE DIMENSION OF ALL DETECTOR LOOPS SHALL BE SIX FEET (1.8 m)
- EACH LANE OF NON-LOCKING, PRESENCE DETECTION AND EACH LANE OF A DOUBLE LEFT TURN LANE REQUIRES A SEPARATE INDUCTIVE LOOP DETECTOR AND LEAD IN CABLE.
- WHEN NON-LOCKING, PRESENCE DETECTION IS USED, MORE THAN ONE LOOP PER LANE IS REQUIRED BEHIND THE STOP BAR (i.e., 1-1-2, 1-1-1).
- WHEN SYSTEM LOOPS ARE REQUIRED ON AN APPROACH OF AN INTERSECTION, THE LOOPS USED FOR VOLUME DENSITY AND INTERSECTION TIMING SHALL ALSO BE USED AS SYSTEM DETECTORS. EACH ONE OF THESE TYPE OF LOOPS REQUIRES A SEPARATE LEAD IN CABLE. WHEN A TYPE 170 CONTROLLER IS USED AND A SEPARATE INDUCTIVE LOOP DETECTOR WHICH NEW CONTROLLERS ARE UTILIZED, THE DESIGNER SHALL LABEL THESE TYPES OF LOOPS AS "INTERSECTION AND SAMPLING SYSTEM DETECTORS" ON THE SIGNAL LAYOUT. THE INTERCONNECT PLAN SHALL SHOW THAT ONE OF THESE LOOPS IN EACH LANE GROUP IS UTILIZED FOR THIS TYPE OF DETECTION, THE PAY ITEM "INDUCTIVE LOOP DETECTOR WITH SYSTEM OUTPUT" SHOULD BE USED.

PLACEMENT OF DETECTORS

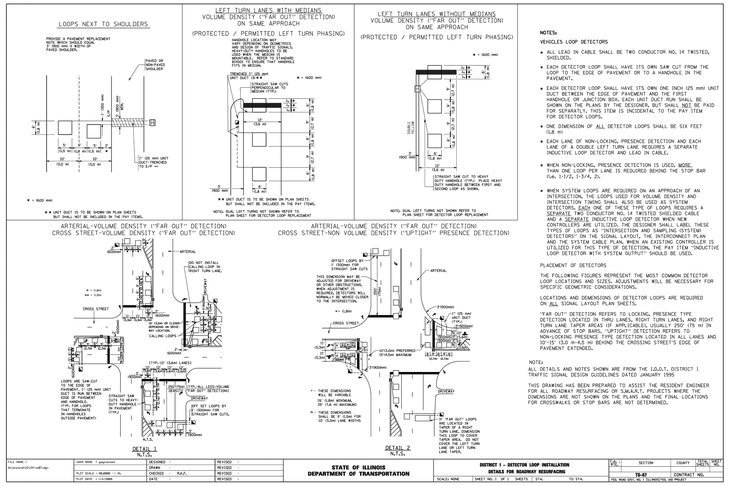
THE FOLLOWING FIGURES REPRESENT THE MOST COMMON DETECTOR LOOP LOCATIONS AND SIZES, ADJUSTMENTS WILL BE NECESSARY FOR SPECIFIC GEOMETRIC CONSIDERATIONS.

LOCATIONS AND DEMENSIONS OF DETECTOR LOOPS ARE REQUIRED ON ALL SIGNAL LAYOUT PLAN SHEETS.

"FAR OUT" DETECTION REFERS TO LOCKING, PRESENCE TYPE DETECTION LOCATED IN THRU LANES, RIGHT TURN LANES AND RIGHT TURN OVERLAPS AT 250' (75 m) OR GREATER FROM THE STOP BAR IN ADVANCE OF STOP BARS. "UPSTREAM" DETECTION REFERS TO NON-LOCKING PRESENCE TYPE DETECTION LOCATED IN ALL LANES AND 50'-75' (15 m-4.5 m) BEHIND THE CROSSING STREET'S EDGE OF PAVEMENT EXTENDED.

NOTE:
ALL DETAILS AND NOTES SHOWN ARE FROM THE I.D.O.T. DISTRICT 1 TRAFFIC SIGNAL DESIGN GUIDELINES DATED JANUARY 1995

THIS DRAWING HAS BEEN PREPARED TO ASSIST THE RESIDENT ENGINEER FOR ALL ROADWAY RESURFACING OR SMALRJ'L PROJECTS WHERE THE DIMENSIONING ARE NOT SHOWN ON THE PLANS AND THE FINAL LOCATIONS FOR CROSSWALKS OR STOP BARS ARE NOT DETERMINED.



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	PLOT DATE = 4/15/2021	DATE - 01/09/20	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

DISTRICT 1 - DETECTOR LOOP INSTALLATION DETAILS FOR ROADWAY RESURFACING

SCALE: NONE | SHEET NO. 1 OF 1 SHEETS | STA. | TO STA.

F.A.S. | SECTION | COUNTY | TOTAL SHEET SHEETS | SHEET NO.

TS-07 | CONTRACT NO.

FED. ROAD DIST. NO. | ILLINOIS FED. PROJECT

04-09-19: PER CITY COMMENTS

REVISIONS:	JOB NO. 080-020
09-18-18: REVISD PER CITY COMMENTS	FIELD BOOK: N/A
11-05-18: REVISD PER FPD COMMENTS	FIELD BOOK: N/A
01-18-19: REVISD PER CITY COMMENTS	DRAWN BY: MK
03-15-19: PER DUDOT COMMENTS	CHECKED BY: KEK
FILE: I:\080-020 Cantera Lot 2 Sub Area C\Engineering\Drawings	COMPLETED:04/07/19

PREPARED FOR:
CANTERA DEVELOPMENT HOLDINGS, LLC.
TWO NORTHFIELD PLAZA, SUITE 320
NORTHFIELD, IL 60093
TEL: (847) 562-2001

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333 PIERCE ROAD SUITE 200 ITASCA, IL 60143
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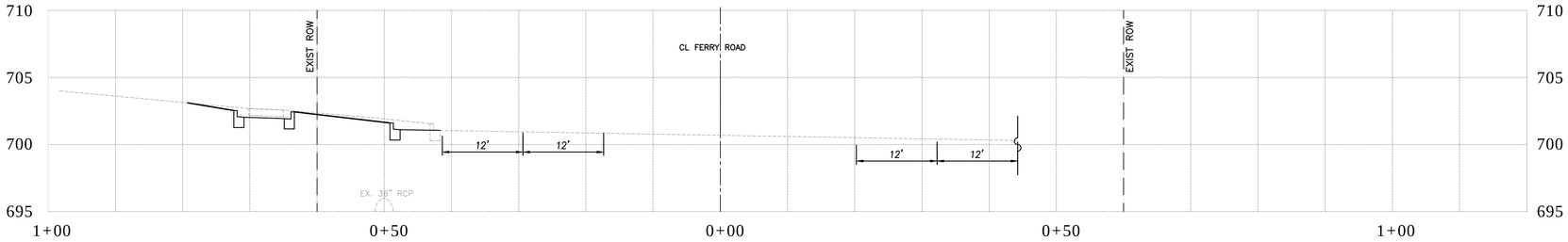
DETAILS
RIVER VIEW WEST
CITY OF WARRENVILLE, ILLINOIS

SHEET NUMBER
66
OF 71

FILE: I:\080-020 Cantera Lot 2 Sub Area C\Engineering\Final Engineering

Design Firm License No. 184-001129



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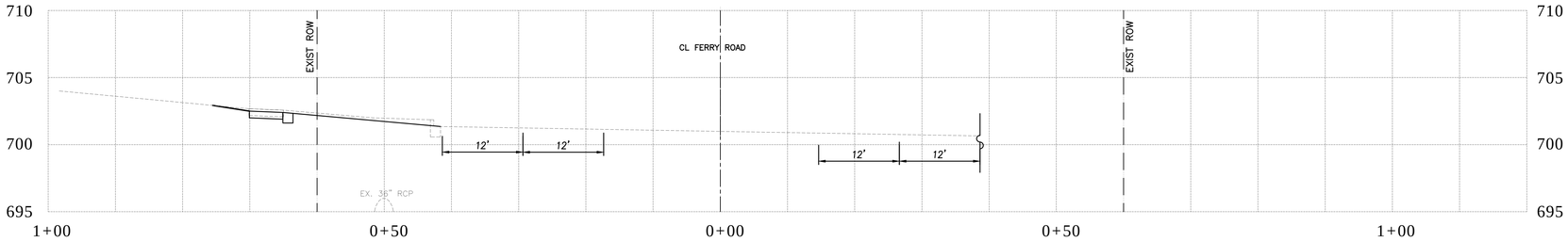

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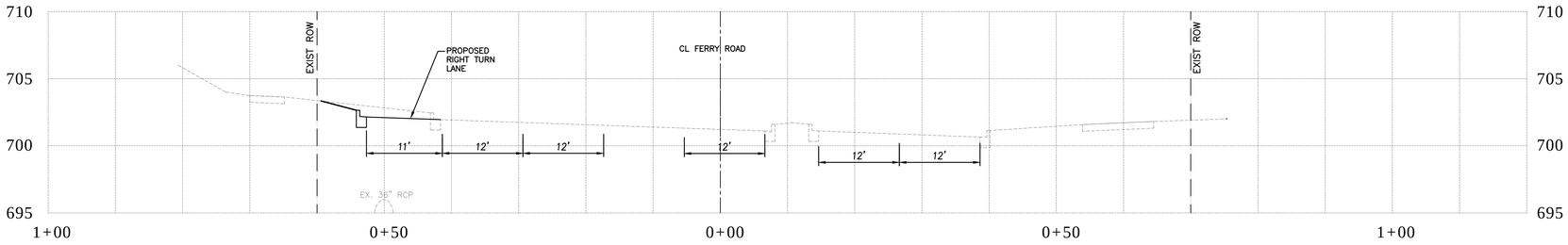
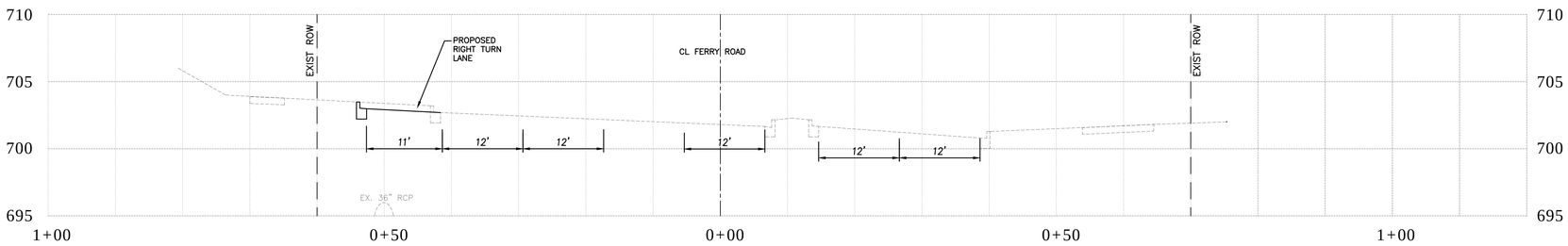


FERRY ROAD STA 132+00



FERRY ROAD STA 132+50

04-19-19: PER CITY COMMENTS

REVISIONS:	JOB NO.: 080-020
09-18-18: REVISD PER CITY COMMENTS	FIELD BOOK: N/A
11-05-18: REVISD PER FPD COMMENTS	FIELD BOOK: N/A
01-18-19: REVISD PER CITY COMMENTS	DRAWN BY: MK
03-15-19: PER DUDOT COMMENTS	CHECKED BY: KEK
FILE: I:\080-020 Cantera Lot 2 Sub Area 4\Engineering\Drawings\Civil	COMPLETED:04/07/19

PREPARED FOR:
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ITASCA * CHICAGO * ALGONQUIN * LAKE GENEVA * SOUTH BEND * INDIANAPOLIS

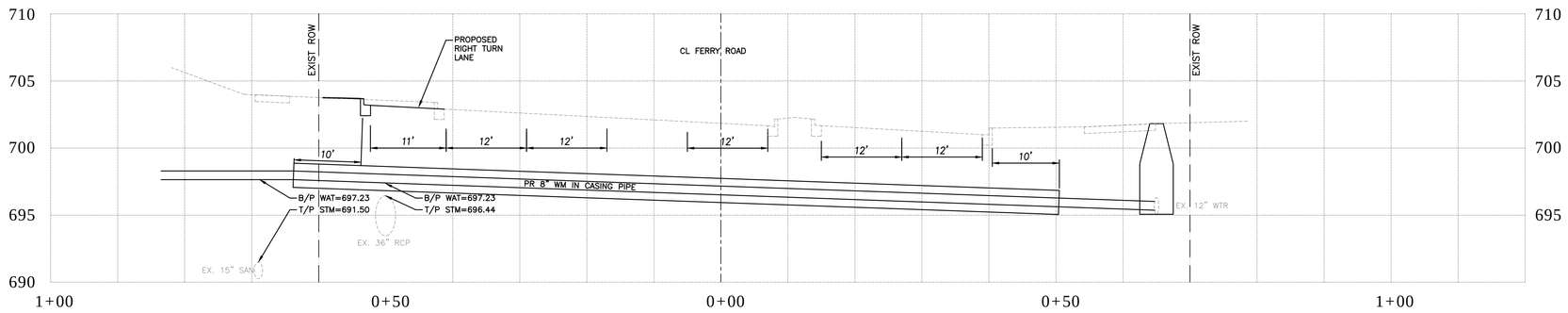
DETAILS

RIVER VIEW WEST
CITY OF WARRENVILLE, ILLINOIS

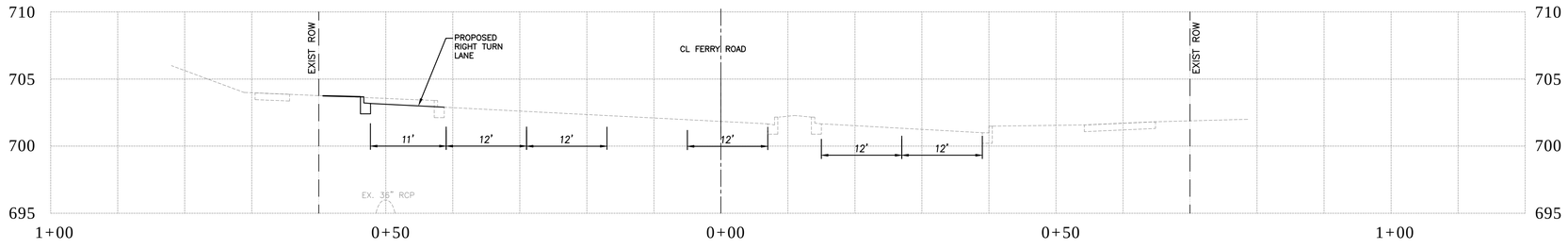
SHEET NUMBER
67
OF 71

FILE: I:\080-020 Cantera Lot 2 Sub Area 4\Engineering\Drawings\Final Engineering

Design Firm License No. 184-001129



FERRY ROAD STA 132+88.41



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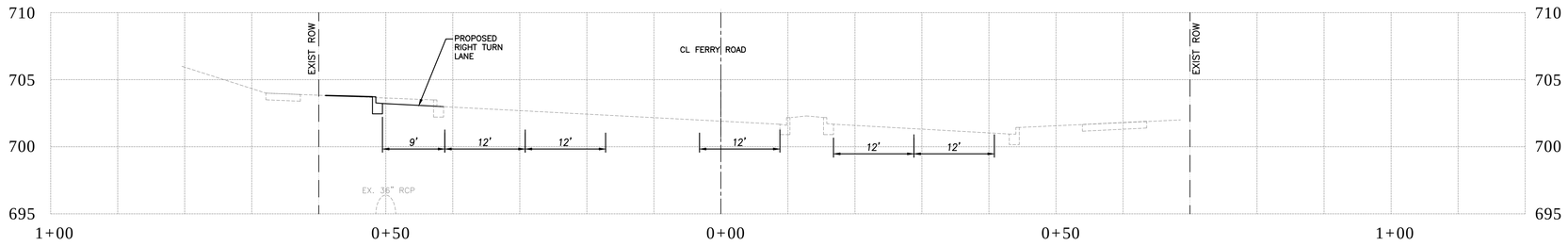
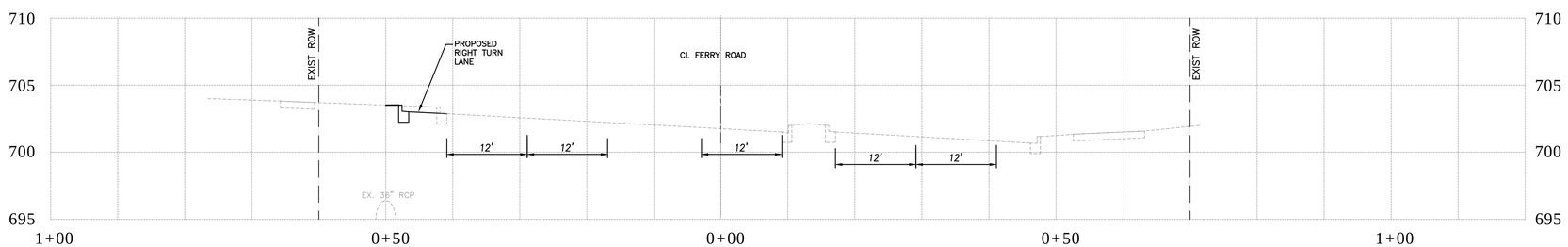


FERRY ROAD STA 133+50



FERRY ROAD STA 134+00

04-19-19: PER CITY COMMENTS

REVISIONS:
- 09-18-18: REVISD PER CITY COMMENTS
- 11-05-18: REVISD PER FPD COMMENTS
- 01-16-19: REVISD PER CITY COMMENTS
- 03-15-19: PER DUDOT COMMENTS

File: I:\080-020 Cantera Lot 2 Sub Area C\Engineering\Drawings

JOB NO: 080-020
FIELD BOOK: N/A
FIELD BOOK: N/A
DRAWN BY: MK
CHECKED BY: KEK
COMPLETED: 04/07/19

PREPARED FOR:
CANTERA DEVELOPMENT HOLDINGS, LLC.
TWO NORTHFIELD PLAZA, SUITE 320
NORTHFIELD, IL 60093
TEL: (847) 562-2001

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CONSULTING ENGINEERS

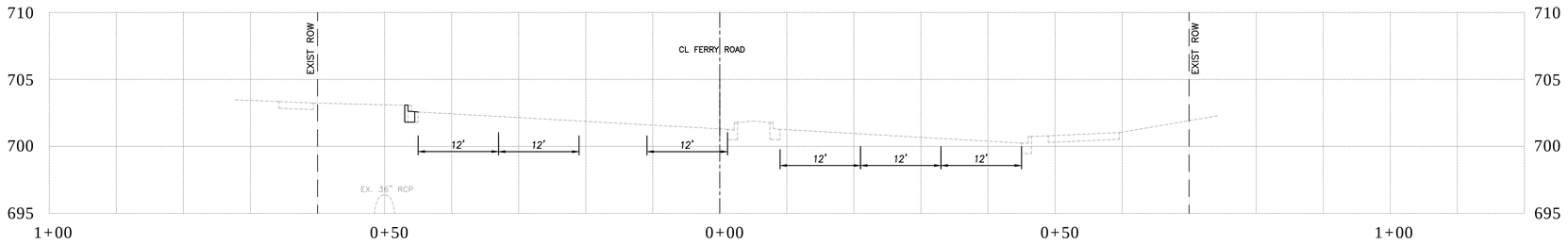
DETAILS

RIVER VIEW WEST
CITY OF WARRENVILLE, ILLINOIS

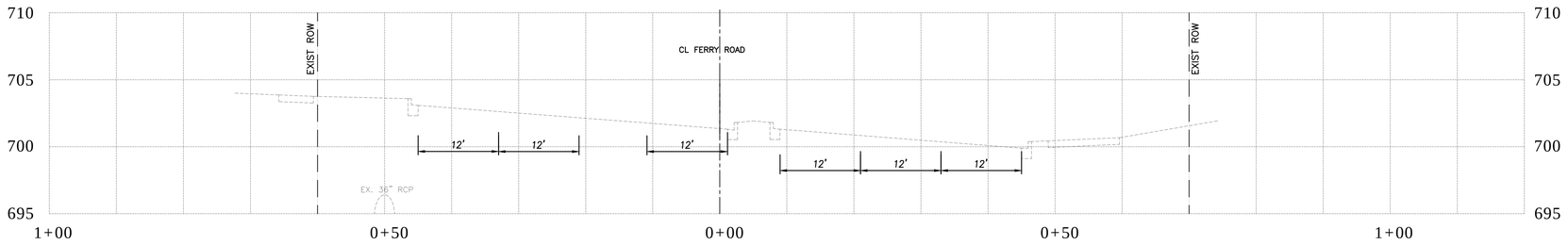
SHEET NUMBER
68
OF 71

FILE: I:\080-020 Cantera Lot 2 Sub Area C\Engineering\Drawings\Final Engineering

Design Firm License No. 184-001129



FERRY ROAD STA 134+50

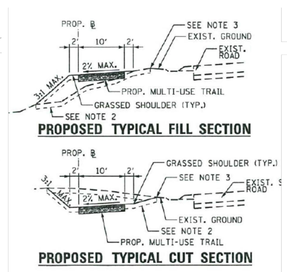


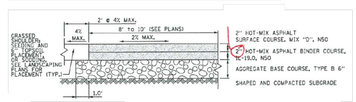
FERRY ROAD STA 135+00

DuPage County Division of Transportation General Notes and Specifications

1. All construction within the County's right-of-way shall be performed according to IDOT'S "Standard Specifications for Road and Bridge Construction" (Latest Edition) and the "Supplemental Specifications and Recurring Special Provisions" (Latest Edition).
2. Daily lane closures are permitted between 9:00 a.m. and 4:00 p.m. ONLY. Traffic control shall conform to IDOT's Highway Standards and the FHWA's 'Manual for Uniform Traffic Control Devices' and IDOT's Supplement at all times during construction. Traffic control shall include use of advance warning lane closure signage, an arrow board and Type II barricades with sandbags.
3. Lane closures are not permitted on County roadways during snowfall or within 2 hours prior to prediction of snowfall or precipitation conditions between November 15 and April 15 for maintenance of the roadway pavement by County Highway Maintenance Department staff and equipment.
4. Disturbed areas of the right-of-way shall be dressed with a minimum of 6" topsoil and Class 2A salt tolerant seed (with erosion control blanket) or sod (salt tolerant and staked in place).
5. Erosion control measures shall comply with the minimum requirements of the DuPage County Stormwater and Floodplain Ordinance specifications at all times.
6. Equipment and materials shall not be stored within the County's right-of-way at any time without the express written permission of the County Engineer, or his duly authorized assign.
7. Pavement, curb/gutter and storm structures within the County's right-of-way shall be maintained free of mud/debris at all times and shall be cleaned as is required and/or as directed by DuPage County.
8. Contact DuPage County (630/407-6900) a minimum of 48 hours prior to the start of construction to arrange for inspections of and at the completion of the described work within the County's right-of-way.
9. Trench backfill for non-paved areas shall be installed within the County's right-of-way per DuPage County's standard.
10. Trench backfill below existing or proposed pavement, curb/gutter and/or sidewalk shall be installed within the County's right of way per DuPage County's standard.
11. There shall be no decorative stone, landscaping or trees planted within the County right of way.

DuPage County DOT Typical Bituminous Multi-use Trail Sections





FILE: I:\080-020 Cantera Lot 2 Sub Area C\Engineering\Drawings\Final Engineering

04-19-19: PER CITY COMMENTS

REVISIONS:
- 09-18-18: REVISD PER CITY COMMENTS
- 11-05-18: REVISD PER FPD COMMENTS
- 01-18-19: REVISD PER CITY COMMENTS
- 03-15-19: PER DUDOT COMMENTS

Ref: I:\Revit Users Lot 4 Tax Cr\Xrefs\Topo.dwg

JOB NO: 080-020
FIELD BOOK: N/A
FIELD BOOK: N/A
DRAWN BY: MK
CHECKED BY: KEK
COMPLETED:04/07/19

PREPARED FOR:
CANTERA DEVELOPMENT HOLDINGS, LLC.
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CONSULTING ENGINEERS

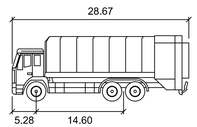
DETAILS

RIVER VIEW WEST
CITY OF WARRENVILLE, ILLINOIS

SHEET NUMBER
69
OF 71

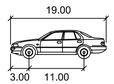
Design Firm License No. 184-001129

60 0 30 60
1 inch = 60 Ft.



REFUSE 3AXLE feet

Width	: 8.20
Track	: 8.20
Lock to Lock Time	: 6.0
Steering Angle	: 35.3



P feet

Width	: 7.00
Track	: 6.00
Lock to Lock Time	: 6.0
Steering Angle	: 31.6

LEGEND

- VEHICLE TRAVEL PATH & DIRECTION
- REAR WHEEL TRAVEL PATH
- FRONT WHEEL TRAVEL PATH
- VEHICLE BODY CLEARANCE PATH

WEST BRANCH DUPAGE RIVER

TORCH PARKWAY

POLLARD ROAD PRIVATE ROAD

364 UNITS MULTIFAMILY BUILDING W/ GARAGE

FERRY ROAD

EXISTING ROW

10' SIDEWALK EASEMENT PER DOC R199-246748

REVISIONS:
- 09-18-18: REVISED PER CITY COMMENTS
- 11-05-18: REVISED PER PPD COMMENTS
- 01-18-19: REVISED PER CITY COMMENTS
- 02-18-19: REVISED PER CITY COMMENTS
- 02-25-19: PER INTERNAL COORDINATION
- 03-15-19: PER DUDOT COMMENTS
- 04-19-19: PER PPD COMMENTS
- 03-25-19: PER PPD COMMENTS

FILE: I:\088-020 Cantera Lot 2 Sub Area C\Engineering\Drawings

JOB NO: 088-020
FIELD BOOK: N/A
FIELD BOOK: N/A
DRAWN BY: MK
CHECKED BY: KEK
COMPLETED: 04/07/19

PREPARED FOR:
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VEHICLE TURNING MOVEMENT PLAN

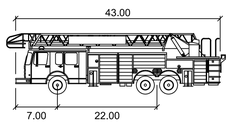
RIVER VIEW WEST
CITY OF WARRENVILLE, ILLINOIS

SHEET NUMBER
70
OF 71

Design Firm License No. 184-001129

60 0 30 60

1 inch = 60 Ft.



Aerial Fire Truck

	feet
Width	: 8.50
Track	: 8.50
Lock to Lock Time	: 6.0
Steering Angle	: 33.3

LEGEND

- VEHICLE TRAVEL PATH & DIRECTION
- REAR WHEEL TRAVEL PATH
- FRONT WHEEL TRAVEL PATH
- VEHICLE BODY CLEARANCE PATH

WEST BRANCH DUPAGE RIVER

TORCH PARKWAY

POLLARD ROAD PRIVATE ROAD

364 UNITS MULTIFAMILY BUILDING W/ GARAGE

FERRY ROAD

EXISTING ROW

10' SIDEWALK EASEMENT PER DOC R99-246748

REVISIONS:
- 04-19-19: PER FPD COMMENTS
- 03-25-19: PER FPD COMMENTS
- 03-15-19: PER DUDOT COMMENTS
- 02-25-19: PER INTERNAL COORDINATION
- 09-18-18: REVISED PER CITY COMMENTS
- 11-05-18: REVISED PER FPD COMMENTS
- 01-18-19: REVISED PER CITY COMMENTS
- 02-18-19: REVISED PER CITY COMMENTS

FILE: I:\08b-020 Cantera Lot 2 Sub Area C\Engineering\Drawings

JOB NO: 08b-020
FIELD BOOK: N/A
FIELD BOOK: N/A
DRAWN BY: MK
CHECKED BY: KEK
COMPLETED: 04/07/19

PREPARED FOR:
CANTERA DEVELOPMENT HOLDINGS, LLC.
TWO NORTHFIELD PLAZA, SUITE 320
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EMERGENCY VEHICLE TURNING PLAN

RIVER VIEW WEST
CITY OF WARRENVILLE, ILLINOIS

SHEET NUMBER
71
OF 71

Maintenance & Monitoring
(Tab 9)

RIVERVIEW WEST

City of Warrenville
DuPage County, Illinois

Prepared by:

Bollinger, Lach & Associates, Inc.
333 Pierce Road, Suite 200
Itasca, IL 60143
Contact: Kevin Kenniff
p: 630.438.6400
f: 630.438.6444

April 19, 2019

TAB 9 - NARRATIVE

The contractor shall maintain temporary and permanent erosion and sediment control measures and stormwater management facilities during the construction period. Please refer to the Erosion and Sediment Control Plans and Details for a list of maintenance and inspection tasks during construction.

The owner shall maintain permanent erosion and sediment control measures and stormwater management facilities after construction has been completed. In addition, the owner shall maintain the native planting areas according to the attached Maintenance and Monitoring Plan for Native Planting Areas. The Homeowners Association and/or the Property Owners Association shall assume responsibility for the continued maintenance and monitoring of the stormwater facilities, PCBMP features, native plantings, and permanent erosion control features for the life of the project

The proposed pond shorelines shall be planted with a Broad Spectrum w/ Flowers Mix as described on the erosion control plans. The proposed seed mix is contained in this section. The pond shorelines shall be planted from the NWL to an elevation of one foot above the HWL for a total of approximately 4.07 acres. The proposed drainage swales and disturbed areas on Outlot A adjacent to the Forest Preserve District Trail shall be planted with Low Profile Dry Mesic Prairie w/ Flowers mix. The proposed seed mix is provided in this section. Areas on Outlot A outside of the pond shall be planted with a IDOT Class 2A seeding. The proposed Torch Parkway ROW and the apartment open space shall be sodded. Please refer to the erosion control plans for additional information on the planting limits.

George's Broad Spectrum Prairie

Native species per mix	**52**
Native seeds per square foot	**358**
Native FQI NE Illinois	**39.52**
Native FQI Illinois	**35.08**
Native Mean C Value NE Illinois	**5.48**
Native Mean C Value Illinois	**4.87**
Mean W Value NE Illinois	**0.60**
Mean W Value Illinois	**0.44**

An old school, "shotgun-type", broad spectrum prairie mix for pond slopes from the waterline to the turf-line, with heavy seeding rate for poor topsoil and the lack of proper post-planting maintenance. A heavy seeding to establish native cover

Graminoids, or grasses, sedges, rushes, and other grasslike plants.

ACRONYMS							S&W	S&W wet	S&W wet	Illinois	IL wet	IL wet			bloom time												
S&W	ILL	USDA	vPlants	scientific name	common name	family	type	C	index	acro	C	index	acro	height	color	M	A	M	J	J	A	S	O	N	seeds/oz	seeds/lb	lb/ac	seeds/ acre	seeds/ftsq	% by weight	% by count
ANDGER	ANDGER	ANGE	ANGE	*Andropogon gerardii*	Big Bluestem	*Graminae*	Nt P-Grass	5	1	FAC-	5	1	FAC-	4.0-8.0+ (6.0)	na					❀	❀				9,375	150,000	3.500	525,000	12.05	14.97%	3.36%
BOUCUR	BOUCUR	BOCU	BOCU	*Bouteloua curtipendula*	Side Oats Gramma	*Graminae*	Nt P-Grass	8	5	UPL	7	5	UPL	1.5-3.0 (2.3)	na					❀	❀				6,563	105,000	2.000	210,000	4.82	8.55%	1.35%
CXBREV	CXBREV	CABR10	CABR10	*Carex brevior*	Shorter Sedge	*Cyperaceae*	Nt P-Sedge	4	3	[FACU]	4	0	FAC	1.0-3.0 (2.0)	na			❀	❀	❀					26,875	430,000	0.250	107,500	2.47	1.07%	0.69%
CXCRIS	CXCRIS	CACR7	CACR7	*Carex cristatella*	Crested Oval Sedge	*Cyperaceae*	Nt P-Sedge	4	-4	FACW+	3	-4	FACW+	1.5-3.0 (2.3)	na			❀	❀						112,500	1,800,000	0.125	225,000	5.17	0.53%	1.44%
CXSCOP	CXSCOP	CASCS	CASCS	*Carex scoparia*	Pointed Broom Sedge	*Cyperaceae*	Nt P-Sedge	7	-3	FACW	5	-3	FACW	1.0-3.0 (2.0)	na			❀	❀						87,500	1,400,000	0.125	175,000	4.02	0.53%	1.12%
CRXVULF	CXVULP	CAVU2	CAVU2	*Carex vulpinoidea*	Fox Sedge	*Cyperaceae*	Nt P-Sedge	2	-5	OBL	3	-5	OBL	2.0-3.0 (2.5)	na			❀	❀						97,188	1,555,000	0.500	777,500	17.85	2.14%	4.98%
ELEOBT	ELEOBT	ELOB2	ELOB2	*Eleocharis obtusa*	Blunt Spikerush	*Cyperaceae*	Nt A-Sedge	3	-5	OBL	2	-5	OBL	1.0-1.5 (1.3)	na			❀	❀	❀	❀				131,250	2,100,000	0.125	262,500	6.03	0.53%	1.68%
ELYCAN	ELECAN	ELCA4	ELCA4	*Elymus canadensis*	Canada Wild Rye	*Graminae*	Nt P-Grass	4	1	FAC-	4	1	FAC-	2.0-4.0 (3.0)	na				❀	❀					7,500	120,000	1.000	120,000	2.75	4.28%	0.77%
AGRTRT	AGRTRT	ELTRT	ELTRT	*Elymus trachycaulus {Agropyron t}*	Slender Wheatgrass	*Graminae*	Nt P-Grass	8	0	FAC	8	0	FAC	2.0-3.0 (2.5)	na				❀	❀					9,375	150,000	1.000	150,000	3.44	4.28%	0.96%
ELYVIR	ELYVIR	ELVI3	ELVIV	*Elymus virginicus*	Virginia Wild Rye	*Graminae*	Nt P-Grass	4	-2	FACW-	4	-2	FACW-	1.5-3.0 (2.3)	na				❀	❀					5,750	92,000	1.000	92,000	2.11	4.28%	0.59%
JUNDUD	JUNDUD	JUDU2	JUDU2	*Juncus dudleyi*	Dudleys Rush	*Juncaceae*	NT P-Rush	4	0	[FAC]	4	0	FAC	1.0-2.0 (1.5)	green			❀	❀	❀	❀	❀			3,750,000	60,000,000	0.063	3,780,000	86.78	0.27%	24.22%
JUNTOR	JUNTOR	JUTO	JUTO	*Juncus torreyi*	Torreys Rush	*Juncaceae*	NT P-Rush	4	-3	FACW	3	-3	FACW	0.5-1.5 (1.0)	green				❀	❀	❀				2,375,000	38,000,000	0.063	2,394,000	54.96	0.27%	15.34%
LEEORY	LEEORY	LEOR	LEOR	*Leersia oryzoides*	Rice Cut Grass	*Graminae*	Nt P-Grass	4	-5	OBL	3	-5	OBL	2.0-3.0 (2.5)	na				❀	❀					25,625	410,000	0.500	205,000	4.71	2.14%	1.31%
PANVIR	PANVIR	PAVI2	PAVI2	*Panicum virgatum*	Prairie Switch Grass	*Graminae*	Nt P-Grass	5	-1	FAC+	4	-1	FAC+	2.5-6.0 (3.0)	na					❀	❀	♣	♣	♣	19,813	317,000	1.000	317,000	7.28	4.28%	2.03%
ANDSCO	SCHSCO	SCSCS	SCSCS	*Schizachyrium scoparium {Andropogon s}*	Little Bluestem	*Graminae*	Nt P-Grass	5	4	FACU-	5	4	FACU-	1.5-3.5 (2.0)	na					❀	❀	♣	♣	♣	15,625	250,000	2.000	500,000	11.48	8.55%	3.20%
SCIATR	SCIATR	SCAT2	SCAT2	*Scirpus atrovirens*	Dark Green Rush	*Cyperaceae*	Nt P-Sedge	4	-5	OBL	4	-5	OBL	2.0-5.0 (3.5)	brown			❀	❀	❀	❀				581,250	9,300,000	0.125	1,162,500	26.69	0.53%	7.45%
SCICYP	SCICYP	SCCY	SCCY	*Scirpus cyperinus*	Wool Grass	*Cyperaceae*	Nt P-Sedge	6	-5	OBL	5	-5	OBL	2.0-5.0 (3.5)	brown				❀	❀	❀	❀			137,500	2,200,000	0.063	138,600	3.18	0.27%	0.89%
SORNUT	SORNUT	SONU2	SONU2	*Sorghastrum nutans*	Indian Grass	*Graminae*	Nt P-Grass	5	2	FACU+	4	2	FACU+	4.0-6.0 (5.0)	na					❀	❀	♣	♣		12,188	195,000	3.000	585,000	13.43	12.83%	3.75%
SPAPEC	SPAPEC	SPPE	SPPE	*Spartina pectinata*	Prairie Cord Grass	*Graminae*	Nt P-Grass	4	-4	FACW+	4	-4	FACW+	3.0-6.0 (4.5)	na					❀	❀	♣	♣		10,875	174,000	0.250	43,500	1.00	1.07%	0.28%
																									Graminoid totals		16.689	11,770,100	270	71.38%	75.41%

Forbs

ACRONYMS							S&W	S&W wet	S&W wet	Illinois	IL wet	IL wet			bloom time												
S&W	ILL	USDA	vPlants	scientific name	common name	*family*	type	C	index	acro	C	index	acro	height	color	M	A	M	J	J	A	S	O	N	seeds/oz	seeds/lb	lb/ac	seeds/ acre	seeds/ftsq	% by weight	% by count
ASCINC	ASCINC	ASIN	ASIN	*Asclepias incarnata*	Swamp Milkweed	*Asclepiadaceae*	Nt P-Forb	4	-5	OBL	4	-5	OBL	2.0-4.0 (3.0)	pink					❀	❀	❀			5,625	90,000	0.313	28,170	0.65	1.34%	0.18%
ASCSUL	ASCSUL	ASSU3	ASSU3	*Asclepias sullivantii*	Prairie Milkweed	*Asclepiadaceae*	Nt P-Forb	8	5	UPL	7	5	UPL	2.0-3.0 (2.5)	pink					❀	❀	❀			5,000	80,000	0.125	10,000	0.23	0.53%	0.06%
ASTCAN	ASTCAN	ASCA11	ASCA11	*Astragalus canadensis*	Canada Milkvetch	*Leguminosae*	Nt P-Forb	10	5	[UPL]	7	-1	FAC+	2.0-3.5 (2.5)	cream					❀	❀	❀			17,500	280,000	0.125	35,000	0.80	0.53%	0.22%
BAPLEA	BAPLAC	BALE2	BAALM	*Baptisia lactea *B alba macrophylla**	White Indigo	*Leguminosae*	Nt P-Forb	8	2	FACU+	6	3	FACU	2.0-4.5 (3.3)	white					❀	❀	❀			1,875	30,000	0.125	3,750	0.09	0.53%	0.02%
CORLAN	CORLAN	COLA5	COLA5	*Coreopsis lanceolata*	Lanceleaf Coreopsis	*Compositae*	Nt P-Forb	5	3	FACU	5	3	FACU	1.0-3.0 (2.0)	yellow			❀	❀	❀					11,875	190,000	0.250	47,500	1.09	1.07%	0.30%
CORTRI	CORTRP	COTR4	COTR4	*Coreopsis tripteris*	Tall Coreopsis	*Compositae*	Nt P-Forb	5	0	FAC	4	0	FAC	4.0-7.0 (6.0)	yellow					❀	❀	❀			15,750	252,000	0.125	31,500	0.72	0.53%	0.20%
PETCAN	DALCAN	DACAC	DACA7	*Dalea candida {Petalostemum c}*	White Prairie Clover	*Leguminosae*	Nt P-Forb	9	5	UPL	9	5	UPL	1.5-2.5 (2.0)	white					❀	❀	❀			27,500	440,000	0.125	55,000	1.26	0.53%	0.35%
PETPUR	DALPUR	DAPUP	DAPU5	*Dalea purpurea {Petalostemum p}*	Purple Prairie Clover	*Leguminosae*	Nt P-Forb	9	5	UPL	8	5	UPL	1.5-2.5 (2.0)	purple					❀	❀	❀			18,750	300,000	0.250	75,000	1.72	1.07%	0.48%
ECHPAL	ECHPAL	ECPA	ECPA	*Echinacea pallida*	Pale Purple Coneflower	*Compositae*	Nt P-Forb	8	5	UPL	7	5	UPL	2.0-3.0 (2.5)	pink					❀	❀	❀			6,250	100,000	0.375	37,500	0.86	1.60%	0.24%
ECHPUR	ECHPUR	ECPU	ECPU	*Echinacea purpurea*	Purple Coneflower	*Compositae*	Nt P-Forb	3	3	UPL	6	5	UPL	2.0-4.0 (2.5)	purple					❀	❀	❀			7,188	115,000	0.500	57,500	1.32	2.14%	0.37%
ERYYUC	ERYYUC	ERYU	ERYU	*Eryngium yuccifolium*	Rattlesnake Master	*Umbelliferae*	Nt P-Forb	9	-1	FAC+	7	-1	FAC+	2.0-5.0 (4.0)	white						❀	❀	❀		8,875	142,000	0.500	71,000	1.63	2.14%	0.45%
EUPPER	EUPPER	EUPE3	EUPE3	*Eupatorium perfoliatum*	Thoroughwort	*Compositae*	Nt P-Forb	4	-4	FACW+	4	-4	FACW+	1.5-3.0 (2.3)	white						❀	❀	❀		196,875	3,150,000	0.063	198,450	4.56	0.27%	1.27%
HELAUT	HELAUT	HEAU	HEAU	*Helenium autumnale*	Sneezeweed	*Compositae*	Nt P-Forb	5	-4	FACW+	3	-4	FACW+	2.0-4.0 (3.0	yellow						❀	❀	❀	❀	131,250	2,100,000	0.188	394,800	9.06	0.80%	2.53%
HELHEL	HELHEL	HEHE5	HEHE5	*Heliopsis helianthoides*	Early Sunflower	*Compositae*	Nt P-Forb	5	5	UPL	4	5	UPL	2.5-4.5 (3.0)	yellow						❀	❀	❀		6,875	110,000	0.250	27,500	0.63	1.07%	0.18%
LIAASP	LIAASP	LIAS	LIAS	*Liatris aspera*	Button Blazing Star	*Compositae*	Nt P-Forb	6	5	UPL	7	5	UPL	1.5-4.0 (2.5)	lavender						❀	❀	❀	❀	15,500	248,000	0.031	7,688	0.18	0.13%	0.05%
LIAPYC	LIAPYC	LIPY	LIPY	*Liatris pycnostachya*	Prairie Gayfeather	*Compositae*	Nt P-Forb	8	1	FAC-	6	1	FAC-	1.0-3.0 (2.0)	lavender						❀	❀	❀	❀	10,250	164,000	0.031	5,084	0.12	0.13%	0.03%
MONFIS	MONFIS	MOFI	MOFI	*Monarda fistulosa*	Bergamont	*Labiatae*	Nt P-Forb	4	3	FACU	4	3	FACU	2.0-4.0 (3.0)	pink						❀	❀	❀		68,750	1,100,000	0.250	275,000	6.31	1.07%	1.76%
SOLRIG	SOLRIG	OLRIR	SORI2	*Oligoneuron rigidum {Solidago r}*	Stiff Goldenrod	*Compositae*	Nt P-Forb	4	4	FACU-	4	4	FACU-	3.0-6.0 (3.5)	yellow							❀	❀	❀	40,625	650,000	0.125	81,250	1.87	0.53%	0.52%
PHYVIV	PHYVIN	PHVIV	PHVIV	*Physostegia virginiana*	False Dragonhead	*Labiatae*	Nt P-Forb	6	-5	OBL	6	-3	FACW	2.0-4.0 (3.0)	pink							❀	❀		14,438	231,000	0.063	14,553	0.33	0.27%	0.09%
RATPIN	RATPIN	RAPI	RAPI	*Ratibida pinnata*	Yellow Coneflower	*Compositae*	Nt P-Forb	4	5	UPL	4	5	UPL	3.0-5.0 (4.0)	yellow							❀	❀		31,875	510,000	0.250	127,500	2.93	1.07%	0.82%
RUDHIR	RUDHIR	RUHI2	RUHI2	*Rudbeckia hirta*	Blackeyed Susan	*Compositae*	Nt P-Forb	1	3	FACU	2	3	FACU	1.0-2.0 (1.5)	yellow						❀	❀	❀		93,750	1,500,000	0.250	375,000	8.61	1.07%	2.40%
RUDSUB	RUDSUB	RUSU	RUSU	*Rudbeckia subtomentosa*	Sweet Coneflower	*Compositae*	Nt P-Forb	9	2	FACU+	5	-3	FACW	2.0-4.0 (3.0)	yellow						❀	❀	❀		46,250	740,000	0.250	185,000	4.25	1.07%	1.19%
SILINT	SILINT	SIIN2	SIIN2	*Silphium integrifolium*	Rosinweed	*Compositae*	Nt P-Forb	5	5	UPL	5	5	UPL	3.0-6.0 (4.5)	yellow							❀	❀		1,875	30,000	0.250	7,500	0.17	1.07%	0.05%
SILLAC	SILLAC	SILA3	SILA3	*Silphium laciniatum*	Compass Plant	*Compositae*	Nt P-Forb	5	5	UPL	5	4	FACU-	4.0-8.0 6.0)	yellow							❀	❀		781	12,500	0.125	1,563	0.04	0.53%	0.01%
SILPER	SILPER	SILPEP	SIPEP	*Silphium perfoliatum*	Cup Plant	*Compositae*	Nt P-Forb	5	-2	FACW-	4	-2	FACW-	4.0-10 (6.0)	yellow							❀	❀		1,813	29,000	0.250	7,250	0.17	1.07%	0.05%
SILTER	SILTER	SITE	SITE	*Silphium terebinthinaceum*	Prairie Dock	*Compositae*	Nt P-Forb	5	3	FACU	4	5	UPL	5.0-10.0 (7.0)	yellow							❀	❀		1,563	25,000	0.250	6,250	0.14	1.07%	0.04%
ASTLAE	ASTLAE	SYLAL3	ASLA5	*Symphyotrichum laeve {Aster l}*	Smooth Aster	*Compositae*	Nt P-Forb	9	5	UPL	8	5	UPL	2.0-3.5 (2.5)	blue							❀	❀	❀	68,750	1,100,000	0.125	137,500	3.16	0.53%	0.88%
ASTNOV	ASTNOV	SYNO2	ASNO	*Symphyotrichum novae-angliae {Aster n}*	New England Aster	*Compositae*	Nt P-Forb	4	-3	FACW	4	-3	FACW	3.0-5.0 (4.0)	blue							❀	❀	❀	87,500	1,400,000	0.250	350,000	8.03	1.07%	2.24%
ASTAZU	ASTAZU	SYOOO	ASOO4	*Symphyotrichum oolentangiense {Aster azureus} *A o**	Skyblue Aster	*Compositae*	Nt P-Forb	8	5	UPL	7	5	UPL	2.0-3.0 (2.5)	blue							❀	❀	❀	87,500	1,800,000	0.125	175,000	4.02	0.53%	1.12%
VERHAS	VERHAS	VEHA2	VEHA2	*Verbena hastata*	Blue Vervain	*Verbenaceae*	Nt P-Forb	4	-4	FACW+	3	-4	FACW+	2.0-6.0 (3.0)	blue						❀	❀	❀		112,500	1,800,000	0.500	900,000	20.66	2.14%	5.77%
VERSTR	VERSTR	VEST	VEST	*Verbena stricta*	Hoary Vervain	*Verbenaceae*	Nt P-Forb	4	5	UPL	2	5	UPL	1.0-2.0 (1.5)	blue						❀	❀	❀		33,125	530,000	0.125	66,250	1.52	0.53%	0.42%
VERFAS	VERFAS	VEFA2	VEFA2	*Vernonia fasciculata*	Common Ironweed	*Compositae*	Nt P-Forb	5	-3	FACW	5	-3	FACW	3.0-6.0 (4.0)	purple						❀	❀	❀		29,375	470,000	0.063	29,610	0.68	0.27%	0.19%
ZIZAUR	ZIZAUR	ZIAU	ZIAU	*Zizia aurea*	Golden Alexander	*Umbelliferae*	Nt P-Forb	7	-1	FAC+	6	-1	FAC+	1.0-2.5 (2.0)	yellow			❀	❀	❀					12,500	200,000	0.063	12,600	0.29	0.27%	0.08%
v120512																									Forb totals		6.690	3,837,268	88	28.62%	24.59%
All items subject to availability. Mix composition may vary seasonally							5.48	0.60		4.87	0.44														Graminoid & forb totals		23.379	15,607,368	358		

Key	OBL = -5, FACW+ = -4, FACW = -3, FACW- = -2, FAC+ = -1, FAC = 0, FAC- = 1, FACU+ = 2, FACU = 3, FACU- = 4, UPL = 5.
main bloom	Graminoids include *Graminae* (grasses), *Cyperaceae* (sedges), *Juncaceae* (rushes), *Sparganaceae* (burreeds), and *Acoraceae* (sweetflag)
extended bloom	Forbs are herbs and select shrubs, which typically behave as herbaceous in a fire managed context, both having more or less showy flowers.
fall leaf color	
fruit color	
[Abc] new scientific name	New and old scientific names are relative terms. Many 'new' names are actually names that were in use 80 to 100 years ago,
{Abc} old scientific name	but were replaced by the names with which we have become accustomed. New is used in the sense that the names have
Abc transitional name	recently come into use or will be soon in Illinois.

Your info here

Lo Pro Dry Mesic Prairie with Flowers mix

Native species per mix	**37**
Native seeds per square foot	**103**
Native FQI NE Illinois	**37.24**
Native FQI Illinois	**33.08**
Native Mean C Value NE Illinois	**6.12**
Native Mean C Value Illinois	**5.44**
Mean W Value NE Illlinois	**2.93**
Mean W Value Illinois	**2.61**

Seed mix for ordinary soils to well drained soils. Depending on the soil richness, these species range roughly from knee to waist high. Will not do well in wet areas or partial shade. More colorful if dormant seeded.

Graminoids, or grasses, sedges, rushes, and other grasslike plants.

ACRONYMS								S&W	S&W wet	S&W wet	Illinois	IL wet	IL wet			bloom time															
S&W	ILL	USDA	vPlants	scientific name	common name	family	type	C	index	acro	C	index	acro	height	color	M	A	M	J	J	A	S	O	N	seeds/oz	seeds/lb	lb/ac	seeds/ acre	seeds/ftsq	% by weight	% by count
BOUCUR	BOUCUR	BOCU	BOCU	*Bouteloua curtipendula*	Side Oats Gramma	*Graminae*	Nt P-Grass	8	5	UPL	7	5	UPL	1.5-3.0 (2.3)	na				❀	❀					6,563	105,000	5.000	525,000	12.05	32.32%	11.66%
CXBICK	CXBICK	CABI3	CABI3	*Carex Bicknellii*	Bicknells Sedge	*Cyperaceae*	Nt P-Sedge	10	5	[UPL]	8	1	FAC-	2.0-3.0 (2.5)	na			❀	❀						27,813	445,000	0.125	55,625	1.28	0.81%	1.23%
CXBREV	CXBREV	CABR10	CABR10	*Carex brevior*	Shorter Sedge	*Cyperaceae*	Nt P-Sedge	4	3	[FACU]	4	0	FAC	1.0-3.0 (2.0)	na			❀	❀						26,875	430,000	0.250	107,500	2.47	1.62%	2.39%
AGRTRT	AGRTRT	ELTRT	ELTRT	*Elymus trachycaulus {Agropyron t}*	Slender Wheatgrass	*Graminae*	Nt P-Grass	8	0	FAC	8	0	FAC	2.0-3.0 (2.5)	na				❀						9,375	150,000	1.000	150,000	3.44	6.46%	3.33%
ELYVIR	ELYVIR	ELVI3	ELVIV	*Elymus virginicus*	Virginia Wild Rye	*Graminae*	Nt P-Grass	4	-2	FACW-	4	-2	FACW-	1.5-3.0 (2.3)	na				❀	❀					5,750	92,000	1.000	92,000	2.11	6.46%	2.04%
ANDSCO	SCHSCO	SCSCS	SCSCS	*Schizachyrium scoparium {Andropogon s}*	Little Bluestem	*Graminae*	Nt P-Grass	5	4	FACU-	5	4	FACU-	1.5-3.5 (2.0)	na					❀	❀	♣	♣	♣	15,625	250,000	4.000	1,000,000	22.96	25.86%	22.20%
																					Graminoid totals				11.375	1,930,125	44	73.53%	42.85%	

Forbs

ACRONYMS								S&W	S&W wet	S&W wet	Illinois	IL wet	IL wet			bloom time															
S&W	ILL	USDA	vPlants	scientific name	common name	family	type	C	index	acro	C	index	acro	height	color	M	A	M	J	J	A	S	O	N	seeds/oz	seeds/lb	lb/ac	seeds/ acre	seeds/ftsq	% by weight	% by count
ALLCER	ALLCER	ALCE2	ALCE2	*Allium cernuum*	Nodding Onion	*Liliacaea*	Nt P-Forb	7	1	[FAC-]	7	5	UPL	1.0-1.5 (1.3)	pink white										8,000	128,000	0.125	16,000	0.37	0.81%	0.36%
AMOCAN	AMOCAN	AMCA6	AMCA6	*Amorpha canescens*	Leadplant	*Leguminosae*	Nt Shrub	9	5	UPL	8	5	UPL	1.0-2.0 (1.5)	blue/gold					❀	❀	❀			19,375	310,000	0.125	38,750	0.89	0.81%	0.86%
ANECYL	ANECYL	ANCY	ANCY	*Anemone cylindrica*	Thimbleweed	*Ranunculaceae*	Nt P-Forb	6	5	UPL	8	5	UPL	1.5-2.5 (2.0)	white					❀	❀				31,250	500,000	0.063	31,500	0.72	0.41%	0.70%
ASCTUB	ASCTUB	ASTU	ASTU	*Asclepias tuberosa*	Butterfly Weed	*Asclepiadaceae*	Nt P-Forb	7	5	UPL	5	5	UPL	1.5-2.0 (1.3)	orange					❀	❀	❀	❀		5,500	88,000	0.063	5,544	0.13	0.41%	0.12%
ASCVER	ASCVER	ASVE	ASVE	*Asclepias verticillata*	Whorled Milkweed	*Asclepiadaceae*	Nt P-Forb	1	5	UPL	1	5	UPL	2-2.0 (1.5)	white						❀	❀	❀		12,500	200,000	0.063	12,600	0.29	0.41%	0.28%
ASTCAN	ASTCAN	ASCA11	ASCA11	*Astragalus canadensis*	Canada Milkvetch	*Leguminosae*	Nt P-Forb	10	5	[UPL]	7	-1	FAC+	2.0-3.5 (2.5)	cream				❀	❀	❀				17,500	280,000	0.031	8,680	0.20	0.20%	0.19%
CASFAS	CASFAS	CHFAF	CHFA2	*Chamaecrista fasciculata (Cassia f)*	Partridge Pea	*Leguminosae*	Nt A-Forb	5	4	FACU-	1	4	FACU-	1.0-2.0 (1.5)	yellow					❀	❀	❀			3,438	55,000	0.500	27,500	0.63	3.23%	0.61%
CORLAN	CORLAN	COLA5	COLA5	*Coreopsis lanceolata*	Lanceleaf Coreopsis	*Compositae*	Nt P-Forb	5	3	FACU	5	3	FACU	1.0-3.0 (2.0)	yellow			❀	❀	❀					11,875	190,000	0.500	95,000	2.18	3.23%	2.11%
CORPAL	CORPAL	COPA10	COPA10	*Coreopsis palmata*	Prairie Coreopsis	*Compositae*	Nt P-Forb	6	5	UPL	6	5	UPL	1.0-2.0 (1.5)	yellow				❀	❀	❀				12,188	195,000	0.015	2,925	0.07	0.10%	0.06%
PETCAN	DALCAN	DACAC	DACA7	*Dalea candida {Petalostemum c}*	White Prairie Clover	*Leguminosae*	Nt P-Forb	9	5	UPL	9	5	UPL	1.5-2.5 (2.0)	white				❀	❀	❀				27,500	440,000	0.015	6,600	0.15	0.10%	0.15%
PETPUR	DALPUR	DAPUP	DAPU5	*Dalea purpurea {Petalostemum p}*	Purple Prairie Clover	*Leguminosae*	Nt P-Forb	9	5	UPL	8	5	UPL	1.5-2.5 (2.0)	purple				❀	❀	❀				18,750	300,000	0.063	18,900	0.43	0.41%	0.42%
POTARU	POTARU	POAR7	[DRAR8]	*Drymocallis arguta {Potentilla a}*	Prairie Cinquefoil	*Rosaceae*	Nt P-Forb	9	4	FACU-	10	4	FACU-	1.0-3.0 (2.0)	yellow				❀	❀	❀				200,000	3,200,000	0.031	99,200	2.28	0.20%	2.20%
ECHPAL	ECHPAL	ECPA	ECPA	*Echinacea pallida*	Pale Purple Coneflower	*Compositae*	Nt P-Forb	8	5	UPL	7	5	UPL	2.0-3.0 (2.5)	pink				❀	❀					6,250	100,000	0.125	12,500	0.29	0.81%	0.28%
ECHPUR	ECHPUR	ECPU	ECPU	*Echinacea purpurea*	Purple Coneflower	*Compositae*	Nt P-Forb	3	3	UPL	6	5	UPL	2.0-4.0 (2.5)	purple					❀	❀	❀			7,188	115,000	0.500	57,500	1.32	3.23%	1.28%
ERYYUC	ERYYUC	ERYU	ERYU	*Eryngium yuccifolium*	Rattlesnake Master	*Umbelliferae*	Nt P-Forb	9	-1	FAC+	7	-1	FAC+	2.0-5.0 (4.0)	white					❀	❀	❀			8,875	142,000	0.125	17,750	0.41	0.81%	0.39%
SOLGRG	EUTGRA	EUGR5	EUGR5	*Euthamia graminifolia {Solidago g}*	Grassleaf Goldenrod	*Compositae*	Nt P-Forb	4	-2	FACW-	3	-2	FACW-	1.0-4.0 (2.0)	yellow						❀	❀			550,000	8,800,000	0.015	132,000	3.03	0.10%	2.93%
SOLGYM	EUTGYM	EUGY	EUGY	*Euthamia gymnospermoides {Solida*	Viscid Grassleaf Golden	*Compositae*	Nt P-Forb	5	0	FAC	5	-1	FAC+	2.5-5.5 (4.0)	yellow						❀	❀			308,750	4,940,000	0.031	153,140	3.52	0.20%	3.40%
HELHEL	HELHEL	HEHE5	HEHE5	*Heliopsis helianthoides*	Early Sunflower	*Compositae*	Nt P-Forb	5	5	UPL	4	5	UPL	2.5-4.5 (3.0)	yellow					❀	❀	❀			6,875	110,000	0.063	6,930	0.16	0.41%	0.15%
LESCAP	LESCAP	LECA8	LECA8	*Lespedeza capitata*	Roundhead Bushclover	*Leguminosae*	Nt P-Forb	4	3	FACU	4	3	FACU	2.0-3.0 (2.5)	green white					❀	❀	❀			10,938	175,000	0.031	5,425	0.12	0.20%	0.12%
LIAASP	LIAASP	LIAS	LIAS	*Liatris aspera*	Button Blazing Star	*Compositae*	Nt P-Forb	6	5	UPL	7	5	UPL	1.5-4.0 (2.5)	lavender					❀	❀	❀	❀		15,500	248,000	0.015	3,720	0.09	0.10%	0.08%
SOLRIG	SOLRIG	OLRIR	SORI2	*Oligoneuron rigidum {Solidago r}*	Stiff Goldenrod	*Compositae*	Nt P-Forb	4	4	FACU-	4	4	FACU-	3.0-6.0 (3.5)	yellow						❀	❀	❀		40,625	650,000	0.125	81,250	1.87	0.81%	1.80%
PARINT	PARINT	PAIN3	PAIN3	*Parthenium integrifolium*	Wild Quinine	*Compositae*	Nt P-Forb	8	5	UPL	8	5	UPL	2.0-4.0 (3.0)	white					❀	❀	❀			12,500	200,000	0.125	25,000	0.57	0.81%	0.56%
PENDIG	PENDIG	PEDI	PEDI	*Penstemon digitalis*	Foxglove Beardtongue	*Scrophulariaceae*	Nt P-Forb	4	1	FAC-	4	1	FAC-	1.0-2.5 (1.7)	white				❀	❀					112,500	1,800,000	0.125	225,000	5.17	0.81%	5.00%
PYCTEN	PYCTEN	PYTE	PYTE	*Pycnanthemum tenuifolium*	Slender Mt. Mint	*Labiatae*	Nt P-Forb	7	0	FAC	4	0	FAC	1.0-2.0 (1.5)	white					❀	❀	❀	❀		481,250	7,700,000	0.031	238,700	5.48	0.20%	5.30%
RUDHIR	RUDHIR	RUHI2	RUHI2	*Rudbeckia hirta*	Blackeyed Susan	*Compositae*	Nt P-Forb	1	3	FACU	2	3	FACU	1.0-2.0 (1.5)	yellow					❀	❀	❀			93,750	1,500,000	0.500	750,000	17.22	3.23%	16.65%
RUDSUB	RUDSUB	RUSU	RUSU	*Rudbeckia subtomentosa*	Sweet Coneflower	*Compositae*	Nt P-Forb	9	2	FACU+	5	-3	FACW	2.0-4.0 (3.0)	yellow					❀	❀	❀			46,250	740,000	0.015	11,100	0.25	0.10%	0.25%
CASMAR	CASMAR	SEMA11	SEMA11	*Senna marilandica {Cassia m}*	Maryland Senna	*Leguminosae*	Nt P-Forb	9	-3	FACW	4	-3	FACW	3.0-4.0 (3.5)	yellow					❀	❀				1,700	27,200	0.063	1,714	0.04	0.41%	0.04%
SILINT	SILINT	SIIN2	SIIN2	*Silphium integrifolium*	Rosinweed	*Compositae*	Nt P-Forb	5	5	UPL	5	5	UPL	3.0-6.0 (4.5)	yellow					❀	❀	❀			1,875	30,000	0.125	3,750	0.09	0.81%	0.08%
SOLNEM	SOLNEM	SONE	SONE	*Solidago nemoralis*	Oldfield Goldenrod	*Compositae*	Nt P-Forb	4	5	UPL	3	5	UPL	0.5-1.5 (1.0)	yellow						❀	❀	❀		206,250	3,300,000	0.046	151,800	3.48	0.30%	3.37%
ASTLAE	ASTLAE	SYLAL3	ASLA5	*Symphyotrichum laeve {Aster l}*	Smooth Aster	*Compositae*	Nt P-Forb	9	5	UPL	8	5	UPL	2.0-3.5 (2.5)	blue						❀	❀	❀		68,750	1,100,000	0.063	69,300	1.59	0.41%	1.54%
ASTNOV	ASTNOV	SYNO2	ASNO	*Symphyotrichum novae-angliae {Aster n}*	New England Aster	*Compositae*	Nt P-Forb	4	-3	FACW	4	-3	FACW	3.0-5.0 (4.0)	blue						❀	❀	❀	❀	87,500	1,400,000	0.063	88,200	2.02	0.41%	1.96%
ASTAZU	ASTAZU	SYOOO	ASOO4	*Symphyotrichum oolentangiense {Aster azureus} *A o**	Azure Aster	*Compositae*	Nt P-Forb	8	5	UPL	7	5	UPL	2.0-3.0 (2.5)	blue							❀	❀	❀	87,500	1,400,000	0.063	88,200	2.02	0.41%	1.96%
TRAOHI	TRAOHI	TROH	TROH	*Tradescantia ohiensis*	Ohio Spiderwort	*Commelinaceae*	Nt P-Forb	2	2	FACU+	3	2	FACU+	1.5-2.5 (2.0)	blue				❀	❀	❀	❀			9,125	146,000	0.063	9,198	0.21	0.41%	0.20%
VERSTR	VERSTR	VEST	VEST	*Verbena stricta*	Hoary Vervain	*Verbenaceae*	Nt P-Forb	4	5	UPL	2	5	UPL	1.0-2.0 (1.5)	blue						❀	❀	❀		33,125	530,000	0.125	66,250	1.52	0.81%	1.47%
ZIZAUR	ZIZAUR	ZIAU	ZIAU	*Zizia aurea*	Golden Alexander	*Umbelliferae*	Nt P-Forb	7	-1	FAC+	6	-1	FAC+	1.0-2.5 (2.0)	yellow				❀	❀	❀				12,500	200,000	0.063	12,600	0.29	0.41%	0.28%
																					Forb totals				4.094	2,574,226	59	26.47%	57.15%	
																					Graminoid & forb totals				15.469	4,504,351	103	100.00%	100.00%	

v032813

All items subject to availability. Mix composition may vary seasonally

6.12 2.93 5.44 2.61

Key

❀ main bloom
❀ extended bloom
♣ fall leaf color
fruit color
[Abc] new scientific name
{Abc} old scientific name
Abc transitional name

Yellow is uncertain data

OBL = -5, FACW+ = -4, FACW = -3, FACW- = -2, FAC+ = -1, FAC = 0, FAC- = 1, FACU+ = 2, FACU = 3, FACU- = 4, UPL = 5.

Graminoids include *Graminae* (grasses), *Cyperaceae* (sedges), *Juncaceae* (rushes), *Sparganaceae* (burreeds), and *Acoraceae* (sweetflag)
Forbs are herbs and select shrubs, which typically behave as herbaceous in a fire managed context, both having more or less showy flowers.

New and old scientific names are relative terms. Many 'new' names are actually names that were in use 80 to 100 years ago, but were replaced by the names with which we have become accustomed. New is used in the sense that the names have recently come into use or will be soon in Illinois.

Your info here

Tough Native Shoreline

Native species per mix	**24**
Native seeds per square foot	**514**
Native FQI NE Illinois	**19.60**
Native FQI Illinois	**16.48**
Native Mean C Value NE Illinois	**4.00**
Native Mean C Value Illinois	**3.36**
Mean W Value NE Illinois	**(4.26)**
Mean W Value Illinois	**(4.43)**

A mix of wetland grasses, sedges, rushes, smartweeds & nurse crop for the harsh environment of detention basin shorelines, with many species tolerant of periodic low water. Actually, many local wetland species are dependent on periodic low water, mudflats & droughts! Dormant seed. No western crap! This mix is intended to supplement a plug planting. If planted as a stand alone, double the seeding rate

Graminoids, or grasses, sedges, rushes, and other grasslike plants.

ACRONYMS S&W	ILL	USDA	vPlants	scientific name	common name	family	type	S&W C	S&W wet index	S&W wet acro	Illinois C	IL wet index	IL wet acro	height	color	bloom time M A M J J A S O N	seeds/oz	seeds/lb	lb/ac	seeds/ acre	seeds/ftsq	% by weight	% by count
AGRALA	AGRALA	AGGI2	AGGI2	*Agrostis gigantea {A alba}*	Red Top Grass	*Graminae*	Ad P-Grass	0	-3	FACW	0	-3	FACW	2.5-3.5 (3.0)	na		312,500	5,000,000	1.000	5,000,000	114.78	12.03%	22.33%
AGRALP	AGRALP	AGST2	AGST2	*Agrostis stolonifera {A alba palustris}*	Bent Grass	*Graminae*	Nt P-Grass	10	-5	[OBL]	8	-3	FACW	1.0-2.0 (1.5)	na		400,000	6,400,000	0.125	800,000	18.37	1.50%	3.57%
CXBEBB	CXBEBB	CABE2	CABE2	*Carex bebbii*	Bebbs Sedge	*Cyperaceae*	Nt P-Sedge	6	-5	OBL	8	-5	OBL	2.0-3.0 (2.5)	na		112,500	1,800,000	0.500	900,000	20.66	6.01%	4.02%
CXSTIP	CXSTIP	CAST5	CAST5	*Carex stipata*	Awfruit Sedge	*Cyperaceae*	Nt P-Sedge	3	-5	OBL	2	-5	OBL	2.0-3.0 (2.5)	na		35,000	560,000	0.125	70,000	1.61	1.50%	0.31%
CRXVULP	CXVULP	CAVU2	CAVU2	*Carex vulpinoidea*	Fox Sedge	*Cyperaceae*	Nt P-Sedge	2	-5	OBL	3	-5	OBL	2.0-3.0 (2.5)	na		97,188	1,555,000	1.000	1,555,000	35.70	12.03%	6.95%
CYPERY	CYPERY	CYER2	CYER2	*Cyperus erythrorhizos*	Redroot Nutsedge	*Cyperaceae*	Nt A-Sedge	2	-5	OBL	1	-5	OBL	0.2-0.8 (0.5)	yellowish		568,750	9,100,000	0.188	1,710,800	39.27	2.26%	7.64%
CYPESC	CYPESC	CYES	CYES	*Cyperus esculentus tubers*	Field Nut Sedge	*Cyperaceae*	Nt P-Sedge	0	-1	[FAC+]	0	-3	FACW	0.5-2.0 (1.3)	yellowish		75	1,200	0.188	226	0.01	2.26%	0.00%
ECHCRU	ECHCRU	ECCR	ECCR	*Echinochloa crusgalli*	Barnyard Grass	*Graminae*	Nt A-Grass	0	-3	FACW	*	-3	FACW	1.5-3.5 (2.5)	na		7,375	118,000	0.500	59,000	1.35	6.01%	0.26%
ELEOBT	ELEOBT	ELOB2	ELOB2	*Eleocharis obtusa*	Blunt Spikerush	*Cyperaceae*	Nt A-Sedge	3	-5	OBL	2	-5	OBL	1.0-1.5 (1.3)	na		131,250	2,100,000	0.125	262,500	6.03	1.50%	1.17%
ELEPAM	ELEPAL	ELPA3	ELPA3	*Eleocharis palustris major*	Great Spikerush	*Cyperaceae*	Nt P-Sedge	10	-5	OBL	8	-5	OBL	0.3-3.3 (1.8)	na		87,500	1,400,000	0.125	175,000	4.02	1.50%	0.78%
GLYSTR	GLYSTR	GLST	GLST	*Glyceria striata*	Fowl Manna Grass	*Graminae*	Nt P-Grass	4	-3	[FACW]	4	-5	OBL	1.5-3.0 (2.3)	na		153,125	2,450,000	0.125	306,250	7.03	1.50%	1.37%
JUNEFF	JUNEFS	JUEF	JUEF	*Juncus effusus*	Common Rush	*Juncaceae*	Nt P-Rush	7	-5	OBL	4	-5	OBL	1.0-2.0 (1.5)	green		2,812,500	45,000,000	0.063	2,835,000	65.08	0.76%	12.66%
JUNTOR	JUNTOR	JUTO	JUTO	*Juncus torreyi*	Torreys Rush	*Juncaceae*	Nt P-Rush	4	-3	FACW	3	-3	FACW	0.5-1.5 (1.0)	green		2,375,000	38,000,000	0.063	2,394,000	54.96	0.76%	10.69%
LEEORY	LEEORY	LEOR	LEOR	*Leersia oryzoides*	Rice Cut Grass	*Graminae*	Nt P-Grass	4	-5	OBL	3	-5	OBL	2.0-3.0 (2.5)	na		25,625	410,000	0.250	102,500	2.35	3.01%	0.46%
PANVIR	PANVIR	PAVI2	PAVI2	*Panicum virgatum*	Prairie Switch Grass	*Graminae*	Nt P-Grass	5	-1	FAC+	4	-1	FAC+	2.5-6.0 (3.0)	na		19,813	317,000	1.000	317,000	7.28	12.03%	1.42%
SCIVAC	SCITAB	[SCTA2	SCTA2	*Schoenoplectus tabernaemontani {Scirpus validus}*	Great Bulrush	*Cyperaceae*	Nt P-Sedge	5	-5	OBL	4	-5	OBL	3.0-6.0 (4.0)	brown		35,000	560,000	0.125	70,000	1.61	1.50%	0.31%
SCIATR	SCIATR	SCAT2	SCAT2	*Scirpus atrovirens*	Dark Green Rush	*Cyperaceae*	Nt P-Sedge	4	-5	OBL	4	-5	OBL	2.0-5.0 (3.5)	brown		581,250	9,300,000	0.500	4,650,000	106.75	6.01%	20.77%
SPAEUR	SPAEUR	SPEU	SPEU	*Sparganium eurycarpum*	Bur Reed	*Sparganiaceae*	Nt P-Grasslike	6	-5	OBL	5	-5	OBL	2.0-5.0 (4.0)	white		794	12,700	1.000	12,700	0.29	12.03%	0.06%
																	Graminoid totals		7.002	21,219,976	487	84.21%	94.78%

Forbs

ACRONYMS S&W	ILL	USDA	vPlants	scientific name	common name	*family*	type	S&W C	S&W wet index	S&W wet acro	Illinois C	IL wet index	IL wet acro	height	color	bloom time M A M J J A S O N	seeds/oz	seeds/lb	lb/ac	seeds/ acre	seeds/ftsq	% by weight	% by count
ALISUB	ALIPPA	ALSU	ALSU	*Alisma subcordatum {A plantago-aquatica parviflorum}*	Common Water Plantain	*Alismataceae*	Nt P-Forb	4	-5	OBL	2	-5	OBL	1.0-3.0 (2.0)	white		81,250	1,300,000	0.250	325,000	7.46	3.01%	1.45%
ASCINC	ASCINC	ASIN	ASIN	*Asclepias incarnata*	Swamp Milkweed	*Asclepiadaceae*	Nt P-Forb	4	-5	OBL	4	-5	OBL	2.0-4.0 (3.0)	pink		5,625	90,000	0.250	22,500	0.52	3.01%	0.10%
BIDCER	BIDCER	BICE	BICE	*Bidens cernua*	Nodding Bur Marigold	*Compositae*	Nt A-Forb	5	-5	OBL	2	-5	OBL	1.0-4.0 (2.5)	yellow		20,625	330,000	0.125	41,250	0.95	1.50%	0.18%
BIDCER	BIDCER	BICE	BICE	*Bidens spp*	Bidens Species	*Compositae*	Nt A-Forb	1	-3	FACW	1	-3	FACW	3.0-4.0 (3.5)	yellow		5,250	84,000	0.125	10,500	0.24	1.50%	0.05%
LYCAME	LYCAME	LYAM	LYAM	*Lycopus americanus*	Common Water Horehound	*Labiatae*	Nt P-Forb	5	-5	OBL	3	-5	OBL	1.5-3.0 (2.3)	white		18,438	295,000	0.063	18,585	0.43	0.76%	0.08%
SAGLAT	SAGLAT	SALA2	SALA2	*Sagittaria latifolia*	Common Arrowhead	*Alismataceae*	Nt P-Forb	4	-5	OBL	4	-5	OBL	2.0-4.0 (2.5)	white		75,000	1,200,000	0.250	300,000	6.89	3.01%	1.34%
VERHAS	VERHAS	VEHA2	VEHA2	*Verbena hastata*	Blue Vervain	*Verbenaceae*	Nt P-Forb	4	-4	FACW+	3	-4	FACW+	2.0-6.0 (3.0)	blue		112,500	1,800,000	0.250	450,000	10.33	3.01%	2.01%
																	Forb totals		1.313	1,167,835	27	15.79%	5.22%
																	Graminoid & forb totals		8.315	22,387,811	514	100.00%	100.00%

v120512

All items subject to availability. Mix composition may vary seasonally

		4.00	-4.26	3.36	-4.43

Key

main bloom
extended bloom
fall leaf color
fruit color
[Abc] new scientific name
{Abc} old scientific name
Abc transitional name

Yellow is uncertain data

OBL = -5, FACW+ = -4, FACW = -3, FACW- = -2, FAC+ = -1, FAC = 0, FAC- = 1, FACU+ = 2, FACU = 3, FACU- = 4, UPL = 5.

Graminoids include *Graminae* (grasses), *Cyperaceae* (sedges), *Juncaceae* (rushes), *Sparganaceae* (burreeds), and *Acoraceae* (sweetflag)
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MAINTENANCE AND MONITORING PLAN

FOR

NATIVE VEGETATION AREAS

I) INTRODUCTION

The purpose of this Maintenance and Monitoring Plan (Plan) is to ensure the successful establishment of native vegetation over a three (3) year period after installation.

The objectives of the Plan are to guide the OWNER or its agent with recommendations on maintenance and monitoring of the planted native species within these areas. The goal of this, as with most restoration plans, is to improve native habitat and ensure long-term regional viability to native species, which were lost from the site (Chicago Region Biodiversity Council 1999) and to address the stormwater quality.

The Plan provides management recommendations including invasive species control, installation of native seed mixes, soil erosion control, and debris management.

II) IMPLEMENTATION PLAN

The native planting areas located within the Proposed Development will be planted with native vegetation according to the approved site engineering plans.

The proposed planting will take place within the project construction limits.

III) GENERAL PLANTING SPECIFICATIONS

The work shall consist of preparing the seed bed and placing the seed and other materials in the seedbed.

The area to be seeded shall be worked to a minimum depth of 3" with a disk, tiller or other equipment approved by the project manager, reducing all soil particles to a size not larger than 2" in the largest dimension. The prepared surface shall be relatively free from weeds, clods, stones, rivulets, gullies, crusting and caking.

All planting areas shall have at least twelve inches of clean un-compacted topsoil. Graded portions, of the planting areas that do not expose suitable planting mediums shall be over excavated and re-spread with 12 inches of topsoil. The sub soil shall be loosened and topsoil applied, to minimize compaction. All clumps, stones, and debris shall be removed and disposed of, legally, off-site. The top 2 in of the soil shall be raked prior to seeding within the planting areas.

No seed shall be sown during high winds or when the ground is not in proper condition for seeding, nor shall any seed be sown until the purity testing has been completed for the seeds to be used, and shows the seed meets the noxious weed requirements.

The cover crop matrix will be seeded and matted with 100% biodegradable soil erosion control blanket throughout the bioswale and temporary impact areas immediately after project completion to prevent erosion. All seeding shall be hand broadcast at twice the drill seed rate. The cover crop matrix will be planted throughout the temporary impact area immediately after project completion to prevent erosion if conditions are not conducive for native species seeding. Permanent native species shall be dormant seeded or seeded during the first available growing season at the appropriate time and conditions for such plantings. The seed will be lightly raked in, rolled, and watered.

If planting and seeding occur in the same zone, seeding shall occur prior to any planting. Seeding shall be accomplished by utilizing a "no till" attachment, meeting the specifications of the project manager or a rangeland type grass drill, meeting the specifications of the Standard Specifications 1101.08(g). Grasses, sedge and forb mixtures will be seeded separately pursuant to the seed mixtures indicated on the Site Improvement Plans. The machine used to seed should be reset to drill the forbs at a depth recommended by the seed supplier or project manager.

Plugs shall be planted on 2 foot centers after May 1st when frost is no longer likely at the appropriate time and conditions for such plantings. Holes for plugs shall be as deep or slightly deeper than the plug roots and soil shall be lightly packed around the roots of the plug. The soil surface should be damp for the first two weeks following planting; as such, watering may be necessary.

Hydraulic seeding or hand broadcast seeding will only be allowed as approved by the project manager and only for inaccessible areas where the use of the equipment specified is physically impossible.

The seeding shall be completed before June 15 and after November 1. Prior to starting work, seeders shall be calibrated and adjusted to sow seeds at the required seeding rate and to the proper depth. Equipment shall be operated in a manner to ensure complete coverage of the entire area to be seeded. The project manager shall be notified 48 hours prior to beginning the seeding operations so that the project manager may determine by trial runs that the seeder will provide uniform distribution.

The classes of seed mixtures and combinations of mixtures are designated on the Plans and these specifications. Seed mixtures specified to be installed in the same season shall be seeded within 3 days of each other. The project manager must approve variations in seed mixture in writing.

Seed quality must meet the applicable standard set forth in the Standard Specification 1081.04.

Period of Establishment.

The Period of Establishment shall be 90 days following seeding. Ninety percent aerial cover shall be evident at the end of the 90-day period of establishment. The Project manager shall make the cover determination.

IV) PERFORMANCE STANDARDS

The enhancement of the establishment of the native planting (BMPs) areas are expected to meet or exceed established performance standards in order for DEC to conclude that native plant establishment was successful enough to warrant a finding of compliance. If compliance is not met, corrective maintenance and subsequent monitoring is required to meet the terms and conditions of the restoration. The following Performance Standards come directly from the DuPage Countywide Stormwater & Flood Plain Ordinance Appendix B:

Monitoring and Management Period as Required by Certification	Temporary Vegetation Cover/Permanent Soil Stabilization*	Percentage Cover Native Vegetation*	Floristic Quality Index (FQI)***	Coefficient of Conservatism (C)***	None of Three Most Dominant Species are Non-native or Invasive**	Survival Rate for Trees and Shrubs****
Year 1	Must meet NPDES Standards	10%	–	–	Cover crop acceptable	100%
Year 2	No unvegetatated areas > 1m²	25%	–	–	Required	100%
Year 3	No unvegetatated areas > 1m²	75%	20	3.5	Required	100%

* As measured by aerial coverage, excluding the emergent zone. The emergent zone must be achieve a minimum of 50% vegetative cover.

** Species include, but are not limited to: Typha angustifolia, Typha X glauca, Phragmites australis, Lythrum salicaria, Salix interior, Phalaris arundinacea, Cirsium arvense, Melilotus sp., Poa pratensis, Dipasacus sp.

*** FQI and © can be adjusted downward when taking the context of the location into consideration. PCBMPs are not required to meet FQI or ©.

**** Percentage can be adjusted downward based on quantities planted and when taking the context of the location into consideration.

V) MONITORING METHODOLOGY

During the required 3-year management and monitoring period, vegetative sampling will be conducted twice annually (May/June and August/September) during the growing season within the native plantings (BMPs) establishment areas. Information regarding findings and comments on overall conditions and site development will be included in an Annual Report submitted to the DEC no later than January 30 following each growing season.

Coverage of species present will be noted as an estimated percent coverage to determine compliance with proposed revegetation performance standards. In addition, an inventory of observed plant species present will be entered into the USACE's Chicago Region FQA Calculatorto indicate C-value and Floristic Quality Index (FQI) value. Nomenclature will follow Swink and Wilhelm (1994) and photographs with dates of site visits will be provided.

VI) GENERAL MANAGEMENT TECHNIQUES

The following restoration management procedures include a description of minimum management recommendations.

1. Weekly site visits during the first growing season following grading and seeding activities are required until the site is stabilized and vegetation is established. These visits will determine if erosion control measures are functioning properly and what remedial procedures are required to correct any identified deficiencies.

2. Sediment and erosion control inspections will be completed during the construction period to ensure silt fence is installed, maintained and removed appropriately. Any deficiencies shall be corrected immediately.

3. The establishment of the native plantings (BMPs) will be continually monitored throughout the growing season for invasive plant species. If such invasive species do appear and begin to dominate the area, herbicide treatments or mowing will be used to suppress their growth. Recommended management techniques for controlling invasive plant species will follow Carroll and White (1997) and Hoffman and Kearns (1997).

4. All debris, trash, etc. shall be removed from the native planting (BMPs) areas and disposed of monthly during the growing season.

VII) MANAGEMENT METHODOLOGY

Plant community management of the pond and shoreline native planting areas shall be conducted utilizing a meander search methodology. A meandering transect should be walked throughout the Area and observed species. Vegetation data would need to be collected and entered into the Wilhelm and masters Floristic Quality Assessment Computer Program to analyze the quality of the riparian environments and wetland/buffer areas' plant communities.

Purple Loosestrife Control. Purple Loosestrife (Lythrum salicaria) control is required throughout the native planting areas. All individuals found of this nuisance species should be pulled or treated with herbicide in June or July. Herbicide application includes treating the foliage of individual loosestrife plants with a 25% solution of a glyposate herbicide (e.g., Rodeo brand) that includes an appropriate wetting agent. Rodeo* is the preferred glyposate herbicide because it is registered for use over open water.
If any infestation of loosestrife occurs within the native planting area an herbicide application and cutting are impractical for these population sizes. The Corps is promoting a biological control program for Purple Loosestrife that was developed by the Illinois Department of Natural Resources and the Illinois Natural History Survey. These organizations have identified different species of beetles (Galerucella sp.) from Europe that naturally feed on the Purple Loosestrife with little or no damage to the plants. The Illinois Natural History Survey is rearing and

releasing the beetles into areas with significant loosestrife infestation. Currently, the biological control program offers the greatest potential for long term control.

Cattail Control. Narrow-leaved Cattail (*Typha angustifolia*) should be controlled in the native planting areas. Cattail control is required for area with the designated goal of floristic functional improvement, because the above species are an unacceptable dominant species which tends to displace native species; cattail is a very aggressive species that can degrade native planting areas by displacing native vegetation. The restored area within native planting areas should receive highest priority for cattail control because the dominance of cattails is precluding fulfillment of the performance standards. To decrease the cattail component in the detention area, the following activities are recommended.

Cattails can be controlled effectively by burning, and/or cutting followed by raised water levels. Fall burning if needed and winter cutting reduces the stem height of the cattail. Although direct water level manipulation is not possible, normal spring flooding should serve to submerge the cattail stems and effectively drown the cattail in the area. Cattail cutting should occur in winter when water levels are low and adequate ice formation has occurred in the prairie area.

In addition to burning and cutting cattails can also be controlled effectively by the application of herbicide. The flowering time of cattail is mid-June through mid-July. Herbicide application should occur prior to this time, which will prevent the distribution of seeds. Herbicide application includes applying a 25 % solution of Rodeo* brand to the cattail foliage. Since cattail is a prolific seed producer, the seed bank in the prairie area likely contains a substantial source of seed. Therefore, repeating the application of herbicide to cattail in the BMP areas may be required to accomplish long-term control.

Reed Canary Grass Control. Reed Canary Grass should be controlled in the BMP areas is a very aggressive species that can degrade natural areas by displacing native vegetation. To decrease the Reed Canary Grass component in the area, the following activities are recommended.

Reed Canary Grass can be controlled effectively by the application of herbicide. The flowering time of Reed Canary Grass (Phalaris arundinacea) is mid-May through June. Herbicide application should occur prior to this time, which will prevent the distribution of seeds. For best results, herbicide application to new growth following a spring prescribed burn is recommended. Herbicide application includes applying a 15% solution of Roundup brand to the Reed Canary Grass foliage. Rodeo brand must be used when applying herbicide over water. Since Reed Canary Grass is a prolific seed producer, the seed bank in these areas likely contains a substantial source of seed. Therefore, repeating the application of herbicide to the Reed Canary Grass may be required to accomplish long-term control.

Reed Canary Grass can also be controlled through prescribed burning in spring, after the grass has begun to actively grow, but before the native vegetation has emerged.

Buckthorns. Common buckthorn (Rhamnus cathartica) Glossy buckthorn (Rhamnus frangula) Cutting alone will not control these shrubs! Buckthorn will re-sprout vigorously, no matter what time of year it is cut. Cutting can be a tool to remove large, seed-bearing plants, but treatment of the cut stump with an appropriate herbicide is needed to kill the root system.

Basal bark spraying is the most cost-effective method to selectively remove buckthorn from an area. Individual stems six inches or less in diameter can be sprayed on the stem of the standing

plant. Spray from the base of the plant to a height of 12 to 15 inches from the ground. A low pressure backpack sprayer works well for this job. This can be done any time of year, except when snow or water (flooding) prevent spraying to the ground line. Stems six inches or more in diameter should be girdled or frilled (to expose cambium) and then sprayed. Fall and winter is a good time to do this spraying, since other plants are dormant and the leaves and bugs are gone. Keep in mind that buckthorn treated in the fall or winter may leaf out briefly in the spring while the herbicide is working its way through the plant.

Recommendations:

Basal bark and cut stump spraying-

Garlon - Using diesel fuel, fuel oil, kerosene or a commercial bark oil diluent, mix a 12½ % solution of Garlon 4 (also sold as Tahoe 4 and Element 4, active ingredient triclopyr). For a four gallon backpack tank this would be ½ gallon of herbicide plus 3½ gallons of diluent.

Pathfinder II – This is triclopyr in a ready-to-use (RTU) form with soybean oil. It can be used for basal bark and cut stump treatment of buckthorn.

Foliar treatments –

Garlon - Use a solution of 2% triclopyr (such as Garlon 4 Ultra), with water and a surfactant during the growing season. This method will kill all broadleaf plants and non-target plants can be damaged or killed due to drift. This method is most appropriate for a large number of seedling buckthorn plants (i.e. seedbank origin plants).

Mechanical Methods –

Pulling - Small plants (less than ½ inch in diameter) can be pulled out by hand. This works especially well when the soil is moist. Larger plants (½ to 1½ inch diameter) can be pulled using a mechanical device (e.g. “Weed Wrench”) or by hand digging. Beware that excessive soil disturbance may cause erosion and may encourage germination of seed origin buckthorn and other weed species!

Prescribed Fire – Smaller plants (seedling to 1 inch) can be killed by spring or fall burns, but larger plants usually survive. Fire is best used in fire-adapted communities such as prairies and savannas. Burning should only be done using the advice of an expert consultant and following local ordinances and permit processes!

Honeysuckle.

Exotic Bush Honeysuckles – Lonicera tatarica, Lonicera morrowii, Lonicera x bella and others

Cutting alone will not control these shrubs! Bush honeysuckles will re-sprout vigorously, no matter what time of year they are cut. Cutting can be a tool to remove large, seed-bearing plants, but treatment of the cut stump with an appropriate herbicide is needed to kill the root system. Foliar or cut stump treatments have proven to be the most effective control methods for honeysuckle. If you choose to use the foliar spraying method, early spring spraying is recommended. Honeysuckle is one of the first plants to leaf out in the spring. Spraying prior to the emergence of native shrubs and ground plants is the safest time to spray to avoid impact to native species. Remember that treatments should be repeated for 3 to 5 years in order to control new plants emerging from the seed bank in the soil.

Recommendations:

Foliar treatments –

Escort XP (metsulfuron methyl) - Mix a stock solution of 2 ounces of Escort XP per gallon of water and use 10 ounces of the stock solution per 3 gallons of water to mix each tank as needed. This solution needs to be agitated regularly.

Glyphosate - Use a 5% glyphosate (Roundup, Accord) solution for foliar treatment of honeysuckle, but beware of non-target plants (including grasses).
Cut stump treatments –
Escort XP at 1 ounce per gallon
Glyphosate – Use a 50% solution of glyphosate and water on fresh cut stumps.
Mechanical Methods-
Pulling – Since the plants are fairly shallow-rooted, this can work well. Small to medium-sized plants can be dug or pulled, especially when the soil is moist. Larger plants can be pulled using a mechanical device (e.g. "Weed Wrench" or mattock) or by hand digging. Beware that excessive soil disturbance may cause erosion and may encourage germination of seed origin honeysuckle and other weed species!
Prescribed Fire – Small plants can be killed by spring or fall burns, but larger plants usually survive. Fire is best used in fire-adapted communities such as prairies and savannas. Burning should only be done using the advice of an expert consultant and following local ordinances and permit processes!

Multi-Flora. Rosa multiflora
These shrubs are just plain nasty to deal with! It's easy to see how they got their nickname of "the living fence". Mowing with heavy equipment can be effective, if followed up with chemical treatment of the cut stumps and/or resprouts. Be careful of thorns that may puncture tires! Hand cutting with a chainsaw or brush cutter is not for the faint of heart and may require a suit of armor for the operator! Chemical methods can be effective, but remember that each plant can produce up to 500,000 seeds per year, so follow-up treatments will be needed. Basal bark spraying requires applying herbicide to the bases of the stems to 12 to 15 inches above the ground. Getting to the bases of the plants can be a challenge for large, spreading plants.
Recommendations:
Foliar treatments –
Escort XP (metsulfuron methyl) - Mix a stock solution of 2 ounces of Escort XP per gallon of water and use 5 ounces of the stock solution per 3 gallons of water to mix each tank as needed. This solution needs to be agitated regularly.
Glyphosate - Use 3 ounces glyphosate (Roundup, Accord) per gallon of water for foliar treatment, but beware of non-target plants (including grasses).
Garlon - Use 2 to 3 ounces of Garlon 4 (or Tahoe 4 or Element 4), active ingredient triclopyr, plus surfactant per gallon of water. Remember that the foliar applications must be made during periods of active plant growth.
Basal bark and cut stump spraying-
Garlon - Using diesel fuel, fuel oil, kerosene or a commercial oil diluent, mix a 12½ % solution of Garlon 4, Tahoe 4, or Element (active ingredient triclopyr). For a four gallon backpack tank this would be ½ gallon of herbicide plus 3½ gallons of diluent. This mixture can be used for basal bark spraying and cut stump treatment.
Glyphosate (Roundup, etc.) – A 10 – 20% solution of glyphosate can be applied to the cut stems or canes.
Mechanical Methods-
Mowing – Mowing with a large brush mower is effective, but non-selective. Beware of thorns and tires.

Prescribed Fire – Plants can be killed by persistent spring or fall burns, but this is often not practical. Fire is best used in fire-adapted communities such as prairies and savannas. Burning should only be done using the advice of an expert consultant and following local ordinances and permit processes!

Garlic Mustard. Alliaria petiolata

This herbaceous (non-woody) plant can spread rapidly in both sun and shade. Stands can become so dense that native plants on the forest floor can be shaded out in just a few years. Garlic mustard plants also release chemicals harmful to a soil fungus that hardwood trees depend on for growth and survival. This plant is a biennial, meaning each plant has a two-year growth cycle. The first year it is a small plant, 2" to 6" tall with rounded to kidney-shaped leaves with scalloped edges. The second year the plant grows quickly to a height of 1' to 4', producing small white flowers from late April to early June. The plants die once the seeds are dispersed (100+ per plant!) in July or August. Any control method will need to be repeated for several years in order to deplete the seed bank in the soil.

Recommendations:

Herbicide treatments-

Glyphosate – Use a 3% solution mixed with water as a foliar spray. Because glyphosate is nonselective, spraying in October or in early spring when most other plants are dormant will avoid injury to nontarget plants.

Garlon (triclopyr) - foliar treatment with 2 to 3% Garlon or Crossbow (as directed for mustard control) should also be targeted for late fall or early spring to avoid damaging nontarget plants.

Oust XP – Apply at 1.5 oz per acre for heavy infestations. This will also kill newly germinating plants, so beware of nontarget species. Mix a stock solution of 2 oz Oust (active ingredient sulfometuron methyl) in 1 gallon of water. Then mix 7.5 oz of the agitated stock solution per 3 gallons of spray solution.

Mechanical methods-

Pulling - Hand pulling can be effective for small infestations or where a large workforce is available. If flowering has begun, pulled plants must be bagged and removed from the site. Tamping the soil after pulling will discourage seed germination.

Cutting or mowing – Cutting flowering plants at ground level has proven to be very effective. Remove the cut plants from the area to prevent further seed dissemination.

Prescribed Fire – First year plants are killed by fire, but the bare soil enhances the survival of the seedlings that germinate after the fire. Fire is best used in fire-adapted communities such as prairies and savannas. Three to five years of burning are required, often with additional hand pulling and/or cutting. Burning should only be done using the advice of an expert consultant and following local ordinances and permit processes!

Boxelder. Boxelder, ash-leaved maple (Acer negundo)

Although this tree is native to Illinois, it is often invasive due to its prolific seed production, its shade tolerance and its ability to send up many vigorous resprouts when cut. Cutting can be a tool to remove large, seed-bearing plants, but treatment of the cut stump with an appropriate herbicide is needed to kill the root system. Boxelders are dioecious, meaning the individual plants are either male or female. From about August through much of the winter you can identify the female trees by the clusters of seeds (called keys, samaras or those "winged helicopters"). If

you are concerned about controlling the spread of these trees into nearby fields, prairies or open land, you should concentrate your initial efforts on controlling the seed production of the female trees. Either cut or girdle these trees first to stop the spread of seeds. Basal bark spraying is the most cost-effective method to selectively remove boxelder from areas where they are mixed with desirable trees. Individual stems six inches or less in diameter can be sprayed on the stem of the standing plant. Spray from the base of the plant to a height of 12 to 15 inches from the ground. A low pressure backpack sprayer works well for this job. This can be done any time of year, even when snow prevents spraying to the ground line, as long as you can spray the 12 -15 inch band below the first branch (called stem banding). Stems six inches or more in diameter should be girdled or frilled (to expose cambium) and then sprayed. Where fields have been invaded by boxelder, the treatment to eliminate the trees will depend on their size. For small trees less than 2 feet tall, foliar spraying with a broadleaf herbicide will selectively kill the boxelder without harming grasses. Be aware that other broadleaved plants (forbs, shrubs and trees) will also be killed. If the trees are larger, more than 2 feet tall but less than 1½ inches in diameter, a "brush hog" style mower can be used to cut the trees, followed by spraying with a broad-leaf weed killer when the trees resprout form the cut stubs. For large trees (greater than 2 inches in diameter), the trees will need to be hand cut and stump sprayed or basal bark sprayed (6 inches in diameter and less). If you need to do this work once, it's unlikely you will let it get to that point again.

Recommendations:

Basal bark and cut stump spraying-

Garlon - Using diesel fuel, fuel oil, kerosene or a commercial bark oil diluent, mix a 10% solution of Garlon 4, Element 4 or Tahoe 4 (active ingredient triclopyr). For a four gallon backpack tank this would be 0.4 gallon of Garlon or Tahoe 4 plus 3.6 gallons of diluent. Pathfinder II is triclopyr in a ready-to-use (RTU) form. It can be used for basal bark and cut stump treatment of boxelder.

Crossbow – This is a mixture of triclopyr and 2,4-D. Mix it as a 25% solution with an oil-based diluent for basal bark or cut stump treatment.

2,4-D – This is available under several brand names, sometimes mixed with Dicamba, and is available at most hardware and farm supply and garden stores. Make sure you use the ester formulation for cut stump or basal bark treatment. Keep in mind that you may need to conduct follow-up treatment as this active ingredient is less effective than triclopyr.

Foliar treatments –

Garlon - Use a solution of 2% triclopyr, with water and a surfactant during the growing season. This method will kill all broadleaf plants and non-target plants can be damaged or killed due to drift. This method is most appropriate for a large number of seedling boxelders (i.e. field invasion from fencerow trees).

Crossbow – Mix a 4% solution with water as a foliar spray during the growing season. Watch out for non-target plants.

Mechanical Methods –

Mowing or Cutting – Depends on the size of the trees. See recommendations in the paragraph above.

Girdling – Chainsaws can be used to cut or girdle larger trees. When girdling trees, make two rings, at least one inch deep, and three inches apart, completely encircling the tree. The girdle cuts need to be treated with an appropriate herbicide to kill the root system.

Prescribed Fire – Smaller plants (seedling to 1 inch) can be killed by spring or fall burns, but larger plants usually survive. Fire is best used in fire-adapted communities such as prairies and

savannas. Burning should only be done using the advice of an expert consultant and following local ordinances and permit processes!

Stump Treatments:

You actually cut a tree down and treat the freshly cut surface with herbicide. On larger trees treat only the outer 2 to 3 inches, including the cambium layer, of the stump (the internal heartwood of the tree is already dead). On trees 3 inches or less in diameter, treat the entire cut surface. Apply treatments immediately after cutting to achieve maximum effectiveness.

Supplemental Planting.

Supplemental planting should be conducted yearly to improve floristic diversity if needed.

Photographic Evidence

As part of the Management Plan, THE OWNER or its designated party will provide at least 4 color photographs for the area and facility listed, for the following stages:

1. Prior to any work commencing on site
2. During and throughout all works. This will consist of during the growing season, every 6 week interval, and throughout the non-growing season, every 12 week interval.
3. Post work

Any specific problem areas identified throughout any phase, will be adequately recorded by photographs, over and above the number outlined above and are paid for as part of this Contract.
THE OWNER or its designated party is required to submit a brief summary report of the photographs taken in each submission, identifying any specific areas of interest or cause for concern. In addition, each photograph is to be clearly annotated as to which facility and area the photograph represents.

Re-planting

All planting material provided under the Management Plan should achieve a healthy, flourishing growth habit. Any plants that suffer either die-back, mortality, or become weak and sickly specimens, will be restored by or it's designated party.
The condition of weak/sickly specimens to be replaced, will be evaluated by the Wetland Specialist, and upon the decision and direction of the Wetland Specialist, shall be replaced by the Contractor as part of the restoration works. The restoration of all areas of die-back/mortality or sick and unhealthy plants is considered to be the responsibility of THE OWNER or its designated party, regardless of reason for failure.
Emergent plugs should be installed between May 15 and July 15 when site hydrology is adequate (i.e., water levels are at the Normal Water Level (NWL)). Seed should be installed when site conditions are appropriate. Seeding prior to June 1 or after September 15 is preferred. If seeding

is conducted during the summer, the area must be adequately irrigated in order to facilitate proper germination and growth of sown species.

Post-planting inspections

Bi-monthly post-planting inspections for two months following planting and seeding activities (2 total inspections) are to be undertaken by the Wetland Specialist to monitor hydrology, erosion, and plant or seed establishment and condition in the prairie area. During these inspections, water levels within the prairie area in particular, shall be observed to ensure that adequate hydrology is present for successful establishment, or if areas require irrigation due to dry conditions.

Signage

The developer will post signage along the native planting areas indicating "Do Not Mow" to advise the people or the maintenance crew and to protect the sensitivity of the naturalized native planting areas.

Semi-Annual Mowing

Mowing the vegetation along the slopes in the native planting area two times per year is required for the first two growing seasons following seeding/planting. The vegetation should be mowed to a height of 9 to 12 inches during each mowing.
To facilitate this mowing, a mower that chops the plants to aid rapid drying will be used, such as a flail-type mower, mulching mower, or weed whacker. Rotary mowers and sickle bar mowers will not be used, as they tend to cut the plants leaving behind large clumps of material that can smother the upland prairie seedlings.
The height specified for the cut, which is the normal height of most first and second year prairie seedlings, will cut weed plants prior to seed-set and will increase the amount of sunlight reaching developing prairie and wetland seedlings. It is recommended that the timing of mowing activities should occur once in early-June and again in mid-August for the first two growing seasons.

Selective Herbicide Application

Management of the vegetation in the prairie area should include selective application of herbicide to control aggressive plant species such as, but not limited to, Purple Loosestrife *(Lythrum salicaria)*, Common Reed *(Phragmites australis)*, Reed Canary Grass *(Phalaris arundinacea)*, sweet clovers **(Melilotus spp.)**, Buckthorn (*Rhamnus cathartica)*, Bush Honeysuckle *(Lonicera maackii)*, Tree of Heaven *(Ailanthus altissima)*, clovers *(Trifolium spp.)*, thistles *(Cirsium spp. and Carduus spp.)* or teasel *(Dipsacus spp.)*. These weedy species amongst others can displace desirable species, thereby reducing floristic diversity. Additionally, performance standards will be extremely difficult to achieve with the presence of certain weed plants. It is very important to control many weed species through cutting and herbicide application as soon as they are observed in the natural areas. A determination regarding the type of herbicide to be used will be made when it is known which nuisance species are present on the

site. Depending on the target weed species, a selective herbicide will be made available by the Contractor.
The choice of herbicide and timing of herbicide application should be made by certified, trained, and experienced staff of the Contractor, in conjunction with the Engineer's approval, and will be based on an assessment of the target weed species and natural area conditions.

When to Apply Herbicide Applications:

Applications of herbicides intended for post-emergent broadleaf weed control will only kill those weeds present at the time that the herbicide is applied. They DO NOT prevent weed seeds from germinating and developing in the lawn at a later date. It is also important to remember weeds must be actively growing when the herbicides are applied so effective control can be achieved. This means that **spring applications should be made from mid-April through early June, and fall applications should be made during the months of September and October**. Herbicide applications during July and August are strongly discouraged because not only will weed control be more difficult to achieve but also an increased risk of causing damage/ discoloration to the lawn.

Debris Management

All trash, brush, grass, clipping debris etc. should be removed at least every two weeks from the existing project starting date throughout and during the whole of the maintenance period. This includes all areas within the project limit, and the native planting areas.

Erosion Control Management

All erosion control device structures and features etc, are to be installed as required by the Soil Erosion Control Plan and function properly at all times. Any deficiencies will be corrected immediately by OWNER or its designated party.

Responsible Parties

For the long-term management plan, OWNER or its designated representative will be responsible for the full compliance with the Maintenance and Monitoring Plan.

VIII) LITERATURE CITED

Carroll, C. and J. White. 1997. Intergrated Pest Management Methods for Control of Invasive Exotic Plant Species at Midewin National Tallgrass Prairie. Ecological Services. Urbana, IL.

Chicago Region Biodiversity Council. 1999. Biodiversity Recovery Plan. Chicago Region Biodiversity Council, Chicago, IL.

Hoffman, R. and K. Kearns. 1997. Wisconsin Manual of Control Recommendations

for Ecologically Invasive Plants. Bureau of Endangered Resources. Dept. of Natural Resources, Madison, WI.

Swink, F. and G. Wilhelm. 1994. Plants of the Chicago Region. 4th Ed. Indianapolis, Indiana Academy of Science.

U.S. Army Corps of Engineers. 1998. Informational Notice. Mitigation Guidelines and Requirements. Department of the Army, Chicago District, Corps of Engineers. Chicago, IL.

Wilhelm, G. and L. Masters. 2001. Floristic Quality Assessment and Computer Applications. Conservation Research Institute. Conservation Design Forum. Elmhurst, IL.

DuPage County Stormwater Management Planning Committee & Stormwater Management. April 2013 – Countywide Stormwater & Flood Plain Ordinance.

Control of Invasive Plants - Department of Natural Resources (DNR) Forester 2013.

DuPage County- Water Quality Best Management Practices Technical Guidance, For Inclusion into Appendix E – Technical Guidance for the DuPage Countywide Stormwater and Flood Plain Ordinance, March 2008.

Security
(Tab 10)

RIVERVIEW WEST

City of Warrenville
DuPage County, Illinois

Prepared by:

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Itasca, IL 60143
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April 19, 2019

TAB 10 - NARRATIVE

The following information is included as part of TAB 10:

- Engineer’s Opinion of Probable Cost to Construct the Stormwater Facility
- Engineer’s Opinion of Probable Cost to Construct Erosion Control Measures
- Engineer's Opinion of Probable Cost for Native Plantings

The following statement is included as part of TAB 10 and pertains to site access:

> The developer shall grant to the county or waiver community a temporary easement authorizing access to the development site to comply with Article VI of the County Ordinance.

RIVERVIEW WEST
DETENTION
City of Warrenville
Conceptual Cost Estimate

09-11-18
Revised 04-19-19

Item	Quantity	Unit	Unit Cost	Cost
Stormwater Management Facilities				
12" Diameter PVC SDR 26	281	LF	$115.00	$32,315.00
15" Diameter PVC SDR 26	270	LF	$125.00	$33,750.00
18" Diameter PVC SDR 26	277	LF	$135.00	$37,395.00
24" Diameter RCP	307	LF	$85.00	$26,095.00
30" Diameter RCP	61	LF	$95.00	$5,795.00
36" Diameter RCP	371	LF	$115.00	$42,665.00
6" Perforated PVC Drain Tile for BMP Areas	2,400	LF	$30.00	$72,000.00
CA-7 Aggregate for BMP Areas	3,273	CYD	$30.00	$98,190.00
Woven Geotextile Fabric for BMP Areas	5,040	SY	$2.50	$12,600.00
Amended Topsoil for BMP Areas	2,667	CYD	$13.00	$34,671.00
Inlet, Type A	2	EA	$1,750.00	$3,500.00
Catch Basin, Type A 4' Diameter	7	EA	$2,800.00	$19,600.00
Catch Basin, Type A, 5' Diameter	9	EA	$3,500.00	$31,500.00
Manhole, Type A, 5' Diameter	6	EA	$3,250.00	$19,500.00
12" PRC FES	5	EA	$1,100.00	$5,500.00
15" PRC FES	3	EA	$1,100.00	$3,300.00
18" PRC FES	3	EA	$1,200.00	$3,600.00
24" PRC FES	4	EA	$1,400.00	$5,600.00
30" PRC FES	1	EA	$1,700.00	$1,700.00
36" PRC FES	4	EA	$2,200.00	$8,800.00
7' x 5' PRC Box Culvert	380	LF	$400.00	$152,000.00
Trench Backfill	1,523	CYD	$35.00	$53,305.00
			Subtotal=	**$703,381.00**

Item	Quantity	Unit	Unit Cost	Cost
Earthwork*				
Excavation	79,014	CYD	$2.25	$177,781.50
Embankment	97,014	CYD	$3.50	$339,549.00
Topsoil Strip - 12"	36,334	CYD	$3.00	$109,002.00
Topsoil Respread - 6"	7,731	CYD	$6.50	$50,251.50
Excess Spoil to Respread (Non Structural Areas)	28,603	CYD	$6.50	$185,919.50
Clay lLiner For Detention Ponds	9,216	CYD	$27.00	$248,832.00
Import	11,000	CYD	$27.00	$297,000.00
			Subtotal=	**$1,408,335.50**

Item	Quantity	Unit	Unit Cost	Cost
Misceleaneous				
Construction Fence	6,070	LF	$12.00	$72,840.00
Dewatering / Cofferdam	1	LS	$75,000.00	$75,000.00
22" Diameter Steel Casing Pipe	91	LF	$250.00	$22,750.00
Retaining Wall	9,034	SQFT	$35.00	$316,190.00
Retaining Wall Protective Fence	1,574	LF	$57.25	$90,111.50
			Subtotal=	**$576,891.50**

			Total=	**$2,688,608**

09/11/18
Revised 04/19/19

RIVERVIEW WEST
EROSION CONTROL
City of Warrenville
Conceptual Cost Estimate

Item	Quantity	Unit	Unit Cost	Cost
Erosion Control				
Silt Fence	5,747	LF	$4.00	$22,988.00
Inlet Filters	51	EA	$150.00	$7,650.00
Rolled/Staked Sediment Log	91	EA	$150.00	$13,650.00
Perforated Riser (for Outlet Pipe)	1	EA	$1,500.00	$1,500.00
Temp Erosion Control Blanket	25,642	SYD	$2.50	$64,105.00
Temp Erosion Control Seeding	27	ACRE	$500.00	$13,500.00
Sodding, Salt Tolerant	15,127	SYD	$7.00	$105,889.00
Seeding, Class 2A	0.9	ACRE	$4,000.00	$3,600.00
RipRap, A4	871	SYD	$150.00	$130,650.00
Stabilized Construction Entrance	614	SYD	$30.00	$18,420.00
Concrete Washout	3	EA	$1,000.00	$3,000.00
			Subtotal=	**$384,952.00**

RIVERVIEW WEST
NATIVE PLANTINGS
City of Warrenville
Conceptual Cost Estimate

9/11/18
Revised 4/19/19

Item	Quantity	Unit	Unit Cost	Cost
Native Planting				
Temp Erosion Control Blanket	25,642	SYD	$2.50	$64,105.00
Native Seeding - Pond Edge (Tough Shoreline Mix)	1.03	ACRE	$7,500.00	$7,725.00
Native Seeding - Broad Spectrum Prairie Mix	4.26	ACRE	$7,500.00	$31,950.00
Native Seeding - Mesic to Dry Prairie Mix	0.97	ACRE	$7,500.00	$7,275.00
*Maintanance & Monitoring (3-Year Period)	1	LS	$18,000.00	$18,000.00
			Subtotal=	**$129,055.00**
			Total=	**$129,055**

*Maintenance & Monitoring based on $6,000.00 per year for a period of 3-Years

Variance
(Tab 11)

RIVERVIEW WEST

City of Warrenville
DuPage County, Illinois

Prepared by:

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April 19, 2019

TAB 11 - NARRATIVE

No variances are anticipated from the DuPage Countywide Stormwater & Floodplain Ordinance.

Several variances from more restrictive City of Warrenville ordinances are required for the proposed development and are included in the overall Planned Urban Development (PUD) documents at the city. Please refer to the list of variances on file as part of the PUD application for a full list of variances requested for the Riverview West Development.

8-13-4: DETENTION/RETENTION POND OUTLOT REQUIREMENTS

All new detention/retention facilities that serve multiple lot developments shall be located on a separate outlot that is owned and maintained by an association created for such purpose unless the City Council approves another arrangement based on specific unique circumstances or special conditions. Said outlot shall encompass all required detention/retention pond improvements, including, but not limited to, required detention/retention pond landscaping and the detention/retention pond outfall structure. (Ord. O2017-38, 6-19-2017)

The proposed detention facility shall be located in a stormwater detention easement. The proposed pond will serve multiple lots in the development and will not be is not located in a separate outlot. This provision is not being met, but a stormwater management easement is being granted and the proposed pond will be maintained by a property owner's association which will be created by the developer.

8-13-5: DETENTION FACILITY DESIGN CRITERIA:

In addition to the other rules and regulations set forth in this chapter, open stormwater detention facilities shall comply with the following design criteria:

A. Bottom Slope: The bottom slope shall be two percent (2%) or steeper in order to prevent wet areas which may kill the intended ground cover or promote the growth of nuisance plant species.

The proposed detention pond will be an open water pond. The proposed detention pond is a modification of an existing pond. The proposed design is a modification of the existing pond and is consistent with the previously approved pond design. There is no bottom slope on the proposed pond. The proposed design is in compliance with this portion of the ordinance.

B. Low Flow Pipes and/or Paved Channels: Low flow pipes and/or paved channels shall not be permitted. The ends of storm sewers draining runoff into the detention pond shall be located at least fifty feet (50') away from the pond outlet to ensure sufficient filtering of contaminants.

There are no proposed low flow pipes or paved channels. The existing outlet is proposed to be used in the proposed pond. Inflow pipes are located approximately 50' away from the existing outlet. The proposed design is in compliance with this portion of the ordinance.

C. Side Slopes: Vegetated side slopes shall be four to one (4:1) or flatter. Seeded slopes shall be protected with an approved erosion control mat designed for that application.

Side slopes are designed at a maximum slope of 4:1. All side slopes are scheduled to be seeded with native seeding. All side slopes shall be protected with erosion control blanket after seeding. The proposed design is in compliance with this portion of the ordinance.

D. Retaining Walls: Retaining walls shall not be permitted on more than fifty percent (50%) of the pond perimeter. Retaining walls shall be constructed of modular blocks. Retaining walls 3.0 feet or taller shall be designed by a registered structural engineer or a registered architect. Stepped walls count as

one wall system (e.g., a 2 foot lower wall plus a stepped 2 foot upper wall equals a 4 foot wall). Safety fencing shall be provided along the top edge of any retaining wall greater than 3.0 feet in height.

Retaining walls are incorporated into the design of the proposed detention facility. The total length of retaining wall is less than 50% of the pond perimeter. The proposed design is in compliance with this portion of the ordinance.

E. Bounce: The maximum bounce (high water level minus the outlet invert elevation) on a detention pond shall be four feet (4').

The proposed pond has a bounce of approximately 5.3 feet. This bounce is being driven by the existing detention facility on the site. The proposed design does not meet this portion of the ordinance.

F. Outfall Pipe: The outfall pipe from a detention pond shall be provided with a flared end section and steel grating.

Steel grating is specified on the proposed flared end sections. The proposed design is in compliance with this portion of the ordinance.

G. Perimeter Berm: For any detention pond at least partially enclosed by an earthen berm, the top of the berm shall be at least one foot (1') higher than the design high water level and at least two feet (2') wide.

There is no berm proposed around the proposed detention facility. The proposed design is in compliance with this portion of the ordinance.

H. Emergency Overflow Weir: An emergency overflow weir shall be provided at an elevation above the design high water level, and not less than six inches (6") below the top of berm. The overflow weir shall be armored from the top of berm to the outside toe of slope. If the weir is armored with riprap or other porous material, the subgrade under the riprap shall be equal to or above the design high water level. The weir shall be wide enough to convey one cfs per tributary acre. Weirs facing adjacent single-family residential properties or public streets shall be incorporated into the landscape design for the facility and shall be designed to minimize negative visual impacts by incorporating landscape stone, grasscrete or an approved equal material in lieu of concrete or standard riprap.

Overflow weirs are provided for the proposed detention facility. Sizing calculations are provided and erosion control measures are provided. The proposed design is in compliance with this portion of the ordinance.

Requests for relief from the requirements of this section will be processed by the Oversight Committee. A public hearing or a published legal notice is not required for any such request unless the request also involves relief from the requirements of the DuPage County Countywide Stormwater and Floodplain Ordinance. The applicant will be responsible for payment of any nonrefundable application fees to appear before the Plan Commission/Oversight Committee. (Ord. O2017-38, 6-19-2017)

8-13-6: PARKING LOT DETENTION:

In addition to the other rules and regulations set forth in this chapter, if a parking lot is used for stormwater detention, the maximum depth of water in the parking lot (usually over the inlets) shall be one foot (1'). The parking lot shall further comply with all applicable City rules, regulations and ordinances applicable to parking lot areas. (Ord. O2017-38, 6-19-2017)

Parking lot detention is not proposed. The proposed design is in compliance with this portion of the ordinance.

8-13-7: RETENTION FACILITY DESIGN CRITERIA:

In addition to the other rules and regulations set forth in this chapter, wet bottom stormwater retention facilities shall comply with the following design criteria:

A. Perimeter Native Grass Plantings: The perimeter area of a retention pond immediately above the normal water line shall be planted with a band of native grass in accordance with the following specifications:

1. Minimum Planting Width: The native grass planting band shall be a minimum width of ten feet (10') for small retention ponds with a surface area of less than fifteen thousand (15,000) square feet measured at the normal water level, fifteen feet (15') for medium retention ponds with a surface area of less than forty thousand (40,000) square feet measured at the normal water level, and twenty feet (20') for large retention ponds with a surface area of more than forty thousand (40,000) square feet measured at the normal water level.

The pond side slopes from the NWL to 1' above the HWL are proposed to be planted with native plantings. The side slope through the lower 4 feet of the bank is 5:1 and slopes above this area are 4:1. The planted area exceeds the required 20 feet. The proposed design is in compliance with this portion of the ordinance.

2. Design: A qualified landscape architect and/or ecologist shall be required to either design or certify the design of these plantings.

The originally proposed native seeding mixes were taken from the DuPage County BMP Manual. The seed mixes have been revised based on City comments. The proposed seed mixes are provided on the detail sheet of the plans and in Tab 9 of this report. The proposed design is in compliance with this portion of the ordinance.

3. Seed versus Plugs: The use of plugs shall be encouraged in lieu of seed. If seed is used, the letter of credit "maintenance" period for these improvements shall be three (3) years

instead of two (2) years and shall be in the amount of twenty five percent (25%) versus ten percent (10%).

Seeding is proposed for the planting of native areas. A maintenance and Monitoring plan has been provided in the stormwater report. The proposed design is in compliance with this portion of the ordinance.

4. Inspection And Certification: In order to verify native planting bands have been established properly and in compliance with the approved design, an inspection shall be performed and a report created by a qualified environmental consultant hired by the pond owner to verify the status of the plantings and to outline a recommended future maintenance program.

A maintenance and Monitoring plan has been provided in the stormwater report. The proposed design is in compliance with this portion of the ordinance.

B. Side Slopes: The side slopes of retention ponds shall be five to one (5:1) or flatter, from the normal water level to the limits of the native vegetation, and the side slopes shall be four to one (4:1) or flatter from the limits of the native vegetation to one foot (1') above the high water level.

The side slopes of the proposed pond are to be planted with native seeding to an elevation of 1' above the HWL. The side slope through the native planting areas from the NWL to 4' above the NWL is at a slope of 5:1 maximum. The pond side slope above this elevation are at a maximum slope of 4:1. The proposed design is in compliance with this portion of the ordinance.

C. Safety Ledge: A ten foot (10') wide safety ledge shall be provided three feet (3') below the normal water level. The safety ledge shall slope back towards the shore at a five percent (5%) grade. The side slopes shall be four to one (4:1) or flatter from the safety ledge to the normal water level and three to one (3:1) or flatter from the bottom of the pond up to the safety ledge.

A ten foot safety ledge is provided three feet below the NWL. The safety ledge pitches back toward the shore. The proposed design is in compliance with this portion of the ordinance.

D. Retaining Walls: Retaining walls shall be permitted on no more than fifty percent (50%) of the pond perimeter. Retaining walls shall be constructed of modular blocks. Retaining walls 3.0 feet or taller are required to be designed by a registered structural engineer or a registered architect and shall include a safety fence. Stepped walls count as one wall system (e.g., a 2 foot lower wall plus a stepped 2 foot upper wall equals a 4 foot wall). Safety fencing shall be provided along the top edge of any retaining wall greater than 3.0 feet in height.

Retaining walls are incorporated into the design of the proposed detention facility. The total length of retaining wall is less than 50% of the pond perimeter. The proposed design is in compliance with this portion of the ordinance.

E. Bounce: The maximum bounce (high water level minus normal water level) on a retention pond shall be four feet (4').

The proposed pond has a bounce of approximately 5.3'. This bounce is being driven by the existing detention facility on the site. The proposed design does not meet this portion of the ordinance.

F. Outfall Pipe: The outfall pipe from a retention pond shall have a flared end section and steel grating.

Steel grating is specified on the proposed flared end sections. The proposed design is in compliance with this portion of the ordinance.

G. Perimeter Berm: For any retention pond at least partially enclosed by an earthen berm, the top of the berm shall be at least one foot (1') higher than the design high water level and at least two feet (2') wide.

There is no berm proposed around the proposed detention facility. The proposed design is in compliance with this portion of the ordinance.

H. Emergency Overflow: An emergency overflow weir shall be provided at an elevation above the design high water level, but at least six inches (6") below the top of berm. The overflow weir shall be armored from the top of berm to the outside toe of slope. If the weir is armored with riprap or other porous material, the subgrade under the riprap shall be equal to or above the design high water level. The weir shall be wide enough to convey one cfs per tributary acre. Weirs facing adjacent single-family residential properties or public streets shall be incorporated into the landscape design for the facility and shall be designed to minimize negative visual impacts by incorporating landscape stone, grasscrete or an approved equal material in lieu of poured concrete or standard riprap.

Overflow weirs are provided for the proposed detention facility. Sizing calculations are provided and erosion control measures are provided. The proposed design is in compliance with this portion of the ordinance.

I. Requests for relief from the requirements of this section will be processed by the Oversight Committee. A public hearing or a published legal notice is not required for any such request unless the request also involves relief from the requirements of the DuPage County Countywide Stormwater and Floodplain Ordinance. The applicant will be responsible for payment of any nonrefundable application fees to appear before the Plan Commission/Oversight Committee. (Ord. O2017-38, 6-19-2017)

There are currently no requests for relief from the stated design requirements.

PHASE ONE LANDSCAPE PLANS

FOR

RIVER VIEW WEST

PREPARED FOR:

CANTERA DEVELOPMENT HOLDINGS, LLC

28301 FERRY ROAD
WARRENVILLE, ILLINOIS

APRIL 16, 2019

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3 TREE PRESERVATION PLAN
4 LANDSCAPE PLAN, NOTES & MAINTENANCE
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6 LANDSCAPE PLAN, PLANT LEGEND & SECTIONS
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10 LANDSCAPE PLAN
11 LANDSCAPE PLAN
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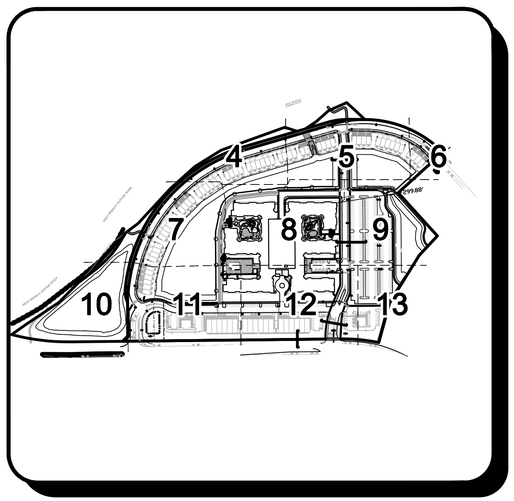
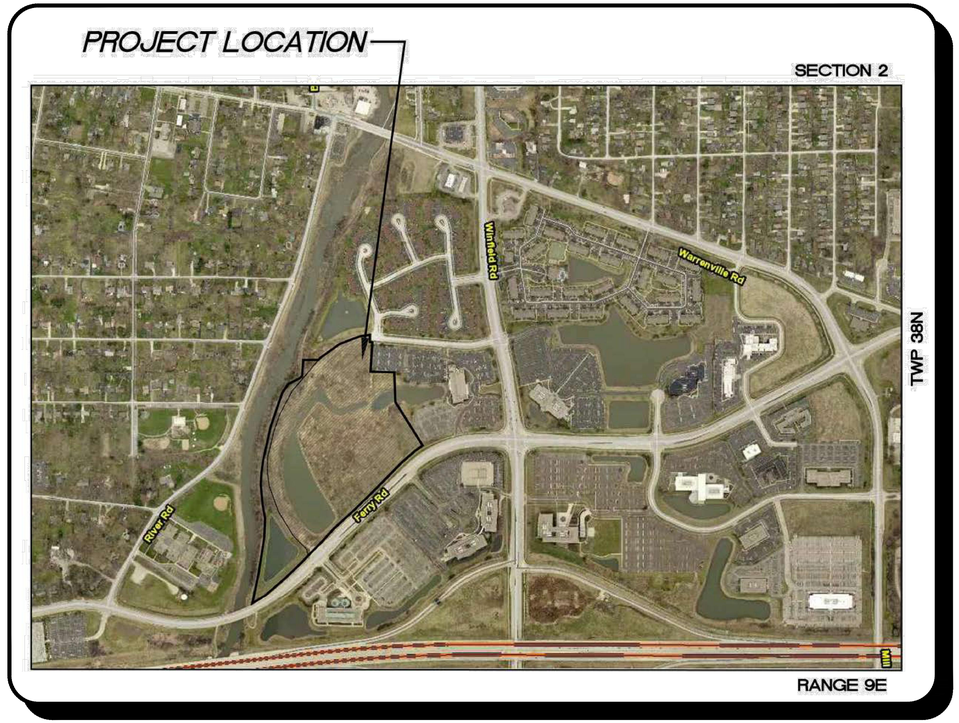
13 LANDSCAPE PLAN, DETAILS & PUD DATA TABLES



SHEET KEY
NOT TO SCALE



SITE LOCATION
NOT TO SCALE

JOB NO.:

DATE: 10.17.18

REVISIONS:
11.09.18 OUTLOT
01.18.19 per comments
02.18.19 per comments
04.16.19 per comments

DRAWN BY: KL

RIVER VIEW WEST
Cantera Development Holdings, LLC
28301 Ferry Road, Warrenville, Illinois
Phase 1 Landscape Development

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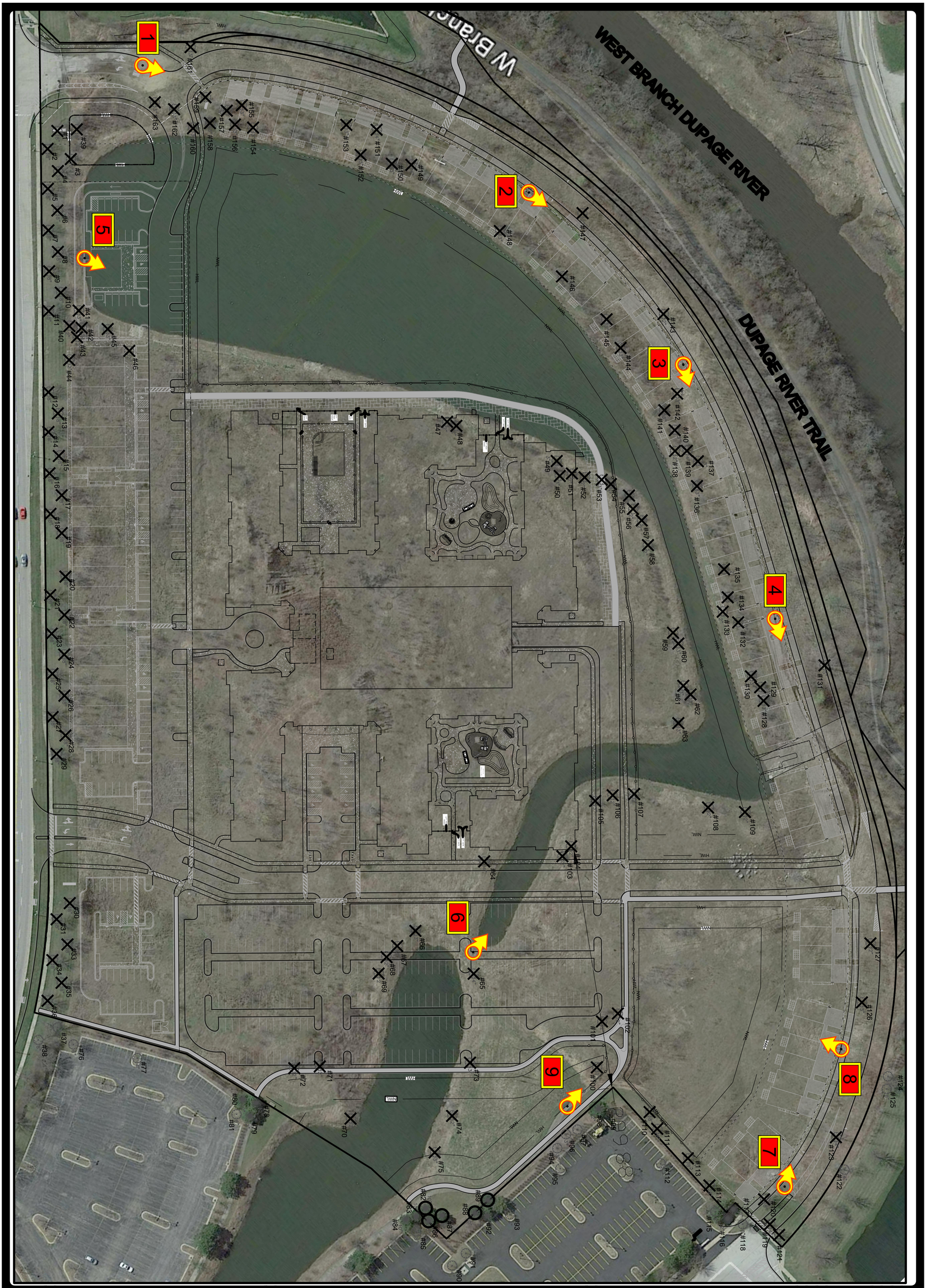
LANDSCAPE PLAN

SHEET NUMBER
1
OF 13

DRAWING NAME: C:\Users\Katrina\AppData\Local\Temp\AcPublish_9416\41709_2019-04-16_ph1.dwg DATE PRINTED: Apr 23, 2019 - 5:17pm

DRAWING NAME: S:\Project Files\Active Jobs\2017 Jobs\1709 Cantera-Warrenville\Drawing Data\A-Exhibits\2019-04-16_ph1\1709_2019-04-16_TreePres.dwg DATE PRINTED: Apr 16, 2019 - 6:17pm



SHEET NUMBER 2 OF 13

TREE PRESERVATION PLAN

50 0 50 100 150
SCALE 1"=50'
NORTH

Lannert Group
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RIVER VIEW WEST
Cantera Development Holdings, LLC
28301 Ferry Road, Warrenville, Illinois
Phase 1 Landscape Development

DRAWN BY: KL

REVISIONS:
11.09.18 OUTLOT
01.18.19 per comments
02.18.19 per comments
04.16.19 per comments

DATE: 10.17.18

JOB NO.:



















TREE DESCRIPTION				CLASSIFICATION	
NO.	DBH	COMMON NAME	SPECIES	REMOVE	PROTECT
1	8"	Green Ash	good	X	
2	8"	Green Ash	good	X	
3	3"	Slippery Elm	fair	X	
4	8"	Green Ash	good	X	
5	8"	Green Ash	good	X	
6	8"	Green Ash	good	X	
7	8"	Green Ash	good	X	
8	8"	Green Ash	good	X	
9	8"	Green Ash	good	X	
10	8"	Green Ash	good	X	
11	8"	Green Ash	good	X	
12	8"	Green Ash	good	X	
13	8"	Green Ash	good	X	
14	8"	Green Ash	good	X	
15	8"	Green Ash	good	X	
16	8"	Green Ash	good	X	
17	8"	Green Ash	good	X	
18	8"	Green Ash	good	X	
19	8"	Green Ash	good	X	
20	8"	Green Ash	good	X	
21	8"	Green Ash	good	X	
22	8"	Green Ash	good	X	
23	8"	Green Ash	good	X	
24	8"	Green Ash	good	X	
25	8"	Green Ash	good	X	
26	8"	Green Ash	good	X	
27	8"	Green Ash	good	X	
28	8"	Green Ash	good	X	
29	8"	Green Ash	good	X	
30	8"	Green Ash	good	X	
31	8"	Green Ash	good	X	
32	8"	Green Ash	good	X	
33	8"	Green Ash	good	X	
34	8"	Green Ash	good	X	
35	8"	Green Ash	good	X	
36	8"	Green Ash	good	X	
37	8"	Green Ash	good		OFF-SITE
38	8"	Green Ash	good		OFF-SITE
39	8"	Slippery Elm	fair	X	
40	2"	Siberian Elm	fair	X	
41	3"	Siberian Elm	poor	X	
42	2"	Siberian Elm	fair	X	
43	2"	Cottonwood	good	X	
44	2"	Cottonwood	good	X	
45	3"	Siberian Elm	poor	X	
46	2"	Siberian Elm	poor	X	
47	2"	Siberian Elm	fair	X	
48	2"	Siberian Elm	fair	X	
49	2"	Pear	fair	X	
50	2"	Pear	fair	X	
51	2"	Siberian Elm	poor	X	
52	2"	Siberian Elm	fair	X	
53	3"	Siberian Elm	fair	X	
54	3"	Cottonwood	good	X	
55	3"	Siberian Elm	fair	X	
56	2"	Cottonwood	good	X	
57	2"	Siberian Elm	fair	X	
58	2"	Siberian Elm	poor	X	
59	2"	Siberian Elm	good	X	
60	2"	Siberian Elm	fair	X	
61	2"	Siberian Elm	fair	X	
62	2"	Siberian Elm	good	X	
63	3"	Cottonwood	good	X	
64	4"	Siberian Elm	fair	X	
65	4"	Siberian Elm	fair	X	
67	3"	Siberian Elm	poor	X	
68	3"	Siberian Elm	poor	X	
69	3"	Siberian Elm	fair	X	
70	3"	Siberian Elm	fair	X	
71	2"	Siberian Elm	fair	X	
72	2"	Siberian Elm	fair	X	
73	3"	Cottonwood	good	X	

TREE DESCRIPTION				CLASSIFICATION	
NO.	DBH	COMMON NAME	SPECIES	REMOVE	PROTECT
74	2"	Cottonwood	good	X	
75	3"	Cottonwood	good	X	
76	6"	Honeylocust	good		OFF-SITE
77	4"	Honeylocust	good		OFF-SITE
78	12"	Mugo Pine	good		OFF-SITE
79	12"	Mugo Pine	good		OFF-SITE
80	12"	Mugo Pine	good		OFF-SITE
81	6"	Honeylocust	good		OFF-SITE
82	10"	Mugo Pine	good		X
83	10"	Mugo Pine	good		OFF-SITE
84	10"	Mugo Pine	good		OFF-SITE
85	8"	Honeylocust	good		OFF-SITE
86	10"	Mugo Pine	good		X
87	10"	Mugo Pine	good		X
88	10"	Mugo Pine	good		X
89	12"	Mugo Pine	good		X
90	4"	Honeylocust	good		OFF-SITE
91	4"	Honeylocust	good		OFF-SITE
92	12"	Mugo Pine	good		OFF-SITE
93	4"	Honeylocust	good		OFF-SITE
94	3"	River Birch	fair		OFF-SITE
95	4"	Honeylocust	good		OFF-SITE
96	3"	River Birch	fair		OFF-SITE
97	3"	River Birch	fair		OFF-SITE
98	12"	Mugo Pine	good		OFF-SITE
99	4"	Honeylocust	good		OFF-SITE
100	1"	Cottonwood	good	X	
101	2"	Cottonwood	good	X	
102	2"	Cottonwood	good	X	
103	2"	Cottonwood	good	X	
104	2"	Cottonwood	good	X	
105	3"	Slippery Elm	good	X	
106	2"	Slippery Elm	good	X	
107	2"	Slippery Elm	good	X	
108	2"	Cottonwood	good	X	
109	2"	Cottonwood	good	X	
110	8"	Freeman Maple	good	X	
111	8"	Freeman Maple	good	X	
112	4"	Honeylocust	good		OFF-SITE
113	8"	Freeman Maple	good	X	
114	8"	Freeman Maple	good	X	
115	8"	Honeylocust	good		OFF-SITE
116	12"	Mugo Pine	good		OFF-SITE
117	10"	Mugo Pine	good		OFF-SITE
118	8"	Green Ash	poor		OFF-SITE
119	4"	Miyabi Maple	good	X	
120	8"	Green Ash	fair	X	
121	4"	Miyabi Maple	good	X	
122	4"	Cottonwood	good		OFF-SITE
123	4"	Cottonwood	good	X	
124	4"	Cottonwood	good		OFF-SITE
125	8"	Green Ash	fair		OFF-SITE
126	3"	Cottonwood	good	X	
127	2"	Cottonwood	good	X	
128	3"	Slippery Elm	good	X	
129	2"	Slippery Elm	good	X	
130	3"	Slippery Elm	fair	X	
131	5"	Boxelder	fair	X	
132	3"	Slippery Elm	good	X	
133	2"	Pear	poor	X	
134	3"	Slippery Elm	good	X	
135	2"	Cottonwood	good	X	
136	3"	Slippery Elm	good	X	
137	3"	Slippery Elm	good	X	
138	2"	Slippery Elm	fair	X	
139	4"	Slippery Elm	good	X	
140	3"	Slippery Elm	good	X	
141	3"	Cottonwood	good	X	
142	3"	Pear	good	X	
143	2"	Cottonwood	good	X	
144	3"	Slippery Elm	fair	X	
145	3"	Slippery Elm	fair	X	
146	4"	Slippery Elm	good	X	
147	2"	Cottonwood	good	X	
148	3"	Slippery Elm	good	X	
149	4"	Slippery Elm	poor	X	
150	3"	Slippery Elm	fair	X	
151	4"	Slippery Elm	poor	X	
152	3"	Slippery Elm	fair	X	
153	3"	Slippery Elm	fair	X	
154	3"	Slippery Elm	good	X	
155	3"	Pear	good	X	
156	3"	Slippery Elm	fair	X	
157	4"	Slippery Elm	fair	X	
158	3"	Slippery Elm	fair	X	
159	3"	Slippery Elm	fair	X	
160	3"	Pear	good	X	
161	3"	Cottonwood	good	X	
162	3"	Crabapple	good	X	
163	3"	Crabapple	good	X	

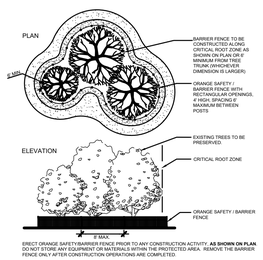
LEGEND

PROTECTED TREE

TREE TO BE REMOVED

NOTES

1. The original land function of the site was a quarry that had been filled during the initial Cantera development. The only purposefully planted trees are those along Ferry Rd, and within the parking lots. The Green Ash trees along Ferry Rd. have been deemed in 'decline' per the Village or Warrenville and Staff has asked that they be removed. The remainder of trees on the site are considered low grade weedy/invasive species germinated from limited site use and maintenance. It is in the best interest of the City of Warrenville and the developer to remove all trees and brush not protected prior to development.
2. Multiple protective fence radii around groups of trees may be combined as long as all root zones within the original noted radii are within combined protection area.



TREE PROTECTION DETAIL

N.T.S.

JOB NO.:

DATE: 10.17.18

REVISIONS:
11.09.18 OUTLOT
01.18.19 per comments
02.18.19 per comments
04.16.19 per comments

DRAWN BY: KL

RIVER VIEW WEST
Cantera Development Holdings, LLC
28301 Ferry Road, Warrenville, Illinois
Phase 1 Landscape Development

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TREE PRESERVATION PLAN

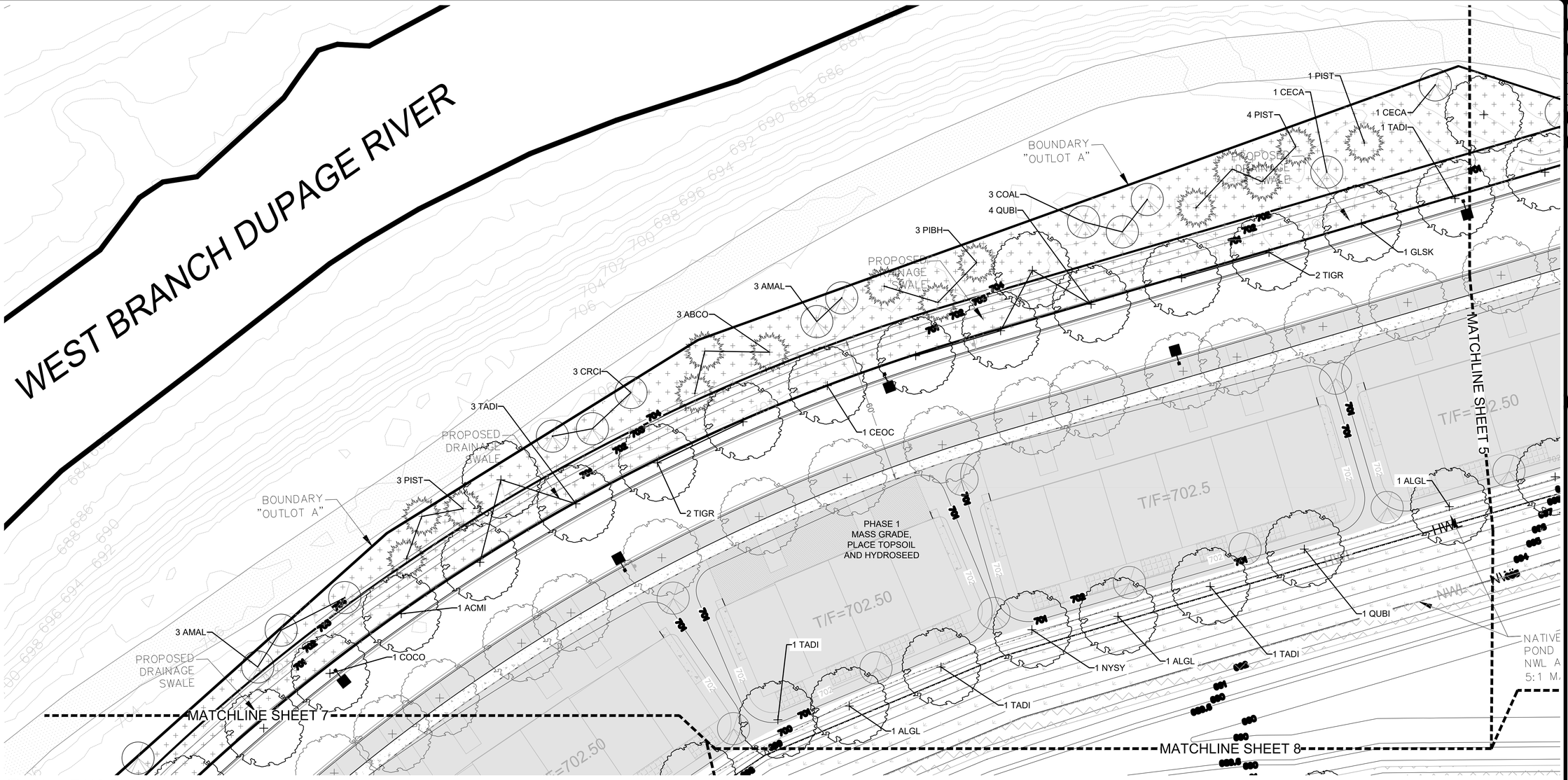
NORTH

SCALE 1"=50'

150 100 50 0 50

SHEET NUMBER
3
OF 13

DRAWING NAME: S:\Project Files\Active Jobs\2017 Jobs\1709 Cantera-Warrenville\Drawing Data\IA-Exhibits\2019-04-16_ph1\1709_2019-04-16_TreePres.dwg DATE PRINTED: Apr 16, 2019 - 6:21pm



A PLANTING PLAN

SCALE: 1" = 20'-0"

GENERAL NOTES:

Contractor is responsible for verification of underground utility lines and is responsible for any damage occurring as a product of his work.

Contractor shall maintain clear and open access to the vehicular and pedestrian entrances to and from the property during all periods of work.

Contractor is responsible for verification of all existing conditions in the field prior to bidding and construction and shall notify the Landscape Architect and/or Owner of any variances.

Contractor is responsible for acquisition of and payment for all permits, fees and inspections necessary for the proper execution of this work and for compliance with all codes applicable to this work.

Contractor shall protect the property and is directly responsible for all damages caused by his work and for daily removal of all trash and debris from his work area to the satisfaction of the Landscape Architect and/or the Owner.

Material quantities are shown only for the convenience of the Contractor. The Contractor is responsible for verification of all materials and supplies in sufficient quantity to complete the job per plan.

LANDSCAPE NOTES:

All work shall conform to American Nursery & Landscape Association 2004 edition of the American Standard for Nursery Stock, State of Illinois Horticultural Standards and local municipal requirements.

All plant material installation shall be as detailed on these Drawings.

All pruning work shall be performed only with hand pruners.

All deciduous plant material shall be thin pruned to remove ¼ interior branches, dead branches and broken branches. Pruning shall compliment the plants natural form. Absolutely no tip pruning is allowed, except for hedges as noted on the Drawing. Any plant that is tip pruned is subject to rejection by the Landscape Architect and/or Owner.

Evergreen trees and shrubs shall be pruned of dead and broken branches and as directed by the Landscape Architect and/or Owner.

The Landscape Architect and/or Owner reserves the right to inspect trees and shrubs either at the place of growth or at the site prior to planting for compliance with requirements of variety, size and quality.

Contractor shall provide top soil cover of at least six inches (6") in turf areas and at least nine inches (9") in all planting beds.

Planting beds shall be prepared with a 2" depth of mushroom compost and a 1" depth of calcined clay tilled to an overall depth of 6"-9".

Prior to mulching, all individual trees, shrub beds and groundcover areas shall be treated with a pre-emergent herbicide, such as Snap-Shot®. All areas shall be free from weeds prior to herbicide application.

All shrub beds and individual existing and proposed trees shall be mulched to a depth of 3" with finely shredded hardwood mulch.

All perennial, groundcover and annual planting beds shall be mulched to a depth of 2" with leaf compost. Mushroom compost may be substituted if leaf compost is unavailable.

Water trees, shrubs and groundcover beds within the first 12 hours of initial planting. Continue watering weekly or as needed until the end of the maintenance period.

Sod shall be Kentucky Bluegrass and is required in all areas as noted on the Drawings.

Seed shall be IDOT 1A Salt Tolerant Lawn mixture of the previous year's crop with 0.5% or less weed seed and 1.75% or less crop seed, by weight. Seed shall be dry and free of mold and delivered to the site in it's original packaging.

Contractor shall maintain all planting under the contracted work for a period of no less than 90 days or until establishment of seeding, whichever is longer.

Maintenance operations shall include pruning, cultivating, weeding, resetting settled plants, application of pesticides if required and application of fertilizer as needed to insure proper establishment of planting and lawns.

LANDSCAPE MAINTENANCE:

MAINTENANCE SCHEDULE MATRIX	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR
Remove debris caught in trees, shrubs and naturalized areas	■	■	■	■	■	■	■	■			■	■
Refresh compost mulch in planting areas as needed to maintain a 2" depth	■	■	■	■	■	■	■					
Mow lawn areas to 2" when grass reaches 3"	■	■	■	■	■	■	■					
Weed planting beds as weeds emerge	■	■	■	■	■	■	■					
Bed clean-up-remove organic debris, excess mulch etc.	■	■	■	■	■	■	■					
Overseed bare areas of lawn or install new lawn	■	■			■	■					■	■
Review site conditions to establish annual fertilization program	■											
Aerate or dethatch lawn when it is actively growing	■	■					■					
Naturalized stormwater basin assessment of maintenance needs	■											
Remove accumulated sediment in stormwater structures	■		■		■			■				
Naturalized stormwater basin weed control and overseeding as needed	■	■				■						
Mow naturalized stormwater basin side sloped to height of 6"		■										
Prune spring flowering shrubs after they have bloomed		■	■									
Divide perennial plants & transplant as needed		■										
Prune blooming shrubs & hedges after bloom if appropriate			■		■	■						
Inspect for grubs, snails and slugs-treat lawn & planting beds if required				■								
Mow lawn area to 3" when grass reaches 4", edge against hardscape	■	■	■	■	■	■	■					
Cut back perennials that have died back for the season					■	■	■	■				
Cattail control operations including treatment and removals								■				
Core aerate/dethatch lawn if thatch layer exceeds 1/2 inch						■						
Replace missing, dead and damaged plants in beds						■	■					
Mow, mulch, shred or compost leaves as they fall								■				
If required in established fertilizaton program, apply fall fertilizer to lawn								■				
Prune damaged tree branches while trees are dormant								■	■	■		
Check all winter cover, evergreen boughs, holiday lighting etc.									■			
Remove all winter cover, evergreen boughs, holiday lighting etc.											■	■
Check perennials-reset any heaved by frost											■	
Prune established trees to thin and shape the crown											■	
Prune dormant shade trees except birch, maple, dogwood, oak & elm												■
Prune hydrangea and spirea												■
Cut ornamental grasses back to ground												■
Prune winterkill from shrubs-prune back to green shoots or new growth												■

Algae Treatment / Removal: Algae shall be chemically treated or raked by a qualified professional.

Bed Maintenance: Dead or injured limbs shall be removed from shrubs and trees as necessary. Debris shall be removed from beds and disposed of offsite.

Cattail Removal: Cattails will be left to stand until complete die-off is observed. At that time, cattails can be cut and removed from the site.

Cattail Treatment: Cattails shall be treated with an aquatic safe version of glyophosphate herbicide (such as Rodeo™) in August or September.
Debris Removal: The removal and legal disposal of wind-blown refuse from the open spaces.

Fertilization: Fertilizer program shall be reviewed and adjusted annually to match site needs. Flags shall be posted throughout community following each application and removed as directed by the product
label.

Inlet/Outlet Cleaning: Refuse, lawn clippings, and sediment carried by stormwaterrunoffshall be removed from the flared end sections associated with inlet and outlet storm structures.

Mowing (Native Stormwater Basins): Mow at a height of 6" per matrix. Mowing height and frequency may be seasonally adjusted depending upon weather conditions in order to control annual weeds.

Mowing (Traditional): Turf shall be mowed weekly to a height of 3" from April through November, or as needed. No more than 1/3 of the grass blade is to be removed per cutting. Mowing height may be seasonally adjusted depending upon weather conditions in order to reduce stress and promote healthy Mowing patterns shall be altered on a weekly basis wherever possible.

Pruning (Shrubs): Shrubs shall be shaped and thinned to allow for its natural form and habit.

Pruning (Trees): All shade and ornamental trees shall be pruned or evaluated for pruning at least once per year. Light pruning and the removal of deadwood can be done during the latter part of the growing. If more extensive pruning is necessary, winter pruning is preferred. The purpose is to maintain proper form, remove dead wood and to promote overall tree health. Pruning shall conform to standard horticultural practices and be done in such a way as to not interfere with blooming of ornamental trees. Trees over 6" in DBH will not be pruned other than removal of low branches hazardous to pedestrian traffic or any sucker growth that may occur.

Site Assessment: A site assessment consists of an on-site inspection to evaluate the condition of the vegetation, inlets, outlets, and any erosion problems. The assessment includes a brief report outlining the overall basin condition and any necessary actions (i.e. gully repair, over seeding, etc.) that may be outside of the standard maintenance program.

Tree Ring, Edging, and Mulch Maintenance: All tree rings containing soil or mulch shall be cultivated and edged three (3) times per year to maintain a fresh appearance. Mulch shall be added as necessary and kept 3" form tree trunks and shall not be mounded. Tree rings shall be kept weed and free through hand weeding and/or spot spraying. Any tree suckers or seedlings should also be removed from tree rings.

Weed Control: Annual weeds and perennial weeds can be spot sprayed as necessary as determined by annual site assessment.

JOB NO.:

DATE: 10.17.18

REVISIONS:
11.09.18 OUTLOT
01.18.19 per comments
02.18.19 per comments
04.16.19 per comments

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RIVER VIEW WEST
Cantera Development Holdings, LLC
28301 Ferry Road, Warrenville, Illinois
Phase 1 Landscape Development

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LANDSCAPE PLAN

NORTH
SCALE 1"=20'
60 40 20 0 10 20

SHEET NUMBER
4
OF 13

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WEST BRANCH DUPAGE RIVER

1 NYSY
5 PIST
BOUNDARY "OUTLOT A"
FOREST PRESERVE DISTRICT CONNECTION TRAIL
EXISTING OFFSITE DETENTION BASIN
1 CECA
PROPOSED DRAINAGE SWALE
3 TADI
2 CRCI
2 PIBH
3 AMAL
PROPOSED DRAINAGE SWALE
3 GLSK
3 TIRE
2 TADI
1 NYSY
3 AMAL
1 NYSY
3 QUBI
1 CEOC
MATCHLINE SHEET 6
DEPRESS CURB 30' FOR OVERFLOW ROUTE
1 HAVE
3 PIBH
PROPOSED POND OVERFLOW ELEV 699.78
PHASE 1 MASS GRADE, PLACE TOPSOIL AND HYDROSEED
T/F=702.50
PHASE 1 MASS GRADE, PLACE TOPSOIL AND HYDROSEED
T/F=702.50
PHASE 1 MASS GRADE, PLACE TOPSOIL AND HYDROSEED
T/F=702.50
MATCHLINE SHEET 4
1 TADI
1 QUBI
1 ALGL
1 TADI
BALCONY
1 TADI
1 QUBI
3 TIRE
1 NYSY
1 ALGL
1 ALGL
1 ALGL
1 CRCI
1 ALGL
NATIVE PLANTINGS ON POND EDGE BETWEEN NWL AND ELEV 697 @ 5:1 MAX SLOPE (TYP) NATIVE PLANTING EXTEND TO ELEV 699.5
4:1 MAX SLOPE ABOVE ELEV 697
3 CRCI
4 COCO
PROPOSED POND OVERFLOW ELEV 699.54
3 TADI
DEPRESS CURB 30' FOR OVERFLOW ROUTE
3 QUBI
5 BEFV
2 BEFV
1 NYSY
NATIVE PLANTINGS ON POND EDGE BETWEEN NWL AND ELEV 697 @ 5:1 MAX SLOPE (TYP)
PROPOSED 5'X7' PRC BOX CULVERT
MATCHLINE SHEET 8
MATCHLINE SHEET 9
PROPOSED POND OVERFLOW ELEV 699.78
NWL
HWL

A PLANTING PLAN
SCALE: 1" = 20'-0"

JOB NO.:

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LANDSCAPE PLAN

NORTH
SCALE 1"=20'

SHEET NUMBER
5
OF 13

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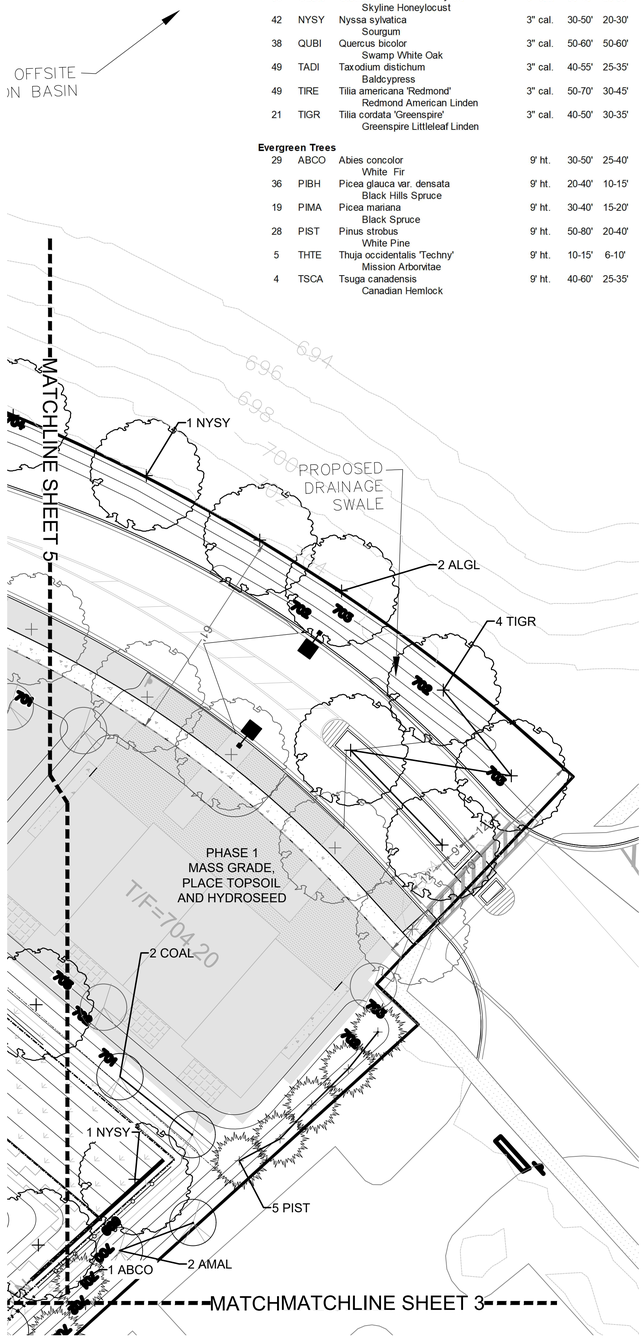
PLANT LIST

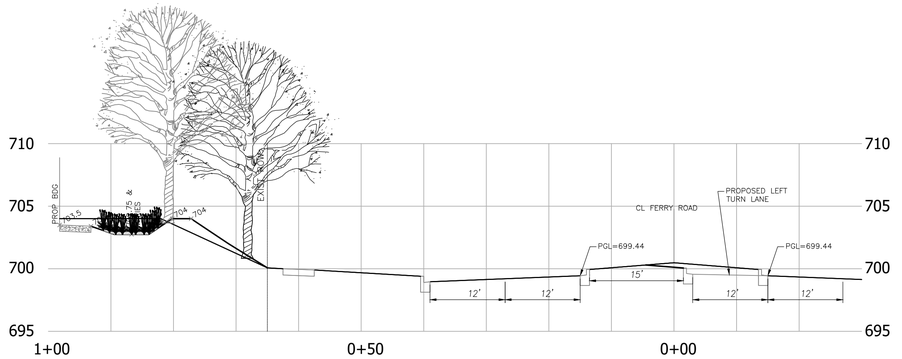
QTY	KEY	BOTANICAL NAME / COMMON NAME	SIZE	MATURE HEIGHT	MATURE WIDTH
Shade Trees					
26	ACMI	Acer miyabei 'Morton' State Street Maple	3" cal.	40-50'	30-35'
21	ALGL	Salix nigra Black Willow	3" cal.	30-60'	30-60'
41	CEOC	Celtis occidentalis Hackberry	3" cal.	40-60'	40-60'
7	COCO	Catalpa speciosa Northern Catalpa	3" cal.	40-70'	20-50'
50	GLSK	Gleditsia triacanthos 'Skyline' Skyline Honeylocust	3" cal.	35-45'	25-35'
42	NYSY	Nyssa sylvatica Sourgum	3" cal.	30-50'	20-30'
38	QUBI	Quercus bicolor Swamp White Oak	3" cal.	50-60'	50-60'
49	TADI	Taxodium distichum Baldcypress	3" cal.	40-55'	25-35'
49	TIRE	Tilia americana 'Redmond' Redmond American Linden	3" cal.	50-70'	30-45'
21	TIGR	Tilia cordata 'Greenspire' Greenspire Littleleaf Linden	3" cal.	40-50'	30-35'
Evergreen Trees					
29	ABCO	Abies concolor White Fir	9' ht.	30-50'	25-40'
36	PIBH	Picea glauca var. densata Black Hills Spruce	9' ht.	20-40'	10-15'
19	PIMA	Picea mariana Black Spruce	9' ht.	30-40'	15-20'
28	PIST	Pinus strobus White Pine	9' ht.	50-80'	20-40'
5	THTE	Thuja occidentalis 'Techny' Mission Arborvitae	9' ht.	10-15'	6-10'
4	TSCA	Tsuga canadensis Canadian Hemlock	9' ht.	40-60'	25-35'

PLANT LIST

QTY	KEY	BOTANICAL NAME / COMMON NAME	SIZE	MATURE HEIGHT	MATURE WIDTH
Ornamental Trees					
43	AMAL	Amelanchier arborea Downy Serviceberry	6' ht.	15-25'	15-25'
36	CECA	Cercis canadensis Redbud	6' ht.	20-30'	25-35'
27	COAL	Cornus alternifolia Pagoda Dogwood	6' ht.	15-20'	20-30'
32	CRCI	Crataegus crus-balli v. inermis Thornless Cockspur Hawthorn	6' ht.	20-30'	20-30'
1	HAVE	Hamamelis vernalis Vernal Witch Hazel	6' ht.	15-20'	15-20'
9	MARJ	Malus 'Jewelcole' Red Jewel Crabapple	6' ht.	12'	12'
8	MASA	Malus sargentii Sargent Crabapple	6' ht.	6-8'	9-15'
Deciduous Shrubs					
33	BEFV	Betula nigra 'Little King' Fox Valley River Birch	5' ht.	8-10'	8-10'
143	CEAM	Ceanothus americanus New Jersey Tea	5 gal.	3-4'	3-4'
66	CLHU	Clethera alnifolia 'Hummingbird' Hummingbird Pepperbush	3 gal.	2-4'	3-5'
35	CLRS	Clethera alnifolia 'Ruby Spice' Ruby Spice Summersweet	3 gal.	4-6'	3-5'
6	HYQU	Hydrangea quercifolia 'Alice' Alice Oakleaf Hydrangea	3 gal.	5-8'	5-8'
72	HYHI	Hypericum 'Hidcote' Hidcote St. John's Wort	3 gal.	2-4'	2-4'
39	ITHG	Itea virginica 'Henry's Garnet' Virginia Sweetspire	3 gal.	3-4'	4-6'
4	PHSW	Philadelphus 'Snowwhite Fantasy' Snow White Mock Orange	5 gal.	4-6'	4-6'
82	PHMS	Philadelphus 'Miniature Snowflake' Mock Orange	3 gal.	2-3'	2-3'
207	RHGL	Rhus aromatica 'Gro-Low' Grow-Low Sumac	3 gal.	1.5-2'	6-8'
88	ROPA	Rosa palustris Swamp Rose	5 gal.	4-6'	4-6';
19	SACN	Sambucus canadensis Elderberry	5' ht.	8-12'	6-8'
67	SPAL	Spirea alba Meadowsweet	5 gal.	3-4'	4-6'
138	SPBT	Spirea betulifolia 'Tor' Tor Birchleaf Spirea	3 gal.	2-3'	2-3'
41	SPGR	Spirea x cinerea 'Grefsheim' First Snow Spirea	5 gal.	4-5'	4-5
45	SYMP	Syringa meyeri 'Palibin' Dwarf Korean Lilac	5 gal.	4-5'	5-7'
66	VICC	Viburnum carlesii 'Compactum' Dwarf Koreanspice Viburnum	3 gal.	2.5-4'	2.5-4'
27	VIBM	Viburnum dentatum 'Christom' Blue Muffin Viburnum	5 gal.	4-6'	4-6'
121	WEMI	Weigelia 'Minuet' Dwarf Weigela	3 gal.	2-3'	3-4'
Evergreen Shrubs					
18	BUNC	Buxus 'Wilson' Northern Charm Boxwood	5 gal.	3-4'	3-4'
48	PIBN	Picea abies 'Nidiformis' Bird's Nest Spruce	5 gal.	4-5'	5-6'
7	TADE	Taxus x media 'Densiformis' Dense Anglojap Yew	5 gal.	3-4'	4-6'
11	THHM	Thuja occidentalis 'Hetz Midget' Hetz's Midget Arborvitae	5 gal.	3-4'	4-5'
Perennials, Groundcover, Ornamental Grasses & Vines					
112	ALSB	Alium tanguticum 'Summer Beauty' Ornamental Onion	1 gal.	12-18"	18-24"
5	ASAD	Astilbe japonica 'Deutschland' Deutschland Astilbe	1 gal.	18-24"	12-18"
8	ASJR	Astilbe japonica 'Rheinland' Rheinland Astilbe	1 gal.	18-24"	18-24"
82	BOCU	Bouteloua curtipendula Site-oats Grama	1 gal.	24-36"	18-24"
13	SCSC	Schizachyrium scoparium Little Bluestem	1 gal.	24-36"	12-18"
7	CANE	Calamintha nepeta ssp. Nepeta Lesser Calamintha	1 gal.	18-24"	18-24"
290	CAST	Carex stricta Tussock Sedge	plug	24-36"	18-24"
10	CHLA	Chasmanthium latifolium Northern Sea Oats	1 gal.	24-36"	18-24"
11	COMO	Coreopsis virticillata 'Moonbeam' Moonbeam Coreopsis	1 gal.	18-24"	18-24"
91	ECPM	Echinacea 'CBG Cone 2' Pixie Meadowbrite Coneflower	1 gal.	18-24"	18-24"
375	ECPA	Echinacea pallida Pale Purple Coneflower	plug	24-36"	12-18"
42	GEMF	Geranium sanguineum 'Max Frei' Max Frei Bloody Cranesbill	1 gal.	8-12"	18-24"
388	GETR	Geum triflorum Prairie Smoke	1 gal.	12-18"	12-18"
8	HEPA	Heuchera 'Palace Purple' Palace Purple Coral Bells	1 gal.	12-18"	12-18"
9	HESC	Heuchera sanguinea 'Chatterbox' Chatterbox Coral Bells	1 gal.	12-18"	12-18"
5	HOFB	Hosta 'Fragrant Bouquet' Fragrant Bouquet Hosta	1 gal.	18-24"	36-48"
11	LISP	Liriope spicata Creeping Lilyturf	1 gal.	8-12"	8-12"
47	PARO	Panicum virgatum 'Rotstrahlbusch' Red Fountainbush Switch Grass	1 gal.	3-6'	24-36"
343	PYVI	Pycnanthemum virginianum Mountain Mint	plug	24-36"	18-24"
150	RUGO	Rudbeckia fulgida 'Goldsturm' Black-eyed Susan	1 gal.	24-36"	18-24"
131	RULS	Rudbeckia fulgida 'Viette's little Suzy' Litle Suzy Black-eyed Susan	1 gal.	12-18"	18-24"
28	SACA	Salvia nemorosa 'Caradonna' Caradonna Salvia	1 gal.	18-24"	18-24"
784	SPHE	Sporobolus heterolepsis Prairie Dropseed	1 gal.	24-36"	18-24"
200	TROH	Tradescantia ohioensis Spiderwort	1 gal.	24-36"	12-18"

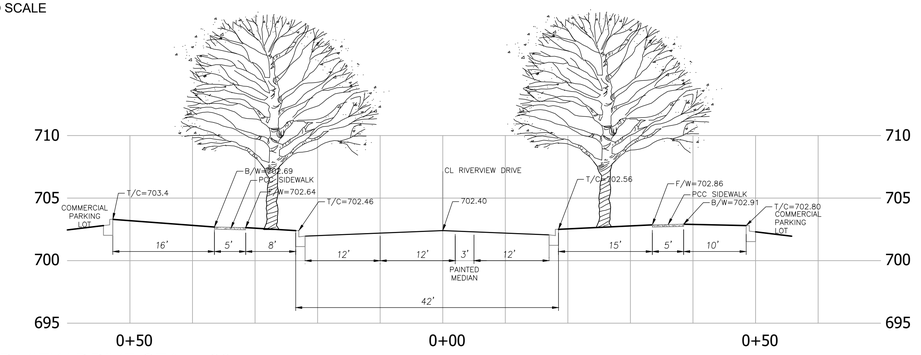


A PLANTING PLAN
SCALE: 1" = 20'-0"



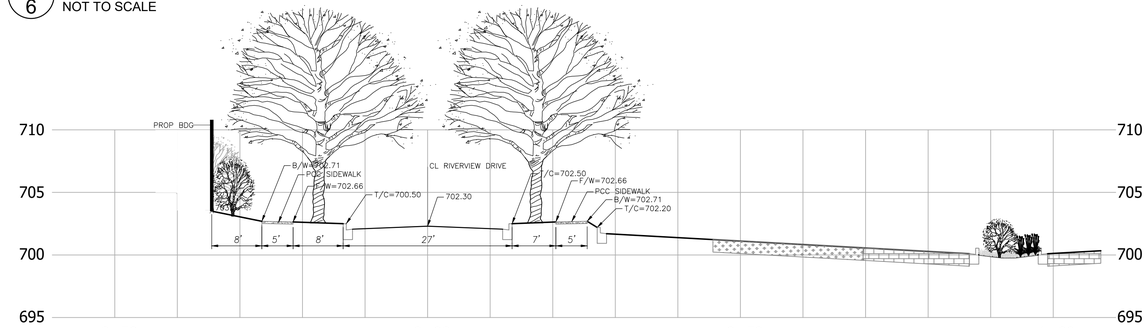
B 6 FERRY ROAD STA 129+50
NOT TO SCALE

FERRY ROAD STA 129+50



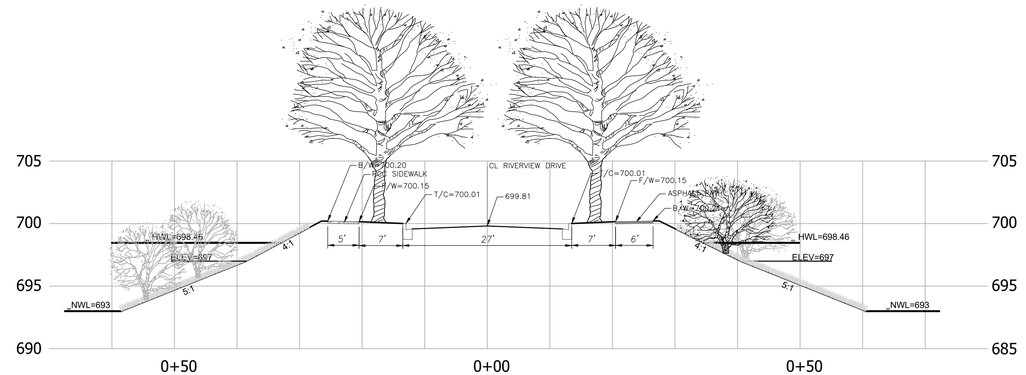
C 6 RIVER VIEW DRIVE STA 1+00
NOT TO SCALE

RIVERVIEW DRIVE STA 1+00



D 6 RIVER VIEW DRIVE STA 5+00
NOT TO SCALE

RIVERVIEW DRIVE STA 5+00



E 6 RIVER VIEW DRIVE STA 9+00
NOT TO SCALE

RIVERVIEW DRIVE STA 9+00

JOB NO.:

DATE: 10.17.18

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11.09.18 OUTLOT
01.18.19 per comments
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LANDSCAPE PLAN

NORTH
SCALE 1"= 20'
60 40 20 0 10 20

SHEET NUMBER
6
OF 13

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WEST BRANCH DUPAGE RIVER

MATCHLINE SHEET 4

2 CECA
2 GLSK
1 QUBI
3 COAL
1 COCO
1 QUBI
1 NYSY
1 QUBI
T/F=702.50
3 NYSY
1 TADI
3 PIBH
HWL
NWL
1 TADI
3 TIRE
2 CEOC
1 CRCI
1 COCO
3 PIST
4 CRCI
PHASE 1
MASS GRADE,
PLACE TOPSOIL
AND HYDROSEED
1 TADI
NATIVE PLANTINGS ON
POND EDGE BETWEEN
NWL AND ELEV 697 @
5:1 MAX SLOPE (TYP)
NATIVE PLANTINGS
EXTEND TO ELEV 699.5
1 NYSY
1 CRCI
20' FIRE LANE
PROPOSED
DRAINAGE
SWALE
BALCONY
1 QUBI
3 AMAL
3 ALGL
BOUNDARY
OUTLOT A
2 COAL
1 ALGL
4:1 MAX SLOPE
ABOVE ELEV 697
5 GLSK
2 BEFV
1 TADI
3 CECA
1 CEOC
3 GLSK
MATCHLINE SHEET 10
ROUNDED 60' ROW
1 TADI
MATCHLINE SHEET 11
MATCHLINE SHEET 8
10 FT. GATE
3 FT. GATE
10 FT. GATE
4 FT. GATE
6 FT. HIGH FENCE

A PLANTING PLAN
SCALE: 1" = 20'-0"

SCALE 1"=20'
NORTH

JOB NO.:

DATE:
10.17.18

REVISIONS:
11.09.18 OUTLOT
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LANDSCAPE PLAN

SHEET NUMBER
7
OF 13

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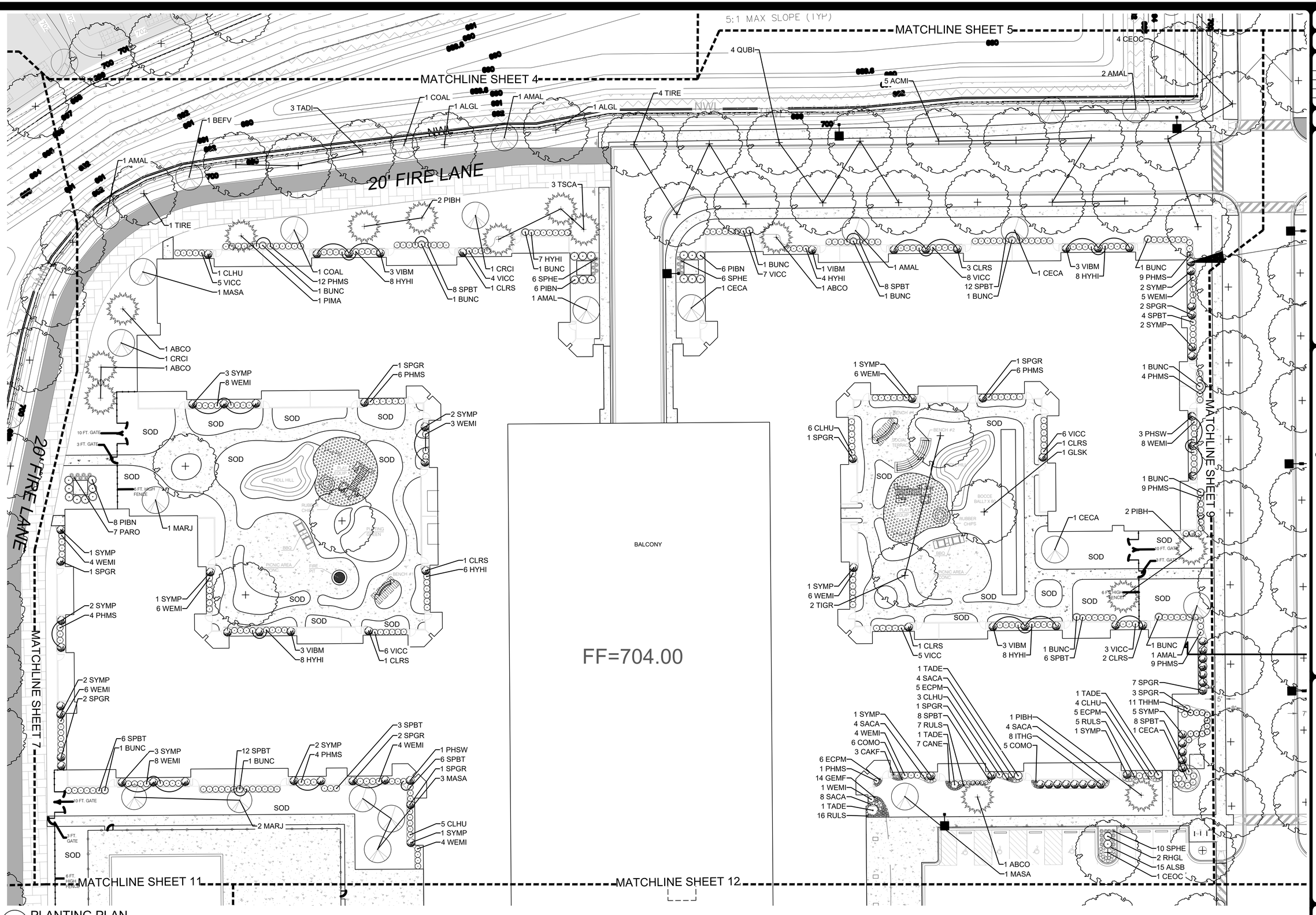

A PLANTING PLAN
SCALE: 1" = 20'-0"

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LANDSCAPE PLAN

NORTH
SCALE 1"= 20'
20 0 10 20 40 60

SHEET NUMBER
8
OF 13

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MATCHLINE SHEET 5

MATCHLINE SHEET 6

MATCHLINE SHEET 8

MATCHLINE SHEET 12

MATCHLINE SHEET 13

BOX CULVERT

PROPOSED POND OVERFLOW ELEV 699.78

NWL

HWL

4:1 MAX SLOPE ABOVE ELEV 697

NATIVE PLANTINGS ON POND EDGE BETWEEN NWL AND ELEV 697 @ 5:1 MAX SLOPE (TYP). NATIVE PLANTINGS EXTEND TO ELEV 699.5

BALCONY

3 AMAL
3 ACMI
1 QUBI
3 CECA
3 NYSY
3 COAL
5 ABCO
3 CRCI
4 ROPA
19 SPHE
15 PARO
5 ITHG
2 PIST
3 CECA
3 GLSK
3 COAL
5 PIMA
3 NYSY
10 PARO
3 ROPA
5 PIST
21 SPHE
5 ITHG
3 ROPA
3 CRCI
4 GLSK
3 TIGR
5 NYSY
5 TIRE
14 SPHE
2 RHGL
15 GETR
1 CEOC
11 CEAM
6 ROPA
14 SPHE
1 ALGL
3 SACN
1 NYSY
1 BEFV
1 ALGL
3 BEFV
6 ITHG
14 BOCU
14 CEAM
3 ROPA
14 SPHE
2 RHGL
12 GETR
1 CEOC

12 SPHE, 1 CEOC, 15 GETR
11 GETR, 2 TIRE, 12 SPHE, 9 RHGL, 11 GETR
1 CEOC, 17 SPHE, 11 GETR, 4 RHGL, 1 ROPA, 6 CAST, 7 ECPA, 9 PYVI, 9 RUGO, 1 CEOC, 6 ITHG, 13 SPHE, 2 AMAL, 14 ECPA, 13 TROH, 3 ROPA, 12 ECPA, 45 BOCU, 5 PYVI, 9 RUGO, 10 PYVI, 2 CEOC, 8 CEAM, 18 CAST, 15 ECPA, 7 RUGO

8 PYVI, 10 TROH, 5 SPAL, 5 ROPA, 7 CAST, 5 CEAM, 8 PYVI, 7 RUGO
1 ROPA, 4 CAST, 3 ECPA, 5 PYVI, 3 RUGO, 9 ECPA, 5 TROH, 5 ECPA
4 ECPA, 7 CAST, 8 PYVI, 5 CEAM, 7 TROH, 5 ROPA
5 PYVI, 3 SPAL, 8 ECPA, 4 CAST, 3 ECPA, 13 CAST
3 RUGO, 9 ECPA, 5 TROH, 5 ECPA, 5 PYVI, 3 SPAL, 4 CAST, 3 ECPA, 10 CAST
8 RHGL, 5 SPHE, 14 GETR, 1 TIRE
8 RHGL, 5 SPHE, 14 GETR, 2 TADI
11 PYVI, 13 TROH, 5 SPAL, 5 ROPA, 7 CAST, 5 CEAM, 8 PYVI, 7 RUGO
6 ECPA, 5 PYVI, 3 RUGO, 9 ECPA, 5 TROH, 5 ECPA
4 ECPA, 7 CAST, 8 PYVI, 5 CEAM, 7 TROH, 5 ROPA
5 PYVI, 3 SPAL, 8 ECPA, 4 CAST, 3 ECPA, 13 CAST
3 RUGO, 9 ECPA, 5 TROH, 5 ECPA, 5 PYVI, 3 SPAL, 4 CAST, 12 SPHE, 9 RHGL
2 TIRE, 11 GETR

8 PYVI, 10 TROH, 5 SPAL, 5 ROPA, 7 CAST, 11 CEAM, 8 PYVI, 7 RUGO, 4 ECPA
1 ROPA, 4 CAST, 3 ECPA, 5 PYVI, 3 RUGO, 9 ECPA, 5 TROH, 5 ECPA
7 CAST, 8 ECPA, 8 PYVI, 7 RUGO, 4 ECPA, 5 CEAM, 7 TROH, 5 ROPA
5 PYVI, 3 SPAL, 8 ECPA, 4 CAST, 3 ECPA, 13 CAST
3 RUGO, 9 ECPA, 5 TROH, 5 ECPA, 5 PYVI, 3 SPAL, 4 CAST, 3 ECPA, 10 CAST
8 RHGL, 5 SPHE, 14 GETR, 2 TADI
11 PYVI, 13 TROH, 5 SPAL, 5 ROPA, 7 CAST, 5 CEAM, 8 PYVI, 7 RUGO
6 ECPA, 5 PYVI, 3 RUGO, 9 ECPA, 5 TROH, 5 ECPA
4 ECPA, 7 CAST, 8 PYVI, 5 CEAM, 7 TROH, 5 ROPA
5 PYVI, 3 SPAL, 8 ECPA, 4 CAST, 3 ECPA, 13 CAST
3 RUGO, 9 ECPA, 5 TROH, 5 ECPA, 5 PYVI, 3 SPAL, 4 CAST, 12 SPHE, 9 RHGL
2 TIRE, 11 GETR

1 TIRE, 5 SPHE, 14 GETR, 8 RHGL
6 ECPA, 5 PYVI, 3 RUGO, 9 ECPA, 5 TROH, 5 ECPA
4 ECPA, 7 CAST, 8 PYVI, 5 CEAM, 7 TROH, 5 ROPA
5 PYVI, 3 SPAL, 8 ECPA, 4 CAST, 3 ECPA, 13 CAST
3 RUGO, 9 ECPA, 5 TROH, 5 ECPA, 5 PYVI, 3 SPAL, 4 CAST, 12 SPHE, 9 RHGL
2 TIRE, 11 GETR

PROVIDE PREFABRICATED FOR DRAINAGE (TYP)

D/6

5', 8', 7'

A PLANTING PLAN
SCALE: 1" = 20'-0"

PRUNE ONLY CROSSOVER, BROKEN OR DEAD BRANCHES
MARK THE NORTH SIDE OF THE TREE IN THE NURSERY, AND ROTATE TREE TO FACE NORTH AT THE SITE WHENEVER POSSIBLE
REMOVE BURLAP FROM TOP 1/3 OF BALL; CUT AND REMOVE AS MUCH WIRE BASKET AS POSSIBLE FROM THE ROOT BALL.
2" LAYER OF MULCH. DO NOT PLACE IN CONTACT WITH TRUNK
EXISTING GRADE
PLANTING MIXTURE.TAMP FIRMLY WITH FOOT PRESSURE
45° OR LESS
LOOSEN HARD PAN (24" MIN.)
4" SOIL SAUCER AROUND TREE
8" TYP.
COMPACTED PLANTING MIXTURE SEE SPECS.
BALL DIA. +24" (MIN. 2x ROOT BALL DIA.)
6' DIA. MIN.

B/9 DECIDUOUS TREE PLANTING
NOT TO SCALE

2" LAYER OF MULCH. DO NOT PLACE IN CONTACT WITH TRUNK
4" SOIL SAUCER AROUND TREE
TRENCH. VERTICALLY CUT EDGE.
TOP OF ROOT BALL SHALL BE 1-2" ABOVE FINISH GRADE IN SLOWLY DRAINING SOILS.
REMOVE BURLAP FROM TOP 1/3 OF ROOT BALL; CUT AND REMOVE AS MUCH WIRE BASKET AS POSSIBLE FROM THE ROOT BALL.
EXISTING GRADE (OR FINISH GRADE-SEE SPECS.)
8" TYP.
PLANTING MIXTURE. TAMP FIRMLY WITH FOOT PRESSURE
COMPACTED PLANTING MIXTURE.
LOOSEN HARDPAN (MIN. 24")
BALL DIA. + 24" (MIN. 2x ROOT BALL DIA.)
6' DIA. MIN.

C/9 EVERGREEN TREE PLANTING
NOT TO SCALE

TOP OF ROOT BALL SHALL BE 2" ABOVE FINISH GRADE BEFORE BACKFILLING.
CUT AND REMOVE BURLAP, TWINE, AND/OR WIRE FROM TOP 1/3 OF ROOT BALL.
2" LAYER OF MULCH.
4" SAUCER AROUND PIT.
EXISTING GRADE (OR FINISH GRADE-SEE SPECS.)
TRENCH. VERTICALLY CUT EDGE.
PLANTING MIX. SEE SPECS.
45° OR LESS
COMPACTED PLANTING MIX. SEE SPECS.
LOOSEN HARD PAN (8" MIN.)
6"
8"
BALL DIA. + 12"

D/9 SHRUB PLANTING DETAIL
NOT TO SCALE

JOB NO.:

DATE: 10.17.18

REVISIONS:
11.09.18 OUTLOT
01.18.19 per comments
02.18.19 per comments
04.16.19 per comments

DRAWN BY: KL

RIVER VIEW WEST
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Phase 1 Landscape Development

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LANDSCAPE PLAN

NORTH
SCALE 1"=20'
20 10 0 20 40 60

SHEET NUMBER
9
OF 13

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WEST BRANCH DUPAGE RIVER

WEST BRANCH DU

MATCHLINE SHEET 7

MATCHLINE SHEET 11

3 CRCI

1 NYSY

2 BEFV

1 NYSY

2 CECA

BOUNDARY "OUTLOT A"

1 ALGL

2 AMAL

1 ALGL

2 COAL

3 TADI

1 AMAL

1 AMAL

3 CRCI

2 NYSY

6 BEFV

1 QUBI

4 ABCO

3 COAL

1 NYSY

1 QUBI

1 ALGL

1 TADI

5 CECA

3 ACMI

3 CEOC

5 GLSK

3 QUBI

2 TIRE

3 TIRE

3 PIBH

5 BEFV

3 AMAL

NWL

HWL

PROPOSED POND OVERFLOW ELEV. 699.04

PROPOSED 5'X7' RCP BOX CULVERT

BALCONY

EXISTING BASIN SIDE SLOPE TO RECEIVE NATIVE PLANTINGS AND LANDSCAPING. REFER TO LANDSCAPE DRAWINGS FOR DETAIL

APPROXIMATE LOCATION OF PEDESTAL MOUNTED IRRIGATION EQUIPMENT-TAP INTO WATER MAIN PROVIDE WATER METER AND RPZ PER WARRENVILLE BUILDING CODE PROVIDE MOISTURE SENSOR AND WEATHER MONITOR SYSTEM TIMER IN EXTERIOR MOUNTED CABINET

RE-GRADE EXISTING POND TO INCORRORATE DETENTION INTO LOT 2 DEVELOPMENT

PROVIDE IRRIGATION ALONG FERRY ROAD

A PLANTING PLAN

SCALE: 1" = 20'-0"

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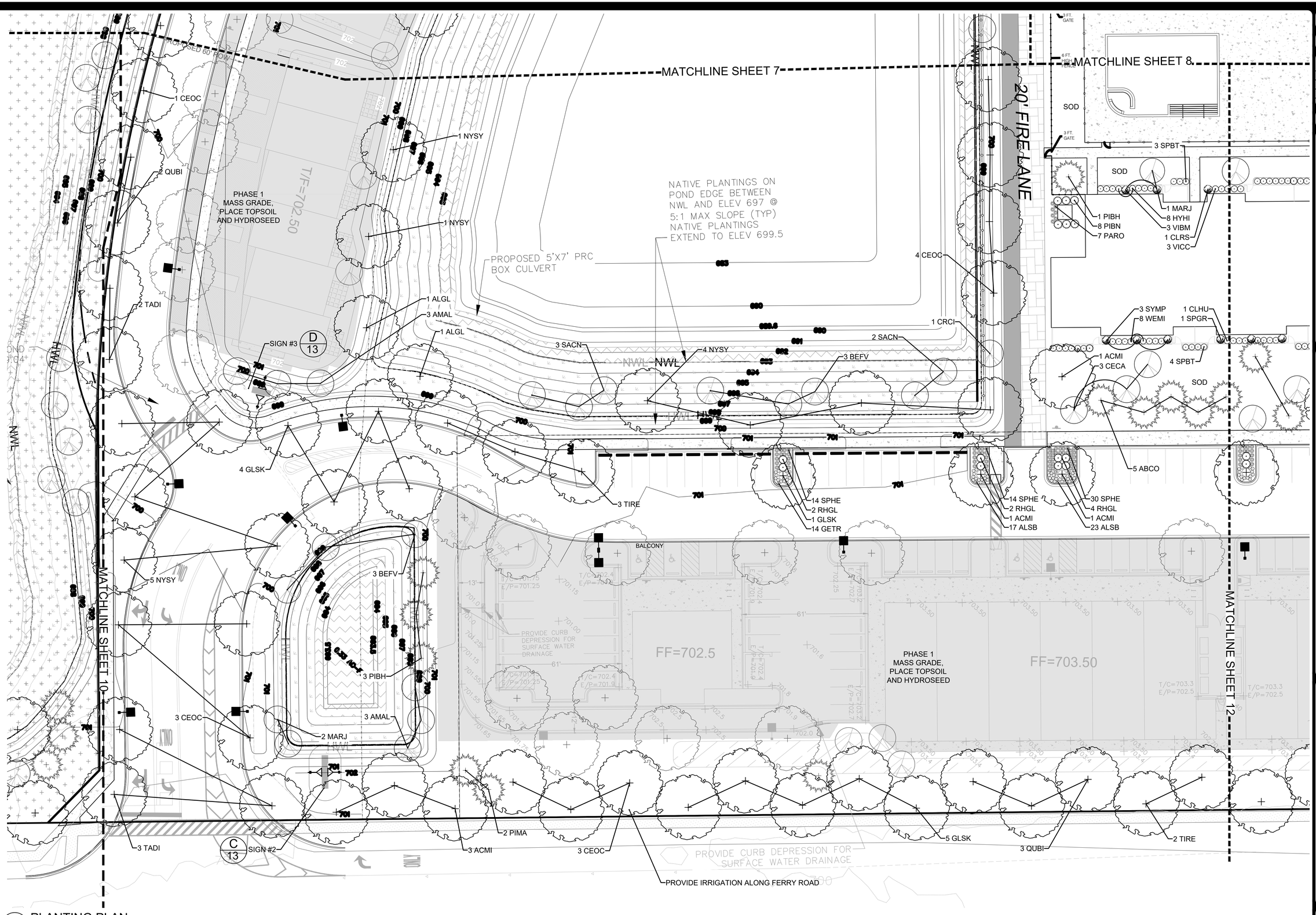
LANDSCAPE PLAN

NORTH

SCALE 1"= 20'

SHEET NUMBER 10 OF 13



A PLANTING PLAN
SCALE: 1" = 20'-0"

JOB NO.:

DATE: 10.17.18

REVISIONS:
11.09.18 OUTLOT
01.18.19 per comments
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LANDSCAPE PLAN

NORTH

SCALE 1"=20'

SHEET NUMBER
11
OF 13

DRAWING NAME: C:\Users\Katrina\AppData\Local\Temp\AcPublish_94164\1709_2019-04-16_ph1.dwg DATE PRINTED: Apr 23, 2019 - 5:18pm

MATCHLINE SHEET 8

MATCHLINE SHEET 9

MATCHLINE SHEET 11

MATCHLINE SHEET 13

SOD

3 SYMP
8 PHMS
1 CLRS

1 MARJ
2 VICC
12 SPBT
1 BUNC
6 HYHI
2 VIBM
1 MASA

8 PARO
1 VIBM

5 HOFB
10 VICC
1 TSCA
1 CECA
7 CLRS
9 HYHI
6 HYQU
2 CEOC

2 PIBH
15 SPHE
1 MARJ
19 RHGL
6 SPHE
8 RHGL
6 SPHE

8 ECPM
2 SYMP
10 SPHE
9 WEMI
2 SYMP
2 SYMP
2 SYMP
2 SYMP
5 SPHE
5 SPGR

1 ABCO
16 RULS
14 GEMF
1 TADE
8 SACA
1 WEMI
6 GEMA
1 CLHU

3 CHLA
6 LISP
4 VICC
4 GEMF
1 CLRS
5 HEPA
8 VIBM

1 COAL
1 ABCO

4 GEMF
5 LISP
1 BUNC
3 CHLA

1 CEOC
15 ALSB
2 RHGL
10 SPHE

5 HESC
3 CHLA
1 CLRS
5 ASAD
1 CHLA
1 TADE

4 HESC
8 ASJR

6 ECPM
4 CAKF
7 WEMI
8 RUGO
3 CAKF
1 TADE
4 ITHG
6 CLRS
3 PIBH
6 SPHE
1 MASA
5 THTE

1 CEOC
15 GETR
2 RHGL
14 SPHE

4 QUBI

5 ACMI

18 RULS

2 PIBH
1 TIGR

11 RHGL
15 SPHE

2 SPGR
7 CLHU
4 WEMI
3 CLRS
8 SPBT

2 SYMP
3 WEMI
1 SPGR

1 BUNC
6 SPBT

6 PIBN
5 PIMA
4 PHMS
1 CLRS

4 PHMS
3 CECA
1 ABCO

1 MASA
1 ABCO

11 PIBN
1 MARJ

4 PHMS
1 CLRS

6 SPBT
1 BUNC

2 SYMP
3 WEMI
2 SPGR

4 SPBT
3 SPGR
8 CLHU

1 CRCI
1 ABCO

4 WEMI
3 CLRS
8 SPBT

1 ABCO

5 WEMI
1 SYMP

4 PHMS

3 AMAL

4 PIMA

1 ABCO

1 AMAL
2 PIBH
1 CRCI

1 GLSK

14 SPHE
2 RHGL
1 GLSK
14 GETR

14 SPHE
2 RHGL
1 GLSK
14 GETR

14 SPHE
2 RHGL
1 TIRE
17 ALSB

26 SPHE
10 RHGL
2 TIRE
25 ALSB

1 GLSK
3 COAL
4 PIBH

14 SPHE
2 RHGL
1 GLSK
14 GETR

2 TIRE

11 RHGL
17 SPHE

3 TADI
16 RULS

3 TADI

PHASE 1
MASS GRADE,
PLACE TOPSOIL
AND HYDROSEED

FF=703.50

FF=703.50

FF=704.0

C
6

8 ECPM
15 RULS
11 SPHE

2 QUBI

14 SPHE

4 TIGR

3 GLSK

3 TIRE

3 ACMI

5 CEOC

PROVIDE IRRIGATION ALONG FERRY ROAD

B
6

SIGN #1

B
13

A PLANTING PLAN
SCALE: 1" = 20'-0"

JOB NO.:

DATE:
10.17.18

REVISIONS:
11.09.18 OUTLOT
01.18.19 per comments
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LANDSCAPE PLAN

NORTH

SCALE 1"=20'

SHEET NUMBER
12
OF 13

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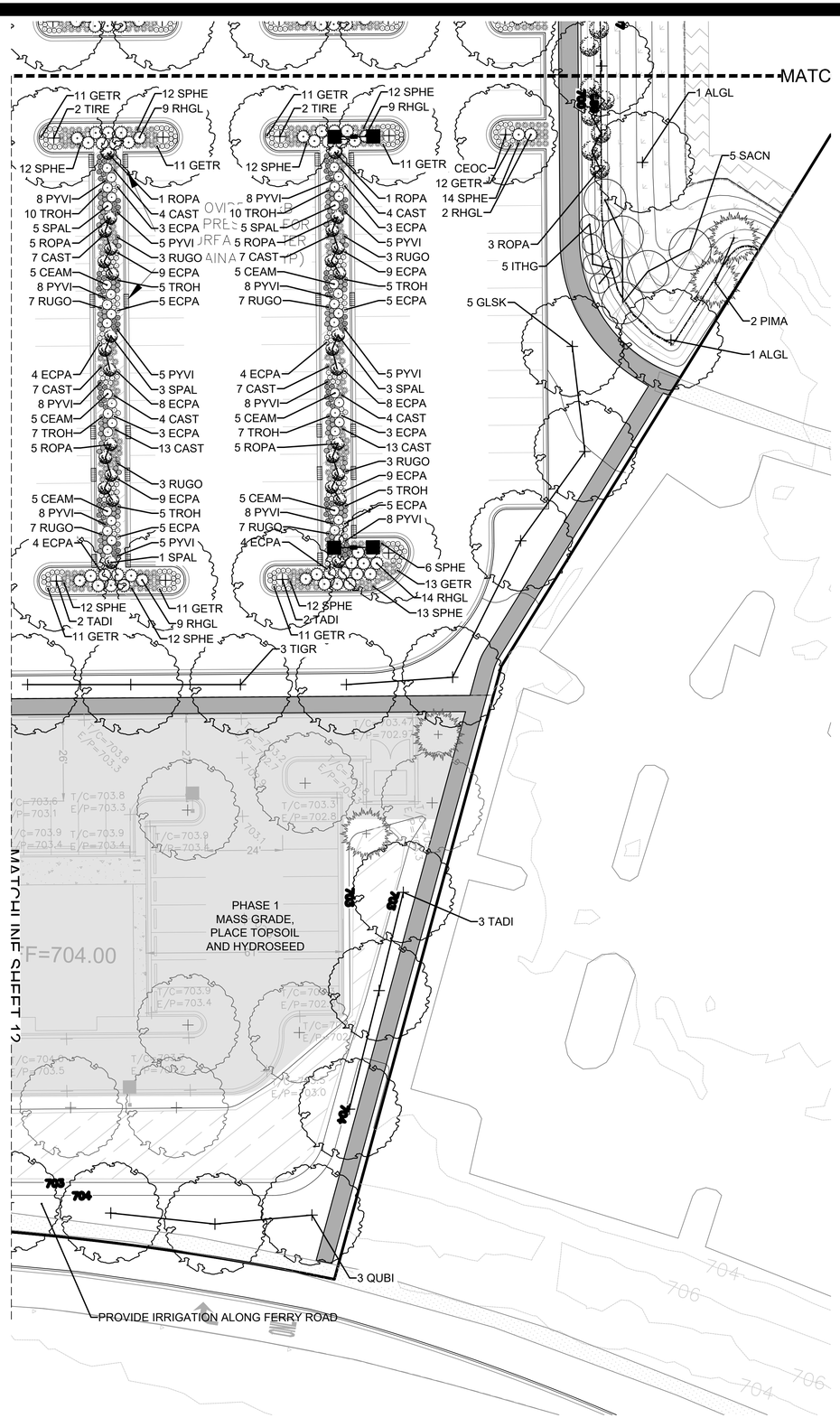
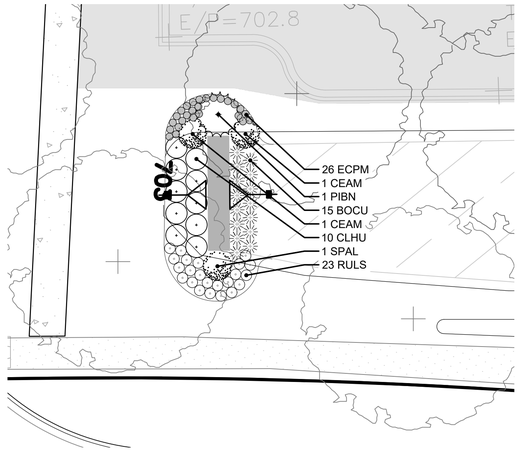
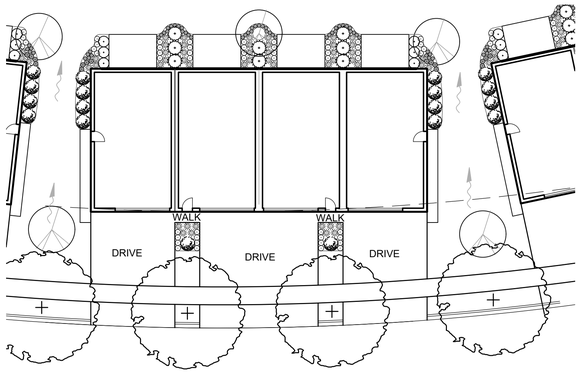


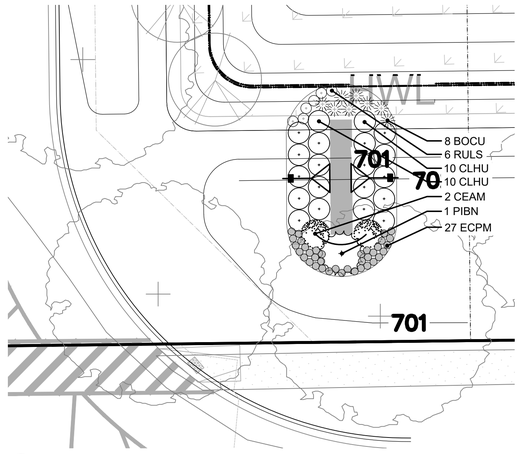
A 13 PLANTING PLAN
SCALE: 1" = 20'-0"



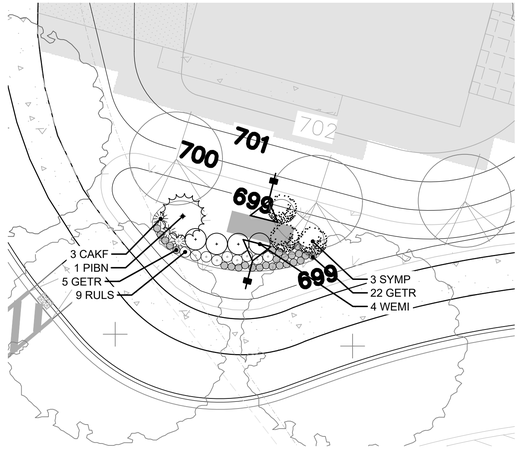
B 13 SIGN #1 LANDSCAPE PLAN
SCALE: 1" = 20'-0"



E 13 TYPICAL TOWNHOUSE LANDSCAPE PLAN
SCALE: 1" = 20'-0"



C 13 SIGN #2 LANDSCAPE PLAN
SCALE: 1" = 20'-0"



D 13 SIGN #3 LANDSCAPE PLAN
SCALE: 1" = 20'-0"

LANDSCAPE REQUIREMENT TABLE

LOT 1

RIGHT-OF-WAY LANDSCAPING
FERRY ROAD
R.O.W. LENGTH: 967 L.F. (1,037 L.F. - 70 L.F. ENTRANCE CURB CUT)
REQUIRED: 1 SHADE TREE / 40 L.F.
24 SHADE TREES
PROVIDED: 35 SHADE TREES PLANTED IN A DOUBLE ROW TO MATCH EXISTING FERRY ROAD R.O.W. PLANTINGS

PARKING LOT LANDSCAPING
PARKING LOT AREA: 144,621 S.F.
REQUIRED: 14,462 S.F. INTERIOR PARKING LOT PLANTING
1 SHADE TREE / 120 S.F.
121 SHADE TREES
PROVIDED: 27,313 S.F. INTERNAL PARKING LOT PLANTING INCLUDING 11,807 S.F. BIOSWALE ISLANDS
94 SHADE TREES

PERIMETER YARD
EAST PROPERTY LINE
LENGTH: 867 L.F. (1,087 L.F. - 220 L.F. DETENTION POND)
REQUIRED: 12 SHADE TREES
PROVIDED: 12 SHADE TREES

DETENTION BASIN
H.W.L. LENGTH: 1,696 L.F.
REQUIRED: 1 SHADE TREE / 50 L.F.
34 SHADE TREES
PROVIDED: 19 SHADE TREES
45 ORNAMENTAL TREES
(SUBSTITUTION IN LIEU OF 15 SHADE TREES)

LOT 2

PARKING LOT LANDSCAPING
PARKING LOT AREA: 8,905 S.F.
REQUIRED: 891 S.F. INTERIOR PARKING LOT PLANTING
1 SHADE TREE / 120 S.F.
7 SHADE TREES
PROVIDED: 557 S.F. INTERNAL PARKING LOT PLANTING
4 SHADE TREES

LOT 3

RIGHT-OF-WAY LANDSCAPING
TORCH PARKWAY
R.O.W. LENGTH: 2,137 L.F.
REQUIRED: 1 SHADE TREE / 40 L.F. (BOTH SIDES)
53 SHADE TREES (EACH SIDE)
106 SHADE TREES TOTAL
PROVIDED: 56 SHADE TREES (NORTH/WEST SIDE)
47 SHADE TREES (SOUTH/EAST SIDE)*
103 SHADE TREES TOTAL
*TOWNHOME DRIVEWAYS IMPEDE R.O.W. PLANTING ON SOUTH/EAST SIDE OF STREET

DETENTION BASIN
H.W.L. LENGTH: 3,069 L.F.
REQUIRED: 1 SHADE TREE / 50 L.F.
61 SHADE TREES
PROVIDED: 56 SHADE TREES
22 ORNAMENTAL TREES
(SUBSTITUTION IN LIEU OF 5 SHADE TREES)

OUTLOT "A"

DETENTION BASIN
H.W.L. LENGTH: 1,586 L.F.
REQUIRED: 1 SHADE TREE / 50 L.F.
32 SHADE TREES
PROVIDED: 17 SHADE TREES
46 ORNAMENTAL TREES
(SUBSTITUTION IN LIEU OF 15 SHADE TREES)

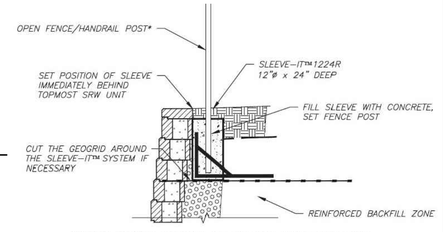
*ADDITIONAL PLANTING ALONG RIVER TRAIL:
8 SHADE TREES
32 ORNAMENTAL TREES
27 EVERGREEN TREES
*AS REQUESTED DURING STAFF REVIEW

LOT 1	COMMERCIAL	
	SQUARE FEET	% OF LOT TOTAL
BUILDINGS FOOTPRINT S.F.	36,500	19.0%
PARKING & DRIVE AREA S.F.	88,298	46.1%
WALKS S.F.	20,935	10.9%
LANDSCAPE AREA S.F.	40,003	20.9%
LAND TOTAL S.F.	185,736	96.9%
POND S.F.	5,951	3.1%
LOT TOTAL S.F.	191,687	4.40 ACRES
PARKING SPACES	438	

LOT 2	364 APARTMENTS	
	SQUARE FEET	% OF LOT TOTAL
BUILDINGS FOOTPRINT S.F.	147,808	19.2%
PARKING & DRIVE AREA S.F.	131,998	17.1%
WALKS S.F.	33,803	4.4%
LANDSCAPE AREA S.F.	279,452	36.2%
LAND TOTAL S.F.	593,061	76.9%
POND S.F.	178,197	23.1%
LOT TOTAL S.F.	771,258	17.71 ACRES
PARKING SPACES	409	

LOT 3	60 TOWNHOUSES	
	SQUARE FEET	% OF LOT TOTAL
BUILDINGS FOOTPRINT S.F.	52,800	20.5%
ROADWAY S.F.	73,394	28.5%
DRIVEWAYS S.F.	29,855	11.6%
WALKS S.F.	18,285	7.1%
LANDSCAPE AREA S.F.	83,039	32.3%
LOT TOTAL S.F.	257,373	5.91 ACRES

OUTLOT A		
	SQUARE FEET	% OF LOT TOTAL
LAND TOTAL S.F.	123,919	60.6%
PATH S.F.	3,684	1.8%
POND S.F.	76,791	37.6%
LOT TOTAL S.F.	204,394	4.69 ACRES



*FENCING SYSTEMS APPROVED FOR USE WITH SLEEVE-IT™ 1224R ARE LIMITED TO THE FOLLOWING HEIGHTS: CHAIN LINK – UP TO 8FT, PRIVACY: UP TO 6FT (WOODEN, PVC, METAL). POST SIZE 4"X4" MAX.

OPEN FENCE / PEDESTRIAN GUARD SECTION
ALTERNATE – SLEEVE-IT™ (ALTERNATE)
1/2" = 1'-0"

JOB NO.:

DATE: 10.17.18

REVISIONS:
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01.18.19 per comments
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04.16.19 per comments

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LANDSCAPE PLAN

NORTH
SCALE 1"=20'
20 10 0 20 40 60

SHEET NUMBER
13
OF 13

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April 16, 2019

THE LANNERT GROUP

RESPONSES TO STAFF COMMENTS 04-11-2019

#6. Site Plan and Landscape Plan

b. Ferry Road Street Trees
Response: As noted, a double row of trees is shown and will be planted along Ferry Road, consistent with the character of the project. The city arborist will be contacted to review and approve the species selection.

c. Access Drive Median Planting
Response: The medians within the north/south drive will be planted as requested. Please note that the labels within the first island reflect this addition; plant symbols are not shown due to the scale of the drawing. The second island north will be fully planted as noted and will transition nicely into the residential portion of the project (Sheet 12).

d. Groundcover
Response: As required, groundcover is noted on the Landscape Plans and is listed on Sheet 6.

e. Turf Details
Response: All areas of the site will be planted with groundcover, sodded, or seeded as outlined in the specifications (Sheet 4). All areas within the courtyards will be sodded, as noted on Sheets 8 and 12, for immediate usefulness.

j. Planting Calculations
Response: Planting calculations have been added in accordance with this item and are shown on a new sheet (Sheet 13).

k. Building Foundation Landscaping
Response: Additional plantings have been added along the fences in front of the patios, as requested, and to reflect the vegetation illustrated on the 3D rendering (Sheets 8 and 12). Please note that along three (3) areas within the play area courtyard (Sheet 8), vegetation has not been added adjacent to the fences. Concern for the limited amount of residual sodded area suggested that more turf grass is appropriate for these areas.

l. Light Poles
Response: The light poles have been shown on the Landscape Plans and plant materials conflicts resolved.

#9. Irrigation
Response: A detailed Irrigation Plan will be submitted at the time of the Building Permit.

UNITED SURVEY

RESPONSE TO CITY STAFF COMMENTS 4.22.19

1. The Quick Start easements were recorded. Not addressed. On Sheet 1 of the Plat of Subdivision show existing and proposed Lot Lines, Access Easements, and Sidewalk Easements. Move Sheet 4 to Sheet 2 and show all existing sanitary, public utility and all easements granted under the Quick Start Plat of Easement (R2019-000492). Move certificates to Page 3 and 4.

   SHOWN AS REQUESTED

2. Update the lot lines and show all existing property lines on Sheets 1 and 2. Not addressed.
   LOT LINES UPDATED

3. The commercial drive in Lot 1 must cross Lots 2 and 3 to reach the dedicated Torch Parkway right-of-way. Provide a cross-access easement or agreement covering this drive. Not addressed.
   CROSS ACCESS EASEMENT ADDED
4. Proposed sanitary sewer and services for more than one service outside of ROW should be within an exclusive City Utility Easement (see attached for easement language). Dedications through Lot 1 will be resolved when Phase 3 plans are submitted.
   CITY UTILITY EASEMENT SHOWN
5. Proposed water main outside of City ROW should be within an exclusive City Utility Easement. Not addressed.
   CITY UTILITY EASEMENT SHOWN

6. Any storm sewer draining the Torch Parkway City ROW should be in an exclusive City Utility Easement unless it was already included in the Quick Start Plat of Easement. Not addressed.
   CITY UTILITY EASEMENT SHOWN

7. New Comment: Overland flow routes should be within the Stormwater Management Easement.
   PLEASE, PROVIDE US WITH THE SKETCH FOR EXACT LOCATION
8. New Comment: Add a note referencing agreement between development and owner of Outlot A (R2018-108094).
   PLEASE, PROVIDE US WITH THE AGREEMENT LAGUAGE.
9. New Comment: Add a note referencing the Covenants.
   PLEASE, PROVIDE US WITH THE NOTE LAGUAGE.

10. New Comment: Label the disconnected Outlot A to the north.
    OUTLOT A LABELED

11. New Comment: Remove the County Health Department Certification.
    REMOVED.

12. New Comment: Change the font size of the certificates so they are all the same.
    FONT SIZE FIXED.

United Survey Service, LLC
7710 Central Ave.
River Forest, Il. 60305
Phone: (847) 299-1010
Fax: (847) 299-5887
E-mail: usurvey@usandcs.com
www.usandcs.com

April 22, 2019

City of Warrenville
3S258 Manning Avenue
Warenville, IL 60555

Re: Final Plat of Subdivision, Ferry Road, Warrenville, Illinois last revised April 17, 2019, file No. 2017-24719-1.

To Whom it May Concern:

List of items we are submitting:

1. Final Plat Of Subdivision, CANTERA SUB-AREA "C", LOT 2 SUBDIVISION, 4 sheets.

Sincerely,

Mike Stanojevic

Mike Stanojevic, President
United Survey Service, LLC

Shopping Center
(820)

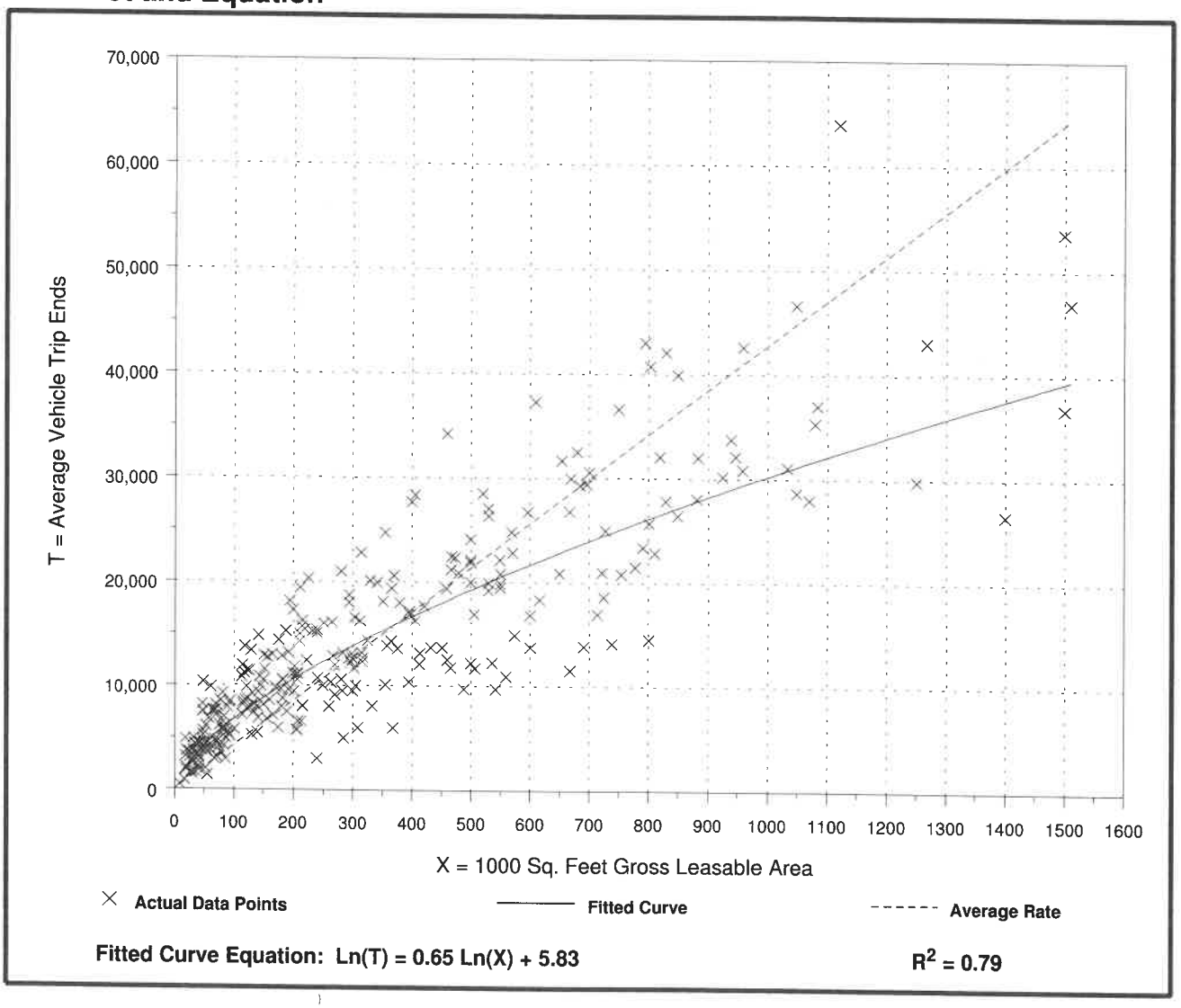
Average Vehicle Trip Ends vs: 1000 Sq. Feet Gross Leasable Area
On a: Weekday

Number of Studies: 302
Average 1000 Sq. Feet GLA: 331
Directional Distribution: 50% entering, 50% exiting

Trip Generation per 1000 Sq. Feet Gross Leasable Area

Average Rate	Range of Rates	Standard Deviation
42.70	12.50 - 270.89	21.25

Data Plot and Equation



Fitted Curve Equation: Ln(T) = 0.65 Ln(X) + 5.83

R^2 = 0.79

Shopping Center
(820)

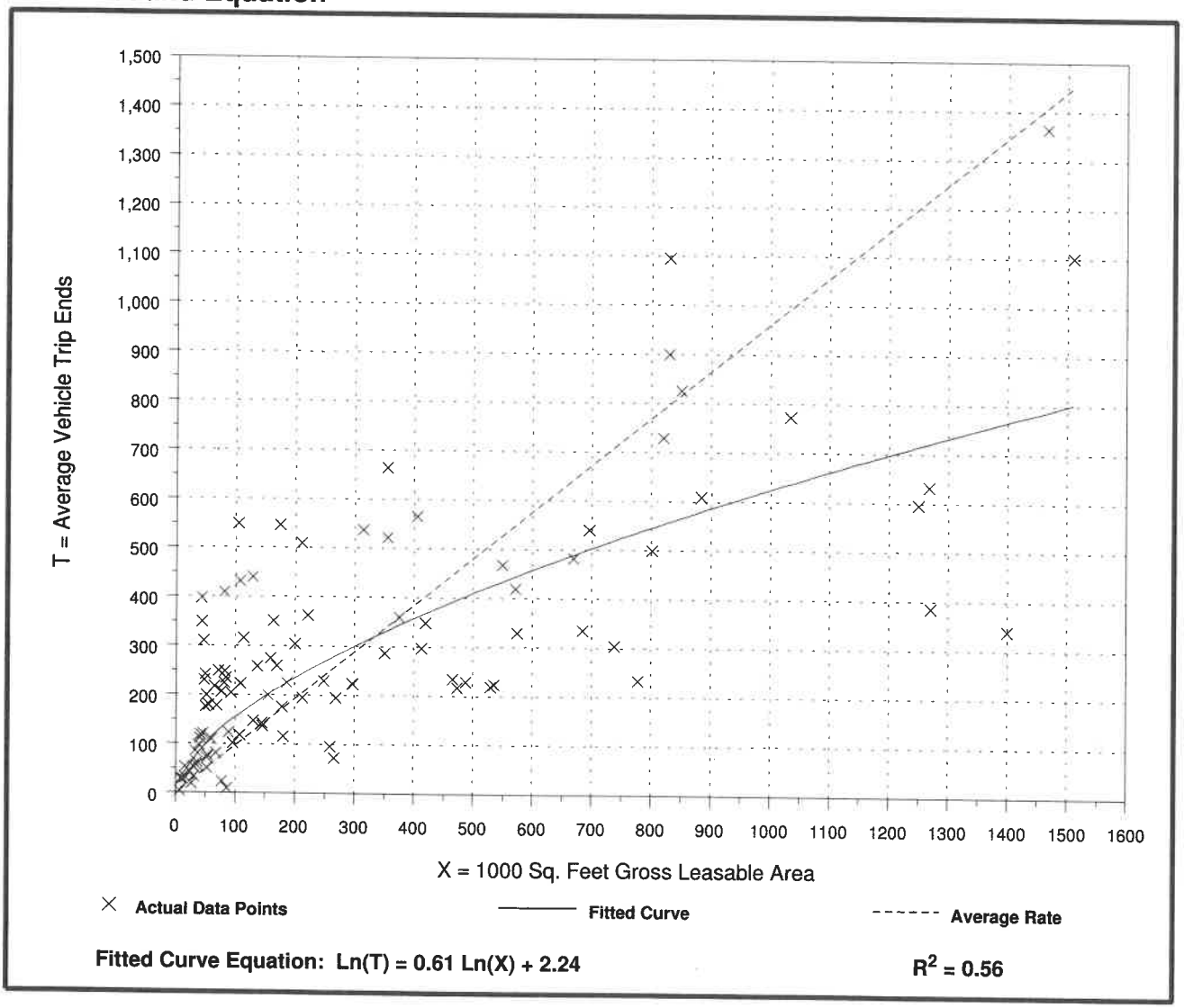
Average Vehicle Trip Ends vs: **1000 Sq. Feet Gross Leasable Area**
On a: **Weekday,**
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.

Number of Studies: 104
Average 1000 Sq. Feet GLA: 310
Directional Distribution: 62% entering, 38% exiting

Trip Generation per 1000 Sq. Feet Gross Leasable Area

Average Rate	Range of Rates	Standard Deviation
0.96	0.10 - 9.05	1.31

Data Plot and Equation



Fitted Curve Equation: $Ln(T) = 0.61\ Ln(X) + 2.24$

$R^2 = 0.56$

Shopping Center
(820)

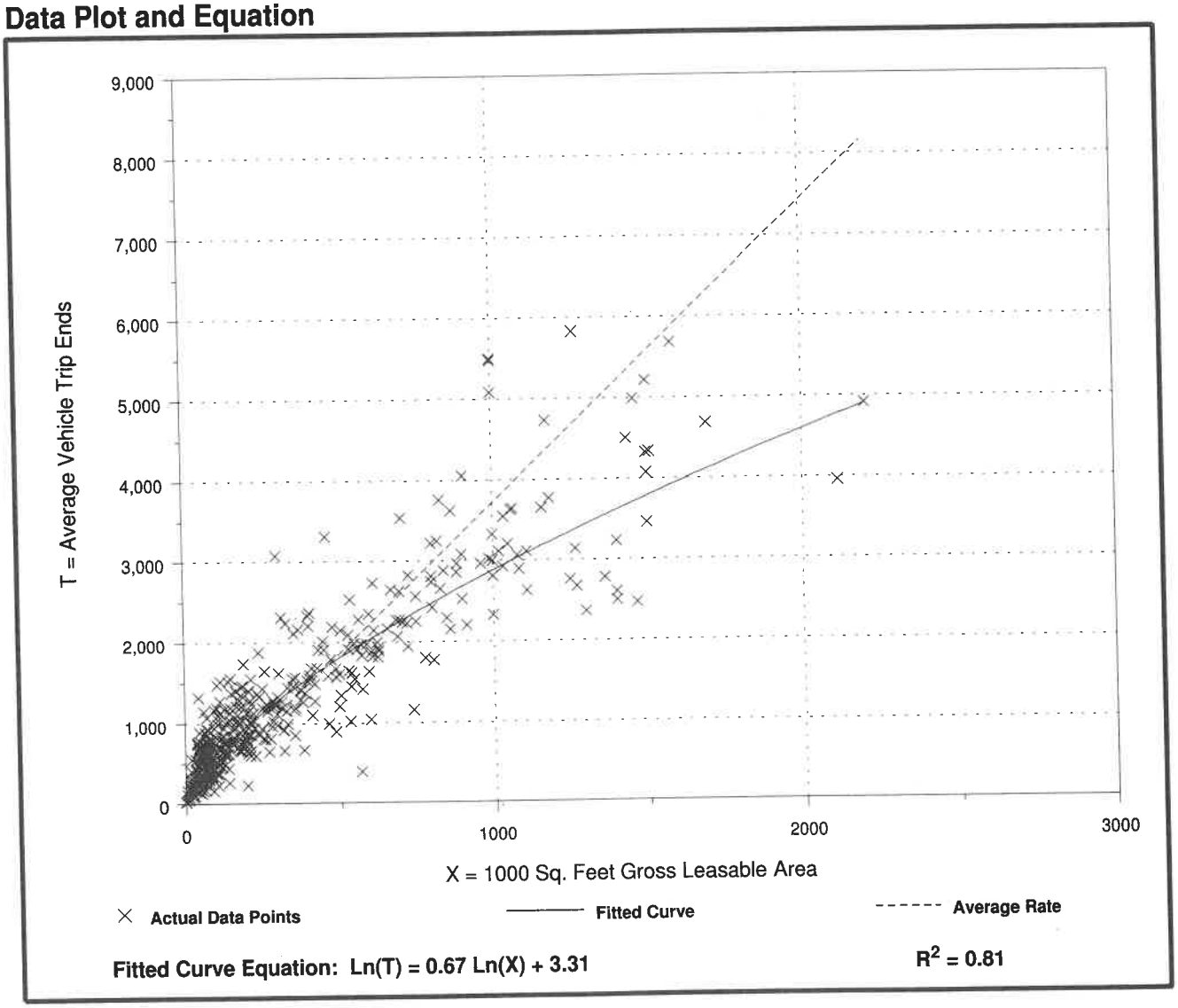
Average Vehicle Trip Ends vs: **1000 Sq. Feet Gross Leasable Area**
On a: **Weekday,**
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.

Number of Studies: 426
Average 1000 Sq. Feet GLA: 376
Directional Distribution: 48% entering, 52% exiting

Trip Generation per 1000 Sq. Feet Gross Leasable Area

Average Rate	Range of Rates	Standard Deviation
3.71	0.68 - 29.27	2.74

Data Plot and Equation



Fitted Curve Equation: Ln(T) = 0.67 Ln(X) + 3.31

R^2 = 0.81



PROPOSED INTERSECTION LOOKING WEST



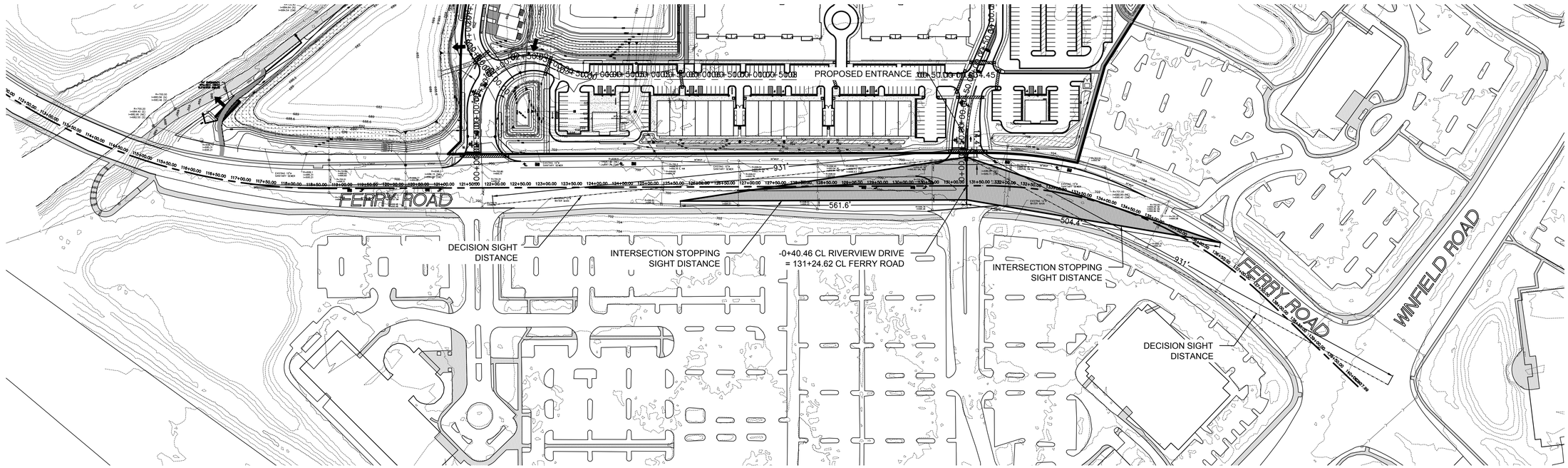
PROPOSED INTERSECTION LOOKING SOUTH

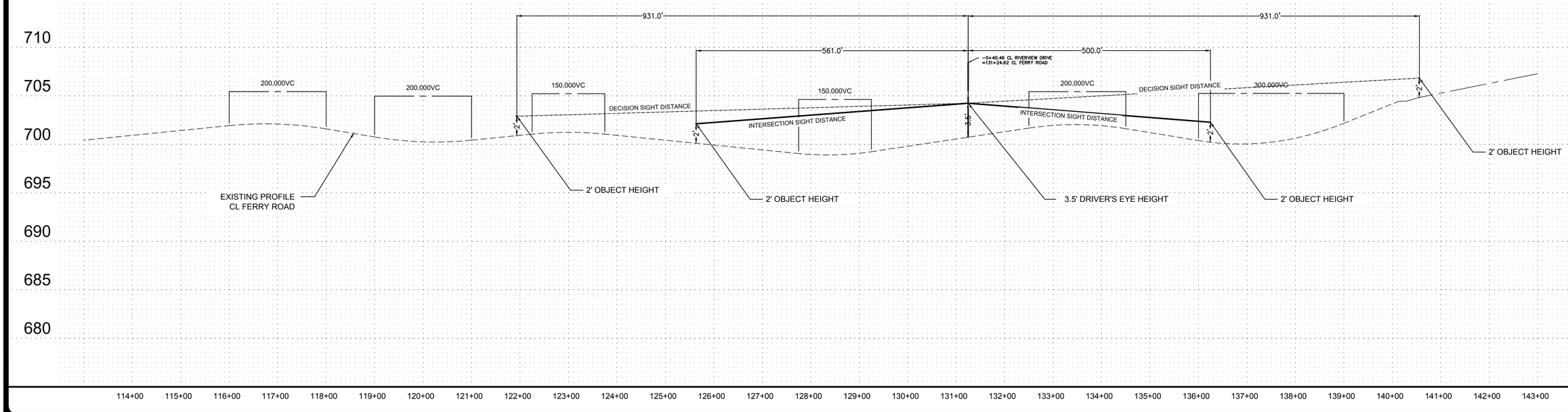


PROPOSED INTERSECTION LOOKING EAST

NOTE:
1) FERRY ROAD EXISTING PROFILE BASED ON AS-BUILT PLANS PROVIDED BY DUPAGE COUNTY DOT.
2) POSTED SPEED LIMINT ON FERRY ROAD IS 40 MPH. SIGHT DISTANCE ANALYSIS WAS DONE USING A DESIGN SPEED OF 45 MPH.

SCALE:
1" = 100' HORIZ
1" = 5' VERT





REVISIONS:
1 09-18-18: REVISED PER CITY COMMENTS
2 11-05-18: REVISED PER FPD COMMENTS
3
4
FILE: I:\080-020 Canteen Lot 2 Sub Area C\Engineering\Drawings\Plat Engineering

JOB NO: 080-020
FIELD BOOK: N/A
FIELD BOOK: N/A
DRAWN BY: KL
CHECKED BY: KK
COMPLETED: 02/07/18

PREPARED FOR:
CANTER DEVELOPMENT HOLDINGS, LLC.
TWO NORTHFIELD PLAZA, SUITE 320
NORTHFIELD, IL 60093
TEL: (847) 562-2001

Bollinger, Lach & Associates, Inc.
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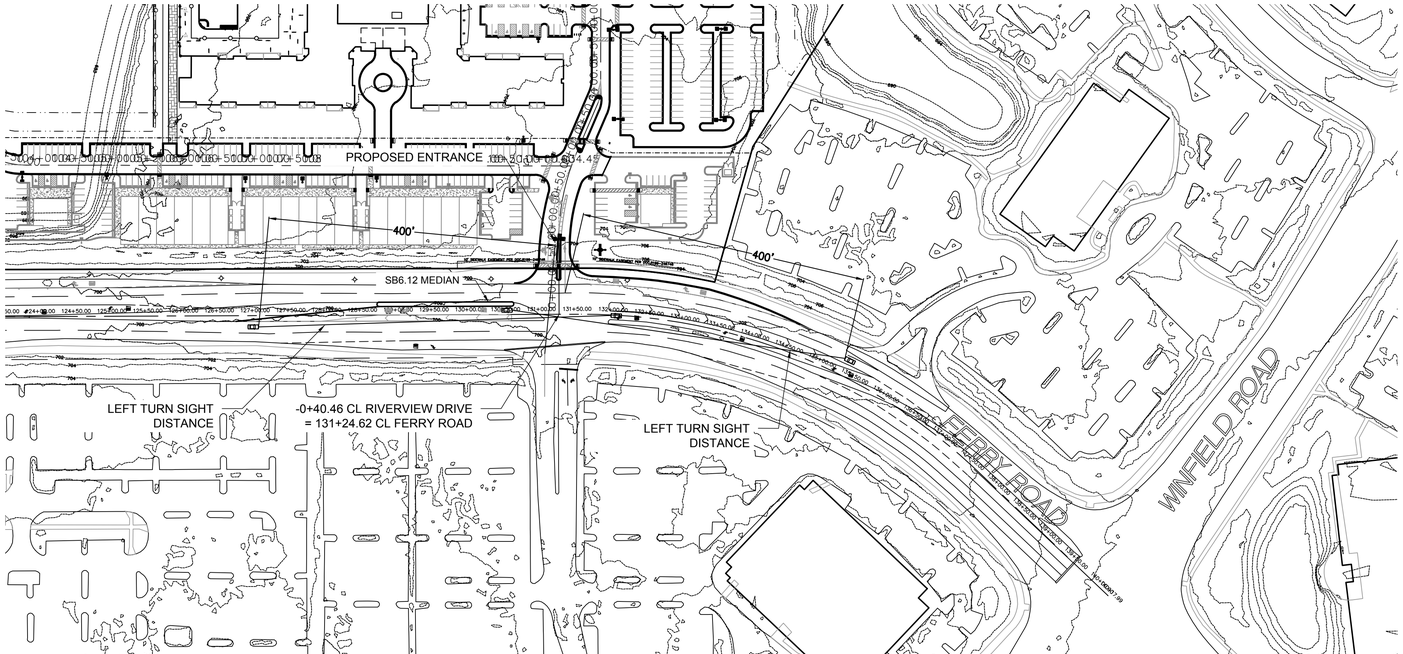
CONSULTING ENGINEERS SCIENTISTS & LAND SURVEYORS

SIGHT DISTANCE EXHIBIT

RIVER VIEW WEST
CITY OF WARRENVILLE, ILLINOIS

SHEET NUMBER
1
OF 1

Design Firm License No. 184-001129



SCALE:
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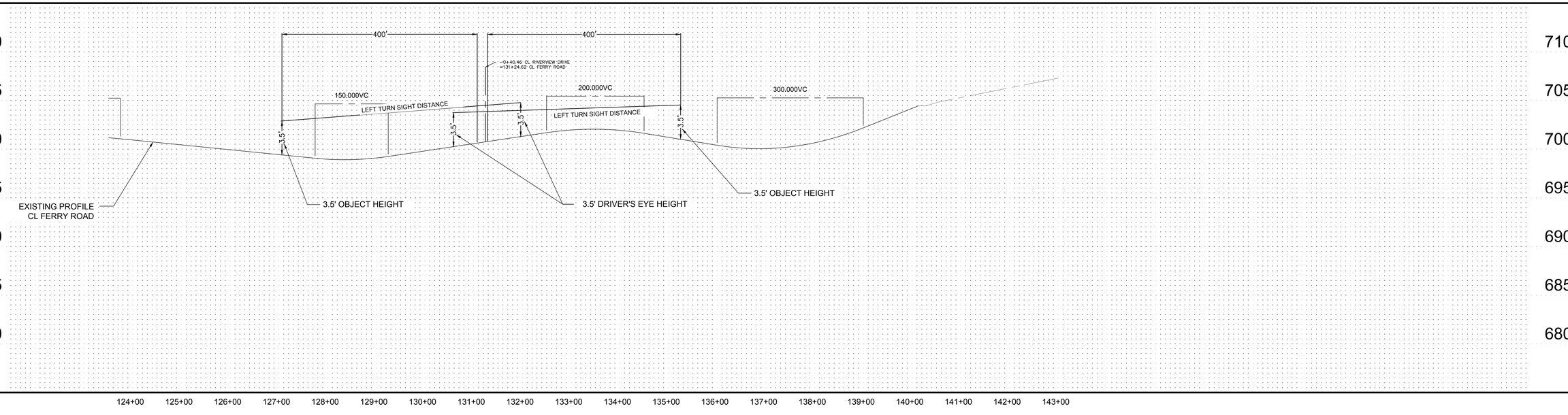
NOTE:
1) FERRY ROAD EXISTING PROFILE BASED ON AS-BUILT PLANS PROVIDED BY DUPAGE COUNTY DOT.
2) POSTED SPEED LIMINT ON FERRY ROAD IS 40 MPH. SIGHT DISTANCE ANALYSIS WAS DONE USING A DESIGN SPEED OF 45 MPH.
3) INTERSECTION SIGHT DISTANCE EQUATION
ISD = 1.467 x Vmaj x Tc
Vmaj = DESIGN SPEED
Tc = CRITICAL GAP FOR ENTERING FOR CROSSING ROAD (5.5 sec FOR ONE LANE, ADD 0.5 sec FOR EACH ADDITIONAL LANE)
ISD = 1.467 x 45 x 6 = 396. USE 400'



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JOB NO: 080-020
FIELD BOOK: N/A
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3
4
FILE: I:\080-020 Cantera Lot 2 Sub Area C\Engineering\Drawings

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SIGHT DISTANCE EXHIBIT

RIVER VIEW WEST
CITY OF WARRENVILLE, ILLINOIS

SHEET NUMBER
2
OF 2

FILE: I:\080-020 Cantera Lot 2 Sub Area C\Engineering\Drawings\Final Engineering

Traffic Impact Study

GEWALT HAMILTON ASSOCIATES, INC.
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www.gha-engineers.com

To: John Schiess
JCSA Chicago

From: Lynn M. Means, P.E., PTOE
Senior Transportation Engineer

William C. Grieve, P.E., PTOE
Senior Transportation Engineer

Date: August 15, 2017
Updated December 4, 2017

Subject: Cantera Riverview West Development
Warrenville, Illinois

Part I. Project Context and Summary Statement

Gewalt Hamilton Associates, Inc. (GHA) has conducted a Traffic Impact Study (TIS) for the above captioned project. As proposed, the remaining 28 acres in the Cantera development, to be known as Riverview West, would be developed with a mix of residential and commercial uses. A key component would be the extension of Torch Parkway from its current terminus at Kline Court and the EN Engineering office headquarters building west and south to Ferry Road.

The following summarizes our TIS findings and provides various recommendations for your consideration. *Exhibits* and *Appendices* referenced are located at the end of this document.

Briefly summarizing, we believe that the adjacent roadways and the site access drives can accommodate the development's traffic activity. Reasons include:

- The extension of Torch Parkway has always been contemplated in the Cantera Master Plan and offers excellent route selection flexibility for Riverview West and background traffic, which will help minimize the impacts at key intersections.
- The site's planned private north-south "collector" street will efficiently distribute the site's residential and commercial traffic to the adjacent public major roadways.
- The sidewalk system will provide excellent connectivity to the area's sidewalk and trail system, in particular the adjacent DuPage River Trail.
- The planned mix of residential and commercial uses will promote internal trips, which will help minimize the development traffic impacts on the adjacent road system.
- The planned mix of residential and commercial uses will promote shared parking, which in turn will help meet the City parking requirements within the Cantera district.

Part II. Background Information

Site Location, Current Traffic Operations, and Photo Inventory

Exhibit 1 provides a map of the site location and a photo inventory of current traffic operations is provided in *Appendix A*. *Exhibit 2* depicts existing traffic operations on the streets serving the site, including lane geometry and traffic control, such as restrictions on turning movements and signalization.

Pertinent comments on the area land-uses, adjacent roadways, traffic operations, and non-auto mobility include:

Area Land Uses

- Cantera is a master planned development on the former Elmhurst Chicago Stone quarry. Cantera straddles the East-West Tollway (I-88) and is basically bisected by Winfield Road, which has a full diamond interchange with I-88.
- Cantera is truly a mixed-use development, offering a myriad of employment centers, corporate headquarters, commercial, retail, entertainment, recreational, and residential components.
- The Cantera Meadows Office Center (EN Engineering Building) is located immediately to the east of the site. Office buildings (Cornerstone of Cantera and BP Business Center) are located on the south side of Ferry Road, although the former BP office building is now vacant.
- The DuPage River borders the site to the west.

Road System

- **Winfield Road (County Highway 13)** is a major north-south route throughout Cantera and is under the jurisdiction of the DuPage County Division of Transportation (DuPage DOT). It is classified as a Minor Arterial on the IDOT functional classification map. Winfield Road has two through travel lanes in each direction.

  Dual left turn lanes and separate right turn lanes are provided on its signalized intersection approaches with Ferry Road. Separate left and right turn lanes are provided at its signalized intersection with Torch Parkway, as well as at its unsignalized intersection with McCormick Lane. The posted speed limit is 40-mph.
- **Ferry Road (County Highway 3)** is a major east-west route that borders the site on the south and is also under DuPage DOT jurisdiction. Ferry Road has two through travel lanes in each direction.

  Dual left turn lanes and separate right turn lanes are provided on its signalized intersection approaches with Winfield Road. Separate left and right turn lanes are provided at the signalized intersection with the vacated BP office building and will be at the planned Torch Parkway extension. Separate left turn lanes are provided at its signalized intersection with River Road. The posted speed limit is 40-mph.
- **River Road (County Highway 1)** is a north-south route on the west side of the DuPage River that has its southern terminus at Ferry Road. It is under DuPage DOT jurisdiction and is classified as Minor Arterial on the IDOT functional classification map. River Road has one travel lane in each direction.

  A separate southbound left turn lane is provided at its signalized intersection with Ferry Road. The posted speed limit is 40-mph.
- **McCormick Lane and Kline Circle** are local, two-lane roadways, serving the Cantera Village residential neighborhood located to the northeast of the site.

Non-Auto Mobility

- Pace operates Bus Route #676, which begins at the Naperville Metra station on the south and traverses through Cantera along Winfield Road, then northwest along Warrenville Road. There is also a loop within Cantera that travels on Mill Street, Ferry Road, and Torch Parkway among other roads and streets.
- Pace also operates Bus Route #182 during weekday evenings. Its routing is flexible depending upon passenger destinations.
- Cantera abounds with a well-planned sidewalk and trail system. All roads and streets in the site area have either sidewalks or trails. The DuPage River Trail provides an excellent recreational opportunity and will have a direct connection at both the north and west ends of the site.
- Crosswalks and pedestrian timers are provided at all signalized intersections in the site area.

Existing Traffic

The DuPage County DOT conducted turning movement traffic counts at the Winfield Road / Ferry Road intersection on Tuesday, June 28, 2016. GHA conducted weekday morning (6-9 AM) and evening (4-7 PM) peak period traffic counts on Wednesday, May 31, 2017 at the Winfield Road / Torch Parkway intersection and the Ferry Road intersections with the office building access west of Winfield Road and River Road. The intersection of Ferry Road with the future Torch Parkway extension was not counted, because the office building on the south side is vacant.

GHA also performed weekday morning and evening peak period traffic counts on Thursday, November 2, 2017 at the Ferry Road and Torch Parkway intersections with the EN Engineering Building access driveways and Kline Circle, as well as the Winfield Road intersection with McCormick Lane. The existing traffic counts were adjusted and/or balanced between intersections, as appropriate, to account for the different count periods.

Exhibit 3 illustrates the existing weekday morning and evening peak hours. Also shown are the Average Daily Traffic (ADT) traffic counts as published by IDOT on their website www.gettingaroundillinois.com. The traffic count summary sheets are provided in *Appendix B*.

Part III. Traffic Evaluation

Crash Analysis

In order to evaluate and address potential safety issues at the study area intersections, crash data was obtained from the Illinois Department of Transportation Division of Transportation Safety for the last three calendar years available, 2013 through 2015[i]. A summary of the crash data is provided in *Table 1*. It should be noted there were zero (0) reported crashed at the Ferry Road intersections with Cantera Meadows Office Center (EN Engineering Building) and Cornerstone of Cantera Access, the Torch Parkway intersections with the EN Engineering Building East and West Access / Kline Circle, or the Winfield Road intersections with Torch Parkway and McCormick Lane during the timeframe analyzed.

[i] Complete year 2016 / 2017 crash data was not available at the time of this study.

Table 1: Crash Summary (2013 – 2015) [A]

Location	No. of Crashes	Severity [B]					Crash Type [D]					Percent During Wet/Icy Conditions	Percent During Adjacent Street Peak Hours
		PD	PI [C]			F	CM	RE	HO	FO	Ped/ Bike		
			A	B	C								
Winfield Rd at Ferry Rd	33	25	2	5	1	0	14	18	0	0	1	21%	39%
Ferry Rd at River Rd	5	4	0	1	0	0	3	1	0	0	1	20%	0%
Ferry Rd at Former BP Office	1	1	0	0	0	0	0	1	0	0	0	0%	0%

[A] Source: IDOT Division of Transportation Safety for the 2013-2015 calendar years.
[B] PD = property damage only; PI = personal injury; F = fatality.
[C] Type A (incapacitating injury); Type B (non-incapacitating injury); Type C (possible injury).
[D] CM = cross movement/angle; RE = rear end; HO = head on; FO = fixed object; Ped = pedestrian.

Riverview West Accessibility

Exhibit 4 illustrates the site plan prepared by Baranyk Associates, Ltd. and dated November 7, 2017. The development plan includes 424 residential units (364 multi-family and 60 townhomes) and approximately 35,000 square-foot of commercial space contained within five (5) buildings. The tenants for the commercial space are currently undefined and were assumed to include a 2,000 square foot coffee shop with drive-thru window, a 2,500 square foot fast-food restaurant (without a drive-thru) and 31,050 square feet of general retail space.

Excellent accessibility will be provided for all Riverview West components and will include:

- Per the Cantera Master Plan, Torch Parkway will be extended as a public street from its current terminus west of Winfield Road at Kline Court. It will be a loop street intersecting Ferry Road at the existing traffic signal that also serves the vacant office building on the south side. The Torch Parkway extension will provide direct access to the planned townhomes component of the development.
- A new north-south private street will be constructed between an existing full access opening on Ferry Road, opposite Cornerstone of Cantera, about 800 feet west of Winfield Road. The private street will provide direct access to the apartment building. It will also bisect the planned east-west private street, providing access to the commercial uses.

Project Traffic Characteristics

Exhibit 5 – Part A lists the traffic generation calculations for the proposed mixed-use development, based on rate data published by the Institute of Transportation Engineers (ITE) in the handbook *Trip Generation Manual, 10th Edition (see Appendix C)*.

For multi-use developments, internal trips between the land uses within the development are expected to occur. These are multi-purpose trips from one land use within the development to another land use within the same development (e.g. a resident eats at the restaurant or shops at one of the retail stores). Based on information published in the ITE *Trip Generation Handbook*, *3rd Edition*, it was determined that 15 percent of the morning peak hour and 44 percent of the evening peak hour trips represent internal trips (*see Appendix C*). However, to provide a conservative analysis, the internal capture rate was limited to 20 percent during the weekday PM peak hour.

In addition, not all vehicle trips expected to be generated by the proposed project represents new trips on the study area roadway system, studies have shown that for retail and restaurant developments, a substantial portion

of the site-generated vehicle trips are already present in the adjacent passing stream of traffic or are diverted from another route to the proposed site. Based on data presented in the ITE *Trip Generation Handbook, 3rd Edition*, the average pass-by trip percentage for coffee shops, fast food restaurants and retail uses is between 26 and 83 percent. However, to provide a conservative analysis, a reduction for pass-by traffic was *not* applied to the development site-generated trips.

Discussion Point. The existing site was previously approved for 985,000 square-feet of office space. Therefore, a comparison was made between what the site would be generating if it were operating as the previously approved office use versus the proposed mixed-use development. A summary of this trip generation comparison is also provided on Exhibit 5. However, this study did not discount for the previously approved site use to provide a conservative analysis scenario. This information is provided for comparative purposes only.

Exhibit 5 – Part B provides the anticipated trip distribution for the residential and commercial components of the development, which is primarily based on current / anticipated travel patterns and the access operations. As can be seen, the established and planned road network in this portion of the Cantera development will afford excellent route selection flexibility.

Site, Year 2025 No-Build, and Year 2025 Total Traffic

Site Traffic

Exhibits 6a and 6b illustrate the Site Traffic assignment for the external and internal study area intersections, respectively, which is based on the project traffic characteristics summarized on *Exhibit 5* (e.g. traffic generations and trip distribution) and the site access system. IDOT generally requires that the existing volumes be increased to reflect other growth in the area for a "Buildout + 5 year" analysis. CMAP was contacted and provided Year 2040 traffic projections (see *Appendix D*).

No-Build Traffic – Year 2025

Riverview West full buildout and occupancy is expected to be completed in the Year 2019-2020, so the analysis horizon becomes the Year 2025. Per the CMAP information (see *Appendix D*), an overall annual, compounded growth rate of approximately 1.5 and 2 percent per year can be anticipated on Winfield Road and Ferry Road, respectively. Ferry Road was anticipated to experience negative growth; therefore, a 1 percent annual compounded growth rate was assumed to be conservative. The Year 2025 No-Build volumes also include traffic generated from the vacant office building on the south side of Ferry Road (BP at Cantera II), which has 158,000 square feet of space, as well as the approximately 260,000 square-foot vacant Navistar office building at the southeast quadrant of Winfield Road and Ferry Road (see *Exhibit 7*). *Exhibit* 8 illustrates the Year 2025 No-Build traffic.

Total Traffic – Year 2025

Site traffic (see *Exhibits 6a and 6b*) and the Year 2025 No-Build volumes (see *Exhibit 8*) were combined to produce the Year 2025 total traffic assignment, which is illustrated on *Exhibits 9a and 9b for the external and internal roadway network, respectively*. It is anticipated that the Torch Parkway extension may encourage some drivers to reroute their existing travel paths. It was estimated that Torch Parkway could attract about 10% of eastbound left turns and 10% of southbound right turns at the Winfield Road / Ferry Road intersection, which was also included in the 2025 total traffic network.

Intersection Capacity Analyses

Capacity analyses are a standard measurement in the industry that identifies how an intersection operates. *Exhibit 10* – Part A lists the analysis parameters, as published in the Transportation Research Board's (TRB) 2010 Highway Capacity Manual (HCM). They are measured in terms of level of service (LOS). LOS A is the best rating, with LOS F being the worst. LOS C is often considered acceptable for design purposes and LOS D is usually considered as providing the lower threshold of acceptable operations.
Since the level of service of a traffic facility is a function of the traffic flows placed upon it, such a facility may operate at a wide range of levels of service, depending on the time of day, day of week or period of year.

Capacity analyses were performed using the Highway Capacity Software (HCS) for the following scenarios:

- *Existing Traffic* - Existing traffic (year 2017),
- *No-Build Traffic* – Future (non-site, year 2025) traffic with background growth (assumed at 1 to 2 percent compounded per year) and the addition of the 2 indentified background developments (occupancy of the BP and Navistar office buildings), and
- *Total Traffic* – Future No-Build traffic volumes (year 2025) plus the addition of site generated traffic, as well as a reassignment of No-Build traffic in connection with the Torch Parkway westerly extension.

Exhibit 10 - Part B summarizes the intersection capacity analysis results and calculated 95th-percentile queues. Capacity analysis summary printouts are provided in *Appendix E*.

> <u>*Discussion Point.*</u> As can be seen, some movements on minor approaches experience "unacceptable" delays. At signalized intersections, such as Torch Parkway at Winfield Road, this is usually the result of the programmed traffic signal timings giving the vast majority of "green time" to the major route to promote progression. At unsignalized intersections, some movements could reroute to avoid excessive delays. For example, southbound left turns on the new north-south private street at Ferry Road could decide to use Torch Parkway as an alternate route.

Part IV. Recommendations

Roadway and Access Operations

Exhibit 11A and 11B schematically illustrates the recommended traffic operations plan for the development for the external and internal intersections, respectively.

<u>Winfield Road at McCormick Lane, Torch Parkway & Ferry Road and Ferry Road at River Road</u>

- Based on the results of the capacity analyses (see *Exhibit 10*), no intersection improvements are proposed nor required to specifically accommodate Riverview West development traffic.

<u>Ferry Road at Torch Parkway Extension</u>

- The Torch Parkway approach should provide one inbound and two outbound lanes, striped for a separate left turn lane and a shared through / right turn lane. At least 115 feet of southbound left turn lane storage should be provided.
- The south approach (vacant office building) should be striped to match the north approach. Permissive/protected left-turn phasing should be provided for the northbound and southbound left-turns.
- Separate eastbound left and westbound right turn lanes should be striped on Ferry Road within the pavement already provided.

Torch Parkway at East-West Private Street

- The commercial component of the development is proposed to have a direct access to the existing traffic signal on Ferry Road; Torch Parkway is proposed to "T" into the East-West Street alignment. A short, separate northbound left-turn lane should be provided at this "T" intersection, to minimize to the potential for northeast bound Torch Parkway traffic (non-commercial) from queueing (extending) into Ferry Road.
- The Torch Parkway southbound approach should operate under Stop sign control (the northbound Torch Parkway and the westbound East-West Private Street free flow).

Torch Parkway Extension

- A 30-foot two-way street (face of curb dimensions) is proposed. Sidewalk is to be provided on one side along the townhomes.
- Parking is also proposed on the outer lane. The pavement section allows for two 10-foot travel lanes and an 8-foot parking lane, assuming the outer curb is used.

Torch Parkway at Kline Circle/EN Engineering Building

- A separate eastbound left-turn lane should be striped within the median on Torch Parkway at Kline Circle. The Torch Parkway westbound right-turn lane should be marked / signed as a through/right-turn lane. The southbound Kline Circle approach provides a wide pavement width that should be marked as a shared through/left-turn lane and a separate right-turn lane. The Kline Circle southbound and the EN Engineering Building northbound approaches should have Stop control (Torch Parkway free flow).

North-South Private Street

- A 36-foot wide two-way street is proposed with one through travel lane in each direction and a two-way center left turn lane. Sidewalks are to be provided on both sides, encouraging non-auto trips.
- On-street parking will not be allowed.
- Traffic calming measures should be considered to reduce speeds and minimize potential for cut-through traffic. Consideration should be given to installing a speed table at the North-South Private Street intersection with the East-West Access to the Multi-Family Residential.
- The Multi-Family east and west approaches to the North-South Private Street should have Stop control (North-South Street free flow). This intersection should be monitored for All-Way Stop-Control.
- The Commercial east and west approaches to the North-South Private Street should have Stop control (North-South Street free flow).

Torch Parkway @ North-South Private Street

- The Torch Parkway approaches will have one travel lane in each direction.
- The North-South Private Street should operate under Stop sign control (Torch Parkway free flow).
- The vehicular and pedestrian traffic volumes should be monitored for All-Way Stop Control, considering the pedestrian connection to the DuPage River Trail.

Ferry Road at North-South Private Street

- A separate eastbound left turn lane should be cut in the median on Ferry Road and a separate westbound right turn lane should also be constructed.
- The North-South Street approach should provide a separate left turn lane and a shared / through right turn lane. The south approach should be restriped to match the north approach.
- The north and south approaches should have Stop control.

Parking Requirements

Townhome Parking

- For townhomes, City code requires 4.0 parking spaces per dwelling. There will be 2 garage spaces and 2 driveway apron spaces provided at each of the 60 townhomes.
- Thus, the 240 spaces provided meets the City code requirement of 240 spaces.

Apartment Parking

- For apartments, City code requires 2.0 spaces for a 1-bedroom, 3.0 spaces for a 2-bedroom, and 4.0 spaces for a 3-bedroom.
- The 201 1-bedroom units will require 402 spaces, the 153 2-bedroom units will require 459 spaces, and the 10 3-bedroom units will require 40 spaces. The total number of parking spaces required by City code for the apartments will be 901 spaces.
- The apartment building garage will have 385 parking spaces, the outdoor guest parking area will have 21 spaces, and an additional 278 outdoor parking spaces will be provided for a total of 684 spaces. This translates to a supply of 1.88 spaces per unit.
- Thus, there would be a shortfall in the apartments of 217 spaces by City code requirements.
- The ITE publication, *Parking Generation, 4th Edition*, indicates that the average parking demand would be 1.23 spaces per unit and the 85th percentile 1.94 spaces per unit. This would result in a range of 448 to 706 parking spaces needed for the apartments, or 195 to 453 *fewer* parking spaces than required by City code. The parking supply provided (684 spaces) exceeds the ITE calculations for average demand by 236 spaces and is only 22 spaces short of the 85th percentile demand.

Commercial Parking

- Commercial building #1 (2,000 square-feet) is anticipated to be a coffeehouse with drive-thru, which requires 20.0 spaces per 1,000 square-feet, or 40 spaces.
- Commercial buildings #2-4 total 31,050 square-feet of general retail, which require 4.0 spaces per 1,000 square-feet. This results in a parking requirement of 124 spaces.
- Commercial building #5 is anticipated to contain a 2,500 square-foot restaurant (without drive-thru window). The requirement per City Code is 16.0 spaces per 1,000 square-feet, which results in a parking requirement of 40 spaces.
- Thus, the total commercial parking requirement is 204 spaces. The Baranyk site plan indicates that 205 parking spaces are to be provided for the 5 commercial buildings.

Shared Parking Calculations Discussion

- The peak parking demand for the different types of uses do not coincide. Therefore, additional analyses were conducted based on parking generation and time-of-day distribution data provided in the Urban Land Institute *Shared Parking Manual*, 2nd Edition, for the proposed land uses. Exhibits contained in *Appendix F* summarize the anticipated parking usage for each use on a weekday and weekend.
- As can be seen in the shared parking calculations, the peak parking demand for the proposed uses occurs at 7:00 PM on both a weekday and weekend at 720 to 735 parking spaces. The parking demand steadily tapers off after that timeframe for the commercial uses.
- The peak residential parking demand occurs overnight, when the commercial uses will not be open. If a shared parking agreement can be executed, the 205 commercial parking spaces could all be used to accommodate overflow residential parking, if needed.

Service Area Operations

General guidelines for service area operations include:

- Commercial deliveries and refuse pick-up should be encouraged to be scheduled outside the busier store hours.
- Refuse pick-up should be scheduled at the apartments to avoid disrupting residents.
- Apartment residents should be notified of any moving activity well in advance to avoid disrupting their daily schedule.

Part V. Technical Addendum

The following *Exhibits* and *Appendices* were previously referenced. They provide technical support for our observations, findings, and recommendations discussed in the text.

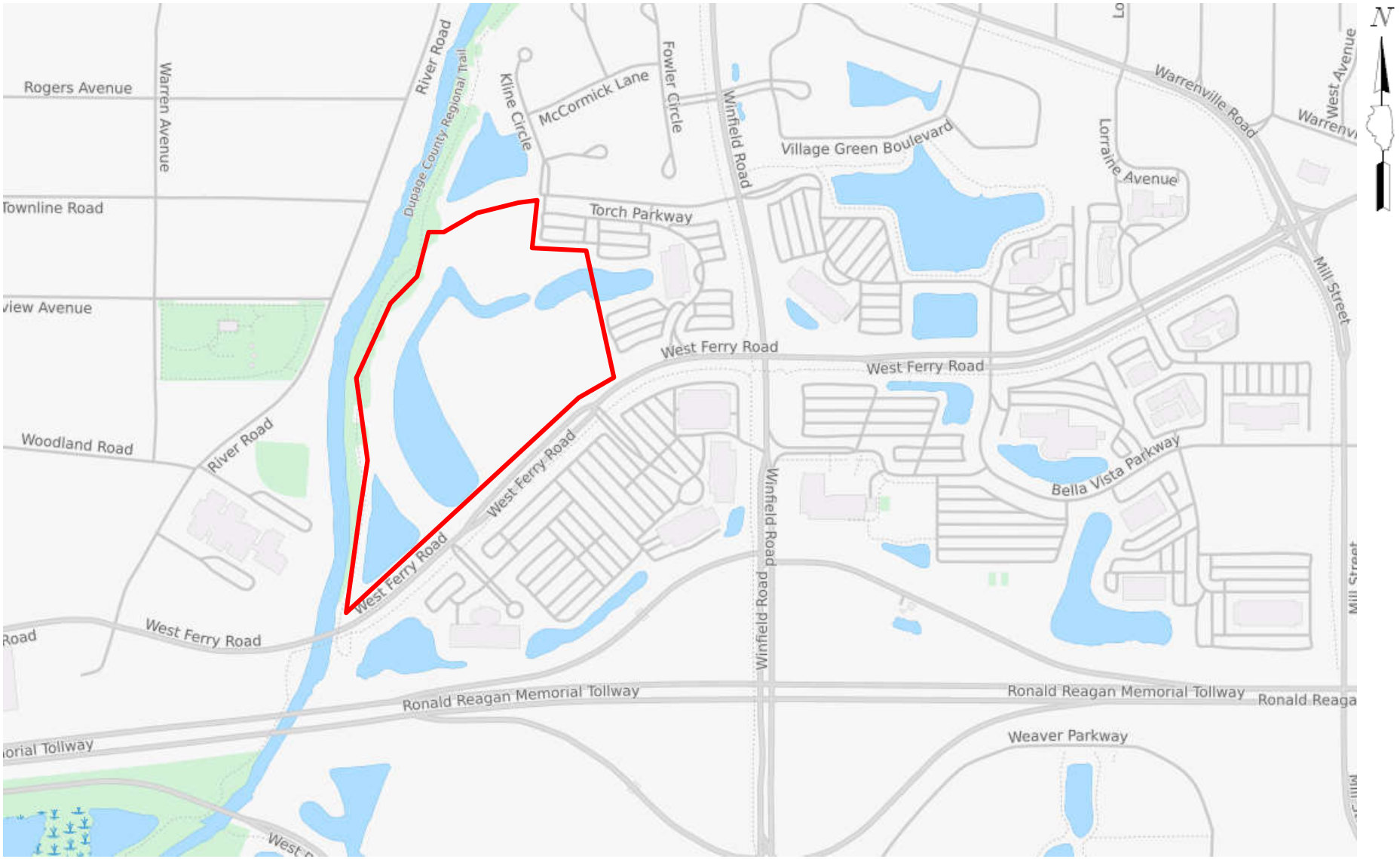
Exhibits

1. Site Location Map
2. Existing Traffic Operations
3. Existing Traffic
4. Site Plan
5. Project Traffic Characteristics
6. Site Traffic
   A. External Intersection
   B. Internal Intersections
7. Background Traffic Characteristics
8. No-Build Traffic – Year 2025
9. Total Traffic – Year 2025
   A. External Intersection
   B. Internal Intersections
10. Intersection Capacity Analyses
11. Recommended Traffic Operations Plan

Appendices

A. Photo Inventory
B. Traffic Count Summaries
C. Trip Generation / Internal Capture Calculations
D. CMAP Correspondence
E. Capacity Analysis Worksheets
F. Shared Parking Analysis

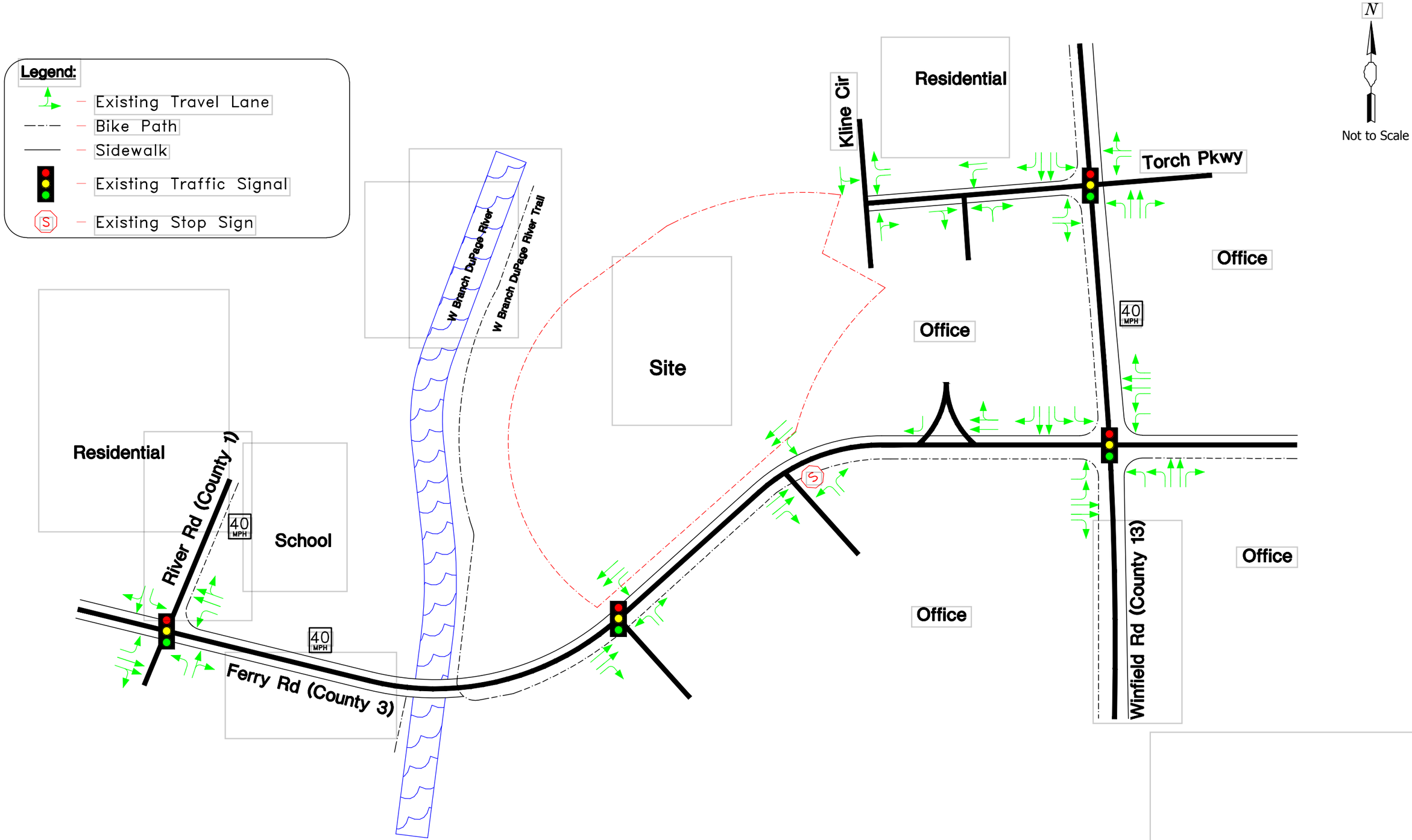
Exhibits



Riverview West Development; Warrenville, Illinois

GEWALT HAMILTON ASSOCIATES, INC.

Exhibit 1
Location Map



GHA GEWALT HAMILTON ASSOCIATES, INC.

Exhibit 2
Existing Traffic Operations

Legend:

- XX — Weekday Morning Peak Hour
- (XX) — Weekday Evening Peak Hour
- XX — Average Daily Traffic
- Existing Traffic Signal

N

Not to Scale

McCormick Ln

Torch Pkwy

Kline Cir

Ferry Rd

Winfield Rd

River Rd

W Branch DuPage River

Site

Office

Residential

School

14,100

16,500

21,200

Exhibit 3
Existing Traffic
Sources: 1) GHA May/Nov 2017
2) DuPage County DOT
3) IDOT ADT

GHA GEWALT HAMILTON ASSOCIATES, INC.

RESIDENTIAL BUILDING

1 BEDROOM - 201 UNITS (55 %)
2 BEDROOM - 153 UNITS (42%)
3 BEDROOM - 10 UNITS (3%)
TOTAL - 364 UNITS (100%)

COMMERCIAL PARKING

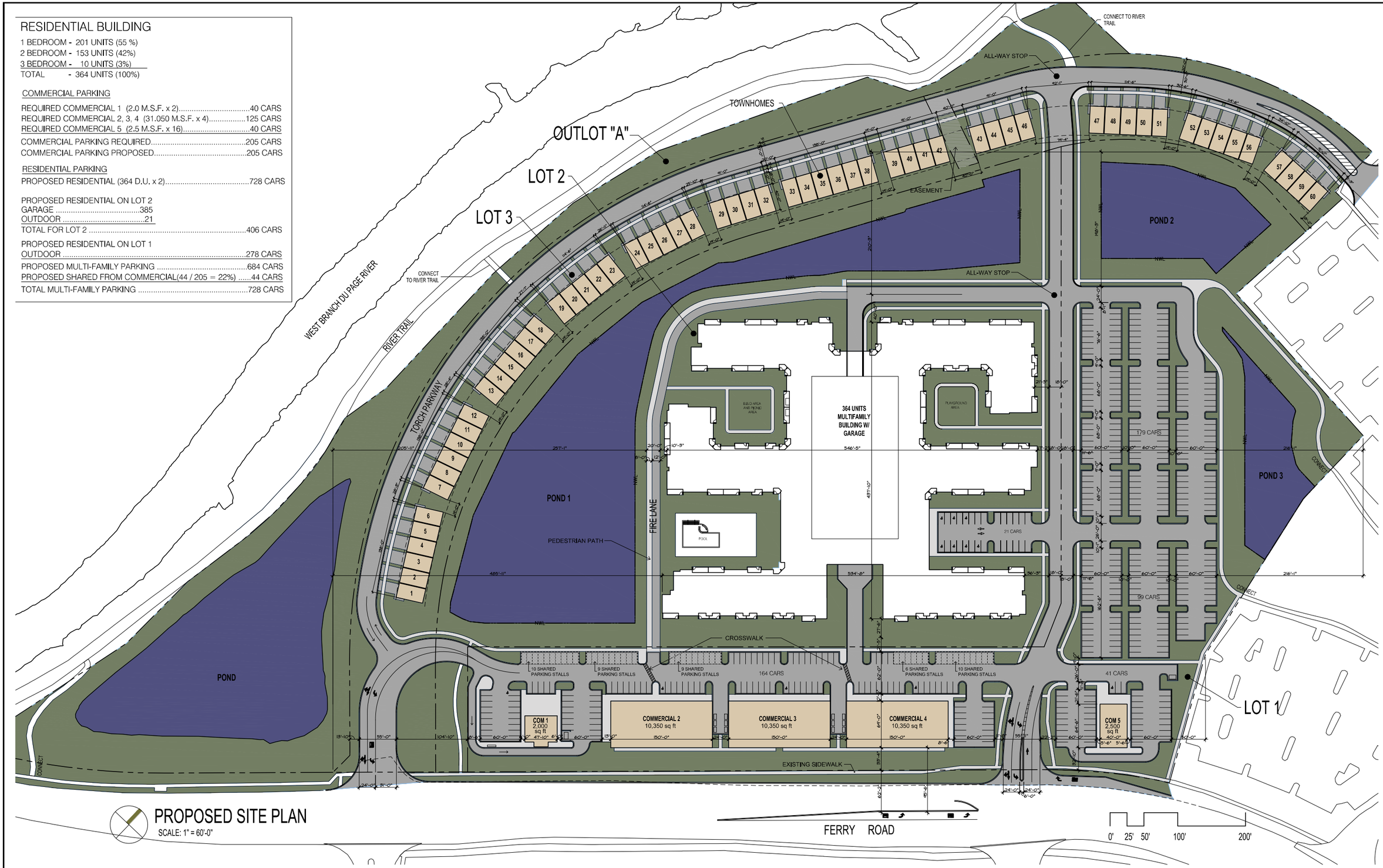
REQUIRED COMMERCIAL 1 (2.0 M.S.F. x 2).....40 CARS
REQUIRED COMMERCIAL 2, 3, 4 (31.050 M.S.F. x 4).....125 CARS
REQUIRED COMMERCIAL 5 (2.5 M.S.F. x 16).....40 CARS
COMMERCIAL PARKING REQUIRED.....205 CARS
COMMERCIAL PARKING PROPOSED.....205 CARS

RESIDENTIAL PARKING

PROPOSED RESIDENTIAL (364 D.U. x 2).....728 CARS

PROPOSED RESIDENTIAL ON LOT 2
GARAGE 385
OUTDOOR 21
TOTAL FOR LOT 2 .....406 CARS

PROPOSED RESIDENTIAL ON LOT 1
OUTDOOR .....278 CARS
PROPOSED MULTI-FAMILY PARKING .....684 CARS
PROPOSED SHARED FROM COMMERCIAL(44 / 205 = 22%) .....44 CARS
TOTAL MULTI-FAMILY PARKING .....728 CARS



PROPOSED SITE PLAN
SCALE: 1" = 60'-0"

4 DEC. 2017

CANTERA APARTMENTS, LLC
DEVELOPER
TWO NORTHFIELD PLAZA, SUITE #320 NORTHFIELD, IL 60093

364 D. U.
APARTMENTS AT RIVERVIEW WEST
WARRENVILLE, ILLINOIS

BARANYK ASSOCIATES, LTD.
ARCHITECTS • ENGINEERS • PLANNERS
710 HIGGINS RD. PARK RIDGE, IL. 60068
FAX 847/825-8617 PHONE 847/292-5757

PROPOSED SITE PLAN

SHEET: A-1

Exhibit 5
Project Traffic Characteristics
Riverview West Development, Warrenville, Illinois

Part A. Traffic Generation Calculations

Land Use	ITE Code	Units		AM Peak Hour In	AM Peak Hour Out	AM Peak Hour Sum	PM Peak Hour In	PM Peak Hour Out	PM Peak Hour Sum	Weekday Daily Total
1. Proposed Use										
Townhomes	#220	60	units	7	22	29	23	14	37	412
Multi-Family Residential	#222	364	units	28	87	115	81	51	132	1,646
Coffee Shop with Drive-Thru (Commercial #1)	#937	2.00	KSF	91	87	178	43	43	86	1,640
General Retail (Commercial #2-4)	#820	31.05	KSF	104	63	167	110	119	229	2,714
Fast Food Restaurant without Drive-Thru (Commerical #5)	#933	2.50	KSF	39	26	65	35	35	70	866
Subtotal				269	285	554	292	262	554	7,278
less internal capture (15% AM Peak / Daily & 20% PM Peak)				*-40*	*-43*	*-83*	*-58*	*-52*	*-110*	*-1,092*
Total (External) Trips				*229*	*242*	*471*	*234*	*210*	*444*	*6,186*
2. Previous Approved Site Use										
Office	#710	985.00	KSF	819	133	952	160	840	1,000	9,758
3. Incremental Increase in Site Traffic										
Proposed Use less Previous Approved Site Use				*-590*	*109*	*-481*	*74*	*-630*	*-556*	*-3,572*

Source: ITE Trip Generation Manual; 10th Edition
ITE Trip Generation Handbook, 3rd Edition.

Part B. Trip Distribution

Route & Direction		Residential To/From	Commercial To/From
Winfield Road			
-North of Torch Parkway		25%	25%
-South of Ferry Road		35%	20%
Ferry Road			
-East of Winfield Road		15%	20%
-West of River Road		20%	30%
River Road			
-North of Ferry Road		5%	5%
Remaining Study Area Roads / Driveways[1]			
-Kline Court, McCormick Ln, Office Driveways		-	-
	Total	100%	100%

[1] Anticipated to be less than 5 percent.

GHA GEWALT HAMILTON ASSOCIATES, INC.

Legend:

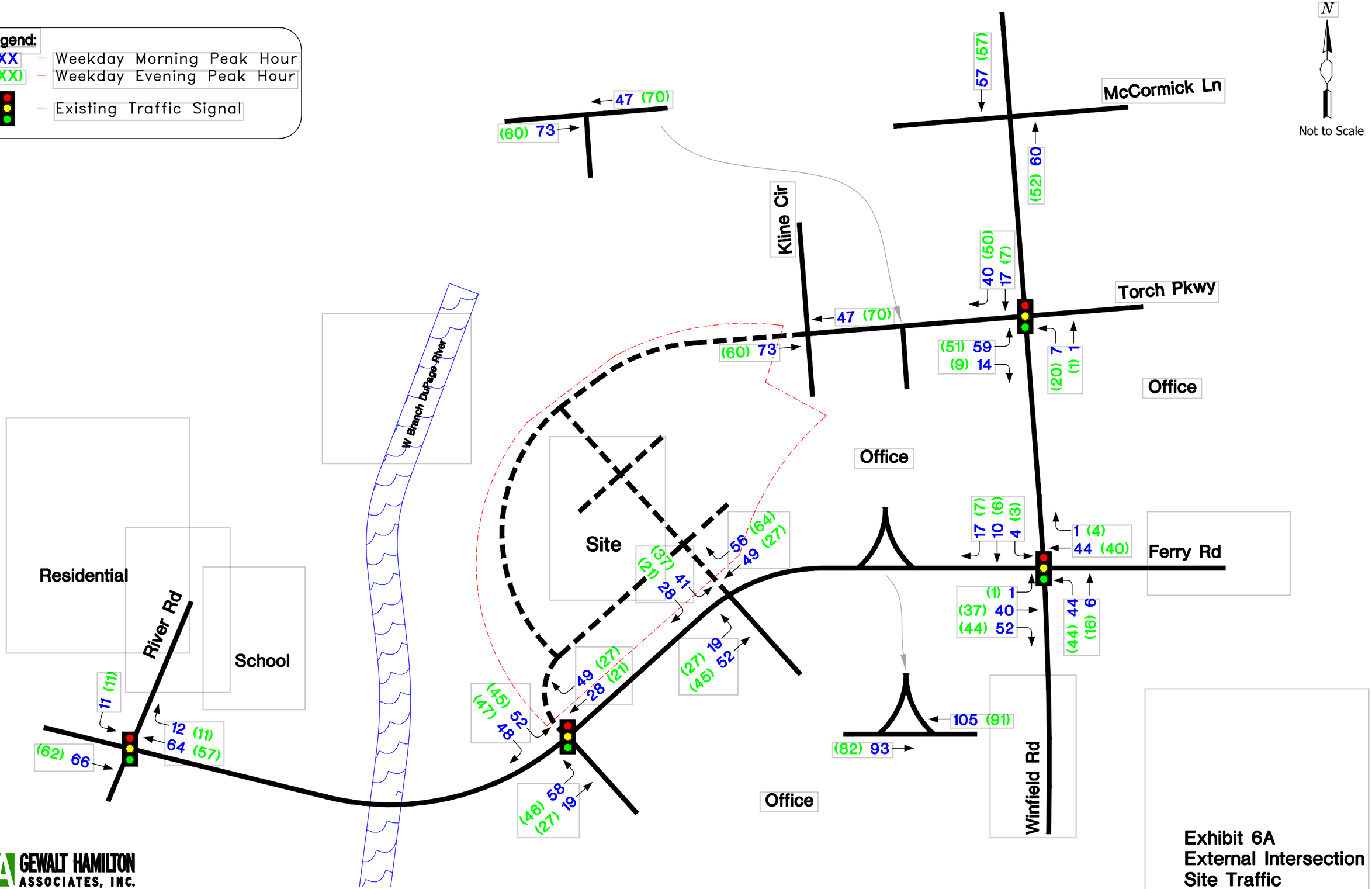
XX – Weekday Morning Peak Hour

(XX) – Weekday Evening Peak Hour

– Existing Traffic Signal

N

Not to Scale



GHA GEWALT HAMILTON ASSOCIATES, INC.

Exhibit 6A
External Intersection Site Traffic

Legend:

XX – Weekday Morning Peak Hour

(XX) – Weekday Evening Peak Hour

– Existing Traffic Signal

W Branch DuPage River

Kline Cir

Torch Pkwy

N

Not to Scale

Office

Office

Site

Ferry Rd

Office

GHA GEWALT HAMILTON ASSOCIATES, INC.

Exhibit 6B
Internal Intersection
Site Traffic

Exhibit 7
Background (Non-Site) Traffic Characteristics
Riverview West Development, Warrenville, Illinois

Part A. Traffic Generation Calculations

Land Use	ITE Code	Units	AM Peak Hour In	AM Peak Hour Out	AM Peak Hour Sum	PM Peak Hour In	PM Peak Hour Out	PM Peak Hour Sum	Weekday Daily Total
1. BP at Cantera II - 28301 Ferry Rd									
Office	#710	158.00 KSF	151	24	175	28	148	176	1,654
2. Navistar - 4201 Winfield Rd									
Office	#710	260.00 KSF	233	38	271	45	237	282	2,680
Total			384	62	446	73	385	458	4,334

Source: ITE Trip Generation Manual; 10th Edition

Part B. Trip Distribution

Route & Direction	To/From
Winfield Road	
-North of Torch Parkway	25%
-South of Ferry Road	35%
Ferry Road	
-East of Winfield Road	15%
-West of River Road	20%
River Road	
-North of Ferry Road	5%
Remaining Study Area Roads / Driveways[1]	
-Kline Court, McCormick Ln, Office Driveways	-
Total	100%

[1] Anticipated to be less than 5 percent.

GEWALT HAMILTON ASSOCIATES, INC.

Legend:

XX — Weekday Morning Peak Hour

(XX) — Weekday Evening Peak Hour

— Existing Traffic Signal

N

Not to Scale

McCormick Ln

Torch Pkwy

Ferry Rd

Winfield Rd

Kline Cir

River Rd

W Branch DuPage River

Site

Office

Residential

School

Exhibit 8
2025 No-Build Traffic

GEWALT HAMILTON ASSOCIATES, INC.

Legend:

XX – Weekday Morning Peak Hour

(XX) – Weekday Evening Peak Hour

– Existing Traffic Signal

N

Not to Scale

89 (112)
176 (19)
(114) 141
(-) -
- -
(-) 7
(194)

4 (11)
1376 (1279)
2 (12)

14 (12)
- (-)
34 (11)

McCormick Ln

(13) 13
(-) 1
(5) 11

(13) 2
(1413) 1106
(32) 11

Kline Cir

127 (88)
1250 (1206)
44 (1)

4 (58)
- (-)
1 (56)

Torch Pkwy

(-) -
- 1 (-)
21 (7)

8 (9)
80 (104)
1 (-)

(-) -
(94) 118
(-) -

- - -
(-) (-) 2
(13)

(137) 107
(-) -
(171) 41

(43) 138
(1263) 1008
(5) 92

Office

Office

W Branch DuPage River

Site

56 (64)
919 (1509)
127 (25)

(37) - -
(21) (-) 41
28 -

310 (307)
804 (1016)
178 (110)

56 (158)
428 (1020)
86 (332)

Ferry Rd

(307) 401
(520) 975
(313) 162

(215) 444
(846) 781
(82) 296

3 (63)
- (-)
(45)

(27) 19
(1040) 1494
(5) 61

49 (27)
788 (1528)
110 (20)

(45) 52
(80) (1) 4
77

17 (107)
6 1 (4)
(37)

(76) 102
(920) 1505
(7) 37

Residential

River Rd

School

78 (83)
2 (-)
60 (31)

30 (67)
816 (1574)
24 (4)

(108) 93
(951) 1583
(2) 19

(31) -
(3) -
(20) 1

6 (59)

86 (4)
1096 (1539)

(1140) 1538

Office

Winfield Rd

GHA GEWALT HAMILTON ASSOCIATES, INC.

Exhibit 9A
2025 External Intersection Total Traffic

Legend:

XX — Weekday Morning Peak Hour

(XX) — Weekday Evening Peak Hour

— Existing Traffic Signal

W Branch DuPage River

Kline Cir

Torch Pkwy

N

Not to Scale

Office

Office

Site

Ferry Rd

Office

40 (42)
43 (63)
48 (49)
- (-)
68 (47)
- (-)
6 (4)
0 (0)
1 (1)
(34) 32
(21) 8
3 (8)
1 (1)
23 (34)
11 (31)
(11) 19
(-) -
37 (24)
(23) (31)
(9) 10
45 (34)
6 (9)
4 (6)
15 (20)
12 (24)
39 (33)
(20) (39)
17 (39)
6 (6)
9 (14)
18 (11)
89 (86)
(40) (2)
44 4
(45) 48
(62) 104

GHA GEWALT HAMILTON ASSOCIATES, INC.

Exhibit 9B
2025 Internal Intersection
Total Traffic

Legend:

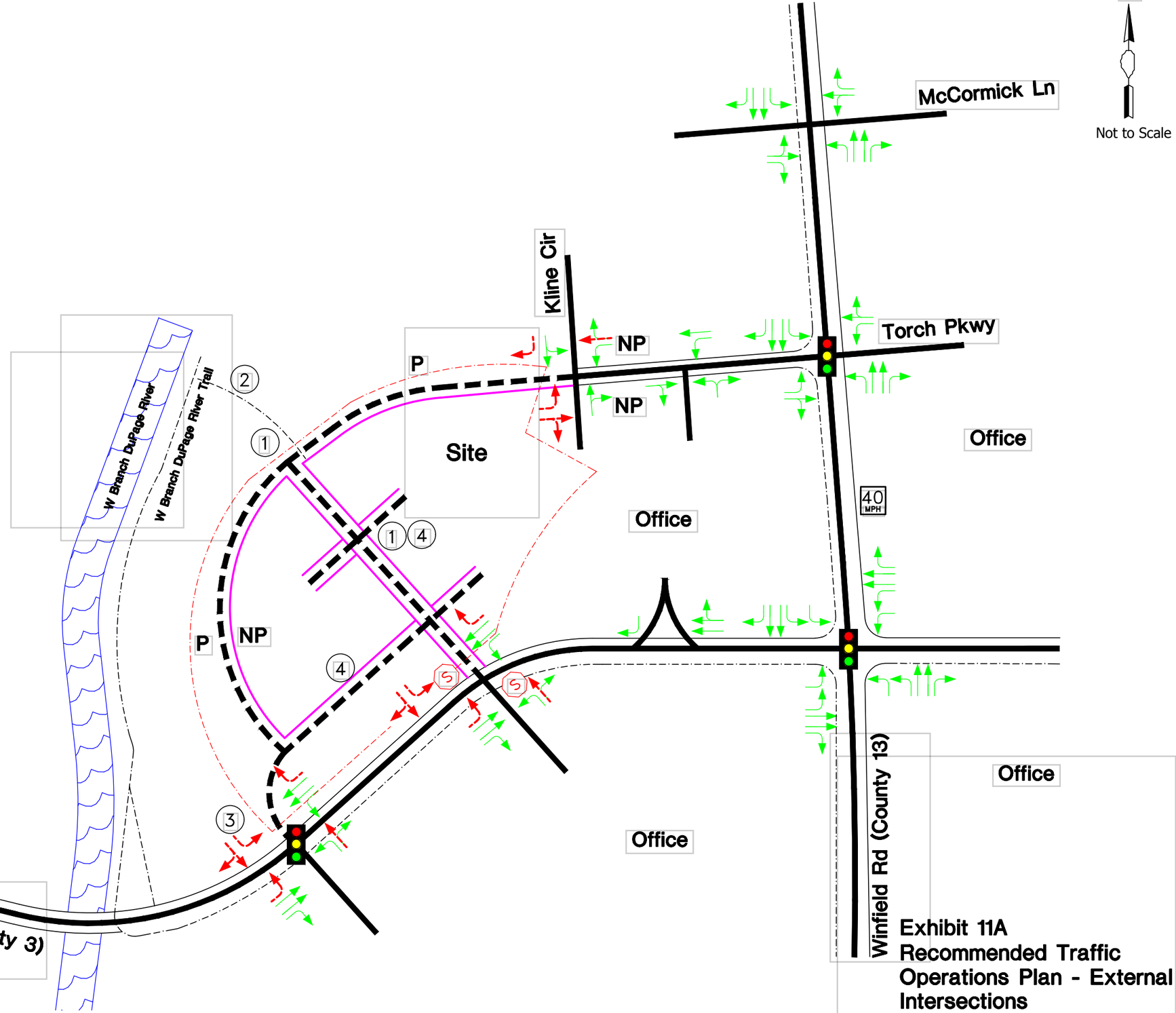
- Existing Travel Lane
- Proposed Travel Lane
- Bike Path
- Existing Sidewalk
- Proposed Sidewalk
- Existing Traffic Signal
- Stop Sign
- NP — No Parking
- P — Parking

Notes:

1. Monitor for Future All-Way Stop
2. Trail Connection
3. Modify Traffic Signal
4. Traffic Calming Measures

N

Not to Scale



GHA GEWALT HAMILTON ASSOCIATES, INC.

Exhibit 11A
Recommended Traffic Operations Plan - External Intersections

Legend:

- Existing Travel Lane
- Proposed Travel Lane
- Bike Path
- Existing Sidewalk
- Proposed Sidewalk
- Existing Traffic Signal
- Stop Sign
- NP — No Parking
- P — Parking

Notes:

1. Monitor for Future All-Way Stop
2. Trail Connection
3. Modify Traffic Signal
4. Traffic Calming Measures

Site

Office

Office

School

Torch Pkwy

Kline Cir

Ferry Rd (County 3)

Winfield Rd (County 13)

W Branch DuPage River

W Branch DuPage River Trail

40 MPH

40 MPH

N

Not to Scale

GHA GEWALT HAMILTON ASSOCIATES, INC.

Exhibit 11B
Recommended Traffic Operations Plan - Internal Intersections

Exhibit 10
Intersection Capacity and Queue Analyses

Riverview West Development; Warrenville, Illinois

Part A. Parameters - Type of Traffic Control (Source: Highway Capacity Manual, 2010)

I. Traffic Signals

LOS	Delay (sec / veh)	Description
A	<10	All signal phases clear waiting vehicles without delay
B	>10 and < 20	Minimal delay experienced on select signal phases
C	>20 and < 35	Some delay experienced on several phases; often used as design criteria
D	>35 and < 55	Usually considered as the acceptable delay standard
E	>55 and < 80	Very long delays experienced during the peak hours
F	>80	Unacceptable delays experienced throughout the peak hours

II. Stop Sign

LOS	Delay (sec / veh)
A	< 10
B	>10 and < 15
C	>15 and < 25
D	>25 and < 35
E	>35 and < 50
F	>50

Part B. Results

Roadway Conditions		LOS Per Movement By Approach (> = Shared Lane; - = Non Critical or not Allowed Movement)												Intersection / Approach	
		Eastbound			Westbound			Northbound			Southbound			Delay	
		LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT	(sec / veh)	LOS
1. Winfield Rd and McCormick Ln	**TWSC - EB/WB Stops**													**EB/WB Approach Delay**	
A. Weekday Morning Peak Hour															
Existing Traffic (See Exhibit 3)	• Current	D	B	<	D	B	<	B	-	-	B	-	-	24.2	C
	• 95th Queue Length (ft)	8	3	-	18	3	-	0	-	-	0	-	-	-	-
No-Build Traffic (See Exhibit 8)	• Current	E	C	<	E	B	<	B	-	-	B	-	-	31.8	D
	• 95th Queue Length (ft)	10	3	-	25	3	-	0	-	-	0	-	-	-	-
Total Traffic (See Exhibit 9)	• Current	E	C	<	E	B	<	B	-	-	B	-	-	35.1	E
	• 95th Queue Length (ft)	13	3	-	28	3	-	0	-	-	0	-	-	-	-
B. Weekday Evening Peak Hour															
Existing Traffic (See Exhibit 3)	• Current	D	B	<	D	B	<	B	-	-	B	-	-	24.9	C
	• 95th Queue Length (ft)	8	0	-	5	3	-	3	-	-	3	-	-	-	-
No-Build Traffic (See Exhibit 8)	• Current	E	B	<	E	B	<	B	-	-	B	-	-	31.9	D
	• 95th Queue Length (ft)	10	0	-	8	3	-	3	-	-	3	-	-	-	-
Total Traffic (See Exhibit 9)	• Current	E	B	<	E	C	<	B	-	-	B	-	-	34.3	D
	• 95th Queue Length (ft)	10	0	-	10	3	-	3	-	-	3	-	-	-	-
2. Winfield Rd and Torch Pkwy	**Traffic Signal**													**Intersection Delay**	
A. Weekday Morning Peak Hour															
Existing Traffic (See Exhibit 3)	• Current	E	E	<	E	E	<	A	A	A	A	A	A	1.7	A
	• 95th Queue Length (ft)	5	44	-	2	6	-	28	5	24	10	7	14	-	-
No-Build Traffic (See Exhibit 8)	• Current	E	E	<	E	E	<	A	A	A	A	A	A	1.6	A
	• 95th Queue Length (ft)	5	44	-	2	6	-	29	7	24	10	10	14	-	-
Total Traffic (See Exhibit 9)	• Current	D	E	<	E	E	<	A	A	A	A	A	A	5.6	A
	• 95th Queue Length (ft)	154	68	-	2	14	-	46	44	35	15	79	38	-	-
B. Weekday Evening Peak Hour															
Existing Traffic (See Exhibit 3)	• Current	D	F	<	E	E	<	A	A	A	A	A	A	11.8	B
	• 95th Queue Length (ft)	84	305	-	92	101	-	10	80	2	0	79	2	-	-
No-Build Traffic (See Exhibit 8)	• Current	D	F	<	E	E	<	A	A	A	A	A	A	10.8	B
	• 95th Queue Length (ft)	84	305	-	92	101	-	10	102	2	0	96	2	-	-
Total Traffic (See Exhibit 9)	• Current	E	F	<	E	E	<	A	A	A	A	A	A	13.1	B
	• 95th Queue Length (ft)	220	330	-	95	113	-	20	114	3	1	110	34	-	-
3. Torch Pkwy and EN North Access Dr	**TWSC - NB Stops**													**NB Approach Delay**	
A. Weekday Morning Peak Hour															
Existing Traffic (See Exhibit 3)	• Current	-	-	-	A	-	-	>	A	<	-	-	-	8.4	A
	• 95th Queue Length (ft)	-	-	-	10	-	-	-	0	-	-	-	-	-	-
No-Build Traffic (See Exhibit 8)	• Current	-	-	-	A	-	-	>	A	<	-	-	-	8.4	A
	• 95th Queue Length (ft)	-	-	-	10	-	-	-	0	-	-	-	-	-	-
Total Traffic (See Exhibit 9)	• Current	-	-	-	A	-	-	>	A	<	-	-	-	9.1	A
	• 95th Queue Length (ft)	-	-	-	13	-	-	-	0	-	-	-	-	-	-
B. Weekday Evening Peak Hour															
Existing Traffic (See Exhibit 3)	• Current	-	-	-	A	-	-	>	A	<	-	-	-	9.6	A
	• 95th Queue Length (ft)	-	-	-	0	-	-	-	25	-	-	-	-	-	-
No-Build Traffic (See Exhibit 8)	• Current	-	-	-	A	-	-	>	A	<	-	-	-	9.6	A
	• 95th Queue Length (ft)	-	-	-	0	-	-	-	25	-	-	-	-	-	-
Total Traffic (See Exhibit 9)	• Current	-	-	-	A	-	-	>	B	<	-	-	-	10.7	B
	• 95th Queue Length (ft)	-	-	-	3	-	-	-	33	-	-	-	-	-	-

GHA GEWALT HAMILTON ASSOCIATES, INC.

Part B. Results (cont.)

	Roadway Conditions	LOS Per Movement By Approach (> = Shared Lane; - = Non Critical or not Allowed Movement)												Intersection / Approach	
		Eastbound			Westbound			Northbound			Southbound			Delay	
		LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT	(sec / veh)	LOS
4. Torch Pkwy and Kline Cir	**TWSC - NB/SB Stops**													**NB/SB Approach Delay**	
A. Weekday Morning Peak Hour															
Existing Traffic (See Exhibit 3)	• Current	-	-	-	A	-	-	-	A	<	>	A	-	8.6	A
	• 95th Queue Length (ft)	-	-	-	0	-	-	-	0	-	-	3	-	-	-
No-Build Traffic (See Exhibit 8)	• Current	-	-	-	A	-	-	-	A	<	>	A	-	8.6	A
	• 95th Queue Length (ft)	-	-	-	0	-	-	-	0	-	-	3	-	-	-
Total Traffic (See Exhibit 9)	• Current	A	-	-	A	-	-	>	A	<	>	B	A	10.6	A
	• 95th Queue Length (ft)	0	-	-	0	-	-	-	0	-	-	3	0	-	-
B. Weekday Evening Peak Hour															
Existing Traffic (See Exhibit 3)	• Current	-	-	-	A	-	-	-	A	<	>	A	-	8.5	A
	• 95th Queue Length (ft)	-	-	-	0	-	-	-	0	-	-	0	-	-	-
No-Build Traffic (See Exhibit 8)	• Current	-	-	-	A	-	-	-	A	<	>	A	-	8.5	A
	• 95th Queue Length (ft)	-	-	-	0	-	-	-	0	-	-	0	-	-	-
Total Traffic (See Exhibit 9)	• Current	A	-	-	A	-	-	>	A	<	>	B	A	10.3	B
	• 95th Queue Length (ft)	0	-	-	0	-	-	-	3	-	-	0	0	-	-
5. Winfield Rd and Ferry Rd	**Traffic Signal**													**Intersection Delay**	
A. Weekday Morning Peak Hour															
Existing Traffic (See Exhibit 3)	• Current	E	C	C	E	D	C	E	C	C	E	C	C	35.8	D
	• 95th Queue Length (ft)	272	327	78	54	175	47	257	252	249	84	309	224	-	-
No-Build Traffic (See Exhibit 8)	• Current	E	C	C	E	D	C	F	C	C	E	C	C	50.3	D
	• 95th Queue Length (ft)	311	439	99	70	223	62	496	322	296	141	358	276	-	-
Total Traffic (See Exhibit 9)	• Current	E	C	C	E	D	C	F	C	C	E	C	C	57.9	E
	• 95th Queue Length (ft)	283	463	152	70	239	62	617	328	297	144	363	269	-	-
B. Weekday Evening Peak Hour															
Existing Traffic (See Exhibit 3)	• Current	E	C	C	E	C	C	E	C	C	E	D	C	39.7	D
	• 95th Queue Length (ft)	241	189	217	202	387	96	133	361	74	81	484	307	-	-
No-Build Traffic (See Exhibit 8)	• Current	E	C	C	E	D	C	F	D	C	E	D	C	45.3	D
	• 95th Queue Length (ft)	302	243	306	277	544	186	175	441	81	102	616	364	-	-
Total Traffic (See Exhibit 9)	• Current	E	C	C	E	D	C	F	D	C	E	D	C	46.5	D
	• 95th Queue Length (ft)	274	260	354	277	559	188	235	454	82	105	639	343	-	-
6. Ferry Rd and EN South RIRO Access Dr	**TWSC - SB Stops**													**SB Approach Delay**	
A. Weekday Morning Peak Hour															
Existing Traffic (See Exhibit 3)	• Current	-	-	-	-	-	-	-	-	-	-	-	B	11.8	B
	• 95th Queue Length (ft)	-	-	-	-	-	-	-	-	-	-	-	0	-	-
No-Build Traffic (See Exhibit 8)	• Current	-	-	-	-	-	-	-	-	-	-	-	B	13.4	B
	• 95th Queue Length (ft)	-	-	-	-	-	-	-	-	-	-	-	0	-	-
Total Traffic (See Exhibit 9)	• Current	-	-	-	-	-	-	-	-	-	-	-	B	13.9	B
	• 95th Queue Length (ft)	-	-	-	-	-	-	-	-	-	-	-	3	-	-
B. Weekday Evening Peak Hour															
Existing Traffic (See Exhibit 3)	• Current	-	-	-	-	-	-	-	-	-	-	-	C	15.5	C
	• 95th Queue Length (ft)	-	-	-	-	-	-	-	-	-	-	-	15	-	-
No-Build Traffic (See Exhibit 8)	• Current	-	-	-	-	-	-	-	-	-	-	-	C	19.2	C
	• 95th Queue Length (ft)	-	-	-	-	-	-	-	-	-	-	-	20	-	-
Total Traffic (See Exhibit 9)	• Current	-	-	-	-	-	-	-	-	-	-	-	C	20.0	C
	• 95th Queue Length (ft)	-	-	-	-	-	-	-	-	-	-	-	20	-	-
7. Ferry Road and Office East	**TWSC - NB/SB Stops**													**NB/SB Approach Delay**	
A. Weekday Morning Peak Hour															
Existing Traffic (See Exhibit 3)	• Current	-	-	-	B	-	-	D	-	B	-	-	-	13.5	B
	• 95th Queue Length (ft)	-	-	-	25	-	-	0	-	0	-	-	-	-	-
No-Build Traffic (See Exhibit 8)	• Current	-	-	-	C	-	-	E	-	C	-	-	-	15.8	C
	• 95th Queue Length (ft)	-	-	-	38	-	-	0	-	0	-	-	-	-	-
Total Traffic (See Exhibit 9)	• Planned Improvements	B	-	-	C	-	-	F	D	<	F	D	<	71.3	F
	• 95th Queue Length (ft)	3	-	-	38	-	-	0	3	-	63	13	-	-	-
B. Weekday Evening Peak Hour															
Existing Traffic (See Exhibit 3)	• Current	-	-	-	A	-	-	C	-	B	-	-	-	16.9	C
	• 95th Queue Length (ft)	-	-	-	3	-	-	18	-	10	-	-	-	-	-
No-Build Traffic (See Exhibit 8)	• Current	-	-	-	B	-	-	D	-	B	-	-	-	22.2	C
	• 95th Queue Length (ft)	-	-	-	3	-	-	28	-	13	-	-	-	-	-
Total Traffic (See Exhibit 9)	• Planned Improvements	C	-	-	B	-	-	F	B	<	F	C	<	67.1	F
	• 95th Queue Length (ft)	5	-	-	3	-	-	45	13	-	55	8	-	-	-

Part B. Results (cont.)

	Roadway Conditions	LOS Per Movement By Approach (> = Shared Lane; - = Non Critical or not Allowed Movement)												Intersection / Approach	
		Eastbound			Westbound			Northbound			Southbound			Delay	
		LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT	(sec / veh)	LOS
8. Ferry Rd and Torch Pkwy/Office West	**Traffic Signal**													**Intersection Delay**	
A. Weekday Morning Peak Hour															
Existing Traffic (See Exhibit 3)	• Current	-	A	A	A	A	-	A	A	<	-	-	-	0.2	A
	• 95th Queue Length (ft)	-	7	0	0	3	-	0	0	-	-	-	-	-	-
No-Build Traffic (See Exhibit 8)	• Current	-	A	A	A	A	-	D	D	<	-	-	-	1.1	A
	• 95th Queue Length (ft)	-	14	6	11	4	-	8	24	-	-	-	-	-	-
Total Traffic (See Exhibit 9)	• Planned Improvements	A	A	A	A	A	A	D	D	<	D	D	<	8.3	A
	• 95th Queue Length (ft)	32	170	14	36	74	18	8	24	-	63	106	-	-	-
B. Weekday Evening Peak Hour															
Existing Traffic (See Exhibit 3)	• Current	-	A	A	A	A	-	A	A	<	-	-	-	0.2	A
	• 95th Queue Length (ft)	-	3	0	0	7	-	0	0	-	-	-	-	-	-
No-Build Traffic (See Exhibit 8)	• Current	-	A	A	A	A	-	E	F	<	-	-	-	4.8	A
	• 95th Queue Length (ft)	-	6	2	4	12	-	65	217	-	-	-	-	-	-
Total Traffic (See Exhibit 9)	• Planned Improvements	A	A	A	A	A	A	E	E	<	E	E	<	8.5	A
	• 95th Queue Length (ft)	29	30	3	8	68	12	62	214	-	76	150	-	-	-

9. Torch Pkwy at Site Access (Internal)	**TWSC - NB Stops**													**NB Approach Delay**	
A. Weekday Morning Peak Hour															
Total Traffic (See Exhibit 9)	• Planned Improvements	-	-	-	>	A	-	>	A	<	-	-	-	8.9	A
	• 95th Queue Length (ft)	-	-	-	-	3	-	-	5	-	-	-	-	-	-
B. Weekday Evening Peak Hour															
Total Traffic (See Exhibit 9)	• Planned Improvements	-	-	-	>	A	-	>	A	<	-	-	-	8.8	A
	• 95th Queue Length (ft)	-	-	-	-	3	-	-	5	-	-	-	-	-	-

10. Multi-Use E/W & N/S Dr (Internal)	**TWSC - EB/WB Stops**													**EB/WB Approach Delay**	
A. Weekday Morning Peak Hour															
Total Traffic (See Exhibit 9)	• Planned Improvements	>	A	<	>	A	<	>	A	<	>	A	<	9.0	A
	• 95th Queue Length (ft)	-	5	-	-	0	-	-	0	-	-	0	-	-	-
B. Weekday Evening Peak Hour															
Total Traffic (See Exhibit 9)	• Planned Improvements	>	A	<	>	A	<	>	A	<	>	A	<	9.1	A
	• 95th Queue Length (ft)	-	3	-	-	0	-	-	3	-	-	0	-	-	-

11. Commericial E/W & N/S Dr (Internal)	**TWSC - EB/WB Stops**													**EB/WB Approach Delay**	
A. Weekday Morning Peak Hour															
Total Traffic (See Exhibit 9)	• Planned Improvements	>	A	<	>	A	<	>	A	<	>	A	<	9.9	A
	• 95th Queue Length (ft)	-	3	-	-	3	-	-	3	-	-	0	-	-	-
B. Weekday Evening Peak Hour															
Total Traffic (See Exhibit 9)	• Planned Improvements	>	B	<	>	A	<	>	A	<	>	A	<	10.1	A
	• 95th Queue Length (ft)	-	8	-	-	5	-	-	3	-	-	0	-	-	-

12. Torch & Commericial Dr (Internal)	**AWSC**													**Intersection Delay**	
A. Weekday Morning Peak Hour															
Total Traffic (See Exhibit 9)	• Planned Improvements	A	-	-	-	-	-	-	-	-	>	B	<	11.9	B
	• 95th Queue Length (ft)	3	-	-	-	-	-	-	-	-	-	8	-	-	-
B. Weekday Evening Peak Hour															
Total Traffic (See Exhibit 9)	• Planned Improvements	A	-	-	-	-	-	-	-	-	>	B	<	11.3	B
	• 95th Queue Length (ft)	3	-	-	-	-	-	-	-	-	-	5	-	-	-

13. Ferry Rd and River Rd	**Traffic Signal**													**Intersection Delay**	
A. Weekday Morning Peak Hour															
Existing Traffic (See Exhibit 3)	• Current	A	A	<	A	A	<	D	D	<	D	D	<	5.1	A
	• 95th Queue Length (ft)	21	86	-	6	42	-	0	1	-	30	79	-	-	-
No-Build Traffic (See Exhibit 8)	• Current	A	A	<	A	A	<	D	D	<	D	D	<	6.5	A
	• 95th Queue Length (ft)	25	136	-	7	62	-	0	1	-	52	84	-	-	-
Total Traffic (See Exhibit 9)	• Current	A	A	<	A	A	<	D	D	<	D	D	<	7.2	A
	• 95th Queue Length (ft)	26	157	-	7	76	-	0	1	-	64	83	-	-	-
B. Weekday Evening Peak Hour															
Existing Traffic (See Exhibit 3)	• Current	A	A	<	A	A	<	E	E	<	E	F	<	6.0	A
	• 95th Queue Length (ft)	32	9	-	1	34	-	54	43	-	27	158	-	-	-
No-Build Traffic (See Exhibit 8)	• Current	A	A	<	A	A	<	E	E	<	E	F	<	6.0	A
	• 95th Queue Length (ft)	36	12	-	1	65	-	53	43	-	34	170	-	-	-
Total Traffic (See Exhibit 9)	• Current	A	A	<	A	A	<	E	E	<	E	F	<	6.2	A
	• 95th Queue Length (ft)	36	13	-	1	74	-	54	43	-	53	170	-	-	-

Appendix A
Photo Inventory



Looking east along Torch Pkwy at Winfield Rd



Looking south along Winfield Rd at Torch Pkwy



Looking west along Torch Pkwy at Winfield Rd



Looking north along Winfield Rd at Torch Pkwy



Looking south along Winfield Rd at Ferry Rd



Looking west along Ferry Rd at Winfield Rd



Looking north along Winfield Rd at Ferry Rd



Looking east along Ferry Rd at Winfield Rd



Looking southwest along Ferry Rd at Office Access



Looking northwest along Office Access at Ferry Rd



Looking northeast along Ferry Rd at Office Access



Looking southwest along Ferry Rd at BP Service Center Access



Looking northwest along BP Service Center Access at Ferry Rd



Looking northeast along Ferry Rd at BP Service Center Access



Looking southeast along BP Service Center Access at Ferry Rd



Looking west along Ferry Rd at River Rd



Looking south along River Rd at Ferry Rd



Looking east along Ferry Rd at River Rd



Looking north along AT&T Access at Ferry Rd

Appendix B

Traffic Count Summary Sheets

DuPage County Division of Transportation

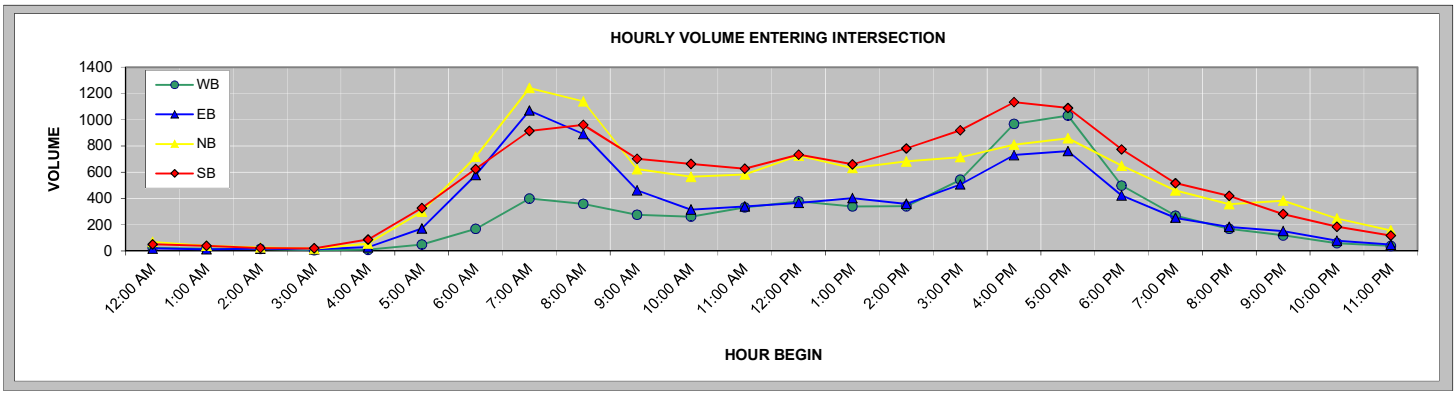
Compiled Intersection Count from Machine Source

Intersection counted: *WINFIELD* N/S @ *FERRY* E/W

Station: *7016*

		WINFIELD SOUTHBOUND				*FERRY* WESTBOUND				*WINFIELD* NORTHBOUND				*FERRY* EASTBOUND				VOLUME ENTERING
Date	Hr Begin	LEFT	THRU	RIGHT	TOTAL	LEFT	THRU	RIGHT	TOTAL	LEFT	THRU	RIGHT	TOTAL	LEFT	THRU	RIGHT	TOTAL	
06/28/16	12:00 AM	1	43	6	50	2	21	2	25	7	58	3	68	4	13	1	18	161
06/28/16	1:00 AM	2	28	9	39	2	13	2	17	2	33	4	39	3	7	3	13	108
06/28/16	2:00 AM	0	17	5	22	1	14	0	15	1	25	1	27	6	7	4	17	81
06/28/16	3:00 AM	0	16	4	20	0	4	1	5	2	12	2	16	5	6	1	12	53
06/28/16	4:00 AM	1	67	18	86	2	6	1	9	7	44	5	56	10	10	8	28	179
06/28/16	5:00 AM	5	265	57	327	12	34	3	49	54	220	23	297	49	98	23	170	843
06/28/16	6:00 AM	27	455	142	624	30	116	21	167	146	456	114	716	195	338	45	578	2085
06/28/16	7:00 AM	85	578	251	914	64	294	40	398	303	678	259	1240	340	650	79	1069	3621
06/28/16	8:00 AM	85	623	252	960	56	246	56	358	266	662	211	1139	241	567	83	891	3348
06/28/16	9:00 AM	43	498	160	701	60	182	33	275	113	438	72	623	134	277	50	461	2060
06/28/16	10:00 AM	37	504	122	663	71	149	41	261	81	425	58	564	104	165	46	315	1803
06/28/16	11:00 AM	21	491	114	626	109	187	35	331	92	412	79	583	119	162	57	338	1878
06/28/16	12:00 PM	41	545	147	733	112	217	48	377	108	504	113	725	96	189	81	366	2201
06/28/16	1:00 PM	24	485	150	659	85	209	44	338	84	463	84	631	140	198	64	402	2030
06/28/16	2:00 PM	32	591	157	780	80	230	30	340	86	532	63	681	116	184	58	358	2159
06/28/16	3:00 PM	34	690	195	919	147	356	39	542	82	579	52	713	163	210	133	506	2680
06/28/16	4:00 PM	61	834	238	1133	261	634	72	967	103	633	73	809	225	336	168	729	3638
06/28/16	5:00 PM	70	743	276	1089	217	739	74	1030	136	650	72	858	234	350	176	760	3737
06/28/16	6:00 PM	33	576	164	773	92	364	42	498	105	503	41	649	137	189	96	422	2342
06/28/16	7:00 PM	13	387	116	516	56	191	21	268	51	365	44	460	80	123	49	252	1496
06/28/16	8:00 PM	9	318	92	419	25	132	10	167	37	287	32	356	65	89	28	182	1124
06/28/16	9:00 PM	9	210	62	281	21	86	11	118	37	315	31	383	55	71	25	151	933
06/28/16	10:00 PM	5	125	53	183	9	48	2	59	20	201	27	248	27	35	15	77	567
06/28/16	11:00 PM	4	73	40	117	6	29	3	38	11	119	25	155	15	30	2	47	357
24HR TOTALS		642	9162	2830		1520	4501	631		1934	8614	1488		2563	4304	1295		39484
			12634				6652				12036				8162			

ADT STATISTICS	WINFIELD	FERRY	WINFIELD	FERRY
	NORTH LEG	EAST LEG	SOUTH LEG	WEST LEG
	24442	13086	24013	17427
	INTERSECTION ADT	39484		

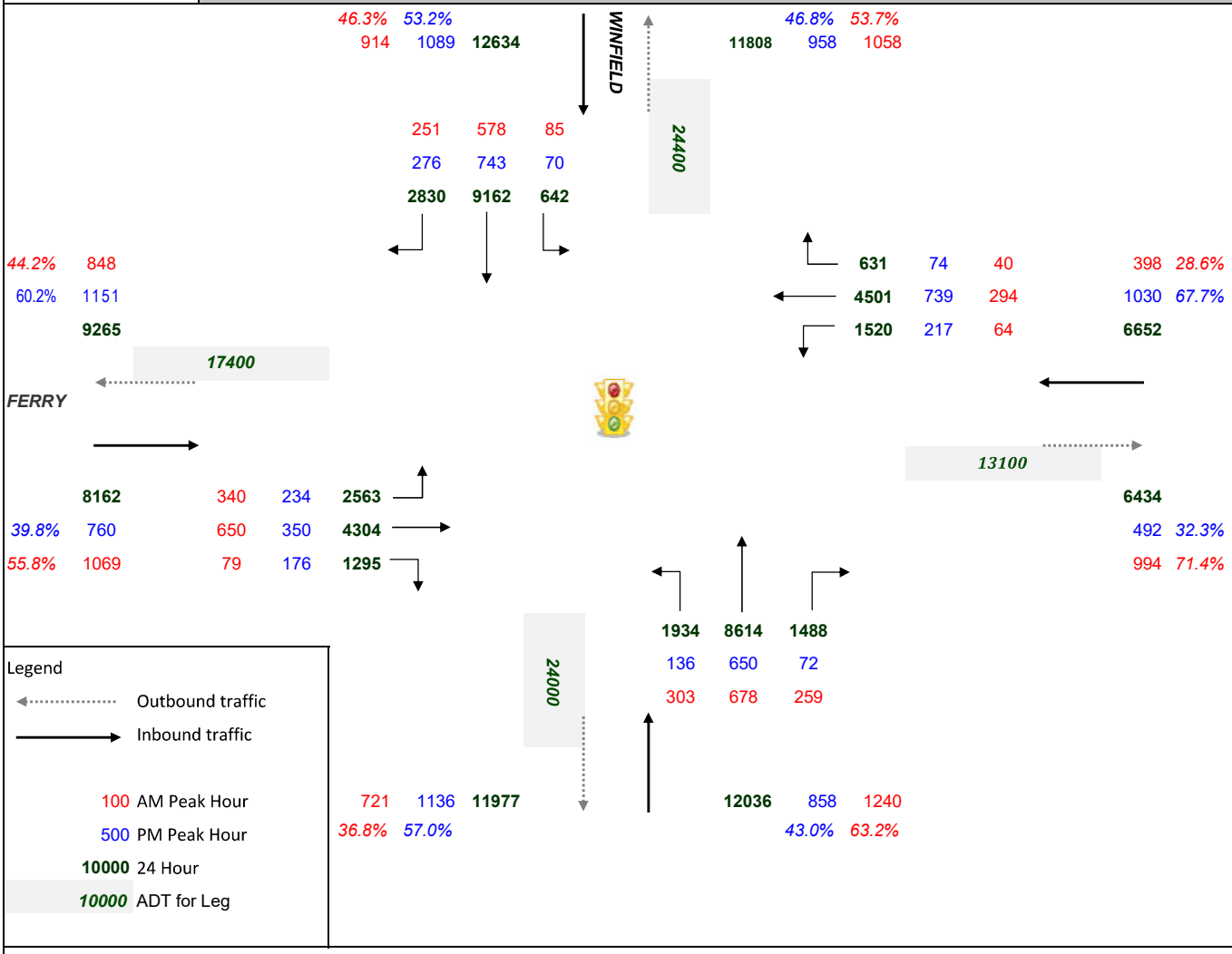


DuPage County Division of Transportation

Compiled Intersection Count from Machine Source

Intersection counted: *WINFIELD* @ *FERRY*

Station: *7016*



	WINFIELD				FERRY				WINFIELD				FERRY				
	SOUTHBOUND				WESTBOUND				NORTHBOUND				EASTBOUND				
	LEFT	THRU	RIGHT	TOTAL	LEFT	THRU	RIGHT	TOTAL	LEFT	THRU	RIGHT	TOTAL	LEFT	THRU	RIGHT	TOTAL	
07:00 AM - 08:00 AM	85	578	251	914	64	294	40	398	303	678	259	1240	340	650	79	1069	3621
% OF TOTAL ENTERING	9.3%	63.2%	27.5%	25.2%	16.1%	73.9%	10.1%	11.0%	24.4%	54.7%	20.9%	34.2%	31.8%	60.8%	7.4%	29.5%	
12:00 PM - 01:00 PM	41	545	147	733	112	217	48	377	108	504	113	725	96	189	81	366	2201
% OF TOTAL ENTERING	5.6%	74.4%	20.1%	33.3%	29.7%	57.6%	12.7%	17.1%	14.9%	69.5%	15.6%	32.9%	26.2%	51.6%	22.1%	16.6%	
05:00 PM - 06:00 PM	70	743	276	1089	217	739	74	1030	136	650	72	858	234	350	176	760	3737
% OF TOTAL ENTERING	6.4%	68.2%	25.3%	29.1%	21.1%	71.7%	7.2%	27.6%	15.9%	75.8%	8.4%	23.0%	30.8%	46.1%	23.2%	20.3%	

Gewalt Hamilton Associates Inc.
625 Forest Edge Drive

Vernon Hills, Illinois, United States 60061
(847) 478-9700 poster@gha-engineers.com

Count Name: 2. Ferry Rd & Office Access
Site Code:
Start Date: 05/31/2017

Turning Movement Data

Start Time	W Ferry Rd Southbound					Office Access Westbound					W Ferry Rd Northbound					Int. Total
	Thru	Left	U-Turn	Peds	App. Total	Right	Left	U-Turn	Peds	App. Total	Right	Thru	U-Turn	Peds	App. Total	
6:00 AM	40	9	0	0	49	1	0	0	1	1	5	82	0	0	87	137
6:15 AM	75	14	0	0	89	1	0	0	0	1	10	110	0	0	120	210
6:30 AM	101	21	0	0	122	1	0	0	0	1	10	153	0	0	163	286
6:45 AM	134	30	0	0	164	2	0	0	0	2	10	184	0	0	194	360
Hourly Total	350	74	0	0	424	5	0	0	1	5	35	529	0	0	564	993
7:00 AM	117	38	0	0	155	0	1	0	0	1	13	218	0	0	231	387
7:15 AM	143	31	1	0	175	0	0	0	0	0	11	283	0	0	294	469
7:30 AM	173	27	0	0	200	0	0	0	0	0	17	317	0	0	334	534
7:45 AM	172	30	1	0	203	2	0	0	0	2	14	291	0	0	305	510
Hourly Total	605	126	2	0	733	2	1	0	0	3	55	1109	0	0	1164	1900
8:00 AM	133	32	0	0	165	1	0	0	0	1	19	306	0	0	325	491
8:15 AM	137	29	0	0	166	2	0	0	0	2	21	258	0	0	279	447
8:30 AM	146	25	1	0	172	1	0	0	0	1	13	243	0	0	256	429
8:45 AM	129	19	0	0	148	2	1	0	0	3	8	190	11	0	209	360
Hourly Total	545	105	1	0	651	6	1	0	0	7	61	997	11	0	1069	1727
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4:00 PM	230	4	0	0	234	17	9	0	0	26	2	132	0	0	134	394
4:15 PM	242	5	0	0	247	21	9	0	0	30	1	129	0	0	130	407
4:30 PM	294	7	1	0	302	19	11	0	0	30	3	186	0	0	189	521
4:45 PM	309	7	3	0	319	13	10	0	0	23	1	173	0	0	174	516
Hourly Total	1075	23	4	0	1102	70	39	0	0	109	7	620	0	0	627	1838
5:00 PM	306	2	3	0	311	14	8	0	0	22	1	233	0	0	234	567
5:15 PM	290	9	1	0	300	17	16	0	0	33	0	186	0	0	186	519
5:30 PM	286	4	1	0	291	11	9	0	0	20	0	175	0	0	175	486
5:45 PM	232	6	3	0	241	6	1	0	0	7	0	107	1	0	108	356
Hourly Total	1114	21	8	0	1143	48	34	0	0	82	1	701	1	0	703	1928
6:00 PM	218	1	0	0	219	6	4	0	0	10	1	131	0	0	132	361
6:15 PM	171	4	1	0	176	2	2	0	2	4	1	120	0	0	121	301
6:30 PM	150	0	0	0	150	1	4	0	0	5	1	100	0	0	101	256
6:45 PM	131	2	0	0	133	4	4	0	0	8	1	59	0	0	60	201
Hourly Total	670	7	1	0	678	13	14	0	2	27	4	410	0	0	414	1119
Grand Total	4359	356	16	0	4731	144	89	0	3	233	163	4366	12	0	4541	9505
Approach %	92.1	7.5	0.3	-	-	61.8	38.2	0.0	-	-	3.6	96.1	0.3	-	-	-
Total %	45.9	3.7	0.2	-	49.8	1.5	0.9	0.0	-	2.5	1.7	45.9	0.1	-	47.8	-
Lights	4278	354	16	-	4648	141	89	0	-	230	162	4308	12	-	4482	9360
% Lights	98.1	99.4	100.0	-	98.2	97.9	100.0	-	-	98.7	99.4	98.7	100.0	-	98.7	98.5
Mediums	75	2	0	-	77	3	0	0	-	3	1	46	0	-	47	127
% Mediums	1.7	0.6	0.0	-	1.6	2.1	0.0	-	-	1.3	0.6	1.1	0.0	-	1.0	1.3
Articulated Trucks	6	0	0	-	6	0	0	0	-	0	0	12	0	-	12	18
% Articulated Trucks	0.1	0.0	0.0	-	0.1	0.0	0.0	-	-	0.0	0.0	0.3	0.0	-	0.3	0.2
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	2	-	-	-	-	0	-	-

% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	66.7	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	0	-	-	-	-	1	-	-	-	-	0	-	-	-
% Pedestrians	-	-	-	-	-	-	-	-	33.3	-	-	-	-	-	-	-	-

Gewalt Hamilton Associates Inc.
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Count Name: 2. Ferry Rd & Office Access
Site Code:
Start Date: 05/31/2017

Turning Movement Peak Hour Data (7:15 AM)

Start Time	W Ferry Rd Southbound					Office Access Westbound					W Ferry Rd Northbound					Int. Total
	Thru	Left	U-Turn	Peds	App. Total	Right	Left	U-Turn	Peds	App. Total	Right	Thru	U-Turn	Peds	App. Total	
7:15 AM	143	31	1	0	175	0	0	0	0	0	11	283	0	0	294	469
7:30 AM	173	27	0	0	200	0	0	0	0	0	17	317	0	0	334	534
7:45 AM	172	30	1	0	203	2	0	0	0	2	14	291	0	0	305	510
8:00 AM	133	32	0	0	165	1	0	0	0	1	19	306	0	0	325	491
Total	621	120	2	0	743	3	0	0	0	3	61	1197	0	0	1258	2004
Approach %	83.6	16.2	0.3	-	-	100.0	0.0	0.0	-	-	4.8	95.2	0.0	-	-	-
Total %	31.0	6.0	0.1	-	37.1	0.1	0.0	0.0	-	0.1	3.0	59.7	0.0	-	62.8	-
PHF	0.897	0.938	0.500	-	0.915	0.375	0.000	0.000	-	0.375	0.803	0.944	0.000	-	0.942	0.938
Lights	608	119	2	-	729	3	0	0	-	3	61	1188	0	-	1249	1981
% Lights	97.9	99.2	100.0	-	98.1	100.0	-	-	-	100.0	100.0	99.2	-	-	99.3	98.9
Mediums	12	1	0	-	13	0	0	0	-	0	0	6	0	-	6	19
% Mediums	1.9	0.8	0.0	-	1.7	0.0	-	-	-	0.0	0.0	0.5	-	-	0.5	0.9
Articulated Trucks	1	0	0	-	1	0	0	0	-	0	0	3	0	-	3	4
% Articulated Trucks	0.2	0.0	0.0	-	0.1	0.0	-	-	-	0.0	0.0	0.3	-	-	0.2	0.2
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Gewalt Hamilton Associates Inc.
625 Forest Edge Drive

Vernon Hills, Illinois, United States 60061
(847) 478-9700 poster@gha-engineers.com

Count Name: 2. Ferry Rd & Office Access
Site Code:
Start Date: 05/31/2017

Turning Movement Peak Hour Data (4:30 PM)

Start Time	W Ferry Rd Southbound					Office Access Westbound					W Ferry Rd Northbound					Int. Total
	Thru	Left	U-Turn	Peds	App. Total	Right	Left	U-Turn	Peds	App. Total	Right	Thru	U-Turn	Peds	App. Total	
4:30 PM	294	7	1	0	302	19	11	0	0	30	3	186	0	0	189	521
4:45 PM	309	7	3	0	319	13	10	0	0	23	1	173	0	0	174	516
5:00 PM	306	2	3	0	311	14	8	0	0	22	1	233	0	0	234	567
5:15 PM	290	9	1	0	300	17	16	0	0	33	0	186	0	0	186	519
Total	1199	25	8	0	1232	63	45	0	0	108	5	778	0	0	783	2123
Approach %	97.3	2.0	0.6	-	-	58.3	41.7	0.0	-	-	0.6	99.4	0.0	-	-	-
Total %	56.5	1.2	0.4	-	58.0	3.0	2.1	0.0	-	5.1	0.2	36.6	0.0	-	36.9	-
PHF	0.970	0.694	0.667	-	0.966	0.829	0.703	0.000	-	0.818	0.417	0.835	0.000	-	0.837	0.936
Lights	1187	25	8	-	1220	63	45	0	-	108	5	774	0	-	779	2107
% Lights	99.0	100.0	100.0	-	99.0	100.0	100.0	-	-	100.0	100.0	99.5	-	-	99.5	99.2
Mediums	12	0	0	-	12	0	0	0	-	0	0	2	0	-	2	14
% Mediums	1.0	0.0	0.0	-	1.0	0.0	0.0	-	-	0.0	0.0	0.3	-	-	0.3	0.7
Articulated Trucks	0	0	0	-	0	0	0	0	-	0	0	2	0	-	2	2
% Articulated Trucks	0.0	0.0	0.0	-	0.0	0.0	0.0	-	-	0.0	0.0	0.3	-	-	0.3	0.1
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Gewalt Hamilton Associates Inc.
625 Forest Edge Drive

Vernon Hills, Illinois, United States 60061
(847) 478-9700 poster@gha-engineers.com

Count Name: 3. River Rd & Ferry Rd
Site Code:
Start Date: 05/31/2017

Turning Movement Data

Start Time	River Road Southbound						W Ferry Rd Westbound						River Road Northbound						W Ferry Rd Eastbound						Int. Total
	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	
6:00 AM	7	0	1	0	0	8	0	44	1	0	0	45	0	0	0	0	0	0	0	87	9	0	0	96	149
6:15 AM	6	0	2	0	0	8	1	72	4	0	0	77	0	0	0	0	0	0	1	114	7	0	0	122	207
6:30 AM	9	0	1	0	0	10	1	99	2	0	1	102	1	0	0	0	2	1	0	168	17	0	0	185	298
6:45 AM	9	0	2	0	0	11	3	126	0	0	0	129	0	0	0	0	1	0	3	193	16	0	0	212	352
Hourly Total	31	0	6	0	0	37	5	341	7	0	1	353	1	0	0	0	3	1	4	562	49	0	0	615	1006
7:00 AM	10	0	9	0	0	19	2	103	3	0	0	108	2	0	0	0	1	2	3	227	14	0	0	244	373
7:15 AM	20	0	6	0	0	26	3	139	5	0	1	147	0	0	0	0	0	0	3	280	21	0	0	304	477
7:30 AM	15	1	10	0	0	26	1	147	9	0	0	157	0	0	0	0	1	0	3	329	25	0	0	357	540
7:45 AM	25	0	6	0	0	31	5	172	4	0	0	181	1	0	0	0	0	1	6	302	18	0	0	326	539
Hourly Total	70	1	31	0	0	102	11	561	21	0	1	593	3	0	0	0	2	3	15	1138	78	0	0	1231	1929
8:00 AM	12	1	6	0	0	19	4	126	5	0	0	135	0	0	0	0	0	0	7	308	22	0	0	337	491
8:15 AM	11	1	4	0	0	16	3	133	2	0	0	138	1	0	0	0	1	1	7	286	27	0	0	320	475
8:30 AM	11	0	4	0	0	15	10	124	6	0	0	140	0	0	1	3	1	4	9	242	23	0	0	274	433
8:45 AM	14	0	5	0	0	19	12	124	3	0	0	139	0	0	1	0	0	1	7	193	23	0	0	223	382
Hourly Total	48	2	19	0	0	69	29	507	16	0	0	552	1	0	2	3	2	6	30	1029	95	0	0	1154	1781
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4:00 PM	18	0	7	0	0	25	4	236	0	0	0	240	5	0	2	0	0	7	1	124	24	0	0	149	421
4:15 PM	12	0	6	0	0	18	5	247	0	0	0	252	4	0	5	0	0	9	0	124	23	0	0	147	426
4:30 PM	14	0	5	0	2	19	8	295	1	0	0	304	5	0	2	0	0	7	1	182	26	0	0	209	539
4:45 PM	21	0	2	0	0	23	5	312	1	0	1	318	4	1	6	0	0	11	2	169	30	0	0	201	553
Hourly Total	65	0	20	0	2	85	22	1090	2	0	1	1114	18	1	15	0	0	34	4	599	103	0	0	706	1939
5:00 PM	28	0	3	0	0	31	7	292	2	0	0	301	6	0	10	0	1	16	0	219	20	0	0	239	587
5:15 PM	7	0	3	0	0	10	12	287	0	0	0	299	5	2	6	0	1	13	0	180	24	0	0	204	526
5:30 PM	21	0	8	0	0	29	9	300	1	0	0	310	5	0	9	0	0	14	0	161	26	0	0	187	540
5:45 PM	14	0	2	0	0	16	14	219	0	0	0	233	2	1	2	0	0	5	0	109	23	0	0	132	386
Hourly Total	70	0	16	0	0	86	42	1098	3	0	0	1143	18	3	27	0	2	48	0	669	93	0	0	762	2039
6:00 PM	18	0	2	0	0	20	4	222	0	0	0	226	5	0	3	0	0	8	0	130	16	0	0	146	400
6:15 PM	14	0	1	0	0	15	4	171	0	0	0	175	3	0	2	0	0	5	2	111	15	0	0	128	323
6:30 PM	7	0	1	0	0	8	7	144	0	0	0	151	1	0	1	0	0	2	2	92	10	0	0	104	265
6:45 PM	10	0	0	0	0	10	0	132	3	0	0	135	3	0	2	0	0	5	0	62	6	0	0	68	218
Hourly Total	49	0	4	0	0	53	15	669	3	0	0	687	12	0	8	0	0	20	4	395	47	0	0	446	1206
Grand Total	333	3	96	0	2	432	124	4266	52	0	3	4442	53	4	52	3	9	112	57	4392	465	0	0	4914	9900
Approach %	77.1	0.7	22.2	0.0	-	-	2.8	96.0	1.2	0.0	-	-	47.3	3.6	46.4	2.7	-	-	1.2	89.4	9.5	0.0	-	-	-
Total %	3.4	0.0	1.0	0.0	-	4.4	1.3	43.1	0.5	0.0	-	44.9	0.5	0.0	0.5	0.0	-	1.1	0.6	44.4	4.7	0.0	-	49.6	-
Lights	329	3	94	0	-	426	122	4190	52	0	-	4364	53	4	52	3	-	112	57	4319	458	0	-	4834	9736
% Lights	98.8	100.0	97.9	-	-	98.6	98.4	98.2	100.0	-	-	98.2	100.0	100.0	100.0	100.0	-	100.0	100.0	98.3	98.5	-	-	98.4	98.3
Mediums	3	0	2	0	-	5	2	51	0	0	-	53	0	0	0	0	-	0	0	62	7	0	-	69	127
% Mediums	0.9	0.0	2.1	-	-	1.2	1.6	1.2	0.0	-	-	1.2	0.0	0.0	0.0	0.0	-	0.0	0.0	1.4	1.5	-	-	1.4	1.3
Articulated Trucks	1	0	0	0	-	1	0	25	0	0	-	25	0	0	0	0	-	0	0	11	0	0	-	11	37

% Articulated Trucks	0.3	0.0	0.0	-	-	0.2	0.0	0.6	0.0	-	-	0.6	0.0	0.0	0.0	0.0	-	0.0	0.0	0.3	0.0	-	-	0.2	0.4
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	2	-	-	-	-	-	4	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	66.7	-	-	-	-	-	44.4	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	-	2	-	-	-	-	-	1	-	-	-	-	-	5	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	33.3	-	-	-	-	-	55.6	-	-	-	-	-	-	-	-

Gewalt Hamilton Associates Inc.
625 Forest Edge Drive

Vernon Hills, Illinois, United States 60061
(847) 478-9700 poster@gha-engineers.com

Count Name: 3. River Rd & Ferry Rd
Site Code:
Start Date: 05/31/2017

Turning Movement Peak Hour Data (7:15 AM)

Start Time	River Road Southbound						W Ferry Rd Westbound						River Road Northbound						W Ferry Rd Eastbound						Int. Total
	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	
7:15 AM	20	0	6	0	0	26	3	139	5	0	1	147	0	0	0	0	0	0	3	280	21	0	0	304	477
7:30 AM	15	1	10	0	0	26	1	147	9	0	0	157	0	0	0	0	1	0	3	329	25	0	0	357	540
7:45 AM	25	0	6	0	0	31	5	172	4	0	0	181	1	0	0	0	0	1	6	302	18	0	0	326	539
8:00 AM	12	1	6	0	0	19	4	126	5	0	0	135	0	0	0	0	0	0	7	308	22	0	0	337	491
Total	72	2	28	0	0	102	13	584	23	0	1	620	1	0	0	0	1	1	19	1219	86	0	0	1324	2047
Approach %	70.6	2.0	27.5	0.0	-	-	2.1	94.2	3.7	0.0	-	-	100.0	0.0	0.0	0.0	-	-	1.4	92.1	6.5	0.0	-	-	-
Total %	3.5	0.1	1.4	0.0	-	5.0	0.6	28.5	1.1	0.0	-	30.3	0.0	0.0	0.0	0.0	-	0.0	0.9	59.6	4.2	0.0	-	64.7	-
PHF	0.720	0.500	0.700	0.000	-	0.823	0.650	0.849	0.639	0.000	-	0.856	0.250	0.000	0.000	0.000	-	0.250	0.679	0.926	0.860	0.000	-	0.927	0.948
Lights	69	2	28	0	-	99	13	572	23	0	-	608	1	0	0	0	-	1	19	1205	84	0	-	1308	2016
% Lights	95.8	100.0	100.0	-	-	97.1	100.0	97.9	100.0	-	-	98.1	100.0	-	-	-	-	100.0	100.0	98.9	97.7	-	-	98.8	98.5
Mediums	3	0	0	0	-	3	0	9	0	0	-	9	0	0	0	0	-	0	0	12	2	0	-	14	26
% Mediums	4.2	0.0	0.0	-	-	2.9	0.0	1.5	0.0	-	-	1.5	0.0	-	-	-	-	0.0	0.0	1.0	2.3	-	-	1.1	1.3
Articulated Trucks	0	0	0	0	-	0	0	3	0	0	-	3	0	0	0	0	-	0	0	2	0	0	-	2	5
% Articulated Trucks	0.0	0.0	0.0	-	-	0.0	0.0	0.5	0.0	-	-	0.5	0.0	-	-	-	-	0.0	0.0	0.2	0.0	-	-	0.2	0.2
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	1	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	-	-	-

Gewalt Hamilton Associates Inc.
625 Forest Edge Drive

Vernon Hills, Illinois, United States 60061
(847) 478-9700 poster@gha-engineers.com

Count Name: 3. River Rd & Ferry Rd
Site Code:
Start Date: 05/31/2017

Turning Movement Peak Hour Data (4:45 PM)

Start Time	River Road Southbound						W Ferry Rd Westbound						River Road Northbound						W Ferry Rd Eastbound						Int. Total
	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	
4:45 PM	21	0	2	0	0	23	5	312	1	0	1	318	4	1	6	0	0	11	2	169	30	0	0	201	553
5:00 PM	28	0	3	0	0	31	7	292	2	0	0	301	6	0	10	0	1	16	0	219	20	0	0	239	587
5:15 PM	7	0	3	0	0	10	12	287	0	0	0	299	5	2	6	0	1	13	0	180	24	0	0	204	526
5:30 PM	21	0	8	0	0	29	9	300	1	0	0	310	5	0	9	0	0	14	0	161	26	0	0	187	540
Total	77	0	16	0	0	93	33	1191	4	0	1	1228	20	3	31	0	2	54	2	729	100	0	0	831	2206
Approach %	82.8	0.0	17.2	0.0	-	-	2.7	97.0	0.3	0.0	-	-	37.0	5.6	57.4	0.0	-	-	0.2	87.7	12.0	0.0	-	-	-
Total %	3.5	0.0	0.7	0.0	-	4.2	1.5	54.0	0.2	0.0	-	55.7	0.9	0.1	1.4	0.0	-	2.4	0.1	33.0	4.5	0.0	-	37.7	-
PHF	0.688	0.000	0.500	0.000	-	0.750	0.688	0.954	0.500	0.000	-	0.965	0.833	0.375	0.775	0.000	-	0.844	0.250	0.832	0.833	0.000	-	0.869	0.940
Lights	77	0	16	0	-	93	33	1175	4	0	-	1212	20	3	31	0	-	54	2	723	100	0	-	825	2184
% Lights	100.0	-	100.0	-	-	100.0	100.0	98.7	100.0	-	-	98.7	100.0	100.0	100.0	-	-	100.0	100.0	99.2	100.0	-	-	99.3	99.0
Mediums	0	0	0	0	-	0	0	5	0	0	-	5	0	0	0	0	-	0	0	5	0	0	-	5	10
% Mediums	0.0	-	0.0	-	-	0.0	0.0	0.4	0.0	-	-	0.4	0.0	0.0	0.0	-	-	0.0	0.0	0.7	0.0	-	-	0.6	0.5
Articulated Trucks	0	0	0	0	-	0	0	11	0	0	-	11	0	0	0	0	-	0	0	1	0	0	-	1	12
% Articulated Trucks	0.0	-	0.0	-	-	0.0	0.0	0.9	0.0	-	-	0.9	0.0	0.0	0.0	-	-	0.0	0.0	0.1	0.0	-	-	0.1	0.5
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	2	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-

Gewalt Hamilton Associates Inc.
625 Forest Edge Drive

Vernon Hills, Illinois, United States 60061
(847) 478-9700 poster@gha-engineers.com

Count Name: 1. Winfield Rd & Torch Pkwy
Site Code:
Start Date: 05/31/2017

Turning Movement Data

Start Time	Winfield Rd Southbound						Driveway Westbound						Winfield Rd Northbound						Torch Pkwy Eastbound						Int. Total
	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	
6:00 AM	8	103	1	0	1	112	0	0	0	0	0	0	6	93	15	0	0	114	1	0	0	0	2	1	227
6:15 AM	1	138	3	0	0	142	0	0	0	0	0	0	5	124	12	0	0	141	1	0	0	0	0	1	284
6:30 AM	6	179	3	0	0	188	0	0	0	0	0	0	8	168	14	0	0	190	1	0	0	0	0	1	379
6:45 AM	6	190	4	0	0	200	0	0	0	0	0	0	8	149	37	1	0	195	7	0	0	0	1	7	402
Hourly Total	21	610	11	0	1	642	0	0	0	0	0	0	27	534	78	1	0	640	10	0	0	0	3	10	1292
7:00 AM	13	197	4	0	0	214	0	0	0	0	0	0	14	158	25	0	0	197	1	0	2	0	0	3	414
7:15 AM	12	269	11	0	0	292	1	0	0	0	1	1	20	204	29	0	0	253	3	0	0	0	0	3	549
7:30 AM	12	266	13	0	0	291	0	0	0	0	1	0	8	227	36	0	0	271	7	0	1	0	0	8	570
7:45 AM	21	259	9	0	0	289	0	0	1	0	0	1	23	207	32	0	0	262	8	0	1	0	1	9	561
Hourly Total	58	991	37	0	0	1086	1	0	1	0	2	2	65	796	122	0	0	983	19	0	4	0	1	23	2094
8:00 AM	9	239	11	0	0	259	3	0	0	0	1	3	36	200	26	0	0	262	8	0	1	0	1	9	533
8:15 AM	13	243	9	0	0	265	1	0	1	0	0	2	32	202	27	1	0	262	7	0	1	0	1	8	537
8:30 AM	8	210	14	0	0	232	0	0	2	0	0	2	19	189	13	0	0	221	4	0	1	0	0	5	460
8:45 AM	4	210	12	0	0	226	0	0	1	0	0	1	21	187	17	0	0	225	3	0	0	0	0	3	455
Hourly Total	34	902	46	0	0	982	4	0	4	0	1	8	108	778	83	1	0	970	22	0	3	0	2	25	1985
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4:00 PM	0	245	1	0	0	246	12	0	16	0	0	28	1	207	3	2	0	213	21	0	5	0	0	26	513
4:15 PM	4	251	0	0	0	255	9	0	18	0	0	27	2	220	5	0	0	227	23	0	5	0	0	28	537
4:30 PM	3	207	1	0	0	211	17	0	35	0	0	52	0	257	3	0	0	260	55	0	15	0	0	70	593
4:45 PM	0	286	0	0	0	286	17	0	25	0	0	42	1	238	8	0	0	247	30	0	9	0	2	39	614
Hourly Total	7	989	2	0	0	998	55	0	94	0	0	149	4	922	19	2	0	947	129	0	34	0	2	163	2257
5:00 PM	3	245	0	0	0	248	19	0	14	0	0	33	0	287	6	0	0	293	56	0	25	0	0	81	655
5:15 PM	1	264	0	0	3	265	15	0	12	0	0	27	1	243	4	0	0	248	44	0	10	0	2	54	594
5:30 PM	0	254	1	0	3	255	7	0	5	0	0	12	3	292	5	0	0	300	32	0	8	0	1	40	607
5:45 PM	3	225	0	0	0	228	10	0	8	0	0	18	1	198	1	1	0	201	20	1	8	0	0	29	476
Hourly Total	7	988	1	0	6	996	51	0	39	0	0	90	5	1020	16	1	0	1042	152	1	51	0	3	204	2332
6:00 PM	5	192	0	0	0	197	4	0	10	0	1	14	1	204	2	1	0	208	18	0	5	0	0	23	442
6:15 PM	0	201	1	0	0	202	2	0	2	0	1	4	0	206	4	0	0	210	15	0	6	0	0	21	437
6:30 PM	0	180	1	0	0	181	3	0	5	0	0	8	0	158	2	0	0	160	8	0	1	0	0	9	358
6:45 PM	0	137	2	0	0	139	2	0	0	0	1	2	0	134	3	1	0	138	8	0	7	0	0	15	294
Hourly Total	5	710	4	0	0	719	11	0	17	0	3	28	1	702	11	2	0	716	49	0	19	0	0	68	1531
Grand Total	132	5190	101	0	7	5423	122	0	155	0	6	277	210	4752	329	7	0	5298	381	1	111	0	11	493	11491
Approach %	2.4	95.7	1.9	0.0	-	-	44.0	0.0	56.0	0.0	-	-	4.0	89.7	6.2	0.1	-	-	77.3	0.2	22.5	0.0	-	-	-
Total %	1.1	45.2	0.9	0.0	-	47.2	1.1	0.0	1.3	0.0	-	2.4	1.8	41.4	2.9	0.1	-	46.1	3.3	0.0	1.0	0.0	-	4.3	-
Lights	130	5097	101	0	-	5328	121	0	155	0	-	276	209	4669	328	7	-	5213	380	1	109	0	-	490	11307
% Lights	98.5	98.2	100.0	-	-	98.2	99.2	-	100.0	-	-	99.6	99.5	98.3	99.7	100.0	-	98.4	99.7	100.0	98.2	-	-	99.4	98.4
Mediums	2	64	0	0	-	66	1	0	0	0	-	1	1	54	1	0	-	56	1	0	2	0	-	3	126
% Mediums	1.5	1.2	0.0	-	-	1.2	0.8	-	0.0	-	-	0.4	0.5	1.1	0.3	0.0	-	1.1	0.3	0.0	1.8	-	-	0.6	1.1
Articulated Trucks	0	29	0	0	-	29	0	0	0	0	-	0	0	29	0	0	-	29	0	0	0	0	-	0	58

% Articulated Trucks	0.0	0.6	0.0	-	-	0.5	0.0	-	0.0	-	-	0.0	0.0	0.6	0.0	0.0	-	0.5	0.0	0.0	0.0	-	-	0.0	0.5
Bicycles on Crosswalk	-	-	-	-	3	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	5	-	-
% Bicycles on Crosswalk	-	-	-	-	42.9	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-	-	-	-	45.5	-	-
Pedestrians	-	-	-	-	4	-	-	-	-	-	6	-	-	-	-	-	0	-	-	-	-	-	6	-	-
% Pedestrians	-	-	-	-	57.1	-	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	54.5	-	-

Gewalt Hamilton Associates Inc.
625 Forest Edge Drive

Vernon Hills, Illinois, United States 60061
(847) 478-9700 poster@gha-engineers.com

Count Name: 1. Winfield Rd & Torch Pkwy
Site Code:
Start Date: 05/31/2017

Turning Movement Peak Hour Data (7:15 AM)

Start Time	Winfield Rd Southbound						Driveway Westbound						Winfield Rd Northbound						Torch Pkwy Eastbound						Int. Total
	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	
7:15 AM	12	269	11	0	0	292	1	0	0	0	1	1	20	204	29	0	0	253	3	0	0	0	0	3	549
7:30 AM	12	266	13	0	0	291	0	0	0	0	1	0	8	227	36	0	0	271	7	0	1	0	0	8	570
7:45 AM	21	259	9	0	0	289	0	0	1	0	0	1	23	207	32	0	0	262	8	0	1	0	1	9	561
8:00 AM	9	239	11	0	0	259	3	0	0	0	1	3	36	200	26	0	0	262	8	0	1	0	1	9	533
Total	54	1033	44	0	0	1131	4	0	1	0	3	5	87	838	123	0	0	1048	26	0	3	0	2	29	2213
Approach %	4.8	91.3	3.9	0.0	-	-	80.0	0.0	20.0	0.0	-	-	8.3	80.0	11.7	0.0	-	-	89.7	0.0	10.3	0.0	-	-	-
Total %	2.4	46.7	2.0	0.0	-	51.1	0.2	0.0	0.0	0.0	-	0.2	3.9	37.9	5.6	0.0	-	47.4	1.2	0.0	0.1	0.0	-	1.3	-
PHF	0.643	0.960	0.846	0.000	-	0.968	0.333	0.000	0.250	0.000	-	0.417	0.604	0.923	0.854	0.000	-	0.967	0.813	0.000	0.750	0.000	-	0.806	0.971
Lights	53	1011	44	0	-	1108	4	0	1	0	-	5	86	826	123	0	-	1035	26	0	3	0	-	29	2177
% Lights	98.1	97.9	100.0	-	-	98.0	100.0	-	100.0	-	-	100.0	98.9	98.6	100.0	-	-	98.8	100.0	-	100.0	-	-	100.0	98.4
Mediums	1	13	0	0	-	14	0	0	0	0	-	0	1	8	0	0	-	9	0	0	0	0	-	0	23
% Mediums	1.9	1.3	0.0	-	-	1.2	0.0	-	0.0	-	-	0.0	1.1	1.0	0.0	-	-	0.9	0.0	-	0.0	-	-	0.0	1.0
Articulated Trucks	0	9	0	0	-	9	0	0	0	0	-	0	0	4	0	0	-	4	0	0	0	0	-	0	13
% Articulated Trucks	0.0	0.9	0.0	-	-	0.8	0.0	-	0.0	-	-	0.0	0.0	0.5	0.0	-	-	0.4	0.0	-	0.0	-	-	0.0	0.6
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	2	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	3	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-

Gewalt Hamilton Associates Inc.
625 Forest Edge Drive

Vernon Hills, Illinois, United States 60061
(847) 478-9700 poster@gha-engineers.com

Count Name: 1. Winfield Rd & Torch Pkwy
Site Code:
Start Date: 05/31/2017

Turning Movement Peak Hour Data (4:45 PM)

Start Time	Winfield Rd Southbound						Driveway Westbound						Winfield Rd Northbound						Torch Pkwy Eastbound						Int. Total
	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	
4:45 PM	0	286	0	0	0	286	17	0	25	0	0	42	1	238	8	0	0	247	30	0	9	0	2	39	614
5:00 PM	3	245	0	0	0	248	19	0	14	0	0	33	0	287	6	0	0	293	56	0	25	0	0	81	655
5:15 PM	1	264	0	0	3	265	15	0	12	0	0	27	1	243	4	0	0	248	44	0	10	0	2	54	594
5:30 PM	0	254	1	0	3	255	7	0	5	0	0	12	3	292	5	0	0	300	32	0	8	0	1	40	607
Total	4	1049	1	0	6	1054	58	0	56	0	0	114	5	1060	23	0	0	1088	162	0	52	0	5	214	2470
Approach %	0.4	99.5	0.1	0.0	-	-	50.9	0.0	49.1	0.0	-	-	0.5	97.4	2.1	0.0	-	-	75.7	0.0	24.3	0.0	-	-	-
Total %	0.2	42.5	0.0	0.0	-	42.7	2.3	0.0	2.3	0.0	-	4.6	0.2	42.9	0.9	0.0	-	44.0	6.6	0.0	2.1	0.0	-	8.7	-
PHF	0.333	0.917	0.250	0.000	-	0.921	0.763	0.000	0.560	0.000	-	0.679	0.417	0.908	0.719	0.000	-	0.907	0.723	0.000	0.520	0.000	-	0.660	0.943
Lights	4	1040	1	0	-	1045	58	0	56	0	-	114	5	1049	23	0	-	1077	162	0	52	0	-	214	2450
% Lights	100.0	99.1	100.0	-	-	99.1	100.0	-	100.0	-	-	100.0	100.0	99.0	100.0	-	-	99.0	100.0	-	100.0	-	-	100.0	99.2
Mediums	0	5	0	0	-	5	0	0	0	0	-	0	0	7	0	0	-	7	0	0	0	0	-	0	12
% Mediums	0.0	0.5	0.0	-	-	0.5	0.0	-	0.0	-	-	0.0	0.0	0.7	0.0	-	-	0.6	0.0	-	0.0	-	-	0.0	0.5
Articulated Trucks	0	4	0	0	-	4	0	0	0	0	-	0	0	4	0	0	-	4	0	0	0	0	-	0	8
% Articulated Trucks	0.0	0.4	0.0	-	-	0.4	0.0	-	0.0	-	-	0.0	0.0	0.4	0.0	-	-	0.4	0.0	-	0.0	-	-	0.0	0.3
Bicycles on Crosswalk	-	-	-	-	3	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	3	-	-
% Bicycles on Crosswalk	-	-	-	-	50.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	60.0	-	-
Pedestrians	-	-	-	-	3	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	2	-	-
% Pedestrians	-	-	-	-	50.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	40.0	-	-

Gewalt Hamilton Associates Inc.
625 Forest Edge Drive

Vernon Hills, Illinois, United States 60061
(847) 478-9700 lmeans@gha-engineers.com

Count Name: Winfield Rd & McCormick Ln
Site Code:
Start Date: 11/02/2017

Turning Movement Data

Start Time	McCormick Ln Eastbound						McCormick Ln Westbound						Winfield Rd Northbound						Winfield Rd Southbound						Int. Total
	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	
6:00 AM	0	1	0	0	3	1	0	3	0	3	0	6	0	0	93	0	0	93	0	1	95	0	0	96	196
6:15 AM	0	3	0	0	1	3	0	2	0	0	0	2	0	0	130	1	0	131	0	0	140	1	0	141	277
6:30 AM	0	3	0	3	0	6	0	4	0	1	0	5	0	0	173	4	0	177	0	0	157	1	0	158	346
6:45 AM	0	6	0	4	0	10	0	8	0	2	0	10	0	1	148	2	0	151	0	0	186	2	0	188	359
Hourly Total	0	13	0	7	4	20	0	17	0	6	0	23	0	1	544	7	0	552	0	1	578	4	0	583	1178
7:00 AM	0	1	0	3	0	4	0	8	1	10	0	19	0	1	173	3	0	177	0	2	214	0	0	216	416
7:15 AM	0	2	0	4	0	6	0	11	0	2	0	13	0	0	180	2	0	182	0	2	230	0	0	232	433
7:30 AM	0	2	1	2	0	5	0	5	0	4	0	9	0	0	231	2	0	233	0	0	296	1	0	297	544
7:45 AM	0	5	0	2	0	7	0	8	0	3	1	11	0	0	193	4	0	197	0	0	293	1	0	294	509
Hourly Total	0	10	1	11	0	22	0	32	1	19	1	52	0	1	777	11	0	789	0	4	1033	2	0	1039	1902
8:00 AM	0	4	0	3	0	7	0	10	0	5	0	15	0	2	200	2	0	204	0	0	257	2	0	259	485
8:15 AM	0	3	0	1	0	4	0	7	0	2	1	9	0	0	200	4	0	204	0	0	207	1	0	208	425
8:30 AM	0	2	0	1	0	3	0	5	0	5	0	10	0	3	187	3	0	193	0	1	199	3	0	203	409
8:45 AM	0	4	1	2	0	7	0	11	0	4	0	15	0	0	172	2	0	174	0	3	214	1	0	218	414
Hourly Total	0	13	1	7	0	21	0	33	0	16	1	49	0	5	759	11	0	775	0	4	877	7	0	888	1733
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4:00 PM	0	3	0	0	0	3	0	2	0	2	0	4	0	7	261	7	0	275	0	3	261	7	0	271	553
4:15 PM	0	1	0	1	0	2	0	1	0	0	0	1	0	3	203	7	0	213	0	1	220	5	0	226	442
4:30 PM	0	3	0	1	0	4	0	3	0	0	0	3	0	1	252	9	0	262	0	5	262	7	0	274	543
4:45 PM	1	3	0	1	0	5	0	1	0	1	0	2	0	7	251	6	0	264	0	2	262	5	0	269	540
Hourly Total	1	10	0	3	0	14	0	7	0	3	0	10	0	18	967	29	0	1014	0	11	1005	24	0	1040	2078
5:00 PM	0	2	0	3	0	5	0	2	0	7	0	9	0	1	277	7	0	285	0	2	203	4	0	209	508
5:15 PM	0	5	0	0	0	5	0	4	0	4	0	8	0	3	265	8	0	276	0	3	221	4	0	228	517
5:30 PM	0	2	0	6	0	8	0	2	0	1	0	3	0	5	229	11	0	245	1	7	216	4	0	228	484
5:45 PM	0	0	0	3	2	3	0	1	0	0	1	1	0	1	192	5	0	198	1	4	209	5	0	219	421
Hourly Total	0	9	0	12	2	21	0	9	0	12	1	21	0	10	963	31	0	1004	2	16	849	17	0	884	1930
6:00 PM	0	0	0	1	0	1	0	2	0	1	0	3	0	2	207	5	0	214	0	6	181	4	0	191	409
6:15 PM	0	3	0	3	0	6	0	5	0	0	0	5	0	4	218	9	0	231	0	3	174	3	0	180	422
6:30 PM	0	3	0	2	0	5	0	3	0	0	0	3	0	7	180	6	0	193	0	4	141	7	0	152	353
6:45 PM	0	4	0	1	0	5	0	2	0	0	1	2	0	5	142	9	0	156	0	2	149	4	0	155	318
Hourly Total	0	10	0	7	0	17	0	12	0	1	1	13	0	18	747	29	0	794	0	15	645	18	0	678	1502
Grand Total	1	65	2	47	6	115	0	110	1	57	4	168	0	53	4757	118	0	4928	2	51	4987	72	0	5112	10323
Approach %	0.9	56.5	1.7	40.9	-	-	0.0	65.5	0.6	33.9	-	-	0.0	1.1	96.5	2.4	-	-	0.0	1.0	97.6	1.4	-	-	-
Total %	0.0	0.6	0.0	0.5	-	1.1	0.0	1.1	0.0	0.6	-	1.6	0.0	0.5	46.1	1.1	-	47.7	0.0	0.5	48.3	0.7	-	49.5	-
Lights	1	65	0	47	-	113	0	110	1	53	-	164	0	53	4683	115	-	4851	2	51	4884	66	-	5003	10131
% Lights	100.0	100.0	0.0	100.0	-	98.3	-	100.0	100.0	93.0	-	97.6	-	100.0	98.4	97.5	-	98.4	100.0	100.0	97.9	91.7	-	97.9	98.1
Mediums	0	0	2	0	-	2	0	0	0	4	-	4	0	0	46	3	-	49	0	0	63	6	-	69	124
% Mediums	0.0	0.0	100.0	0.0	-	1.7	-	0.0	0.0	7.0	-	2.4	-	0.0	1.0	2.5	-	1.0	0.0	0.0	1.3	8.3	-	1.3	1.2
Articulated Trucks	0	0	0	0	-	0	0	0	0	0	-	0	0	0	28	0	-	28	0	0	40	0	-	40	68

% Articulated Trucks	0.0	0.0	0.0	0.0	-	0.0	-	0.0	0.0	0.0	-	0.0	-	0.0	0.6	0.0	-	0.6	0.0	0.0	0.8	0.0	-	0.8	0.7
Bicycles on Crosswalk	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	16.7	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	-	5	-	-	-	-	-	4	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	83.3	-	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Gewalt Hamilton Associates Inc.
625 Forest Edge Drive

Vernon Hills, Illinois, United States 60061
(847) 478-9700 lmeans@gha-engineers.com

Count Name: Winfield Rd & McCormick Ln
Site Code:
Start Date: 11/02/2017

Turning Movement Peak Hour Data (7:15 AM)

Start Time	McCormick Ln Eastbound						McCormick Ln Westbound						Winfield Rd Northbound						Winfield Rd Southbound						Int. Total
	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	
7:15 AM	0	2	0	4	0	6	0	11	0	2	0	13	0	0	180	2	0	182	0	2	230	0	0	232	433
7:30 AM	0	2	1	2	0	5	0	5	0	4	0	9	0	0	231	2	0	233	0	0	296	1	0	297	544
7:45 AM	0	5	0	2	0	7	0	8	0	3	1	11	0	0	193	4	0	197	0	0	293	1	0	294	509
8:00 AM	0	4	0	3	0	7	0	10	0	5	0	15	0	2	200	2	0	204	0	0	257	2	0	259	485
Total	0	13	1	11	0	25	0	34	0	14	1	48	0	2	804	10	0	816	0	2	1076	4	0	1082	1971
Approach %	0.0	52.0	4.0	44.0	-	-	0.0	70.8	0.0	29.2	-	-	0.0	0.2	98.5	1.2	-	-	0.0	0.2	99.4	0.4	-	-	-
Total %	0.0	0.7	0.1	0.6	-	1.3	0.0	1.7	0.0	0.7	-	2.4	0.0	0.1	40.8	0.5	-	41.4	0.0	0.1	54.6	0.2	-	54.9	-
PHF	0.000	0.650	0.250	0.688	-	0.893	0.000	0.773	0.000	0.700	-	0.800	0.000	0.250	0.870	0.625	-	0.876	0.000	0.250	0.909	0.500	-	0.911	0.906
Lights	0	13	0	11	-	24	0	34	0	14	-	48	0	2	787	10	-	799	0	2	1053	3	-	1058	1929
% Lights	-	100.0	0.0	100.0	-	96.0	-	100.0	-	100.0	-	100.0	-	100.0	97.9	100.0	-	97.9	-	100.0	97.9	75.0	-	97.8	97.9
Mediums	0	0	1	0	-	1	0	0	0	0	-	0	0	0	13	0	-	13	0	0	17	1	-	18	32
% Mediums	-	0.0	100.0	0.0	-	4.0	-	0.0	-	0.0	-	0.0	-	0.0	1.6	0.0	-	1.6	-	0.0	1.6	25.0	-	1.7	1.6
Articulated Trucks	0	0	0	0	-	0	0	0	0	0	-	0	0	0	4	0	-	4	0	0	6	0	-	6	10
% Articulated Trucks	-	0.0	0.0	0.0	-	0.0	-	0.0	-	0.0	-	0.0	-	0.0	0.5	0.0	-	0.5	-	0.0	0.6	0.0	-	0.6	0.5
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Gewalt Hamilton Associates Inc.
625 Forest Edge Drive

Vernon Hills, Illinois, United States 60061
(847) 478-9700 lmeans@gha-engineers.com

Count Name: Winfield Rd & McCormick Ln
Site Code:
Start Date: 11/02/2017

Turning Movement Peak Hour Data (4:30 PM)

Start Time	McCormick Ln Eastbound						McCormick Ln Westbound						Winfield Rd Northbound						Winfield Rd Southbound						Int. Total
	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	
4:30 PM	0	3	0	1	0	4	0	3	0	0	0	3	0	1	252	9	0	262	0	5	262	7	0	274	543
4:45 PM	1	3	0	1	0	5	0	1	0	1	0	2	0	7	251	6	0	264	0	2	262	5	0	269	540
5:00 PM	0	2	0	3	0	5	0	2	0	7	0	9	0	1	277	7	0	285	0	2	203	4	0	209	508
5:15 PM	0	5	0	0	0	5	0	4	0	4	0	8	0	3	265	8	0	276	0	3	221	4	0	228	517
Total	1	13	0	5	0	19	0	10	0	12	0	22	0	12	1045	30	0	1087	0	12	948	20	0	980	2108
Approach %	5.3	68.4	0.0	26.3	-	-	0.0	45.5	0.0	54.5	-	-	0.0	1.1	96.1	2.8	-	-	0.0	1.2	96.7	2.0	-	-	-
Total %	0.0	0.6	0.0	0.2	-	0.9	0.0	0.5	0.0	0.6	-	1.0	0.0	0.6	49.6	1.4	-	51.6	0.0	0.6	45.0	0.9	-	46.5	-
PHF	0.250	0.650	0.000	0.417	-	0.950	0.000	0.625	0.000	0.429	-	0.611	0.000	0.429	0.943	0.833	-	0.954	0.000	0.600	0.905	0.714	-	0.894	0.971
Lights	1	13	0	5	-	19	0	10	0	12	-	22	0	12	1034	30	-	1076	0	12	933	20	-	965	2082
% Lights	100.0	100.0	-	100.0	-	100.0	-	100.0	-	100.0	-	100.0	-	100.0	98.9	100.0	-	99.0	-	100.0	98.4	100.0	-	98.5	98.8
Mediums	0	0	0	0	-	0	0	0	0	0	-	0	0	0	7	0	-	7	0	0	10	0	-	10	17
% Mediums	0.0	0.0	-	0.0	-	0.0	-	0.0	-	0.0	-	0.0	-	0.0	0.7	0.0	-	0.6	-	0.0	1.1	0.0	-	1.0	0.8
Articulated Trucks	0	0	0	0	-	0	0	0	0	0	-	0	0	0	4	0	-	4	0	0	5	0	-	5	9
% Articulated Trucks	0.0	0.0	-	0.0	-	0.0	-	0.0	-	0.0	-	0.0	-	0.0	0.4	0.0	-	0.4	-	0.0	0.5	0.0	-	0.5	0.4
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Gewalt Hamilton Associates Inc.
625 Forest Edge Drive

Vernon Hills, Illinois, United States 60061
(847) 478-9700 lmeans@gha-engineers.com

Count Name: Ferry Rd & EN Building Driveway
Site Code:
Start Date: 11/02/2017

Turning Movement Data

Start Time	Ferry Rd Eastbound		Ferry Rd Westbound				EN Building Driveway Southbound				
	Peds	App. Total	Thru	Right	Peds	App. Total	U-Turn	Right	Peds	App. Total	Int. Total
6:00 AM	0	0	48	1	0	49	0	0	1	0	49
6:15 AM	0	0	88	3	0	91	0	0	1	0	91
6:30 AM	0	0	117	7	0	124	0	0	0	0	124
6:45 AM	0	0	159	13	0	172	0	2	0	2	174
Hourly Total	0	0	412	24	0	436	0	2	2	2	438
7:00 AM	0	0	155	16	0	171	0	0	0	0	171
7:15 AM	0	0	165	16	0	181	0	0	0	0	181
7:30 AM	0	0	166	14	0	180	0	1	0	1	181
7:45 AM	0	0	213	31	0	244	0	4	0	4	248
Hourly Total	0	0	699	77	0	776	0	5	0	5	781
8:00 AM	0	0	218	23	0	241	0	1	1	1	242
8:15 AM	0	0	186	11	0	197	0	1	0	1	198
8:30 AM	0	0	159	16	0	175	0	2	0	2	177
8:45 AM	0	0	145	16	0	161	0	1	0	1	162
Hourly Total	0	0	708	66	0	774	0	5	1	5	779
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-
4:00 PM	0	0	223	1	0	224	0	15	0	15	239
4:15 PM	0	0	263	1	0	264	0	7	0	7	271
4:30 PM	0	0	314	2	0	316	0	18	0	18	334
4:45 PM	0	0	276	0	0	276	0	10	0	10	286
Hourly Total	0	0	1076	4	0	1080	0	50	0	50	1130
5:00 PM	0	0	293	1	0	294	0	20	0	20	314
5:15 PM	0	0	305	1	0	306	0	11	0	11	317
5:30 PM	0	0	289	1	0	290	0	14	0	14	304
5:45 PM	0	0	229	0	0	229	0	6	1	6	235
Hourly Total	0	0	1116	3	0	1119	0	51	1	51	1170
6:00 PM	0	0	207	0	0	207	0	7	0	7	214
6:15 PM	0	0	183	1	0	184	0	3	0	3	187
6:30 PM	0	0	119	1	0	120	0	3	0	3	123
6:45 PM	0	0	135	0	0	135	0	3	0	3	138
Hourly Total	0	0	644	2	0	646	0	16	0	16	662
Grand Total	0	0	4655	176	0	4831	0	129	4	129	4960
Approach %	-	-	96.4	3.6	-	-	0.0	100.0	-	-	-
Total %	-	0.0	93.9	3.5	-	97.4	0.0	2.6	-	2.6	-
Lights	-	0	4597	176	-	4773	0	128	-	128	4901
% Lights	-	-	98.8	100.0	-	98.8	-	99.2	-	99.2	98.8
Mediums	-	0	37	0	-	37	0	1	-	1	38
% Mediums	-	-	0.8	0.0	-	0.8	-	0.8	-	0.8	0.8
Articulated Trucks	-	0	21	0	-	21	0	0	-	0	21
% Articulated Trucks	-	-	0.5	0.0	-	0.4	-	0.0	-	0.0	0.4
Bicycles on Crosswalk	0	-	-	-	0	-	-	-	0	-	-

% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	0.0	-	-
Pedestrians	0	-	-	-	0	-	-	-	4	-	-
% Pedestrians	-	-	-	-	-	-	-	-	100.0	-	-

Gewalt Hamilton Associates Inc.
625 Forest Edge Drive

Vernon Hills, Illinois, United States 60061
(847) 478-9700 lmeans@gha-engineers.com

Count Name: Ferry Rd & EN Building Driveway
Site Code:
Start Date: 11/02/2017

Turning Movement Peak Hour Data (7:15 AM)

Start Time	Ferry Rd Eastbound		Ferry Rd Westbound				EN Building Driveway Southbound				
	Peds	App. Total	Thru	Right	Peds	App. Total	U-Turn	Right	Peds	App. Total	Int. Total
7:15 AM	0	0	165	16	0	181	0	0	0	0	181
7:30 AM	0	0	166	14	0	180	0	1	0	1	181
7:45 AM	0	0	213	31	0	244	0	4	0	4	248
8:00 AM	0	0	218	23	0	241	0	1	1	1	242
Total	0	0	762	84	0	846	0	6	1	6	852
Approach %	-	-	90.1	9.9	-	-	0.0	100.0	-	-	-
Total %	-	0.0	89.4	9.9	-	99.3	0.0	0.7	-	0.7	-
PHF	-	0.000	0.874	0.677	-	0.867	0.000	0.375	-	0.375	0.859
Lights	-	0	750	84	-	834	0	6	-	6	840
% Lights	-	-	98.4	100.0	-	98.6	-	100.0	-	100.0	98.6
Mediums	-	0	10	0	-	10	0	0	-	0	10
% Mediums	-	-	1.3	0.0	-	1.2	-	0.0	-	0.0	1.2
Articulated Trucks	-	0	2	0	-	2	0	0	-	0	2
% Articulated Trucks	-	-	0.3	0.0	-	0.2	-	0.0	-	0.0	0.2
Bicycles on Crosswalk	0	-	-	-	0	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	0.0	-	-
Pedestrians	0	-	-	-	0	-	-	-	1	-	-
% Pedestrians	-	-	-	-	-	-	-	-	100.0	-	-

Gewalt Hamilton Associates Inc.
625 Forest Edge Drive

Vernon Hills, Illinois, United States 60061
(847) 478-9700 lmeans@gha-engineers.com

Count Name: Ferry Rd & EN Building Driveway
Site Code:
Start Date: 11/02/2017

Turning Movement Peak Hour Data (4:30 PM)

Start Time	Ferry Rd Eastbound		Ferry Rd Westbound				EN Building Driveway Southbound				
	Peds	App. Total	Thru	Right	Peds	App. Total	U-Turn	Right	Peds	App. Total	Int. Total
4:30 PM	0	0	314	2	0	316	0	18	0	18	334
4:45 PM	0	0	276	0	0	276	0	10	0	10	286
5:00 PM	0	0	293	1	0	294	0	20	0	20	314
5:15 PM	0	0	305	1	0	306	0	11	0	11	317
Total	0	0	1188	4	0	1192	0	59	0	59	1251
Approach %	-	-	99.7	0.3	-	-	0.0	100.0	-	-	-
Total %	-	0.0	95.0	0.3	-	95.3	0.0	4.7	-	4.7	-
PHF	-	0.000	0.946	0.500	-	0.943	0.000	0.738	-	0.738	0.936
Lights	-	0	1176	4	-	1180	0	59	-	59	1239
% Lights	-	-	99.0	100.0	-	99.0	-	100.0	-	100.0	99.0
Mediums	-	0	6	0	-	6	0	0	-	0	6
% Mediums	-	-	0.5	0.0	-	0.5	-	0.0	-	0.0	0.5
Articulated Trucks	-	0	6	0	-	6	0	0	-	0	6
% Articulated Trucks	-	-	0.5	0.0	-	0.5	-	0.0	-	0.0	0.5
Bicycles on Crosswalk	0	-	-	-	0	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	0	-	-	-	0	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-

Gewalt Hamilton Associates Inc.
625 Forest Edge Drive

Vernon Hills, Illinois, United States 60061
(847) 478-9700 lmeans@gha-engineers.com

Count Name: Torch Pkwy & EN Building Driveway
Site Code:
Start Date: 11/02/2017

Turning Movement Data

Start Time	Torch Pkwy Eastbound					Torch Pkwy Westbound					Parking Lot Northbound					Int. Total
	U-Turn	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Peds	App. Total	U-Turn	Left	Right	Peds	App. Total	
6:00 AM	0	1	0	0	1	0	13	0	0	13	0	0	0	0	0	14
6:15 AM	0	1	0	0	1	0	19	3	0	22	0	0	0	0	0	23
6:30 AM	0	5	0	0	5	0	17	0	0	17	0	0	0	0	0	22
6:45 AM	0	2	0	0	2	0	39	0	0	39	0	0	0	0	0	41
Hourly Total	0	9	0	0	9	0	88	3	0	91	0	0	0	0	0	100
7:00 AM	0	0	0	0	0	0	38	2	0	40	0	0	0	0	0	40
7:15 AM	0	2	0	0	2	0	40	1	0	41	0	0	4	0	4	47
7:30 AM	0	8	0	0	8	0	45	3	0	48	0	0	1	0	1	57
7:45 AM	0	7	0	0	7	0	43	4	0	47	0	0	0	0	0	54
Hourly Total	0	17	0	0	17	0	166	10	0	176	0	0	5	0	5	198
8:00 AM	0	6	0	0	6	0	29	0	0	29	0	0	2	0	2	37
8:15 AM	0	1	0	0	1	1	28	2	0	31	0	0	3	0	3	35
8:30 AM	0	3	0	0	3	0	44	1	0	45	0	0	2	0	2	50
8:45 AM	0	5	0	0	5	0	24	2	0	26	0	0	1	0	1	32
Hourly Total	0	15	0	0	15	1	125	5	0	131	0	0	8	0	8	154
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4:00 PM	0	5	0	0	5	0	6	4	0	10	0	0	37	0	37	52
4:15 PM	0	4	0	0	4	0	3	5	0	8	0	0	20	0	20	32
4:30 PM	0	7	0	0	7	0	1	1	0	2	0	0	61	0	61	70
4:45 PM	0	5	0	0	5	0	2	2	0	4	0	0	32	0	32	41
Hourly Total	0	21	0	0	21	0	12	12	0	24	0	0	150	0	150	195
5:00 PM	0	5	0	0	5	0	2	4	0	6	0	0	63	0	63	74
5:15 PM	0	2	0	0	2	0	1	1	0	2	0	1	26	1	27	31
5:30 PM	0	8	0	0	8	0	3	3	0	6	0	0	36	0	36	50
5:45 PM	0	3	0	0	3	0	1	2	0	3	0	0	23	0	23	29
Hourly Total	0	18	0	0	18	0	7	10	0	17	0	1	148	1	149	184
6:00 PM	0	0	0	0	0	0	1	2	0	3	0	0	16	0	16	19
6:15 PM	0	1	0	0	1	0	0	2	0	2	0	0	11	0	11	14
6:30 PM	0	3	0	0	3	0	0	5	0	5	0	0	11	0	11	19
6:45 PM	0	2	0	0	2	0	1	1	0	2	0	0	6	0	6	10
Hourly Total	0	6	0	0	6	0	2	10	0	12	0	0	44	0	44	62
Grand Total	0	86	0	0	86	1	400	50	0	451	0	1	355	1	356	893
Approach %	0.0	100.0	0.0	-	-	0.2	88.7	11.1	-	-	0.0	0.3	99.7	-	-	-
Total %	0.0	9.6	0.0	-	9.6	0.1	44.8	5.6	-	50.5	0.0	0.1	39.8	-	39.9	-
Lights	0	83	0	-	83	1	398	49	-	448	0	1	355	-	356	887
% Lights	-	96.5	-	-	96.5	100.0	99.5	98.0	-	99.3	-	100.0	100.0	-	100.0	99.3
Mediums	0	3	0	-	3	0	2	1	-	3	0	0	0	-	0	6
% Mediums	-	3.5	-	-	3.5	0.0	0.5	2.0	-	0.7	-	0.0	0.0	-	0.0	0.7
Articulated Trucks	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Articulated Trucks	-	0.0	-	-	0.0	0.0	0.0	0.0	-	0.0	-	0.0	0.0	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-

% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	1	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-

Gewalt Hamilton Associates Inc.
625 Forest Edge Drive

Vernon Hills, Illinois, United States 60061
(847) 478-9700 lmeans@gha-engineers.com

Count Name: Torch Pkwy & EN Building Driveway
Site Code:
Start Date: 11/02/2017

Turning Movement Peak Hour Data (7:15 AM)

Start Time	Torch Pkwy Eastbound					Torch Pkwy Westbound					Parking Lot Northbound					
	U-Turn	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Peds	App. Total	U-Turn	Left	Right	Peds	App. Total	Int. Total
7:15 AM	0	2	0	0	2	0	40	1	0	41	0	0	4	0	4	47
7:30 AM	0	8	0	0	8	0	45	3	0	48	0	0	1	0	1	57
7:45 AM	0	7	0	0	7	0	43	4	0	47	0	0	0	0	0	54
8:00 AM	0	6	0	0	6	0	29	0	0	29	0	0	2	0	2	37
Total	0	23	0	0	23	0	157	8	0	165	0	0	7	0	7	195
Approach %	0.0	100.0	0.0	-	-	0.0	95.2	4.8	-	-	0.0	0.0	100.0	-	-	-
Total %	0.0	11.8	0.0	-	11.8	0.0	80.5	4.1	-	84.6	0.0	0.0	3.6	-	3.6	-
PHF	0.000	0.719	0.000	-	0.719	0.000	0.872	0.500	-	0.859	0.000	0.000	0.438	-	0.438	0.855
Lights	0	23	0	-	23	0	157	7	-	164	0	0	7	-	7	194
% Lights	-	100.0	-	-	100.0	-	100.0	87.5	-	99.4	-	-	100.0	-	100.0	99.5
Mediums	0	0	0	-	0	0	0	1	-	1	0	0	0	-	0	1
% Mediums	-	0.0	-	-	0.0	-	0.0	12.5	-	0.6	-	-	0.0	-	0.0	0.5
Articulated Trucks	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Articulated Trucks	-	0.0	-	-	0.0	-	0.0	0.0	-	0.0	-	-	0.0	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Gewalt Hamilton Associates Inc.
625 Forest Edge Drive

Vernon Hills, Illinois, United States 60061
(847) 478-9700 lmeans@gha-engineers.com

Count Name: Torch Pkwy & EN Building Driveway
Site Code:
Start Date: 11/02/2017

Turning Movement Peak Hour Data (4:30 PM)

Start Time	Torch Pkwy Eastbound					Torch Pkwy Westbound					Parking Lot Northbound					
	U-Turn	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Peds	App. Total	U-Turn	Left	Right	Peds	App. Total	Int. Total
4:30 PM	0	7	0	0	7	0	1	1	0	2	0	0	61	0	61	70
4:45 PM	0	5	0	0	5	0	2	2	0	4	0	0	32	0	32	41
5:00 PM	0	5	0	0	5	0	2	4	0	6	0	0	63	0	63	74
5:15 PM	0	2	0	0	2	0	1	1	0	2	0	1	26	1	27	31
Total	0	19	0	0	19	0	6	8	0	14	0	1	182	1	183	216
Approach %	0.0	100.0	0.0	-	-	0.0	42.9	57.1	-	-	0.0	0.5	99.5	-	-	-
Total %	0.0	8.8	0.0	-	8.8	0.0	2.8	3.7	-	6.5	0.0	0.5	84.3	-	84.7	-
PHF	0.000	0.679	0.000	-	0.679	0.000	0.750	0.500	-	0.583	0.000	0.250	0.722	-	0.726	0.730
Lights	0	19	0	-	19	0	6	8	-	14	0	1	182	-	183	216
% Lights	-	100.0	-	-	100.0	-	100.0	100.0	-	100.0	-	100.0	100.0	-	100.0	100.0
Mediums	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Mediums	-	0.0	-	-	0.0	-	0.0	0.0	-	0.0	-	0.0	0.0	-	0.0	0.0
Articulated Trucks	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Articulated Trucks	-	0.0	-	-	0.0	-	0.0	0.0	-	0.0	-	0.0	0.0	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	1	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-

Gewalt Hamilton Associates Inc.
625 Forest Edge Drive

Vernon Hills, Illinois, United States 60061
(847) 478-9700 lmeans@gha-engineers.com

Count Name: Torch Pkwy & Kline Cir
Site Code:
Start Date: 11/02/2017

Turning Movement Data

Start Time	Torch Pkwy Westbound					Parking Lot Northbound					Kline Circle Southbound					
	U-Turn	Left	Right	Peds	App. Total	U-Turn	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Peds	App. Total	Int. Total
6:00 AM	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	2
6:15 AM	0	1	2	0	3	0	0	0	0	0	0	0	0	0	0	3
6:30 AM	0	0	0	0	0	0	0	0	0	0	0	5	0	0	5	5
6:45 AM	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	2
Hourly Total	0	1	2	0	3	0	0	0	0	0	0	9	0	0	9	12
7:00 AM	0	1	1	0	2	0	0	0	0	0	0	0	0	0	0	2
7:15 AM	0	0	1	0	1	0	0	0	0	0	0	2	0	0	2	3
7:30 AM	0	0	3	0	3	0	0	1	0	1	0	7	0	0	7	11
7:45 AM	1	0	3	0	4	0	0	0	0	0	0	6	0	0	6	10
Hourly Total	1	1	8	0	10	0	0	1	0	1	0	15	0	0	15	26
8:00 AM	0	1	0	0	1	0	0	1	0	1	0	5	1	0	6	8
8:15 AM	0	2	0	0	2	0	0	0	0	0	0	1	0	0	1	3
8:30 AM	0	1	0	0	1	0	0	0	0	0	0	3	0	0	3	4
8:45 AM	0	2	0	0	2	0	0	0	0	0	0	5	0	2	5	7
Hourly Total	0	6	0	0	6	0	0	1	0	1	0	14	1	2	15	22
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4:00 PM	0	0	4	0	4	0	0	1	0	1	0	4	0	0	4	9
4:15 PM	0	1	4	0	5	0	0	2	0	2	0	2	0	0	2	9
4:30 PM	0	0	1	0	1	0	0	6	0	6	0	1	0	1	1	8
4:45 PM	0	0	2	0	2	0	0	3	0	3	0	2	0	0	2	7
Hourly Total	0	1	11	0	12	0	0	12	0	12	0	9	0	1	9	33
5:00 PM	0	0	4	0	4	0	0	3	0	3	0	2	0	0	2	9
5:15 PM	0	0	2	0	2	0	0	0	0	0	0	2	0	0	2	4
5:30 PM	0	0	3	0	3	0	0	5	0	5	0	3	0	0	3	11
5:45 PM	0	0	2	0	2	0	0	2	0	2	0	1	0	0	1	5
Hourly Total	0	0	11	0	11	0	0	10	0	10	0	8	0	0	8	29
6:00 PM	0	0	2	0	2	0	0	0	0	0	0	0	0	0	0	2
6:15 PM	0	0	2	0	2	0	0	1	0	1	0	0	0	0	0	3
6:30 PM	0	0	5	0	5	0	0	1	0	1	0	2	0	0	2	8
6:45 PM	0	0	1	0	1	0	0	1	0	1	0	1	0	0	1	3
Hourly Total	0	0	10	0	10	0	0	3	0	3	0	3	0	0	3	16
Grand Total	1	9	42	0	52	0	0	27	0	27	0	58	1	3	59	138
Approach %	1.9	17.3	80.8	-	-	0.0	0.0	100.0	-	-	0.0	98.3	1.7	-	-	-
Total %	0.7	6.5	30.4	-	37.7	0.0	0.0	19.6	-	19.6	0.0	42.0	0.7	-	42.8	-
Lights	1	9	41	-	51	0	0	27	-	27	0	55	1	-	56	134
% Lights	100.0	100.0	97.6	-	98.1	-	-	100.0	-	100.0	-	94.8	100.0	-	94.9	97.1
Mediums	0	0	1	-	1	0	0	0	-	0	0	3	0	-	3	4
% Mediums	0.0	0.0	2.4	-	1.9	-	-	0.0	-	0.0	-	5.2	0.0	-	5.1	2.9
Articulated Trucks	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Articulated Trucks	0.0	0.0	0.0	-	0.0	-	-	0.0	-	0.0	-	0.0	0.0	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-

% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	3	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-

Gewalt Hamilton Associates Inc.
625 Forest Edge Drive

Vernon Hills, Illinois, United States 60061
(847) 478-9700 lmeans@gha-engineers.com

Count Name: Torch Pkwy & Kline Cir
Site Code:
Start Date: 11/02/2017

Turning Movement Peak Hour Data (7:15 AM)

Start Time	Torch Pkwy Westbound					Parking Lot Northbound					Kline Circle Southbound					
	U-Turn	Left	Right	Peds	App. Total	U-Turn	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Peds	App. Total	Int. Total
7:15 AM	0	0	1	0	1	0	0	0	0	0	0	2	0	0	2	3
7:30 AM	0	0	3	0	3	0	0	1	0	1	0	7	0	0	7	11
7:45 AM	1	0	3	0	4	0	0	0	0	0	0	6	0	0	6	10
8:00 AM	0	1	0	0	1	0	0	1	0	1	0	5	1	0	6	8
Total	1	1	7	0	9	0	0	2	0	2	0	20	1	0	21	32
Approach %	11.1	11.1	77.8	-	-	0.0	0.0	100.0	-	-	0.0	95.2	4.8	-	-	-
Total %	3.1	3.1	21.9	-	28.1	0.0	0.0	6.3	-	6.3	0.0	62.5	3.1	-	65.6	-
PHF	0.250	0.250	0.583	-	0.563	0.000	0.000	0.500	-	0.500	0.000	0.714	0.250	-	0.750	0.727
Lights	1	1	6	-	8	0	0	2	-	2	0	20	1	-	21	31
% Lights	100.0	100.0	85.7	-	88.9	-	-	100.0	-	100.0	-	100.0	100.0	-	100.0	96.9
Mediums	0	0	1	-	1	0	0	0	-	0	0	0	0	-	0	1
% Mediums	0.0	0.0	14.3	-	11.1	-	-	0.0	-	0.0	-	0.0	0.0	-	0.0	3.1
Articulated Trucks	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Articulated Trucks	0.0	0.0	0.0	-	0.0	-	-	0.0	-	0.0	-	0.0	0.0	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Gewalt Hamilton Associates Inc.
625 Forest Edge Drive

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(847) 478-9700 lmeans@gha-engineers.com

Count Name: Torch Pkwy & Kline Cir
Site Code:
Start Date: 11/02/2017

Turning Movement Peak Hour Data (4:30 PM)

Start Time	Torch Pkwy Westbound					Parking Lot Northbound					Kline Circle Southbound					
	U-Turn	Left	Right	Peds	App. Total	U-Turn	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Peds	App. Total	Int. Total
4:30 PM	0	0	1	0	1	0	0	6	0	6	0	1	0	1	1	8
4:45 PM	0	0	2	0	2	0	0	3	0	3	0	2	0	0	2	7
5:00 PM	0	0	4	0	4	0	0	3	0	3	0	2	0	0	2	9
5:15 PM	0	0	2	0	2	0	0	0	0	0	0	2	0	0	2	4
Total	0	0	9	0	9	0	0	12	0	12	0	7	0	1	7	28
Approach %	0.0	0.0	100.0	-	-	0.0	0.0	100.0	-	-	0.0	100.0	0.0	-	-	-
Total %	0.0	0.0	32.1	-	32.1	0.0	0.0	42.9	-	42.9	0.0	25.0	0.0	-	25.0	-
PHF	0.000	0.000	0.563	-	0.563	0.000	0.000	0.500	-	0.500	0.000	0.875	0.000	-	0.875	0.778
Lights	0	0	9	-	9	0	0	12	-	12	0	7	0	-	7	28
% Lights	-	-	100.0	-	100.0	-	-	100.0	-	100.0	-	100.0	-	-	100.0	100.0
Mediums	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Mediums	-	-	0.0	-	0.0	-	-	0.0	-	0.0	-	0.0	-	-	0.0	0.0
Articulated Trucks	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Articulated Trucks	-	-	0.0	-	0.0	-	-	0.0	-	0.0	-	0.0	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	1	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-

APPENDIX C

Trip Generation / Internal Capture Calculations

General Office Building
(710)

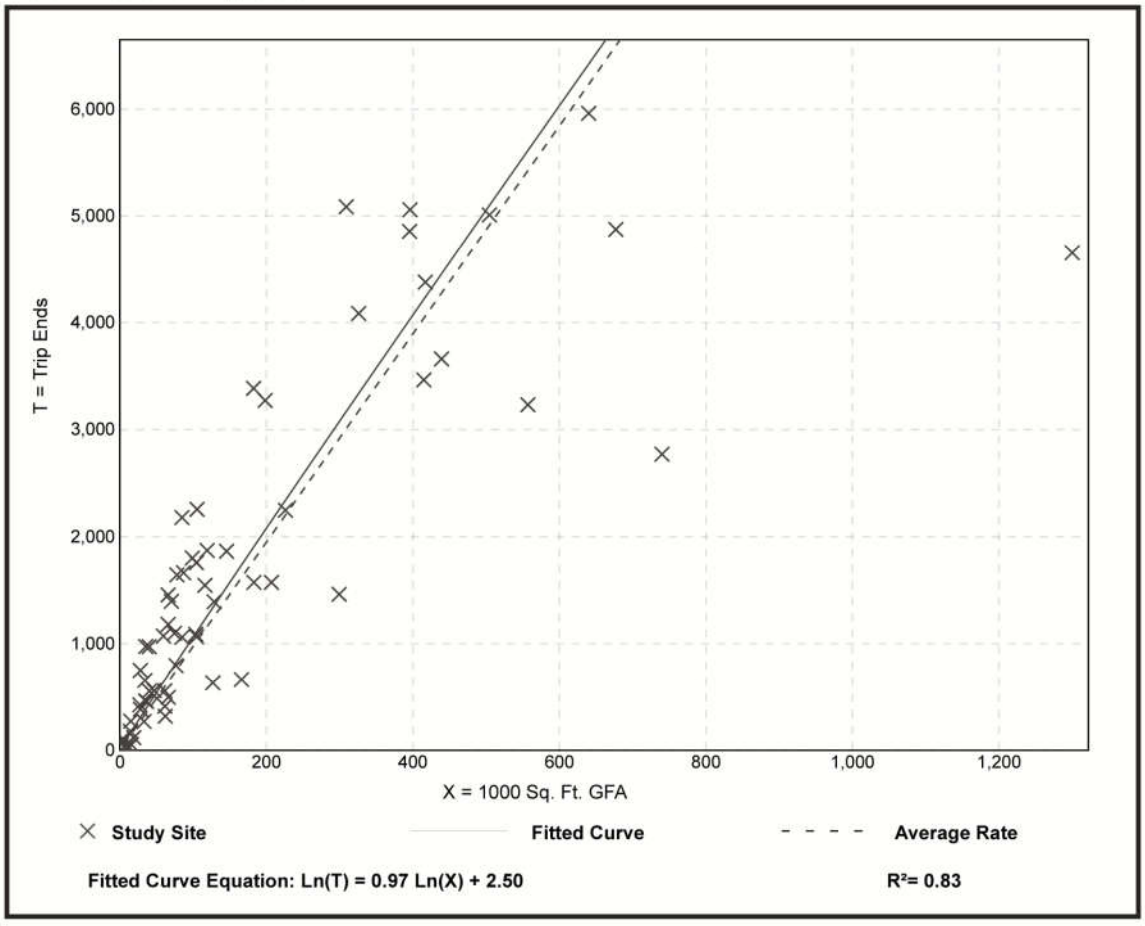
Vehicle Trip Ends vs: **1000 Sq. Ft. GFA**
On a: **Weekday**

Setting/Location: **General Urban/Suburban**
Number of Studies: 66
1000 Sq. Ft. GFA: 171
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
9.74	2.71 - 27.56	5.15

Data Plot and Equation



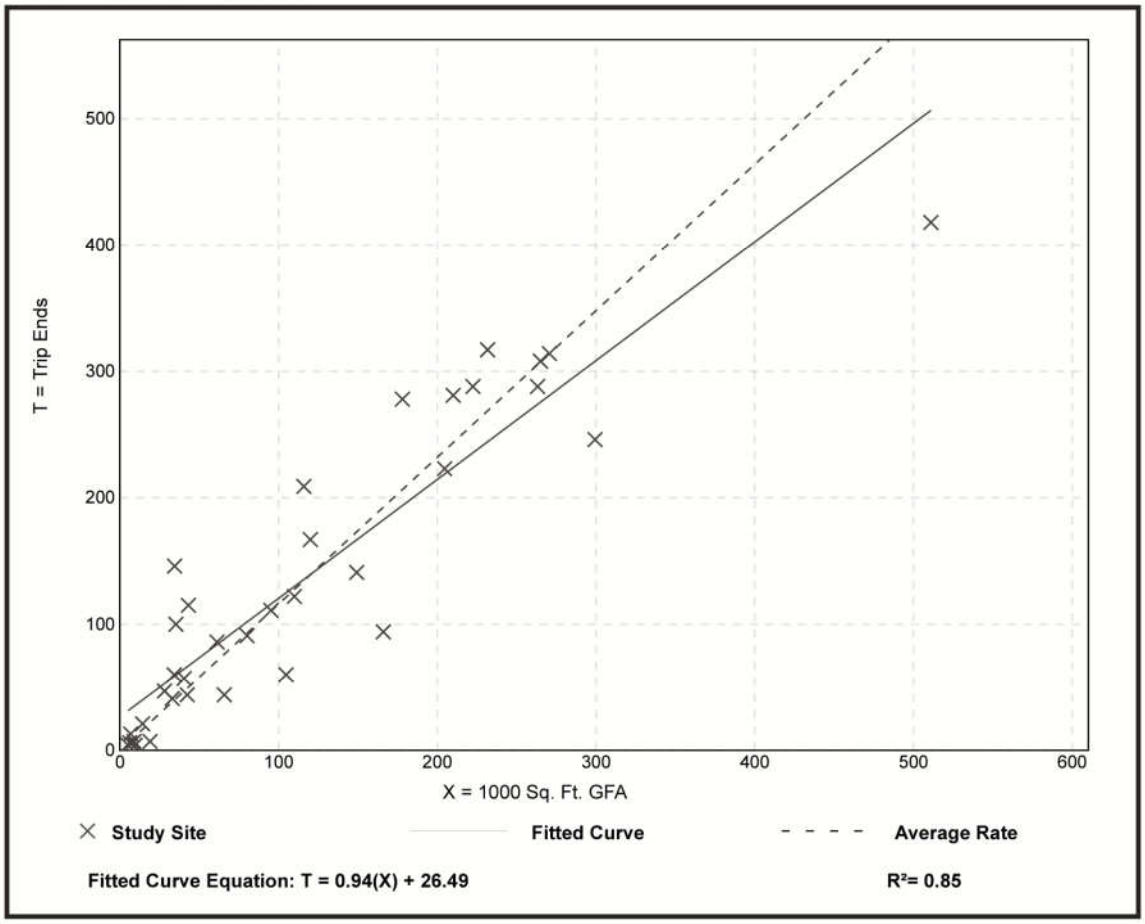
General Office Building
(710)

Vehicle Trip Ends vs: **1000 Sq. Ft. GFA**
On a: **Weekday,**
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.
Setting/Location: **General Urban/Suburban**
Number of Studies: 35
1000 Sq. Ft. GFA: 117
Directional Distribution: 86% entering, 14% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
1.16	0.37 - 4.23	0.47

Data Plot and Equation



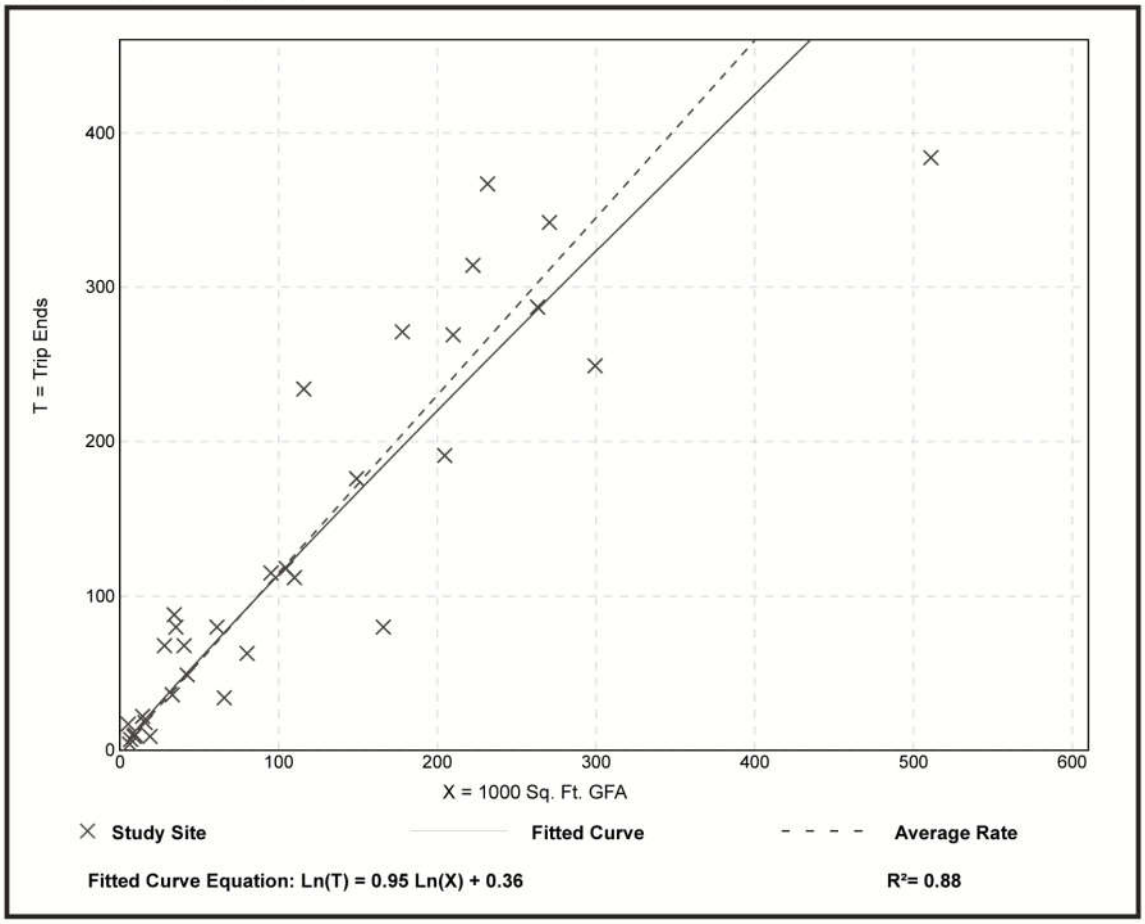
General Office Building
(710)

Vehicle Trip Ends vs: **1000 Sq. Ft. GFA**
On a: **Weekday,**
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.
Setting/Location: **General Urban/Suburban**
Number of Studies: 32
1000 Sq. Ft. GFA: 114
Directional Distribution: 16% entering, 84% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
1.15	0.47 - 3.23	0.42

Data Plot and Equation



Multifamily Housing (Low-Rise)
(220)

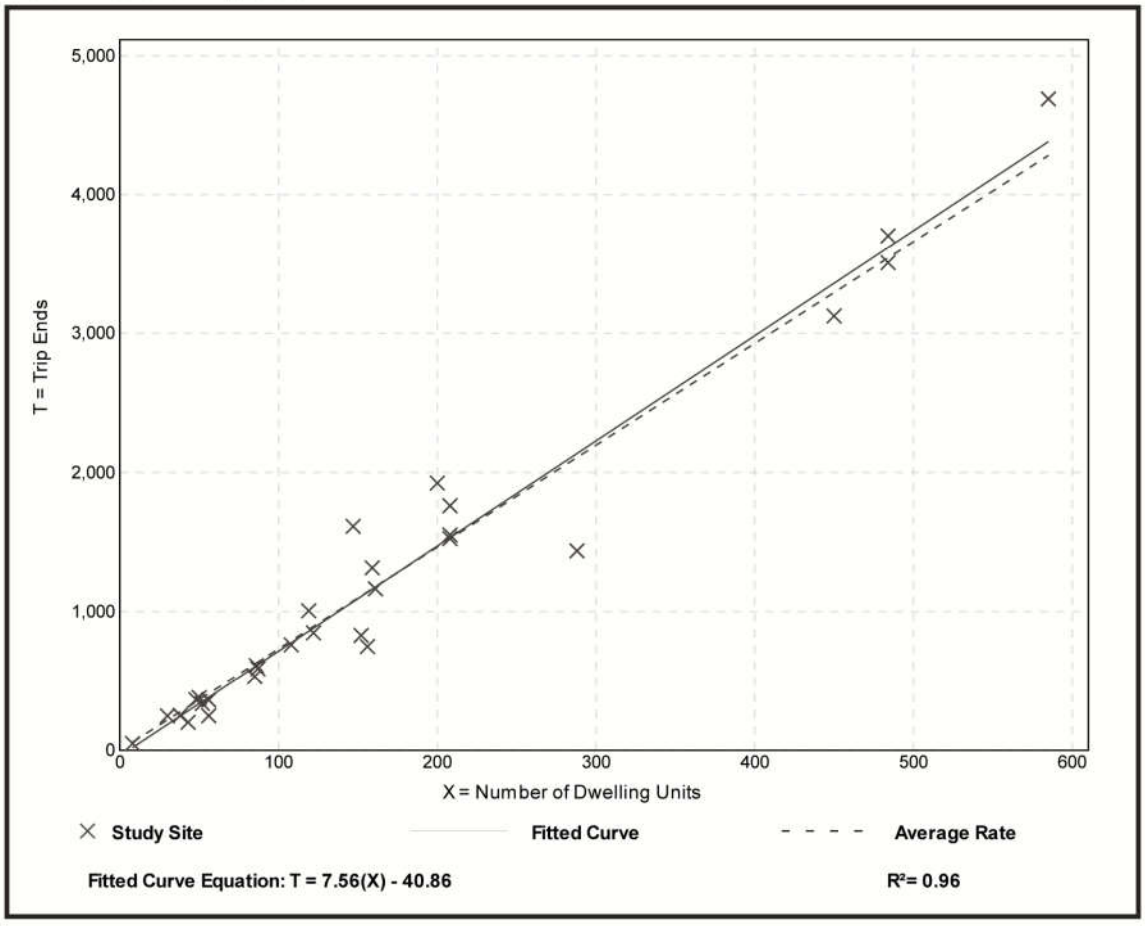
Vehicle Trip Ends vs: **Dwelling Units**
On a: **Weekday**

Setting/Location: **General Urban/Suburban**
Number of Studies: 29
Avg. Num. of Dwelling Units: 168
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
7.32	4.45 - 10.97	1.31

Data Plot and Equation



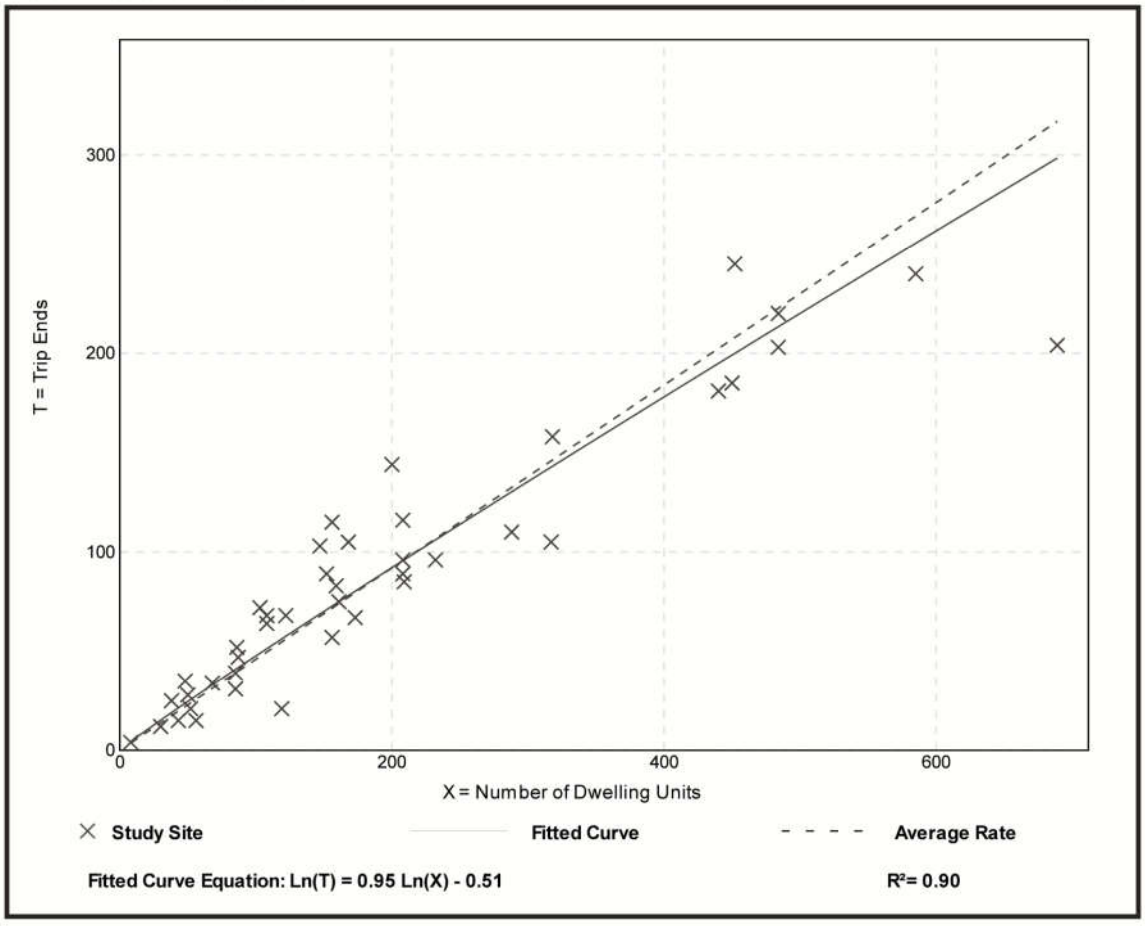
Multifamily Housing (Low-Rise)
(220)

Vehicle Trip Ends vs: **Dwelling Units**
On a: **Weekday,**
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.
Setting/Location: **General Urban/Suburban**
Number of Studies: 42
Avg. Num. of Dwelling Units: 199
Directional Distribution: 23% entering, 77% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.46	0.18 - 0.74	0.12

Data Plot and Equation



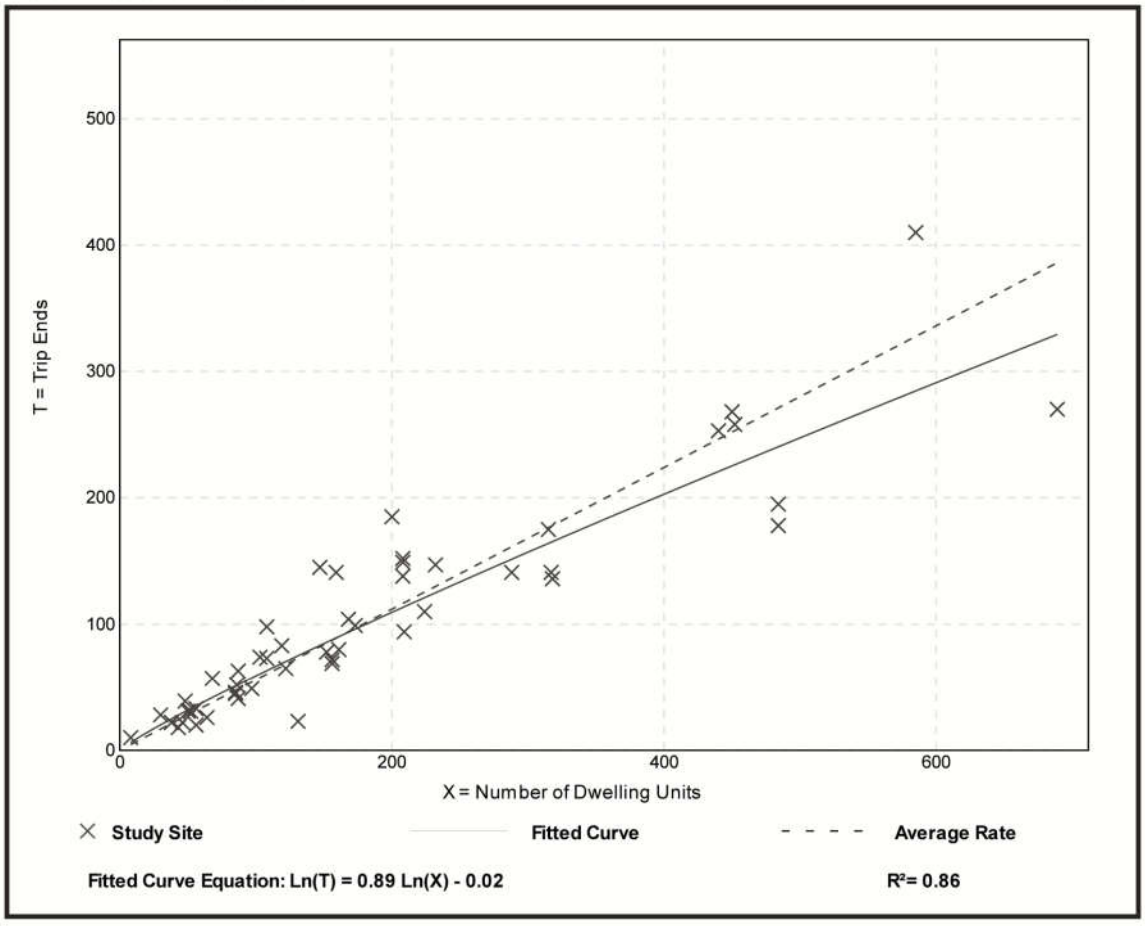
Multifamily Housing (Low-Rise)
(220)

Vehicle Trip Ends vs: **Dwelling Units**
On a: **Weekday,**
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.
Setting/Location: **General Urban/Suburban**
Number of Studies: 50
Avg. Num. of Dwelling Units: 187
Directional Distribution: 63% entering, 37% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.56	0.18 - 1.25	0.16

Data Plot and Equation



Multifamily Housing (High-Rise)
(222)

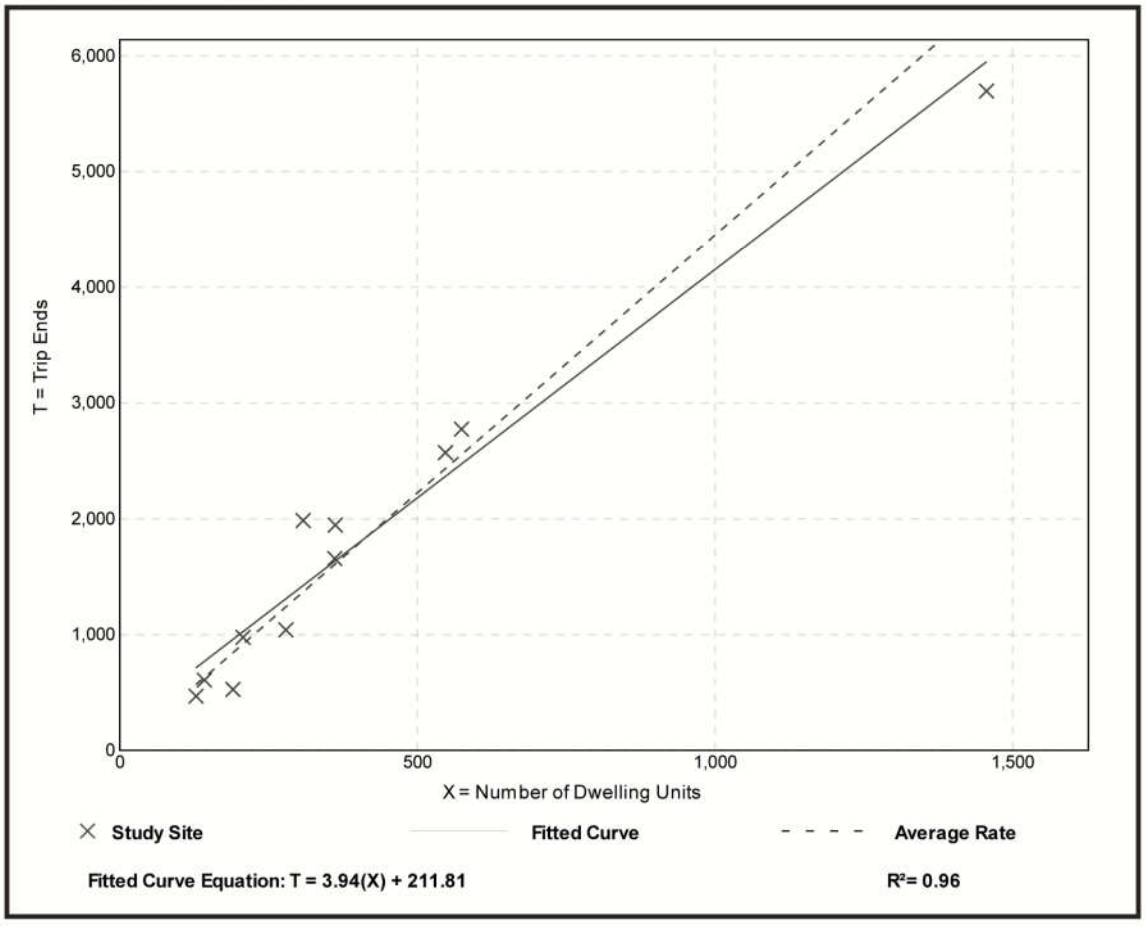
Vehicle Trip Ends vs: **Dwelling Units**
On a: **Weekday**

Setting/Location: **General Urban/Suburban**
Number of Studies: 11
Avg. Num. of Dwelling Units: 414
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
4.45	2.77 - 6.45	0.83

Data Plot and Equation



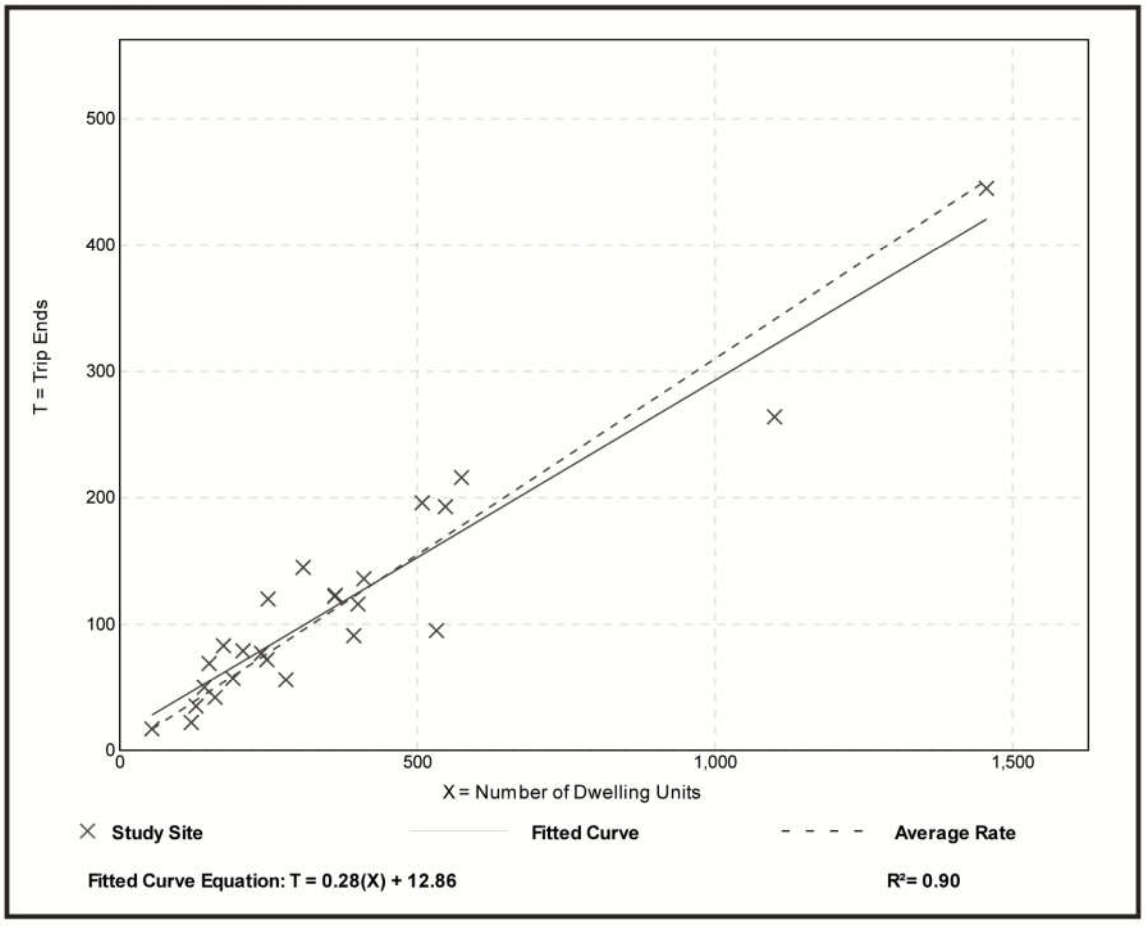
Multifamily Housing (High-Rise)
(222)

Vehicle Trip Ends vs: **Dwelling Units**
On a: **Weekday,**
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.
Setting/Location: **General Urban/Suburban**
Number of Studies: 25
Avg. Num. of Dwelling Units: 372
Directional Distribution: 24% entering, 76% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.31	0.18 - 0.48	0.08

Data Plot and Equation



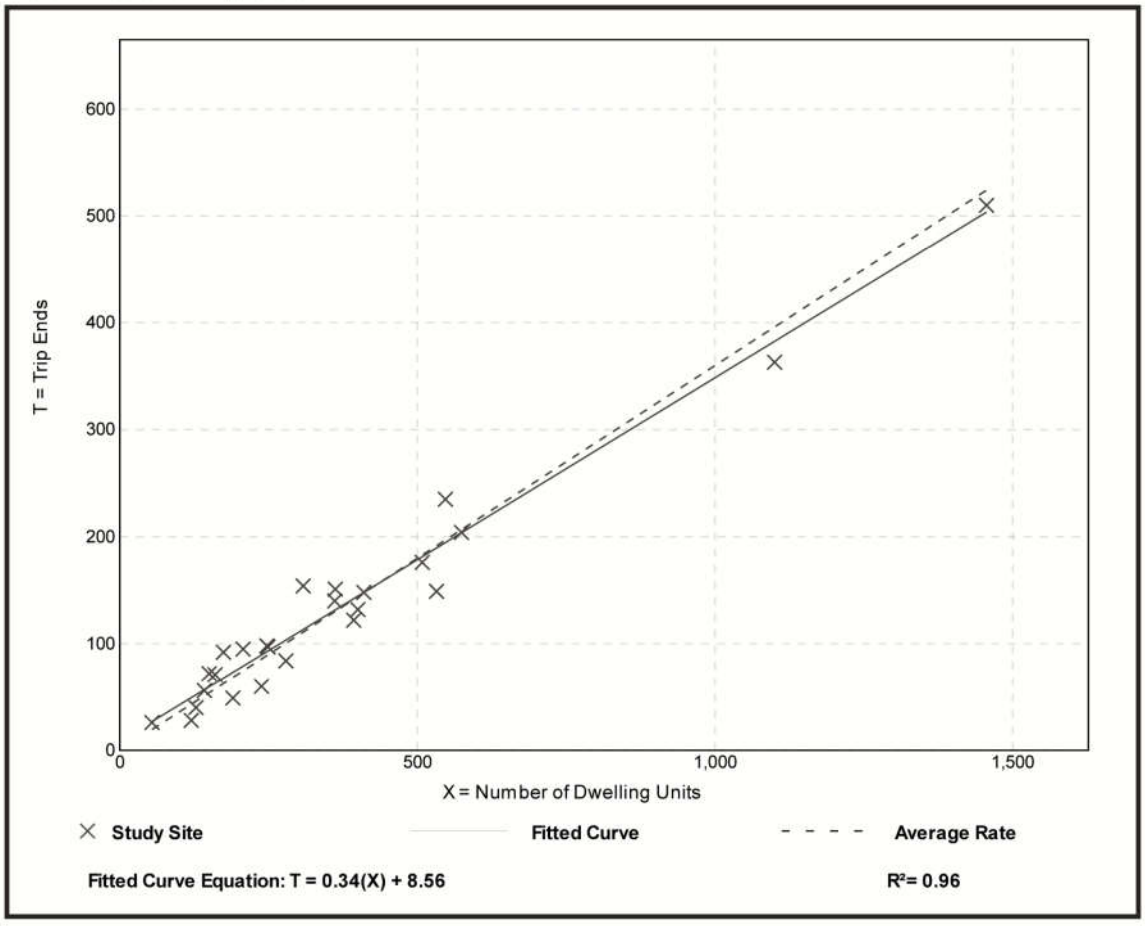
Multifamily Housing (High-Rise)
(222)

Vehicle Trip Ends vs: **Dwelling Units**
On a: **Weekday,**
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.
Setting/Location: **General Urban/Suburban**
Number of Studies: 25
Avg. Num. of Dwelling Units: 372
Directional Distribution: 61% entering, 39% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.36	0.23 - 0.53	0.06

Data Plot and Equation



Fast-Food Restaurant without Drive-Through Window
(933)

Vehicle Trip Ends vs: **1000 Sq. Ft. GFA**
On a: **Weekday**

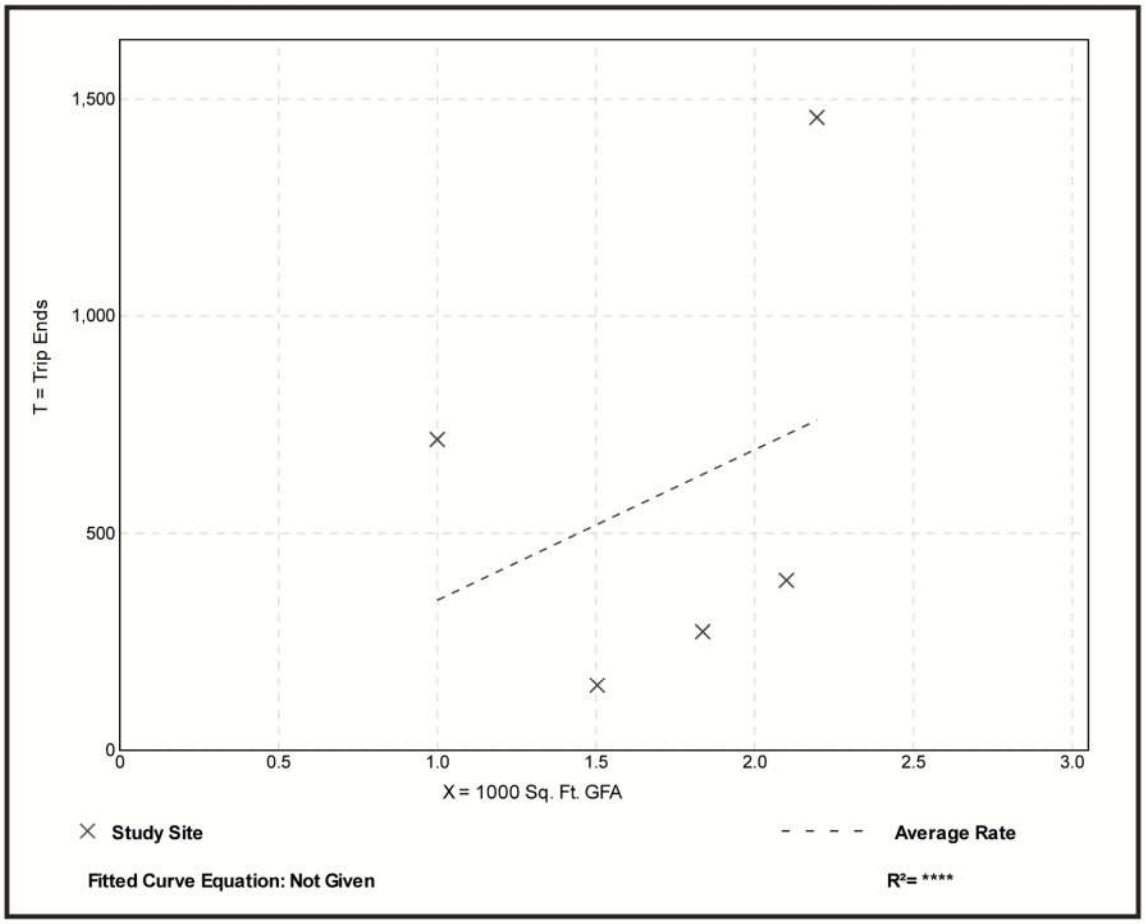
Setting/Location: **General Urban/Suburban**
Number of Studies: 5
1000 Sq. Ft. GFA: 2
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
346.23	99.73 - 716.00	288.36

Data Plot and Equation

Caution – Small Sample Size



Fast-Food Restaurant without Drive-Through Window
(933)

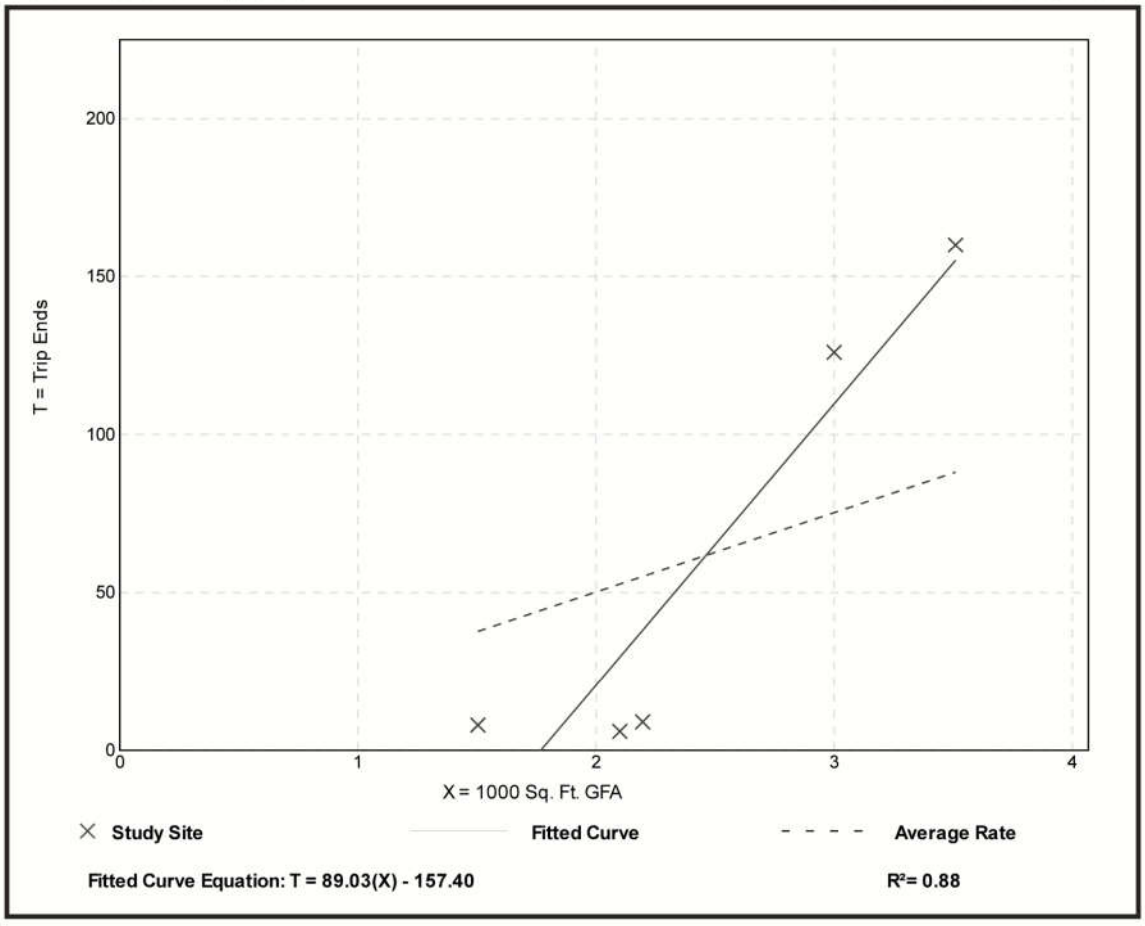
Vehicle Trip Ends vs: **1000 Sq. Ft. GFA**
On a: **Weekday,**
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.
Setting/Location: **General Urban/Suburban**
Number of Studies: 5
1000 Sq. Ft. GFA: 2
Directional Distribution: 60% entering, 40% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
25.10	2.86 - 45.58	22.36

Data Plot and Equation

Caution – Small Sample Size



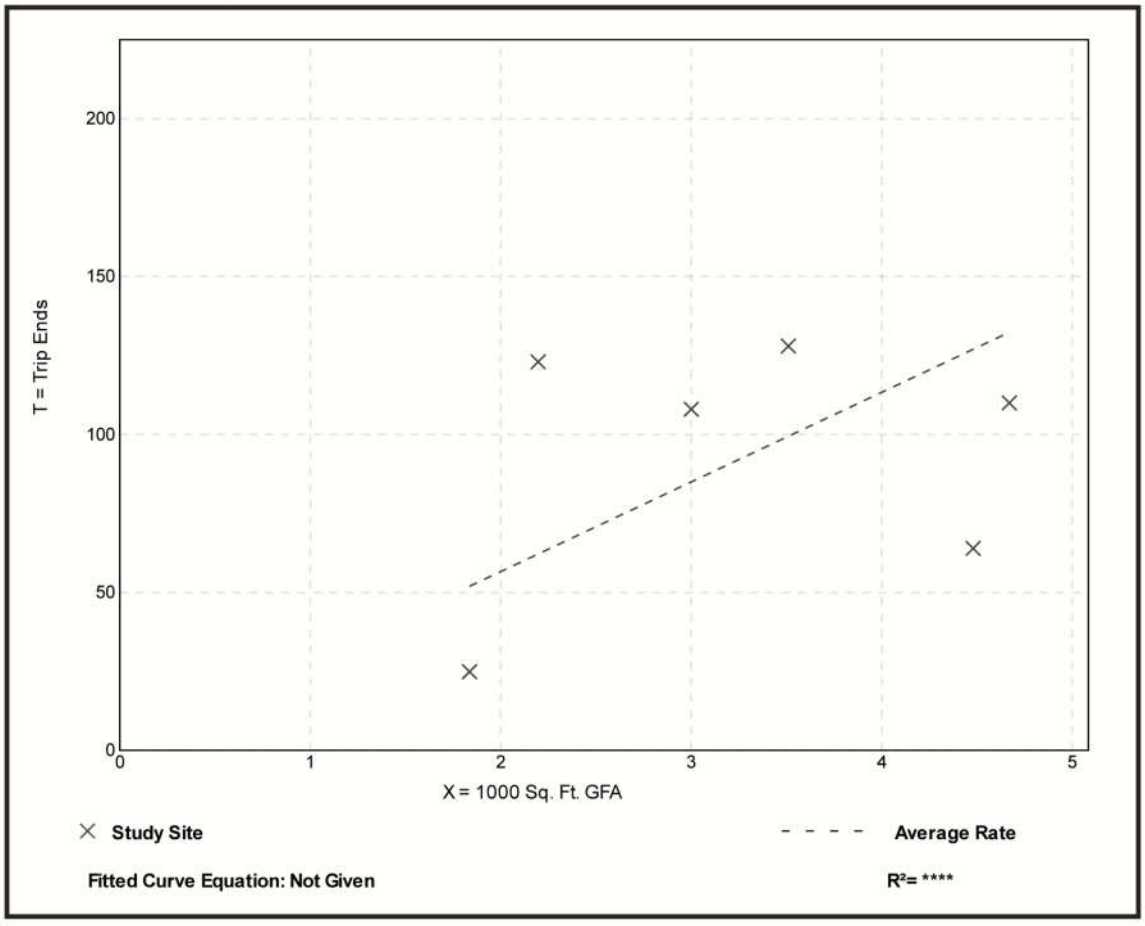
Fast-Food Restaurant without Drive-Through Window
(933)

Vehicle Trip Ends vs: **1000 Sq. Ft. GFA**
On a: **Weekday,**
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.
Setting/Location: **General Urban/Suburban**
Number of Studies: 6
1000 Sq. Ft. GFA: 3
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
28.34	13.62 - 56.01	14.56

Data Plot and Equation



Coffee/Donut Shop with Drive-Through Window
(937)

Vehicle Trip Ends vs: **1000 Sq. Ft. GFA**
On a: **Weekday**

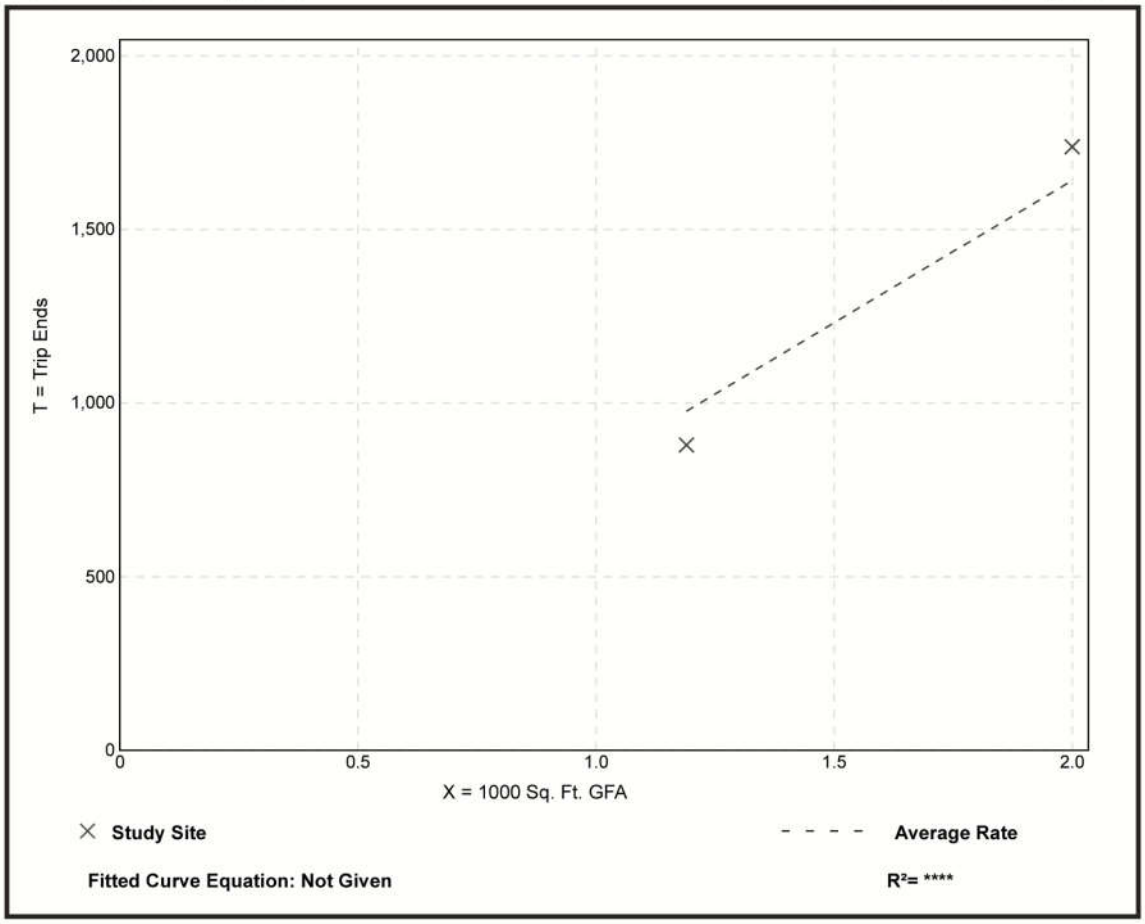
Setting/Location: **General Urban/Suburban**
Number of Studies: 2
1000 Sq. Ft. GFA: 2
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
820.38	738.66 - 869.00	*

Data Plot and Equation

Caution – Small Sample Size



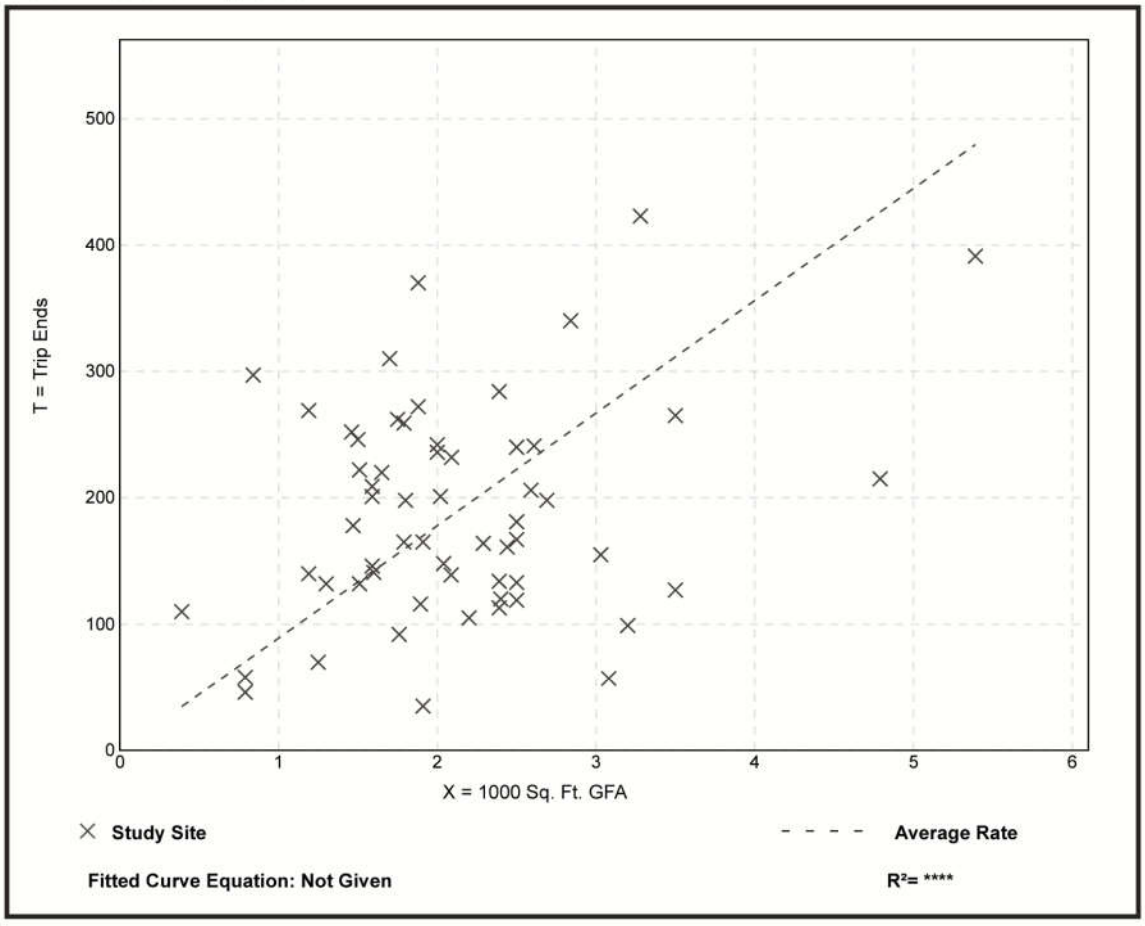
Coffee/Donut Shop with Drive-Through Window
(937)

Vehicle Trip Ends vs:	**1000 Sq. Ft. GFA**
On a:	**Weekday,**
	Peak Hour of Adjacent Street Traffic,
	One Hour Between 7 and 9 a.m.
Setting/Location:	**General Urban/Suburban**
Number of Studies:	61
1000 Sq. Ft. GFA:	2
Directional Distribution:	51% entering, 49% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
88.99	18.32 - 353.57	48.19

Data Plot and Equation



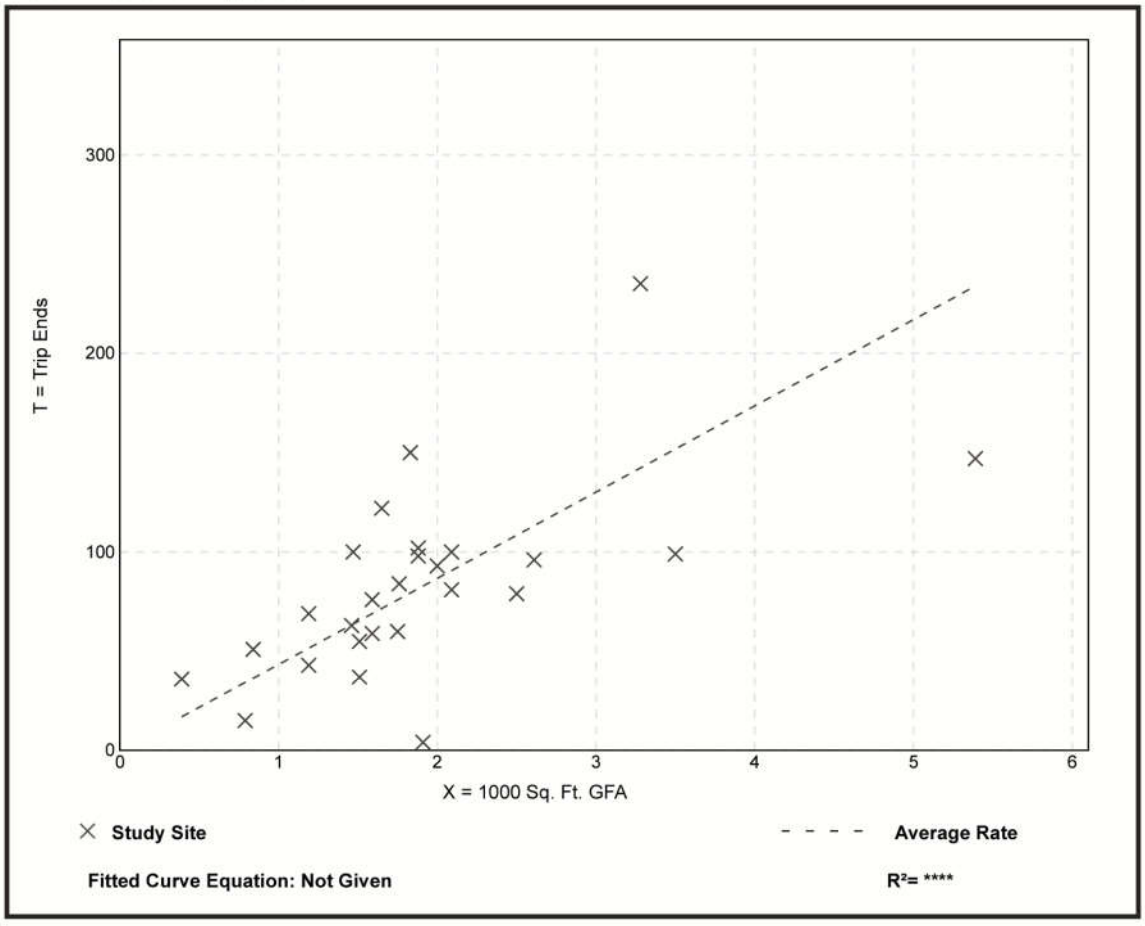
Coffee/Donut Shop with Drive-Through Window
(937)

Vehicle Trip Ends vs:	**1000 Sq. Ft. GFA**
On a:	**Weekday,**
	Peak Hour of Adjacent Street Traffic,
	One Hour Between 4 and 6 p.m.
Setting/Location:	**General Urban/Suburban**
Number of Studies:	26
1000 Sq. Ft. GFA:	2
Directional Distribution:	50% entering, 50% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
43.38	2.09 - 92.31	18.88

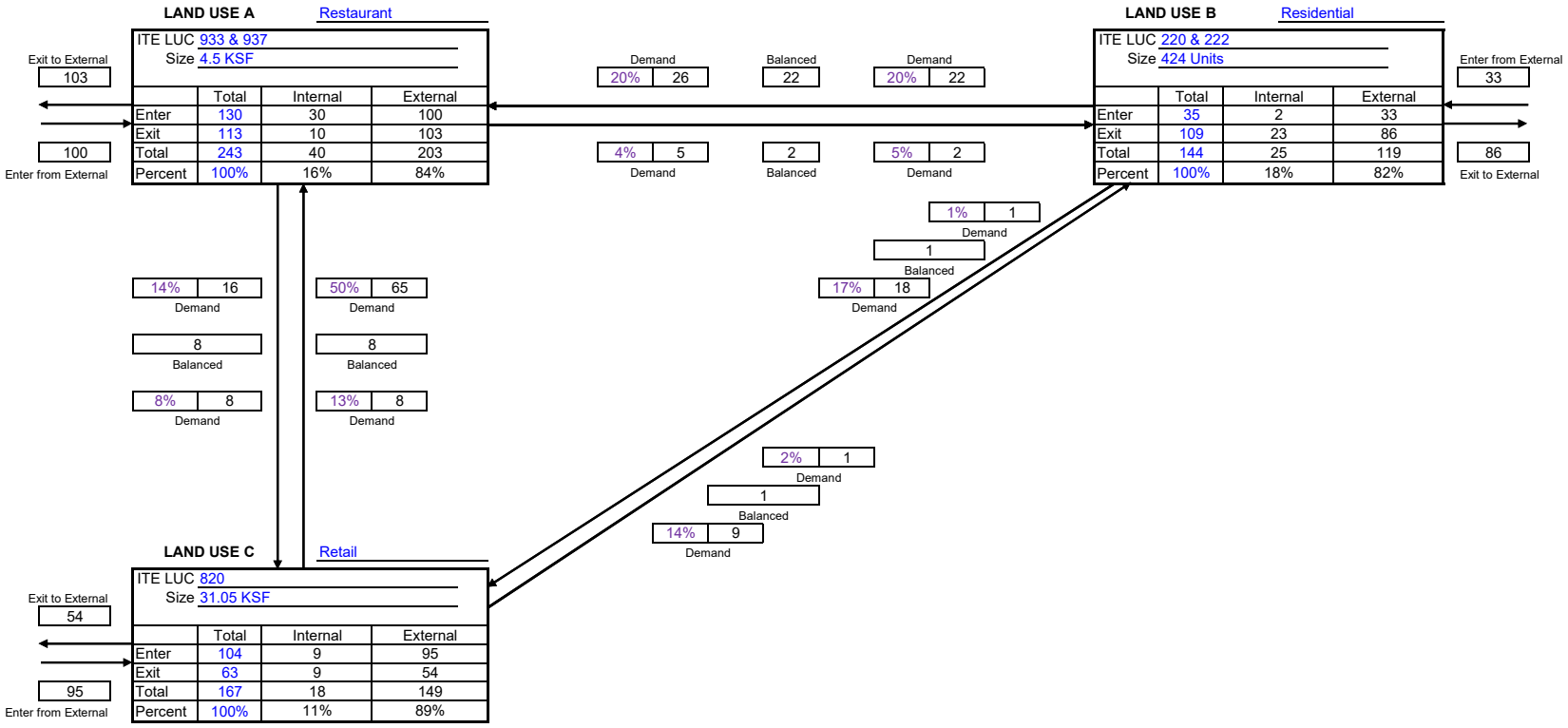
Data Plot and Equation



Analyst: LMM
Date: 11/3/17

MULTI-USE DEVELOPMENT
TRIP GENERATION
AND INTERNAL CAPTURE SUMMARY

Name of Dvlpt: Riverview West Development
Time Period: Weekday AM Peak Hour



Net External Trips for Multi-Use Development

	Enter	Exit	Total	Single-Use Trip Gen Est.	
Land Use A	100	103	203	243	
Land Use B	33	86	119	144	
Land Use C	95	54	149	167	
Land Use D	0	0	0	0	*Internal Capture*
TOTAL	227	243	470	554	**15%**

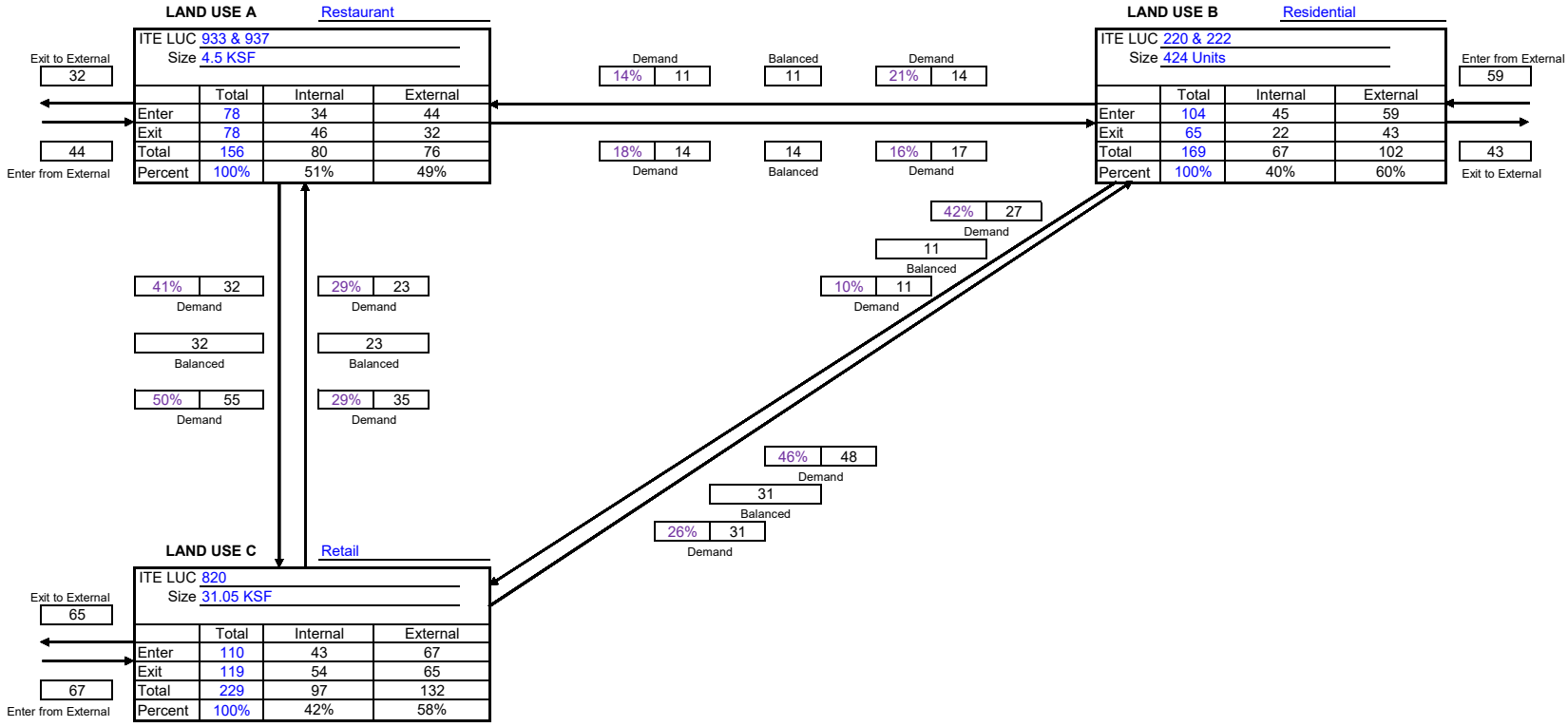
Based on ITE Trip Generation Handbook, 3rd Edition, September 2017.

GEWALT HAMILTON ASSOCIATES, INC.

Analyst: LMM
Date: 11/3/17

MULTI-USE DEVELOPMENT
TRIP GENERATION
AND INTERNAL CAPTURE SUMMARY

Name of Dvlpt: Riverview West Development
Time Period: Weekday PM Peak Hour



Net External Trips for Multi-Use Development					
	Enter	Exit	Total	Single-Use Trip Gen Est.	
Land Use A	44	32	76	156	
Land Use B	59	43	102	169	
Land Use C	67	65	132	229	
Land Use D	0	0	0	0	*Internal Capture*
TOTAL	171	141	311	554	**44%**

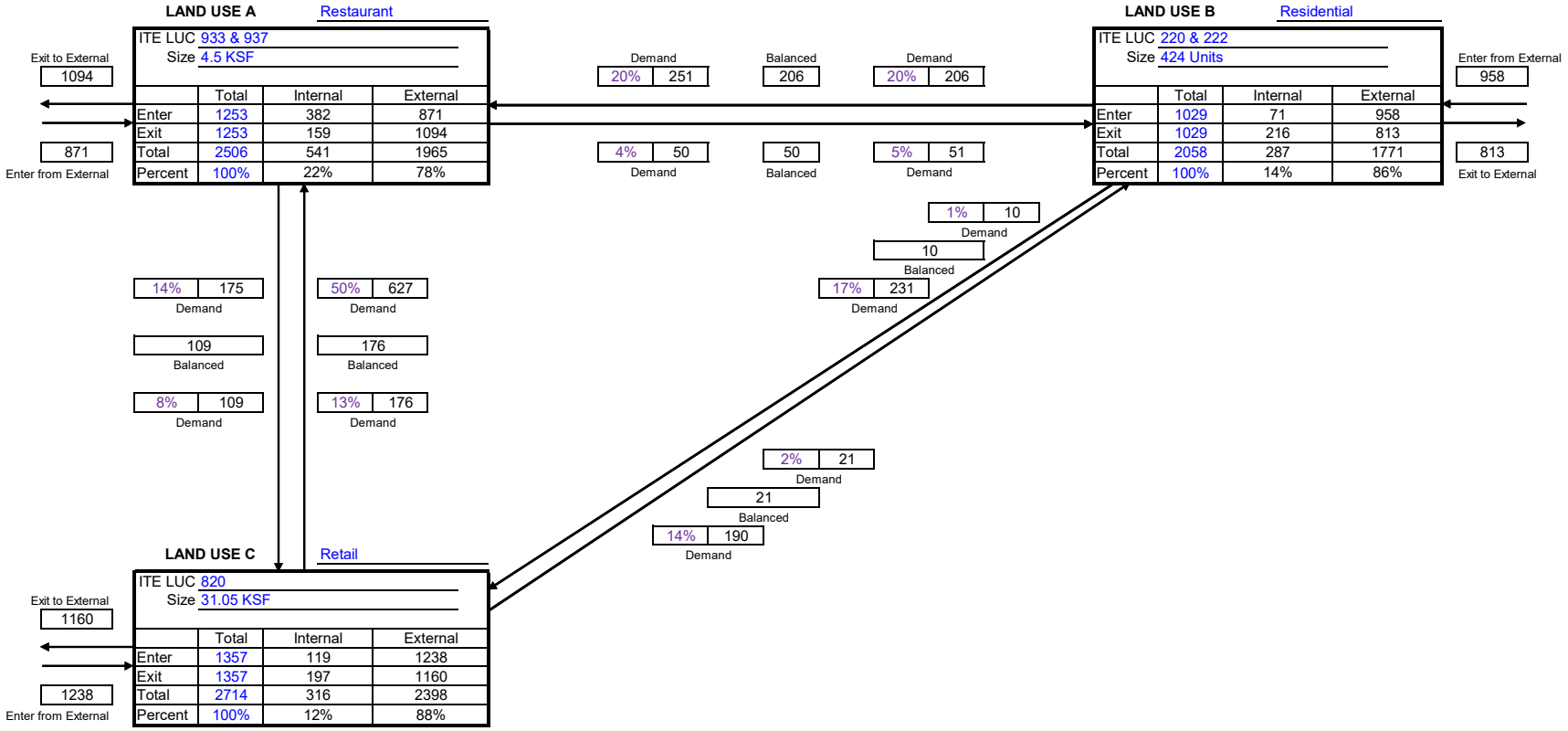
Based on ITE Trip Generation Handbook, 3rd Edition, September 2017.

GHA GEWALT HAMILTON ASSOCIATES, INC.

Analyst: LMM
Date: 11/3/17

MULTI-USE DEVELOPMENT
TRIP GENERATION
AND INTERNAL CAPTURE SUMMARY

Name of Dvlpt: Riverview West Development
Time Period: Daily



Net External Trips for Multi-Use Development

	Enter	Exit	Total	Single-Use Trip Gen Est.	
Land Use A	871	1094	1965	2506	
Land Use B	958	813	1771	2058	
Land Use C	1238	1160	2398	2714	
Land Use D	0	0	0	0	*Internal Capture*
TOTAL	3067	3067	6134	7278	**16%**

Based on ITE Trip Generation Handbook, 3rd Edition, September 2017.

APPENDIX D

CMAP Correspondence

Chicago Metropolitan
Agency for Planning

233 South Wacker Drive
Suite 800
Chicago, Illinois 60606

312 454 0400
www.cmap.illinois.gov

June 22, 2017

William C. Grieve, P.E., PTOE
Senior Transportation Engineer
Gewalt Hamilton Associates
625 Forest Edge Drive
Vernon Hills, IL 60061

Subject: ***Winfield Road - Ferry Road - River Road***
DuPage DOT

Dear Mr. Grieve:

In response to a request made on your behalf and dated June 22, 2017, we have developed year 2040 average daily traffic (ADT) projections for the subject location.

Traffic projections are developed using existing ADT data provided in the request letter and the results from the March 2017 CMAP Travel Demand Analysis. The regional travel model uses CMAP 2040 socioeconomic projections and assumes the implementation of the GO TO 2040 Comprehensive Regional Plan for the Northeastern Illinois area.

If you have any questions, please call me at (312) 386 8806.

Sincerely,

Jose Rodriguez, PTP, AICP
Senior Planner, Research & Analysis

cc Quigley (IDOT), Loper (DuPage Count DOT)
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APPENDIX E

Capacity Analysis Worksheets

HCS7 Two-Way Stop-Control Report

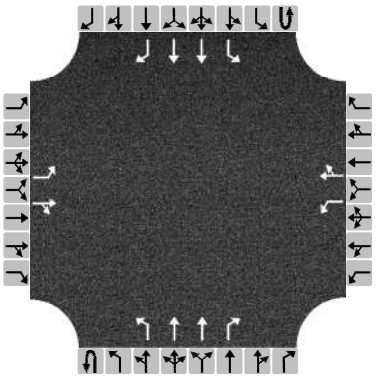
General Information

Analyst	LMM
Agency/Co.	GHA
Date Performed	11/9/2017
Analysis Year	2017
Time Analyzed	Existing AM
Intersection Orientation	North-South
Project Description	5244.902

Site Information

Intersection	Winfield Rd/McCormick Ln
Jurisdiction	DuDOT
East/West Street	McCormick Lane
North/South Street	Winfield Road
Peak Hour Factor	0.91
Analysis Time Period (hrs)	0.25

Lanes



Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		1	1	0		1	1	0	0	1	2	1	0	1	2	1
Configuration		L		TR		L		TR		L	T	R		L	T	R
Volume, V (veh/h)		13	1	11		34	0	14		2	882	11		2	1086	4
Percent Heavy Vehicles (%)		0	0	0		0	0	0		0				0		
Proportion Time Blocked																
Percent Grade (%)	0				0											
Right Turn Channelized	No				No				No				No			
Median Type/Storage	Left + Thru								1							

Critical and Follow-up Headways

Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		14		13		37		15		2				2		
Capacity, c (veh/h)		153		393		185		534		590				712		
v/c Ratio		0.09		0.03		0.20		0.03		0.00				0.00		
95% Queue Length, Q_{95} (veh)		0.3		0.1		0.7		0.1		0.0				0.0		
Control Delay (s/veh)		30.9		14.5		29.2		11.9		11.1				10.1		
Level of Service, LOS		D		B		D		B		B				B		
Approach Delay (s/veh)	23.0				24.2				0.0				0.0			
Approach LOS	C				C											

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HCS7 Two-Way Stop-Control Report

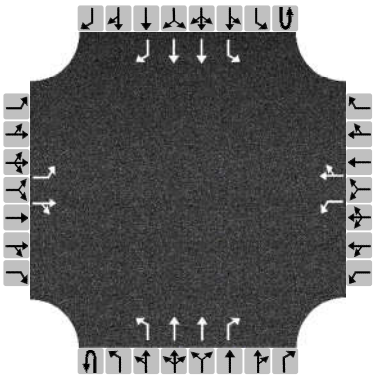
General Information

Analyst	LMM
Agency/Co.	GHA
Date Performed	11/9/2017
Analysis Year	2017
Time Analyzed	Existing PM
Intersection Orientation	North-South
Project Description	5244.902

Site Information

Intersection	Winfield Rd/McCormick Ln
Jurisdiction	DuDOT
East/West Street	McCormick Lane
North/South Street	Winfield Road
Peak Hour Factor	0.97
Analysis Time Period (hrs)	0.25

Lanes



Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		1	1	0		1	1	0	0	1	2	1	0	1	2	1
Configuration		L		TR		L		TR		L	T	R		L	T	R
Volume, V (veh/h)		13	0	5		11	0	12		13	1125	32		12	1038	11
Percent Heavy Vehicles (%)		0	0	0		0	0	0		0				0		
Proportion Time Blocked																
Percent Grade (%)	0				0											
Right Turn Channelized	No				No				No				No			
Median Type/Storage	Left + Thru								1							

Critical and Follow-up Headways

Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		13		5		11		12		13				12		
Capacity, c (veh/h)		158		495		147		463		653				592		
v/c Ratio		0.08		0.01		0.07		0.03		0.02				0.02		
95% Queue Length, Q_{95} (veh)		0.3		0.0		0.2		0.1		0.1				0.1		
Control Delay (s/veh)		29.8		12.3		31.5		13.0		10.6				11.2		
Level of Service, LOS		D		B		D		B		B				B		
Approach Delay (s/veh)	24.9				21.8				0.1				0.1			
Approach LOS	C				C											

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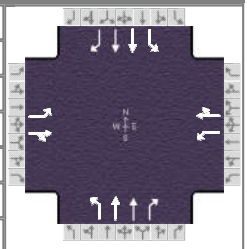
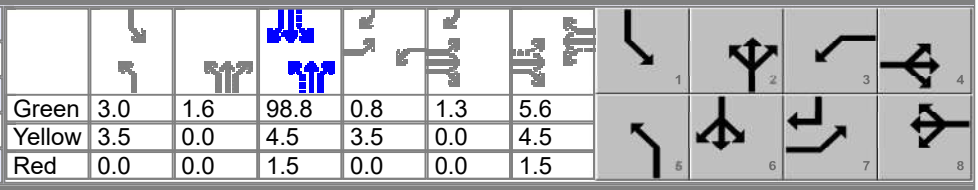
HCS7 Signalized Intersection Input Data

General Information				Intersection Information	
Agency	GHA			Duration, h	0.25
Analyst	LMM	Analysis Date	Nov 9, 2017	Area Type	Other
Jurisdiction	DuDOT	Time Period	AM Peak	PHF	0.97
Urban Street	Winfield Rd	Analysis Year	Existing	Analysis Period	1> 7:00
Intersection	Winfield Rd / Torch Pkwy	File Name	EX_Winfield_Torch_AM.xus		
Project Description	5244.900				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	3	0	27	1	0	4	131	888	92	44	1033	54

Signal Information			
Cycle, s	130.0	Reference Phase	2
Offset, s	0	Reference Point	Begin
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	3.0	1.6		98.8	0.8	1.3	5.6					
Yellow	3.5	0.0		4.5	3.5	0.0	4.5					
Red	0.0	0.0		1.5	0.0	0.0	1.5					

Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	3	0	27	1	0	4	131	888	92	44	1033	54
Initial Queue (Q_b), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s_o), veh/h	1900	1900	1900	1900	1900	1900	1900	2000	1900	1900	2000	1900
Parking (N_m), man/h		None			None			None			None	
Heavy Vehicles (P_{HV}), %	0	0		0	0		0	1	1	0	2	2
Ped / Bike / RTOR, /h	0	0	0	0	0	0	0	0	0	0	0	0
Buses (N_b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (*AT*)	3	3	3	3	3	3	3	4	3	3	4	3
Upstream Filtering (*I*)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width (*W*), ft	12.0	12.0		12.0	12.0		12.0	12.0	12.0	12.0	12.0	12.0
Turn Bay Length, ft	120	0		150	0		470	0	115	90	0	125
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h	25	25	25	25	25	25	40	40	40	40	40	40

Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s	13.0	32.0	13.0	32.0	13.0	72.0	13.0	72.0
Yellow Change Interval (*Y*), s	3.5	4.5	3.5	4.5	3.5	4.5	3.5	4.5
Red Clearance Interval (R_c), s	0.0	1.5	0.0	1.5	0.0	1.5	0.0	1.5
Minimum Green (G_{min}), s	3	8	3	8	3	15	3	15
Start-Up Lost Time (*lt*), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (*e*), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Passage (*PT*), s	3.0	4.0	3.0	4.0	3.0	7.0	3.0	7.0
Recall Mode	Off	Off	Off	Off	Off	Min	Off	Min
Dual Entry	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Walk (*Walk*), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pedestrian Clearance Time (*PC*), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0	No	25	0	No	25	0	No	25	0	No	25
Walkway / Crosswalk Width / Length, ft	9.0	12	0	9.0	12	0	9.0	12	0	9.0	12	0
Street Width / Island / Curb	0	0	No	0	0	No	0	0	No	0	0	No
Width Outside / Bike Lane / Shoulder, ft	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50		No	0.50		No	0.50		No	0.50	

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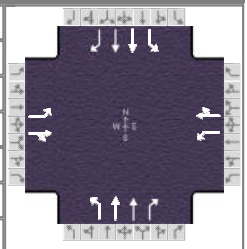
HCS7 Signalized Intersection Results Summary

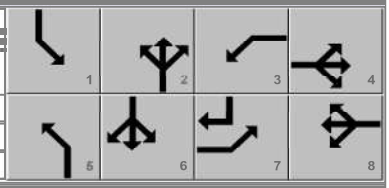
General Information				Intersection Information	
Agency	GHA			Duration, h	0.25
Analyst	LMM	Analysis Date	Nov 9, 2017	Area Type	Other
Jurisdiction	DuDOT	Time Period	AM Peak	PHF	0.97
Urban Street	Winfield Rd	Analysis Year	Existing	Analysis Period	1> 7:00
Intersection	Winfield Rd / Torch Pkwy	File Name	EX_Winfield_Torch_AM.xus		
Project Description	5244.900				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	3	0	27	1	0	4	131	888	92	44	1033	54

Signal Information			
Cycle, s	130.0	Reference Phase	2
Offset, s	0	Reference Point	Begin
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	3.0	1.6	98.8	0.8	1.3	5.6						
Yellow	3.5	0.0	4.5	3.5	0.0	4.5						
Red	0.0	0.0	1.5	0.0	0.0	1.5						



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	7	4	3	8	5	2	1	6
Case Number	1.1	4.0	1.1	4.0	1.1	3.0	1.1	3.0
Phase Duration, s	5.6	12.9	4.3	11.6	8.1	106.4	6.5	104.8
Change Period, ($Y+R_c$), s	3.5	6.0	3.5	6.0	3.5	6.0	3.5	6.0
Max Allow Headway (*MAH*), s	4.2	5.4	4.2	5.4	4.0	0.0	4.0	0.0
Queue Clearance Time (g_s), s	2.2	4.2	2.1	2.3	4.1		2.7	
Green Extension Time (g_e), s	0.0	0.1	0.0	0.1	0.4	0.0	0.1	0.0
Phase Call Probability	0.68	0.72	0.26	0.70	1.00		1.00	
Max Out Probability	0.00	0.00	0.00	0.00	0.00		0.00	

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (*v*), veh/h	3	28		1	4		135	915	95	45	1065	56
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1810	1610		1810	1610		1810	1889	1598	1810	1874	1585
Queue Service Time (g_s), s	0.2	2.2		0.1	0.3		2.1	0.0	1.9	0.7	0.0	1.1
Cycle Queue Clearance Time (g_c), s	0.2	2.2		0.1	0.3		2.1	0.0	1.9	0.7	0.0	1.1
Green Ratio (*g/C*)	0.06	0.05		0.05	0.04		0.80	0.77	0.77	0.78	0.76	0.78
Capacity (*c*), veh/h	142	85		95	69		528	2917	1234	566	2849	1230
Volume-to-Capacity Ratio (*X*)	0.022	0.328		0.011	0.060		0.256	0.314	0.077	0.080	0.374	0.045
Back of Queue (*Q*), ft/ln (95 th percentile)	4.5	43.5		1.5	6.4		28	5.2	24.2	9.7	6.8	13.6
Back of Queue (*Q*), veh/ln (95 th percentile)	0.2	1.7		0.1	0.3		1.1	0.2	1.0	0.4	0.3	0.5
Queue Storage Ratio (*RQ*) (95 th percentile)	0.04	0.00		0.01	0.00		0.06	0.00	0.21	0.11	0.00	0.11
Uniform Delay (d_1), s/veh	57.7	59.4		58.9	59.7		2.9	0.0	3.6	3.1	0.0	3.4
Incremental Delay (d_2), s/veh	0.1	3.2		0.0	0.5		0.3	0.3	0.1	0.1	0.4	0.1
Initial Queue Delay (d_3), s/veh	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (*d*), s/veh	57.8	62.5		58.9	60.2		3.2	0.3	3.7	3.2	0.4	3.5
Level of Service (LOS)	E	E		E	E		A	A	A	A	A	A
Approach Delay, s/veh / LOS	62.0	E		60.0	E		0.9	A		0.6	A	
Intersection Delay, s/veh / LOS	1.7						A					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	3.0	C	3.0	C	2.2	B	2.2	B
Bicycle LOS Score / LOS	0.5	A	0.5	A	1.4	A	1.4	A

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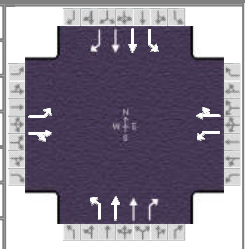
HCS7 Signalized Intersection Intermediate Values

General Information				Intersection Information	
Agency	GHA			Duration, h	0.25
Analyst	LMM	Analysis Date	Nov 9, 2017	Area Type	Other
Jurisdiction	DuDOT	Time Period	AM Peak	PHF	0.97
Urban Street	Winfield Rd	Analysis Year	Existing	Analysis Period	1> 7:00
Intersection	Winfield Rd / Torch Pkwy	File Name	EX_Winfield_Torch_AM.xus		
Project Description	5244.900				

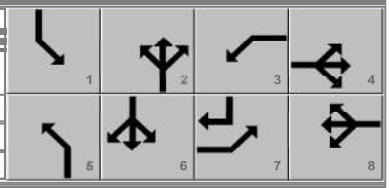


Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	3	0	27	1	0	4	131	888	92	44	1033	54

Signal Information			
Cycle, s	130.0	Reference Phase	2
Offset, s	0	Reference Point	Begin
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	3.0	1.6	98.8	0.8	1.3	5.6
Yellow	3.5	0.0	4.5	3.5	0.0	4.5
Red	0.0	0.0	1.5	0.0	0.0	1.5



Saturation Flow / Delay	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles and Grade Factor (f_{HVg})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.992	0.992	1.000	0.984	0.984
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.952	1.000	1.000	0.952	1.000
Left-Turn Adjustment Factor (f_{LT})	0.952	0.000		0.952	0.000		0.952	0.000		0.952	0.000	
Right-Turn Adjustment Factor (f_{RT})		0.847	0.847		0.847	0.847		0.000	0.847		0.000	0.847
Left-Turn Pedestrian Adjustment Factor (f_{Lpb})	1.000			1.000			1.000			1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{Rpb})			1.000			1.000			1.000			1.000
Work Zone Adjustment Factor (f_{wz})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
DDI Factor (f_{DDI})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Movement Saturation Flow Rate (s), veh/h	1810	0	1610	1810	0	1610	1810	3778	1598	1810	3749	1585
Proportion of Vehicles Arriving on Green (P)	0.02	0.00	0.05	0.01	0.00	0.04	0.04	1.00	0.77	0.02	1.00	0.76
Incremental Delay Factor (k)	0.11	0.15		0.11	0.15		0.11	0.50	0.50	0.11	0.50	0.50

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)	3.5	6.0	3.5	6.0	3.5	6.0	3.5	6.0
Green Ratio (g/C)	0.06	0.05	0.05	0.04	0.80	0.77	0.78	0.76
Permitted Saturation Flow Rate (s_p), veh/h/ln	1435	0	1404	0	538	0	620	0
Shared Saturation Flow Rate (s_{sh}), veh/h/ln								
Permitted Effective Green Time (g_p), s	5.6	0.0	5.6	0.0	98.9	0.0	98.8	0.0
Permitted Service Time (g_u), s	5.3	0.0	2.7	0.0	98.8	0.0	98.4	0.0
Permitted Queue Service Time (g_{ps}), s	0.0		0.0		0.0		0.0	
Time to First Blockage (g_f), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Service Time Before Blockage (g_{fs}), s								
Protected Right Saturation Flow (s_R), veh/h/ln						0		1585
Protected Right Effective Green Time (g_R), s						0.0		2.1

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	2.224	0.00	2.224	0.00	1.557	0.00	1.557	0.00
Pedestrian F_s / F_{delay}	0.000	0.163	0.000	0.164	0.000	0.049	0.000	0.053
Pedestrian M_{corner} / M_{cw}								
Bicycle c_b / d_b	105.40	58.33	85.69	59.55	1544.24	3.38	1520.24	3.74
Bicycle F_w / F_v	-3.64	0.05	-3.64	0.01	-3.64	0.94	-3.64	0.96

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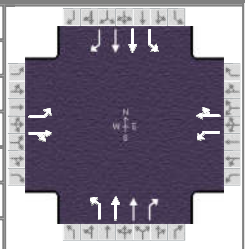
HCS7 Signalized Intersection Results Graphical Summary

General Information				Intersection Information	
Agency	GHA			Duration, h	0.25
Analyst	LMM	Analysis Date	Nov 9, 2017	Area Type	Other
Jurisdiction	DuDOT	Time Period	AM Peak	PHF	0.97
Urban Street	Winfield Rd	Analysis Year	Existing	Analysis Period	1> 7:00
Intersection	Winfield Rd / Torch Pkwy	File Name	EX_Winfield_Torch_AM.xus		
Project Description	5244.900				

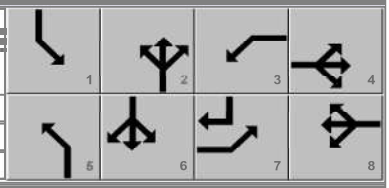


Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	3	0	27	1	0	4	131	888	92	44	1033	54

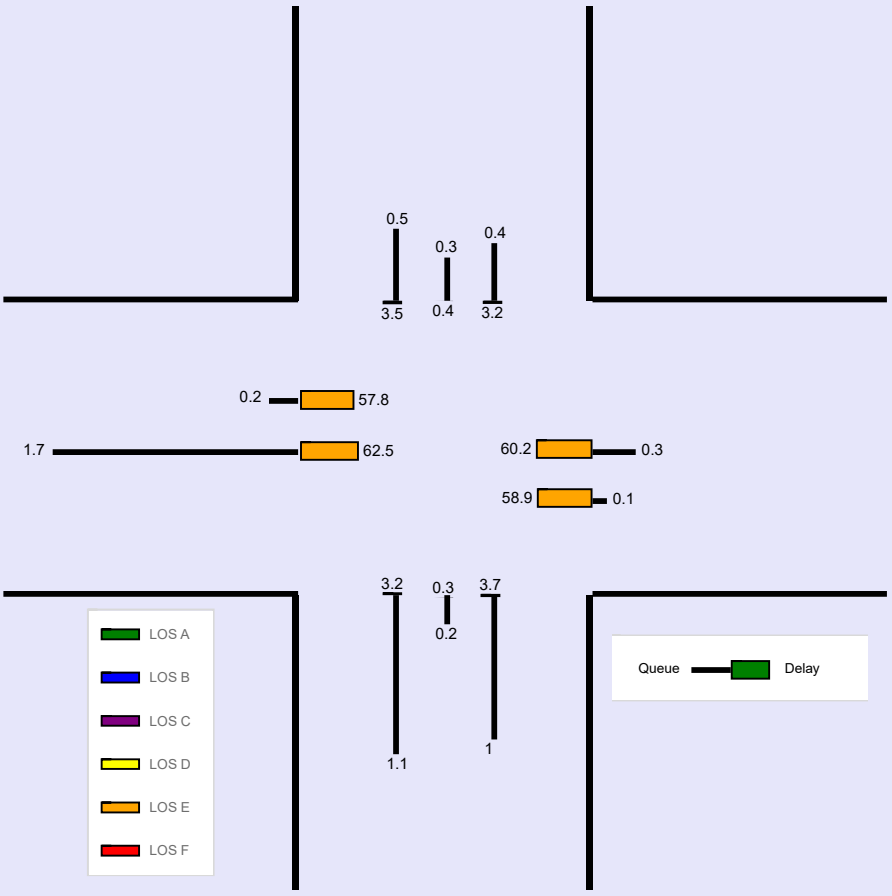
Signal Information			
Cycle, s	130.0	Reference Phase	2
Offset, s	0	Reference Point	Begin
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	3.0	1.6		98.8	0.8	1.3	5.6					
Yellow	3.5	0.0		4.5	3.5	0.0	4.5					
Red	0.0	0.0		1.5	0.0	0.0	1.5					



Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Back of Queue (*Q*), ft/ln (95 th percentile)	4.5	43.5		1.5	6.4		28	5.2	24.2	9.7	6.8	13.6
Back of Queue (*Q*), veh/ln (95 th percentile)	0.2	1.7		0.1	0.3		1.1	0.2	1.0	0.4	0.3	0.5
Queue Storage Ratio (*RQ*) (95 th percentile)	0.04	0.00		0.01	0.00		0.06	0.00	0.21	0.11	0.00	0.11
Control Delay (*d*), s/veh	57.8	62.5		58.9	60.2		3.2	0.3	3.7	3.2	0.4	3.5
Level of Service (LOS)	E	E		E	E		A	A	A	A	A	A
Approach Delay, s/veh / LOS	62.0	E		60.0	E		0.9	A		0.6	A	
Intersection Delay, s/veh / LOS	1.7						A					



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--- Messages ---

No errors or warnings exist.

--- Comments ---

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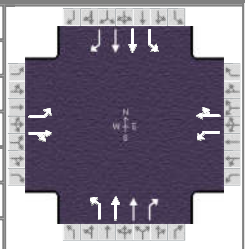
HCS7 Signalized Intersection Input Data

General Information				Intersection Information	
Agency	GHA			Duration, h	0.25
Analyst	LMM	Analysis Date	Nov 9, 2017	Area Type	Other
Jurisdiction	DuDOT	Time Period	PM Peak	PHF	0.94
Urban Street	Winfield Rd	Analysis Year	Existing	Analysis Period	1> 5:00
Intersection	Winfield Rd / Torch Pkwy	File Name	EX_Winfield_Torch_PM.xus		
Project Description	5244.900				

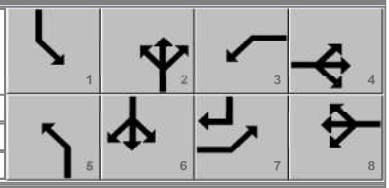


Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	52	0	162	56	0	58	23	1060	5	1	1049	4

Signal Information			
Cycle, s	150.0	Reference Phase	2
Offset, s	0	Reference Point	Begin
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	3.0	103.1	6.0	0.3	18.6	0.0
Yellow	3.5	4.5	3.5	0.0	4.5	0.0
Red	0.0	1.5	0.0	0.0	1.5	0.0



Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	52	0	162	56	0	58	23	1060	5	1	1049	4
Initial Queue (Q_b), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s_o), veh/h	1900	1900	1900	1900	1900	1900	1900	2000	1900	1900	2000	1900
Parking (N_m), man/h		None			None			None			None	
Heavy Vehicles (P_{HV}), %	0	0		0	0		0	1	0	0	1	0
Ped / Bike / RTOR, /h	0	0	0	0	0	0	0	0	0	0	0	0
Buses (N_b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (*AT*)	3	3	3	3	3	3	3	4	3	3	4	3
Upstream Filtering (*I*)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width (*W*), ft	12.0	12.0		12.0	12.0		12.0	12.0	12.0	12.0	12.0	12.0
Turn Bay Length, ft	120	0		150	0		470	0	115	90	0	125
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h	25	25	25	25	25	25	40	40	40	40	40	40

Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s	14.0	28.0	14.0	28.0	14.0	94.0	14.0	94.0
Yellow Change Interval (*Y*), s	3.5	4.5	3.5	4.5	3.5	4.5	3.5	4.5
Red Clearance Interval (R_c), s	0.0	1.5	0.0	1.5	0.0	1.5	0.0	1.5
Minimum Green (G_{min}), s	3	8	3	8	3	15	3	15
Start-Up Lost Time (*lt*), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (*e*), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Passage (*PT*), s	3.0	4.0	3.0	4.0	3.0	7.0	3.0	7.0
Recall Mode	Off	Off	Off	Off	Off	Min	Off	Min
Dual Entry	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Walk (*Walk*), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pedestrian Clearance Time (*PC*), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0	No	25	0	No	25	0	No	25	0	No	25
Walkway / Crosswalk Width / Length, ft	9.0	12	0	9.0	12	0	9.0	12	0	9.0	12	0
Street Width / Island / Curb	0	0	No	0	0	No	0	0	No	0	0	No
Width Outside / Bike Lane / Shoulder, ft	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50		No	0.50		No	0.50		No	0.50	

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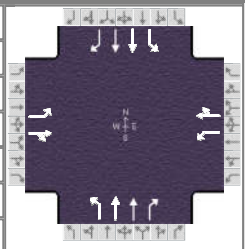
HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	GHA			Duration, h	0.25
Analyst	LMM	Analysis Date	Nov 9, 2017	Area Type	Other
Jurisdiction	DuDOT	Time Period	PM Peak	PHF	0.94
Urban Street	Winfield Rd	Analysis Year	Existing	Analysis Period	1> 5:00
Intersection	Winfield Rd / Torch Pkwy	File Name	EX_Winfield_Torch_PM.xus		
Project Description	5244.900				

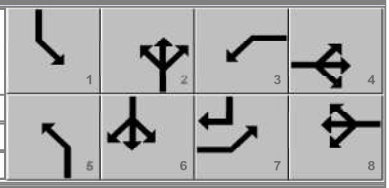


Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	52	0	162	56	0	58	23	1060	5	1	1049	4

Signal Information			
Cycle, s	150.0	Reference Phase	2
Offset, s	0	Reference Point	Begin
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	3.0	103.1	6.0	0.3	18.6	0.0
Yellow	3.5	4.5	3.5	0.0	4.5	0.0
Red	0.0	1.5	0.0	0.0	1.5	0.0



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	7	4	3	8	5	2	1	6
Case Number	1.1	4.0	1.1	4.0	1.1	3.0	1.1	3.0
Phase Duration, s	9.5	24.6	9.8	24.9	6.5	109.1	6.5	109.1
Change Period, ($Y+R_c$), s	3.5	6.0	3.5	6.0	3.5	6.0	3.5	6.0
Max Allow Headway (*MAH*), s	4.2	5.4	4.2	5.4	4.0	0.0	4.0	0.0
Queue Clearance Time (g_s), s	6.0	17.8	6.3	7.2	2.6		2.0	
Green Extension Time (g_e), s	0.0	0.8	0.0	1.3	0.0	0.0	0.0	0.0
Phase Call Probability	1.00	1.00	1.00	1.00	1.00		1.00	
Max Out Probability	0.64	0.27	0.92	0.00	0.00		0.00	

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (*v*), veh/h	55	172		60	62		24	1128	5	1	1116	4
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1810	1610		1810	1610		1810	1889	1610	1810	1889	1610
Queue Service Time (g_s), s	4.0	15.8		4.3	5.2		0.6	6.2	0.2	0.0	6.1	0.1
Cycle Queue Clearance Time (g_c), s	4.0	15.8		4.3	5.2		0.6	6.2	0.2	0.0	6.1	0.1
Green Ratio (*g/C*)	0.16	0.12		0.17	0.13		0.71	0.69	0.69	0.71	0.69	0.73
Capacity (*c*), veh/h	226	199		147	203		409	2598	1107	405	2598	1172
Volume-to-Capacity Ratio (*X*)	0.245	0.865		0.405	0.305		0.060	0.434	0.005	0.003	0.430	0.004
Back of Queue (*Q*), ft/ln (95 th percentile)	84.1	304.6		92.2	100.5		10.1	80.2	2.4	0.4	79.1	1.6
Back of Queue (*Q*), veh/ln (95 th percentile)	3.4	12.2		3.7	4.0		0.4	3.2	0.1	0.0	3.1	0.1
Queue Storage Ratio (*RQ*) (95 th percentile)	0.70	0.00		0.61	0.00		0.02	0.00	0.02	0.00	0.00	0.01
Uniform Delay (d_1), s/veh	54.3	64.5		54.8	59.6		6.7	2.2	7.3	6.6	2.2	5.6
Incremental Delay (d_2), s/veh	0.6	20.1		1.8	1.2		0.1	0.5	0.0	0.0	0.5	0.0
Initial Queue Delay (d_3), s/veh	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (*d*), s/veh	54.8	84.6		56.6	60.8		6.8	2.7	7.4	6.6	2.7	5.6
Level of Service (LOS)	D	F		E	E		A	A	A	A	A	A
Approach Delay, s/veh / LOS	77.4	E		58.8	E		2.8	A		2.7	A	
Intersection Delay, s/veh / LOS	11.8						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	3.0	C	3.0	C	2.2	B	2.2	B
Bicycle LOS Score / LOS	0.9	A	0.7	A	1.4	A	1.4	A

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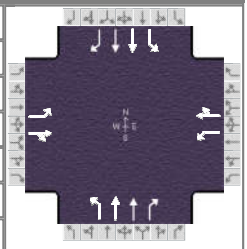
HCS7 Signalized Intersection Intermediate Values

General Information				Intersection Information	
Agency	GHA			Duration, h	0.25
Analyst	LMM	Analysis Date	Nov 9, 2017	Area Type	Other
Jurisdiction	DuDOT	Time Period	PM Peak	PHF	0.94
Urban Street	Winfield Rd	Analysis Year	Existing	Analysis Period	1> 5:00
Intersection	Winfield Rd / Torch Pkwy	File Name	EX_Winfield_Torch_PM.xus		
Project Description	5244.900				

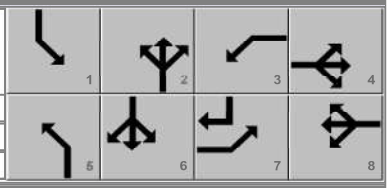


Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	52	0	162	56	0	58	23	1060	5	1	1049	4

Signal Information			
Cycle, s	150.0	Reference Phase	2
Offset, s	0	Reference Point	Begin
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	3.0	103.1	6.0	0.3	18.6	0.0
Yellow	3.5	4.5	3.5	0.0	4.5	0.0
Red	0.0	1.5	0.0	0.0	1.5	0.0



Saturation Flow / Delay	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles and Grade Factor (f_{HVg})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.992	1.000	1.000	0.992	1.000
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.952	1.000	1.000	0.952	1.000
Left-Turn Adjustment Factor (f_{LT})	0.952	0.000		0.952	0.000		0.952	0.000		0.952	0.000	
Right-Turn Adjustment Factor (f_{RT})		0.847	0.847		0.847	0.847		0.000	0.847		0.000	0.847
Left-Turn Pedestrian Adjustment Factor (f_{Lpb})	1.000			1.000			1.000			1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{Rpb})			1.000			1.000			1.000			1.000
Work Zone Adjustment Factor (f_{wz})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
DDI Factor (f_{DDI})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Movement Saturation Flow Rate (s), veh/h	1810	0	1610	1810	0	1610	1810	3778	1610	1810	3778	1610
Proportion of Vehicles Arriving on Green (P)	0.04	0.00	0.12	0.04	0.00	0.13	0.02	0.92	0.69	0.02	0.92	0.69
Incremental Delay Factor (k)	0.11	0.23		0.11	0.15		0.11	0.50	0.50	0.11	0.50	0.50

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)	3.5	6.0	3.5	6.0	3.5	6.0	3.5	6.0
Green Ratio (g/C)	0.16	0.12	0.17	0.13	0.71	0.69	0.71	0.69
Permitted Saturation Flow Rate (s_p), veh/h/ln	1362	0	1232	0	513	0	507	0
Shared Saturation Flow Rate (s_{sh}), veh/h/ln								
Permitted Effective Green Time (g_p), s	18.6	0.0	18.6	0.0	103.1	0.0	103.1	0.0
Permitted Service Time (g_u), s	11.6	0.0	2.8	0.0	95.1	0.0	94.9	0.0
Permitted Queue Service Time (g_{ps}), s	0.3		0.8		0.4		0.0	
Time to First Blockage (g_f), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Service Time Before Blockage (g_{fs}), s								
Protected Right Saturation Flow (s_R), veh/h/ln						0		1610
Protected Right Effective Green Time (g_R), s						0.0		6.0

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	2.224	0.00	2.224	0.00	1.557	0.00	1.557	0.00
Pedestrian F_s / F_{delay}	0.000	0.163	0.000	0.162	0.000	0.080	0.000	0.080
Pedestrian M_{corner} / M_{cw}								
Bicycle c_b / d_b	247.50	57.59	251.53	57.32	1375.23	7.32	1375.23	7.32
Bicycle F_w / F_v	-3.64	0.38	-3.64	0.20	-3.64	0.95	-3.64	0.93

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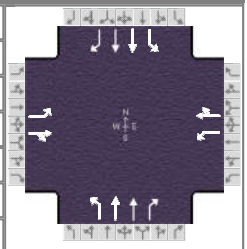
HCS7 Signalized Intersection Results Graphical Summary

General Information				Intersection Information	
Agency	GHA			Duration, h	0.25
Analyst	LMM	Analysis Date	Nov 9, 2017	Area Type	Other
Jurisdiction	DuDOT	Time Period	PM Peak	PHF	0.94
Urban Street	Winfield Rd	Analysis Year	Existing	Analysis Period	1> 5:00
Intersection	Winfield Rd / Torch Pkwy	File Name	EX_Winfield_Torch_PM.xus		
Project Description	5244.900				

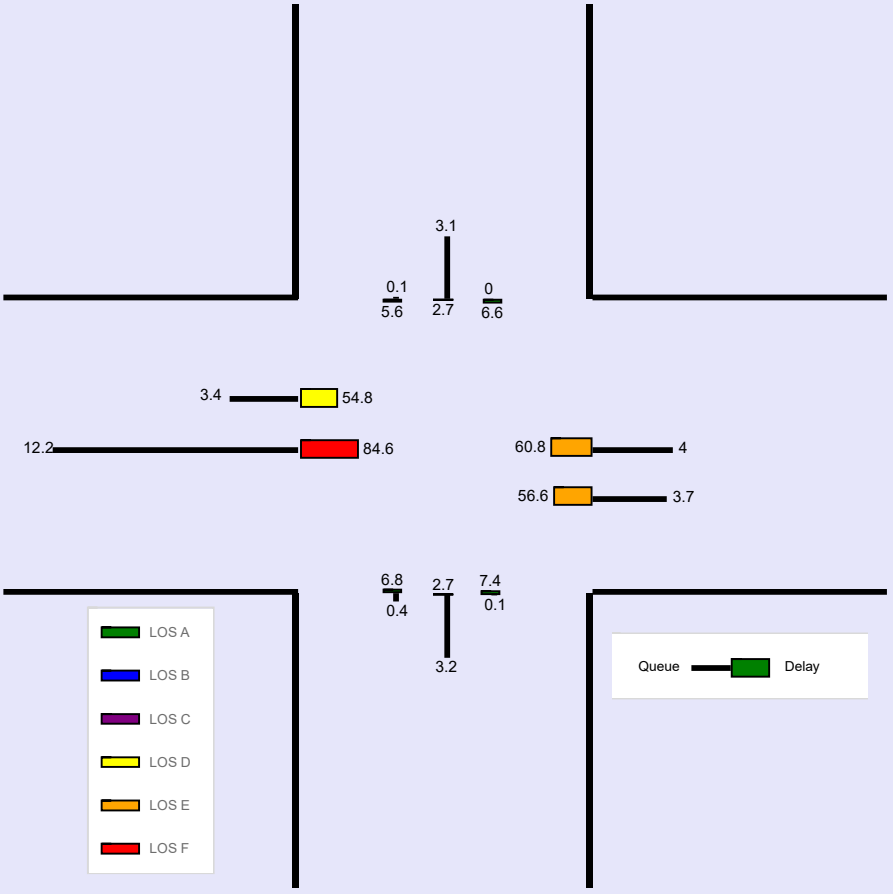


Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	52	0	162	56	0	58	23	1060	5	1	1049	4

Signal Information			
Cycle, s	150.0	Reference Phase	2
Offset, s	0	Reference Point	Begin
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	3.0	103.1	6.0	0.3	18.6	0.0	1	2	3	4		
Yellow	3.5	4.5	3.5	0.0	4.5	0.0	5	6	7	8		
Red	0.0	1.5	0.0	0.0	1.5	0.0						

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Back of Queue (*Q*), ft/ln (95 th percentile)	84.1	304.6		92.2	100.5		10.1	80.2	2.4	0.4	79.1	1.6
Back of Queue (*Q*), veh/ln (95 th percentile)	3.4	12.2		3.7	4.0		0.4	3.2	0.1	0.0	3.1	0.1
Queue Storage Ratio (*RQ*) (95 th percentile)	0.70	0.00		0.61	0.00		0.02	0.00	0.02	0.00	0.00	0.01
Control Delay (*d*), s/veh	54.8	84.6		56.6	60.8		6.8	2.7	7.4	6.6	2.7	5.6
Level of Service (LOS)	D	F		E	E		A	A	A	A	A	A
Approach Delay, s/veh / LOS	77.4	E		58.8	E		2.8	A		2.7	A	
Intersection Delay, s/veh / LOS	11.8						B					



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--- Messages ---

No errors or warnings exist.

--- Comments ---

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HCS7 Two-Way Stop-Control Report

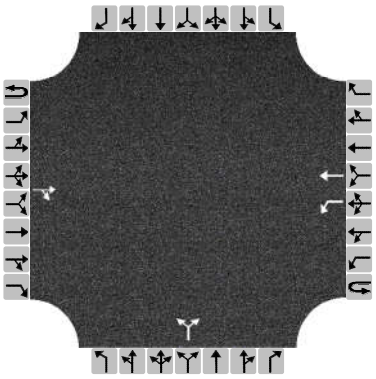
General Information

Analyst	LMM
Agency/Co.	GHA
Date Performed	11/9/2017
Analysis Year	2017
Time Analyzed	Existing AM
Intersection Orientation	East-West
Project Description	5244.902

Site Information

Intersection	Torch Pkwy / Office E
Jurisdiction	Local
East/West Street	Torch Parkway
North/South Street	office East
Peak Hour Factor	0.86
Analysis Time Period (hrs)	0.25

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	1	1	0		0	1	0		0	0	0
Configuration				TR		L	T				LR					
Volume, V (veh/h)			23	0		176	9			0		7				
Percent Heavy Vehicles (%)						0				0		0				
Proportion Time Blocked																
Percent Grade (%)										0						
Right Turn Channelized		No				No				No				No		
Median Type/Storage			Undivided													

Critical and Follow-up Headways

Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						205					8					
Capacity, c (veh/h)						1600					1054					
v/c Ratio						0.13					0.01					
95% Queue Length, Q_{95} (veh)						0.4					0.0					
Control Delay (s/veh)						7.6					8.4					
Level of Service, LOS						A					A					
Approach Delay (s/veh)						7.2					8.4					
Approach LOS											A					

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HCS7 Two-Way Stop-Control Report

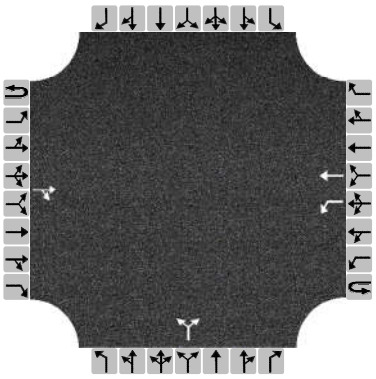
General Information

Analyst	LMM
Agency/Co.	GHA
Date Performed	11/9/2017
Analysis Year	2017
Time Analyzed	Existing PM
Intersection Orientation	East-West
Project Description	5244.902

Site Information

Intersection	Torch Pkwy / Office E
Jurisdiction	Local
East/West Street	Torch Parkway
North/South Street	office East
Peak Hour Factor	0.73
Analysis Time Period (hrs)	0.25

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	1	1	0		0	1	0		0	0	0
Configuration				TR		L	T				LR					
Volume, V (veh/h)			20	0		19	8			1		194				
Percent Heavy Vehicles (%)						0				0		0				
Proportion Time Blocked																
Percent Grade (%)										0						
Right Turn Channelized		No				No				No				No		
Median Type/Storage			Undivided													

Critical and Follow-up Headways

Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						26					267					
Capacity, c (veh/h)						1600					1054					
v/c Ratio						0.02					0.25					
95% Queue Length, Q_{95} (veh)						0.0					1.0					
Control Delay (s/veh)						7.3					9.6					
Level of Service, LOS						A					A					
Approach Delay (s/veh)						5.1					9.6					
Approach LOS											A					

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HCS7 Two-Way Stop-Control Report

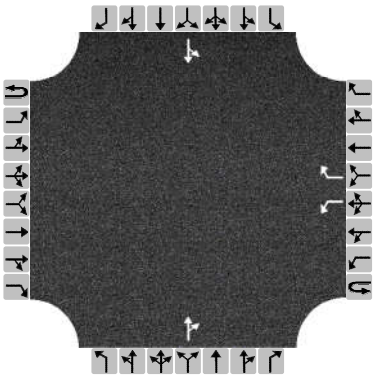
General Information

Analyst	LMM
Agency/Co.	GHA
Date Performed	11/9/2017
Analysis Year	2017
Time Analyzed	Existing AM
Intersection Orientation	East-West
Project Description	5244.902

Site Information

Intersection	Torch Pkwy/Kline/Office W
Jurisdiction	Local
East/West Street	Torch Parkway
North/South Street	Office West/Kline Circle
Peak Hour Factor	0.73
Analysis Time Period (hrs)	0.25

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	0	0	0	1	0	1		0	1	0		0	1	0
Configuration						L		R				TR		LT		
Volume, V (veh/h)						1		8			0	2		21	1	
Percent Heavy Vehicles (%)						0					0	0		0	0	
Proportion Time Blocked																
Percent Grade (%)									0				0			
Right Turn Channelized	No				No				No				No			
Median Type/Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						1						3		30		
Capacity, c (veh/h)						1636						1091		1024		
v/c Ratio						0.00						0.00		0.03		
95% Queue Length, Q_{95} (veh)						0.0						0.0		0.1		
Control Delay (s/veh)						7.2						8.3		8.6		
Level of Service, LOS						A						A		A		
Approach Delay (s/veh)					0.6				8.3				8.6			
Approach LOS									A				A			

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HCS7 Two-Way Stop-Control Report

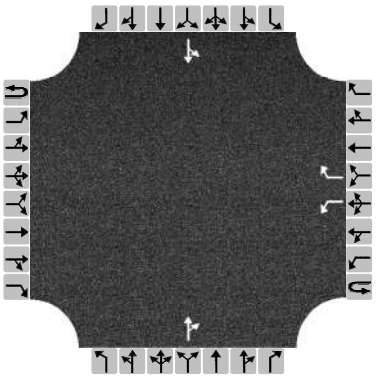
General Information

Analyst	LMM
Agency/Co.	GHA
Date Performed	11/9/2017
Analysis Year	2017
Time Analyzed	Existing PM
Intersection Orientation	East-West
Project Description	5244.902

Site Information

Intersection	Torch Pkwy/Kline/Office W
Jurisdiction	Local
East/West Street	Torch Parkway
North/South Street	Office West/Kline Circle
Peak Hour Factor	0.78
Analysis Time Period (hrs)	0.25

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	0	0	0	1	0	1		0	1	0		0	1	0
Configuration						L		R				TR		LT		
Volume, V (veh/h)						0		9			0	13		7	0	
Percent Heavy Vehicles (%)						0					0	0		0	0	
Proportion Time Blocked																
Percent Grade (%)									0				0			
Right Turn Channelized	No				No				No				No			
Median Type/Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						0						17		9		
Capacity, c (veh/h)						1636						1091		1029		
v/c Ratio						0.00						0.02		0.01		
95% Queue Length, Q_{95} (veh)						0.0						0.0		0.0		
Control Delay (s/veh)						7.2						8.4		8.5		
Level of Service, LOS						A						A		A		
Approach Delay (s/veh)					0.0				8.4				8.5			
Approach LOS									A				A			

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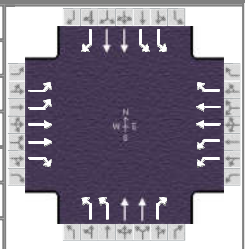
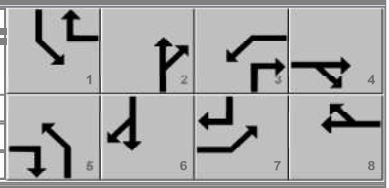
HCS7 Signalized Intersection Input Data

General Information				Intersection Information	
Agency	GHA			Duration, h	0.25
Analyst	LMM	Analysis Date	Nov 9, 2017	Area Type	Other
Jurisdiction	DuDOT	Time Period	AM Peak	PHF	0.95
Urban Street	Winfield Rd	Analysis Year	Existing	Analysis Period	1> 7:00
Intersection	Winfield Rd / Ferry Rd	File Name	EX_Winfield Ferry_AM.xus		
Project Description	5244.902				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	382	729	89	65	300	41	308	688	263	103	703	255

Signal Information												
Cycle, s	130.0	Reference Phase	2									
Offset, s	0	Reference Point	Begin	Green	6.2	3.3	46.1	4.2	9.3	31.0		
Uncoordinated	No	Simult. Gap E/W	On	Yellow	3.5	3.5	4.5	3.5	3.5	4.5		
Force Mode	Fixed	Simult. Gap N/S	On	Red	1.0	1.0	1.5	1.0	1.0	1.5		



Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	382	729	89	65	300	41	308	688	263	103	703	255
Initial Queue (Q_b), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s_o), veh/h	1900	2000	1900	1900	2000	1900	1900	2000	1900	1900	2000	1900
Parking (N_m), man/h		None			None			None			None	
Heavy Vehicles (P_{HV}), %	1	1	1	1	2	1	1	1	1	2	2	2
Ped / Bike / RTOR, /h	0	0	0	0	0	0	0	0	0	0	0	0
Buses (N_b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (*AT*)	3	4	3	3	4	3	3	4	3	3	4	3
Upstream Filtering (*I*)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width (*W*), ft	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0
Turn Bay Length, ft	185	0	515	480	0	175	435	0	550	160	0	180
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h	40	40	40	40	40	40	40	40	40	40	40	40

Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s	35.0	47.0	15.0	27.0	16.0	45.0	23.0	52.0
Yellow Change Interval (*Y*), s	3.5	4.5	3.5	4.5	3.5	4.5	3.5	4.5
Red Clearance Interval (R_c), s	1.0	1.5	1.0	1.5	1.0	1.5	1.0	1.5
Minimum Green (G_{min}), s	3	15	3	15	3	15	3	15
Start-Up Lost Time (*lt*), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (*e*), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Passage (*PT*), s	3.0	7.0	3.0	7.0	3.0	7.0	3.0	7.0
Recall Mode	Off	Off	Off	Off	Off	Min	Off	Min
Dual Entry	No	Yes	No	Yes	No	Yes	No	Yes
Walk (*Walk*), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pedestrian Clearance Time (*PC*), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0	No	25	0	No	25	0	No	25	0	No	25
Walkway / Crosswalk Width / Length, ft	9.0	12	0	9.0	12	0	9.0	12	0	9.0	12	0
Street Width / Island / Curb	0	0	No	0	0	No	0	0	No	0	0	No
Width Outside / Bike Lane / Shoulder, ft	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50		No	0.50		No	0.50		No	0.50	

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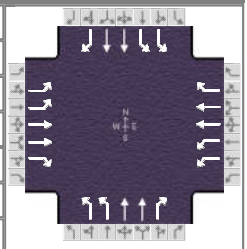
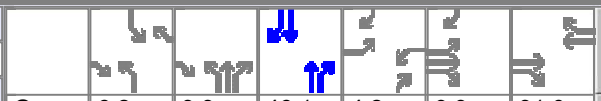
HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	GHA			Duration, h	0.25
Analyst	LMM	Analysis Date	Nov 9, 2017	Area Type	Other
Jurisdiction	DuDOT	Time Period	AM Peak	PHF	0.95
Urban Street	Winfield Rd	Analysis Year	Existing	Analysis Period	1> 7:00
Intersection	Winfield Rd / Ferry Rd	File Name	EX_Winfield Ferry_AM.xus		
Project Description	5244.902				

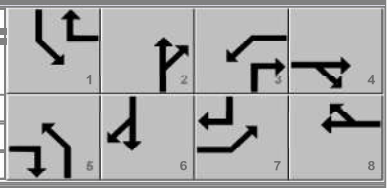


Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	382	729	89	65	300	41	308	688	263	103	703	255

Signal Information			
Cycle, s	130.0	Reference Phase	2
Offset, s	0	Reference Point	Begin
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	6.2	3.3	46.1	4.2	9.3	31.0
Yellow	3.5	3.5	4.5	3.5	3.5	4.5
Red	1.0	1.0	1.5	1.0	1.0	1.5



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	7	4	3	8	5	2	1	6
Case Number	2.0	3.0	2.0	3.0	2.0	3.0	2.0	3.0
Phase Duration, s	22.5	50.8	8.7	37.0	18.4	59.8	10.7	52.1
Change Period, ($Y+R_c$), s	4.5	6.0	4.5	6.0	4.5	6.0	4.5	6.0
Max Allow Headway (*MAH*), s	4.0	11.2	4.0	11.2	4.0	0.0	4.0	0.0
Queue Clearance Time (g_s), s	16.6	21.6	4.5	10.4	13.9		6.0	
Green Extension Time (g_e), s	1.4	22.8	0.1	20.6	0.0	0.0	0.3	0.0
Phase Call Probability	1.00	1.00	0.92	1.00	1.00		0.98	
Max Out Probability	0.01	0.90	0.08	0.92	1.00		0.00	

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (*v*), veh/h	402	767	94	68	316	43	324	724	277	108	740	268
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1743	1889	1598	1743	1874	1598	1743	1889	1598	1730	1874	1585
Queue Service Time (g_s), s	14.6	19.6	4.4	2.5	8.4	2.6	11.9	15.0	15.1	4.0	18.4	13.4
Cycle Queue Clearance Time (g_c), s	14.6	19.6	4.4	2.5	8.4	2.6	11.9	15.0	15.1	4.0	18.4	13.4
Green Ratio (*g/C*)	0.14	0.34	0.45	0.03	0.24	0.29	0.11	0.41	0.45	0.05	0.35	0.49
Capacity (*c*), veh/h	482	1302	722	113	895	457	373	1565	713	164	1329	781
Volume-to-Capacity Ratio (*X*)	0.835	0.589	0.130	0.607	0.353	0.094	0.869	0.463	0.388	0.662	0.557	0.344
Back of Queue (*Q*), ft/ln (95 th percentile)	271.7	327.4	77.5	53.7	174.8	47.4	257.4	252	248.6	84.2	309.3	223.8
Back of Queue (*Q*), veh/ln (95 th percentile)	10.8	13.0	3.1	2.1	6.9	1.9	10.2	10.0	9.9	3.3	12.2	8.8
Queue Storage Ratio (*RQ*) (95 th percentile)	1.47	0.00	0.15	0.11	0.00	0.27	0.59	0.00	0.45	0.53	0.00	1.24
Uniform Delay (d_1), s/veh	54.6	28.3	20.8	62.1	36.6	34.0	57.1	20.4	24.1	60.9	27.0	20.1
Incremental Delay (d_2), s/veh	3.9	2.0	0.4	5.2	1.1	0.4	19.0	1.0	1.6	4.5	1.7	1.2
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (*d*), s/veh	58.5	30.3	21.1	67.3	37.7	34.5	76.1	21.4	25.7	65.4	28.7	21.3
Level of Service (LOS)	E	C	C	E	D	C	E	C	C	E	C	C
Approach Delay, s/veh / LOS	38.6	D		42.1	D		35.7	D		30.5	C	
Intersection Delay, s/veh / LOS	35.8						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	3.1	C	3.1	C	3.1	C	3.1	C
Bicycle LOS Score / LOS	1.5	B	0.8	A	1.6	B	1.4	A

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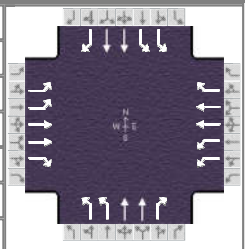
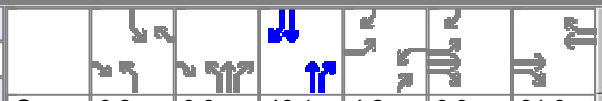
HCS7 Signalized Intersection Intermediate Values

General Information				Intersection Information	
Agency	GHA			Duration, h	0.25
Analyst	LMM	Analysis Date	Nov 9, 2017	Area Type	Other
Jurisdiction	DuDOT	Time Period	AM Peak	PHF	0.95
Urban Street	Winfield Rd	Analysis Year	Existing	Analysis Period	1> 7:00
Intersection	Winfield Rd / Ferry Rd	File Name	EX_Winfield Ferry_AM.xus		
Project Description	5244.902				

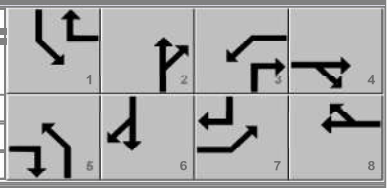


Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	382	729	89	65	300	41	308	688	263	103	703	255

Signal Information			
Cycle, s	130.0	Reference Phase	2
Offset, s	0	Reference Point	Begin
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	6.2	3.3	46.1	4.2	9.3	31.0
Yellow	3.5	3.5	4.5	3.5	3.5	4.5
Red	1.0	1.0	1.5	1.0	1.0	1.5



Saturation Flow / Delay	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles and Grade Factor (f_{HVg})	0.992	0.992	0.992	0.992	0.984	0.992	0.992	0.992	0.992	0.984	0.984	0.984
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	0.971	0.952	1.000	0.971	0.952	1.000	0.971	0.952	1.000	0.971	0.952	1.000
Left-Turn Adjustment Factor (f_{LT})	0.952	0.000		0.952	0.000		0.952	0.000		0.952	0.000	
Right-Turn Adjustment Factor (f_{RT})		0.000	0.847		0.000	0.847		0.000	0.847		0.000	0.847
Left-Turn Pedestrian Adjustment Factor (f_{Lpb})	1.000			1.000			1.000			1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{Rpb})			1.000			1.000			1.000			1.000
Work Zone Adjustment Factor (f_{wz})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
DDI Factor (f_{DDI})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Movement Saturation Flow Rate (s), veh/h	3487	3778	1598	3487	3749	1598	3487	3778	1598	3459	3749	1585
Proportion of Vehicles Arriving on Green (P)	0.14	0.46	0.34	0.03	0.32	0.24	0.11	0.55	0.41	0.05	0.47	0.35
Incremental Delay Factor (k)	0.11	0.50	0.50	0.11	0.50	0.50	0.39	0.50	0.50	0.11	0.50	0.50

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)	4.5	6.0	4.5	6.0	4.5	6.0	4.5	6.0
Green Ratio (g/C)	0.14	0.34	0.03	0.24	0.11	0.41	0.05	0.35
Permitted Saturation Flow Rate (s_p), veh/h/ln	0	0	0	0	0	0	0	0
Shared Saturation Flow Rate (s_{sh}), veh/h/ln								
Permitted Effective Green Time (g_p), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Permitted Service Time (g_u), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Permitted Queue Service Time (g_{ps}), s								
Time to First Blockage (g_f), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Service Time Before Blockage (g_{fs}), s								
Protected Right Saturation Flow (s_R), veh/h/ln		1598		1598		1598		1585
Protected Right Effective Green Time (g_R), s		13.9		6.2		4.2		18.0

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	2.336	0.00	2.336	0.00	2.336	0.00	2.336	0.00
Pedestrian F_s / F_{delay}	0.000	0.134	0.000	0.146	0.000	0.125	0.000	0.132
Pedestrian M_{corner} / M_{cw}								
Bicycle c_b / d_b	689.32	27.92	477.64	37.66	828.28	22.31	708.89	27.09
Bicycle F_w / F_v	-3.64	1.04	-3.64	0.35	-3.64	1.09	-3.64	0.92

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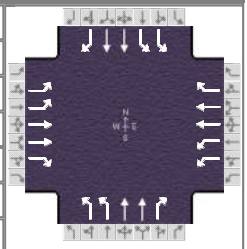
HCS7 Signalized Intersection Results Graphical Summary

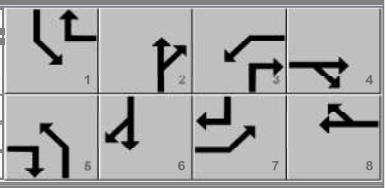
General Information				Intersection Information	
Agency	GHA			Duration, h	0.25
Analyst	LMM	Analysis Date	Nov 9, 2017	Area Type	Other
Jurisdiction	DuDOT	Time Period	AM Peak	PHF	0.95
Urban Street	Winfield Rd	Analysis Year	Existing	Analysis Period	1> 7:00
Intersection	Winfield Rd / Ferry Rd	File Name	EX_Winfield Ferry_AM.xus		
Project Description	5244.902				



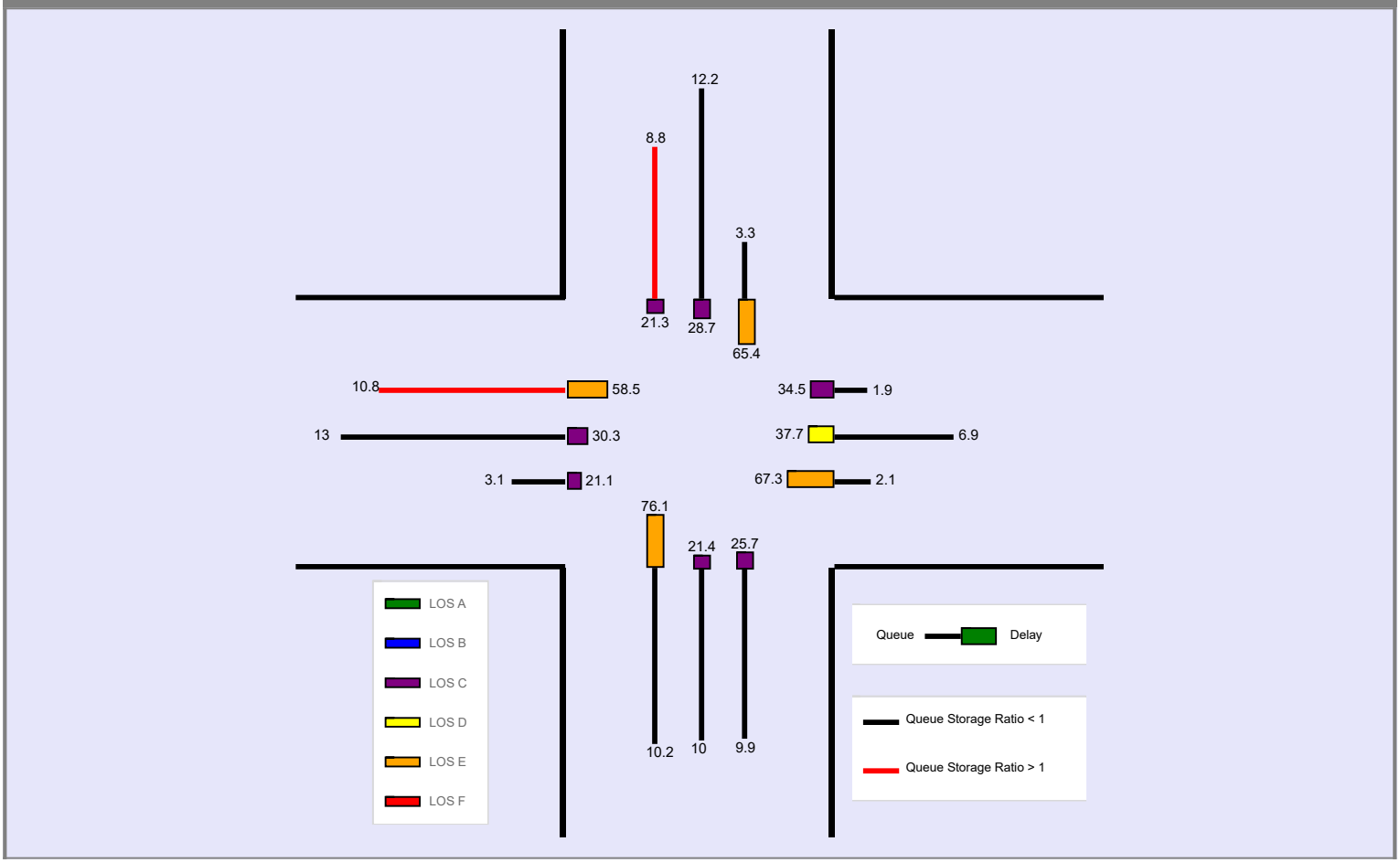
Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	382	729	89	65	300	41	308	688	263	103	703	255

Signal Information			
Cycle, s	130.0	Reference Phase	2
Offset, s	0	Reference Point	Begin
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	6.2	3.3		46.1	4.2	9.3	31.0					
Yellow	3.5	3.5		4.5	3.5	3.5	4.5					
Red	1.0	1.0		1.5	1.0	1.0	1.5					



Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Back of Queue (*Q*), ft/ln (95 th percentile)	271.7	327.4	77.5	53.7	174.8	47.4	257.4	252	248.6	84.2	309.3	223.8
Back of Queue (*Q*), veh/ln (95 th percentile)	10.8	13.0	3.1	2.1	6.9	1.9	10.2	10.0	9.9	3.3	12.2	8.8
Queue Storage Ratio (*RQ*) (95 th percentile)	1.47	0.00	0.15	0.11	0.00	0.27	0.59	0.00	0.45	0.53	0.00	1.24
Control Delay (*d*), s/veh	58.5	30.3	21.1	67.3	37.7	34.5	76.1	21.4	25.7	65.4	28.7	21.3
Level of Service (LOS)	E	C	C	E	D	C	E	C	C	E	C	C
Approach Delay, s/veh / LOS	38.6	D		42.1	D		35.7	D		30.5	C	
Intersection Delay, s/veh / LOS	35.8						D					



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--- Messages ---

WARNING: One or more minor street movements was assigned an Arrival Type input value other than 3; this implies signal coordination on the minor street.

WARNING: Since queue spillover from turn lanes and spillback into upstream intersections is not accounted for in the HCM procedures, use of a simulation tool may be advised in situations where the Queue Storage Ratio exceeds 1.0.

--- Comments ---

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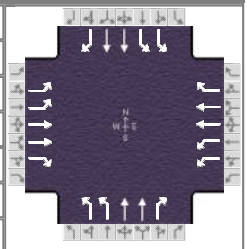
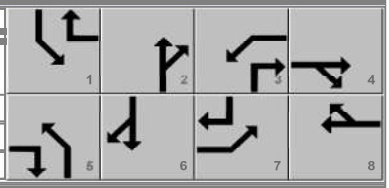
HCS7 Signalized Intersection Input Data

General Information				Intersection Information	
Agency	GHA			Duration, h	0.25
Analyst	LMM	Analysis Date	Nov 9, 2017	Area Type	Other
Jurisdiction	DuDOT	Time Period	PM Peak	PHF	0.95
Urban Street	Winfield Rd	Analysis Year	Existing	Analysis Period	1> 5:00
Intersection	Winfield Rd / Ferry Rd	File Name	EX_Winfield Ferry_PM.xus		
Project Description	5244.902				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	267	382	192	221	767	84	140	737	73	85	897	285

Signal Information												
Cycle, s	150.0	Reference Phase	2									
Offset, s	0	Reference Point	Begin	Green	5.8	2.6	52.4	12.6	1.8	53.8		
Uncoordinated	No	Simult. Gap E/W	On	Yellow	3.5	0.0	4.5	3.5	0.0	4.5		
Force Mode	Fixed	Simult. Gap N/S	On	Red	1.0	0.0	1.5	1.0	0.0	1.5		



Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	267	382	192	221	767	84	140	737	73	85	897	285
Initial Queue (Q_b), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s_o), veh/h	1900	2000	1900	1900	2000	1900	1900	2000	1900	1900	2000	1900
Parking (N_m), man/h		None			None			None			None	
Heavy Vehicles (P_{HV}), %	1	1	1	1	1	1	1	1	1	1	1	1
Ped / Bike / RTOR, /h	0	0	0	0	0	0	0	0	0	0	0	0
Buses (N_b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (*AT*)	3	4	3	3	4	3	3	4	3	3	4	3
Upstream Filtering (*I*)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width (*W*), ft	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0
Turn Bay Length, ft	185	0	515	480	0	175	435	0	550	160	0	180
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h	40	40	40	40	40	40	40	40	40	40	40	40

Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s	25.0	46.0	35.0	56.0	15.0	54.0	15.0	54.0
Yellow Change Interval (*Y*), s	3.5	4.5	3.5	4.5	3.5	4.5	3.5	4.5
Red Clearance Interval (R_c), s	1.0	1.5	1.0	1.5	1.0	1.5	1.0	1.5
Minimum Green (G_{min}), s	3	15	3	15	3	15	3	15
Start-Up Lost Time (*lt*), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (*e*), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Passage (*PT*), s	3.0	7.0	3.0	7.0	3.0	7.0	3.0	7.0
Recall Mode	Off	Off	Off	Off	Off	Min	Off	Min
Dual Entry	No	Yes	No	Yes	No	Yes	No	Yes
Walk (*Walk*), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pedestrian Clearance Time (*PC*), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0	No	25	0	No	25	0	No	25	0	No	25
Walkway / Crosswalk Width / Length, ft	9.0	12	0	9.0	12	0	9.0	12	0	9.0	12	0
Street Width / Island / Curb	0	0	No	0	0	No	0	0	No	0	0	No
Width Outside / Bike Lane / Shoulder, ft	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50		No	0.50		No	0.50		No	0.50	

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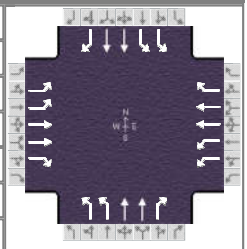
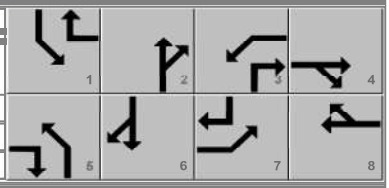
HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	GHA			Duration, h	0.25
Analyst	LMM	Analysis Date	Nov 9, 2017	Area Type	Other
Jurisdiction	DuDOT	Time Period	PM Peak	PHF	0.95
Urban Street	Winfield Rd	Analysis Year	Existing	Analysis Period	1> 5:00
Intersection	Winfield Rd / Ferry Rd	File Name	EX_Winfield Ferry_PM.xus		
Project Description	5244.902				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	267	382	192	221	767	84	140	737	73	85	897	285

Signal Information			
Cycle, s	150.0	Reference Phase	2
Offset, s	0	Reference Point	Begin
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	5.8	2.6	52.4	12.6	1.8	53.8	
Yellow	3.5	0.0	4.5	3.5	0.0	4.5	
Red	1.0	0.0	1.5	1.0	0.0	1.5	

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	7	4	3	8	5	2	1	6
Case Number	2.0	3.0	2.0	3.0	2.0	3.0	2.0	3.0
Phase Duration, s	19.0	61.6	17.1	59.8	12.9	61.0	10.3	58.4
Change Period, ($Y+R_c$), s	4.5	6.0	4.5	6.0	4.5	6.0	4.5	6.0
Max Allow Headway (*MAH*), s	4.0	10.9	4.0	10.9	4.0	0.0	4.0	0.0
Queue Clearance Time (g_s), s	13.9	14.5	11.8	25.4	8.2		5.8	
Green Extension Time (g_e), s	0.6	39.2	0.8	28.4	0.2	0.0	0.1	0.0
Phase Call Probability	1.00	1.00	1.00	1.00	1.00		0.98	
Max Out Probability	0.18	0.88	0.00	0.93	0.62		0.03	

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (*v*), veh/h	281	402	202	233	807	88	147	776	77	89	944	300
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1743	1889	1598	1743	1889	1598	1743	1889	1598	1743	1889	1598
Queue Service Time (g_s), s	11.9	9.4	12.5	9.8	23.4	5.3	6.2	21.7	4.2	3.8	30.1	19.2
Cycle Queue Clearance Time (g_c), s	11.9	9.4	12.5	9.8	23.4	5.3	6.2	21.7	4.2	3.8	30.1	19.2
Green Ratio (*g/C*)	0.10	0.37	0.43	0.08	0.36	0.40	0.06	0.37	0.45	0.04	0.35	0.45
Capacity (*c*), veh/h	336	1401	682	293	1355	634	195	1385	720	134	1319	712
Volume-to-Capacity Ratio (*X*)	0.836	0.287	0.296	0.793	0.596	0.139	0.754	0.560	0.107	0.666	0.716	0.422
Back of Queue (*Q*), ft/ln (95 th percentile)	240.6	187.8	217.1	202.3	386.8	96	132.7	360.7	74.3	81.2	483.5	307.4
Back of Queue (*Q*), veh/ln (95 th percentile)	9.5	7.5	8.6	8.0	15.3	3.8	5.3	14.3	2.9	3.2	19.2	12.2
Queue Storage Ratio (*RQ*) (95 th percentile)	1.30	0.00	0.42	0.42	0.00	0.55	0.30	0.00	0.14	0.51	0.00	1.71
Uniform Delay (d_1), s/veh	66.6	26.2	28.2	67.4	31.2	28.9	69.8	29.8	23.8	71.2	34.1	28.4
Incremental Delay (d_2), s/veh	8.7	0.5	1.1	4.8	1.9	0.5	5.8	1.6	0.3	5.6	3.4	1.8
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (*d*), s/veh	75.3	26.7	29.3	72.3	33.2	29.3	75.6	31.5	24.1	76.7	37.5	30.2
Level of Service (LOS)	E	C	C	E	C	C	E	C	C	E	D	C
Approach Delay, s/veh / LOS	42.8	D		40.9	D		37.4	D		38.5	D	
Intersection Delay, s/veh / LOS	39.7						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	3.1	C	3.1	C	3.1	C	3.1	C
Bicycle LOS Score / LOS	1.2	A	1.4	A	1.3	A	1.6	B

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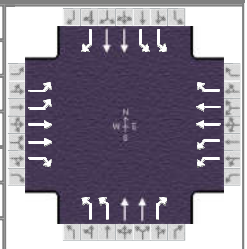
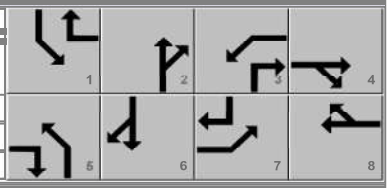
HCS7 Signalized Intersection Intermediate Values

General Information				Intersection Information	
Agency	GHA			Duration, h	0.25
Analyst	LMM	Analysis Date	Nov 9, 2017	Area Type	Other
Jurisdiction	DuDOT	Time Period	PM Peak	PHF	0.95
Urban Street	Winfield Rd	Analysis Year	Existing	Analysis Period	1> 5:00
Intersection	Winfield Rd / Ferry Rd	File Name	EX_Winfield Ferry_PM.xus		
Project Description	5244.902				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	267	382	192	221	767	84	140	737	73	85	897	285

Signal Information			
Cycle, s	150.0	Reference Phase	2
Offset, s	0	Reference Point	Begin
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	5.8	2.6		52.4	12.6	1.8	53.8					
Yellow	3.5	0.0		4.5	3.5	0.0	4.5					
Red	1.0	0.0		1.5	1.0	0.0	1.5					

Saturation Flow / Delay	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles and Grade Factor (f_{HVg})	0.992	0.992	0.992	0.992	0.992	0.992	0.992	0.992	0.992	0.992	0.992	0.992
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	0.971	0.952	1.000	0.971	0.952	1.000	0.971	0.952	1.000	0.971	0.952	1.000
Left-Turn Adjustment Factor (f_{LT})	0.952	0.000		0.952	0.000		0.952	0.000		0.952	0.000	
Right-Turn Adjustment Factor (f_{RT})		0.000	0.847		0.000	0.847		0.000	0.847		0.000	0.847
Left-Turn Pedestrian Adjustment Factor (f_{Lpb})	1.000			1.000			1.000			1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{Rpb})			1.000			1.000			1.000			1.000
Work Zone Adjustment Factor (f_{wz})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
DDI Factor (f_{DDI})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Movement Saturation Flow Rate (s), veh/h	3487	3778	1598	3487	3778	1598	3487	3778	1598	3487	3778	1598
Proportion of Vehicles Arriving on Green (P)	0.10	0.49	0.37	0.08	0.48	0.36	0.06	0.49	0.37	0.04	0.47	0.35
Incremental Delay Factor (k)	0.18	0.50	0.50	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.50	0.50

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)	4.5	6.0	4.5	6.0	4.5	6.0	4.5	6.0
Green Ratio (g/C)	0.10	0.37	0.08	0.36	0.06	0.37	0.04	0.35
Permitted Saturation Flow Rate (s_p), veh/h/ln	0	0	0	0	0	0	0	0
Shared Saturation Flow Rate (s_{sh}), veh/h/ln								
Permitted Effective Green Time (g_p), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Permitted Service Time (g_u), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Permitted Queue Service Time (g_{ps}), s								
Time to First Blockage (g_f), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Service Time Before Blockage (g_{fs}), s								
Protected Right Saturation Flow (s_R), veh/h/ln		1598		1598		1598		1598
Protected Right Effective Green Time (g_R), s		8.4		5.8		12.6		14.5

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	2.336	0.00	2.336	0.00	2.336	0.00	2.336	0.00
Pedestrian F_s / F_{delay}	0.000	0.136	0.000	0.138	0.000	0.137	0.000	0.139
Pedestrian M_{corner} / M_{cw}								
Bicycle c_b / d_b	741.68	29.69	717.04	30.86	733.12	30.09	698.04	31.78
Bicycle F_w / F_v	-3.64	0.73	-3.64	0.93	-3.64	0.83	-3.64	1.10

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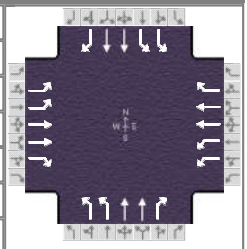
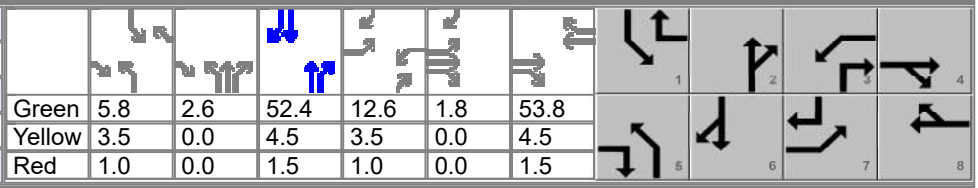
HCS7 Signalized Intersection Results Graphical Summary

General Information				Intersection Information	
Agency	GHA			Duration, h	0.25
Analyst	LMM	Analysis Date	Nov 9, 2017	Area Type	Other
Jurisdiction	DuDOT	Time Period	PM Peak	PHF	0.95
Urban Street	Winfield Rd	Analysis Year	Existing	Analysis Period	1> 5:00
Intersection	Winfield Rd / Ferry Rd	File Name	EX_Winfield Ferry_PM.xus		
Project Description	5244.902				



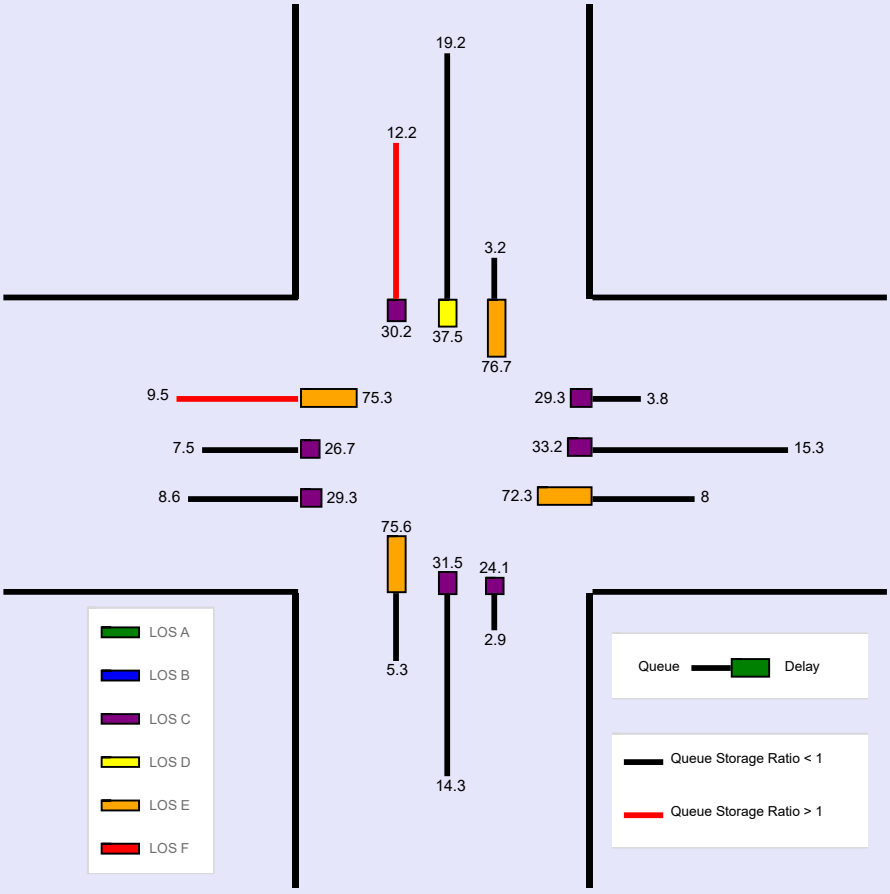
Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	267	382	192	221	767	84	140	737	73	85	897	285

Signal Information			
Cycle, s	150.0	Reference Phase	2
Offset, s	0	Reference Point	Begin
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	5.8	2.6		52.4	12.6	1.8	53.8					
Yellow	3.5	0.0		4.5	3.5	0.0	4.5					
Red	1.0	0.0		1.5	1.0	0.0	1.5					

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Back of Queue (*Q*), ft/ln (95 th percentile)	240.6	187.8	217.1	202.3	386.8	96	132.7	360.7	74.3	81.2	483.5	307.4
Back of Queue (*Q*), veh/ln (95 th percentile)	9.5	7.5	8.6	8.0	15.3	3.8	5.3	14.3	2.9	3.2	19.2	12.2
Queue Storage Ratio (*RQ*) (95 th percentile)	1.30	0.00	0.42	0.42	0.00	0.55	0.30	0.00	0.14	0.51	0.00	1.71
Control Delay (*d*), s/veh	75.3	26.7	29.3	72.3	33.2	29.3	75.6	31.5	24.1	76.7	37.5	30.2
Level of Service (LOS)	E	C	C	E	C	C	E	C	C	E	D	C
Approach Delay, s/veh / LOS	42.8	D		40.9	D		37.4	D		38.5	D	
Intersection Delay, s/veh / LOS	39.7						D					



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--- Messages ---

WARNING: One or more minor street movements was assigned an Arrival Type input value other than 3; this implies signal coordination on the minor street.

WARNING: Since queue spillover from turn lanes and spillback into upstream intersections is not accounted for in the HCM procedures, use of a simulation tool may be advised in situations where the Queue Storage Ratio exceeds 1.0.

--- Comments ---

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HCS7 Two-Way Stop-Control Report

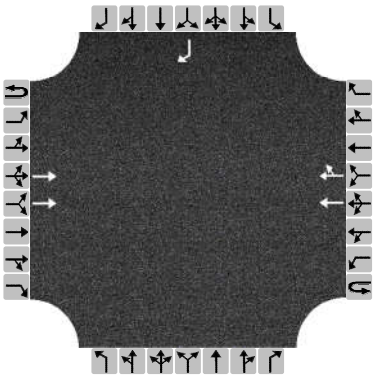
General Information

Analyst	LMM
Agency/Co.	GHA
Date Performed	11/9/2017
Analysis Year	2017
Time Analyzed	Existing AM
Intersection Orientation	East-West
Project Description	5244.902

Site Information

Intersection	Ferry Rd at Office RIRO
Jurisdiction	DuDOT
East/West Street	Ferry Rd
North/South Street	Office RIRO
Peak Hour Factor	0.90
Analysis Time Period (hrs)	0.25

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	2	0	0	0	2	0		0	0	0		0	0	1
Configuration			T				T	TR								R
Volume, V (veh/h)			1200				777	86								6
Percent Heavy Vehicles (%)																0
Proportion Time Blocked																
Percent Grade (%)													0			
Right Turn Channelized	No				No				No				No			
Median Type/Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)																7
Capacity, c (veh/h)																537
v/c Ratio																0.01
95% Queue Length, Q_{95} (veh)																0.0
Control Delay (s/veh)																11.8
Level of Service, LOS																B
Approach Delay (s/veh)													11.8			
Approach LOS													B			

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HCS7 Two-Way Stop-Control Report

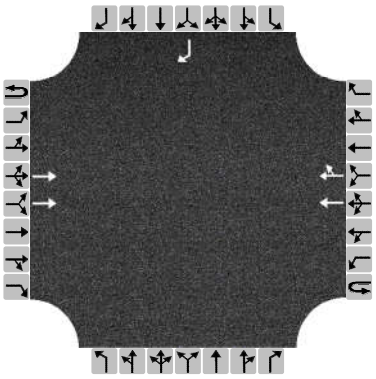
General Information

Analyst	LMM
Agency/Co.	GHA
Date Performed	11/9/2017
Analysis Year	2017
Time Analyzed	Existing PM
Intersection Orientation	East-West
Project Description	5244.902

Site Information

Intersection	Ferry Rd at Office RIRO
Jurisdiction	DuDOT
East/West Street	Ferry Rd
North/South Street	Office RIRO
Peak Hour Factor	0.90
Analysis Time Period (hrs)	0.25

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	2	0	0	0	2	0		0	0	0		0	0	1
Configuration			T				T	TR								R
Volume, V (veh/h)			841				1188	4								59
Percent Heavy Vehicles (%)																0
Proportion Time Blocked																
Percent Grade (%)													0			
Right Turn Channelized	No				No				No				No			
Median Type/Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)																66
Capacity, c (veh/h)																409
v/c Ratio																0.16
95% Queue Length, Q_{95} (veh)																0.6
Control Delay (s/veh)																15.5
Level of Service, LOS																C
Approach Delay (s/veh)													15.5			
Approach LOS													C			

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HCS7 Two-Way Stop-Control Report

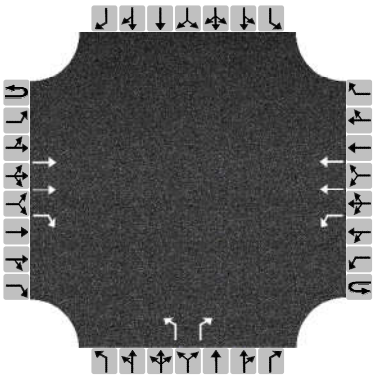
General Information

Analyst	LMM
Agency/Co.	GHA
Date Performed	11/9/2017
Analysis Year	2017
Time Analyzed	Existing AM Peak
Intersection Orientation	East-West
Project Description	5244.900

Site Information

Intersection	Ferry Road / Office East
Jurisdiction	DuDOT
East/West Street	Ferry Road
North/South Street	Office East
Peak Hour Factor	0.94
Analysis Time Period (hrs)	0.25

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	2	1	0	1	2	0		1	0	1		0	0	0
Configuration			T	R		L	T			L		R				
Volume, V (veh/h)			1197	61		127	656			0		3				
Percent Heavy Vehicles (%)						1				0		0				
Proportion Time Blocked																
Percent Grade (%)										0						
Right Turn Channelized			No				No				No				No	
Median Type/Storage			Left Only								1					

Critical and Follow-up Headways

Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						135				0		3				
Capacity, c (veh/h)						517				150		426				
v/c Ratio						0.26				0.00		0.01				
95% Queue Length, Q_{95} (veh)						1.0				0.0		0.0				
Control Delay (s/veh)						14.4				29.0		13.5				
Level of Service, LOS						B				D		B				
Approach Delay (s/veh)						2.3				13.5						
Approach LOS										B						

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HCS7 Two-Way Stop-Control Report

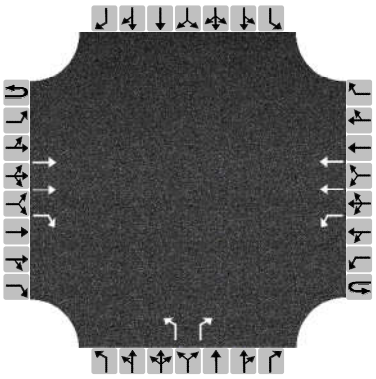
General Information

Analyst	LMM
Agency/Co.	GHA
Date Performed	11/09/2017
Analysis Year	2017
Time Analyzed	Existing PM Peak
Intersection Orientation	East-West
Project Description	5244.900

Site Information

Intersection	Ferry Road / Office East
Jurisdiction	DuDOT
East/West Street	Ferry Road
North/South Street	Office East
Peak Hour Factor	0.94
Analysis Time Period (hrs)	0.25

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	2	1	0	1	2	0		1	0	1		0	0	0
Configuration			T	R		L	T			L		R				
Volume, V (veh/h)			778	5		25	1222			45		63				
Percent Heavy Vehicles (%)						0				0		0				
Proportion Time Blocked																
Percent Grade (%)										0						
Right Turn Channelized			No				No				No				No	
Median Type/Storage			Left Only								1					

Critical and Follow-up Headways

Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						27				48		67				
Capacity, c (veh/h)						809				238		593				
v/c Ratio						0.03				0.20		0.11				
95% Queue Length, Q_{95} (veh)						0.1				0.7		0.4				
Control Delay (s/veh)						9.6				23.9		11.8				
Level of Service, LOS						A				C		B				
Approach Delay (s/veh)						0.2				16.9						
Approach LOS										C						

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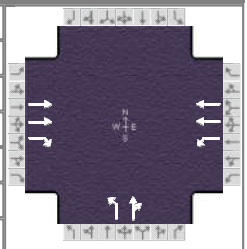
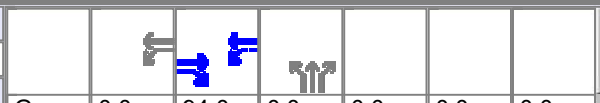
HCS7 Signalized Intersection Input Data

General Information				Intersection Information	
Agency	GHA			Duration, h	0.25
Analyst	LMM	Analysis Date	Nov 9, 2017	Area Type	Other
Jurisdiction	DuDOT	Time Period	AM Peak	PHF	0.95
Urban Street	Ferry Road	Analysis Year	Existing	Analysis Period	1> 7:00
Intersection	Ferry Rd / Office Bldg	File Name	EX_Ferry Office_AM.xus		
Project Description	5244.900				

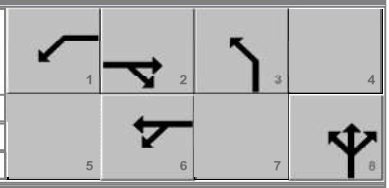


Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h		1258	0	0	656		0	0	0			

Signal Information			
Cycle, s	100.0	Reference Phase	2
Offset, s	0	Reference Point	Begin
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	0.0	94.0	0.0	0.0	0.0	0.0						
Yellow	3.5	4.5	4.5	0.0	0.0	0.0						
Red	0.0	1.5	1.5	0.0	0.0	0.0						



Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h		1258	0	0	656		0	0	0			
Initial Queue (Q_b), veh/h		0	0	0	0		0	0	0			
Base Saturation Flow Rate (s_o), veh/h		2000	1900	1900	2000		1900	1900	1900			
Parking (N_m), man/h		None			None			None				
Heavy Vehicles (P_{HV}), %		1	0	0	2		0	0				
Ped / Bike / RTOR, /h	0	0		0	0		0	0		0	0	
Buses (N_b), buses/h		0	0	0	0		0	0	0			
Arrival Type (*AT*)		4	3	3	4		3	3	3			
Upstream Filtering (*I*)		1.00	1.00	1.00	1.00		1.00	1.00	1.00			
Lane Width (*W*), ft		12.0	12.0	12.0	12.0		12.0	12.0				
Turn Bay Length, ft		0	135	315	0		175	0				
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h		40	40	40	40		25	25	25			

Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s		56.0	18.0	74.0	15.0	26.0		
Yellow Change Interval (*Y*), s		4.5	3.5	4.5	3.5	4.5		
Red Clearance Interval (R_c), s		1.5	0.0	1.5	0.0	1.5		
Minimum Green (G_{min}), s		15	3	15	3	8		
Start-Up Lost Time (*l1*), s		2.0	2.0	2.0	2.0	2.0		
Extension of Effective Green (*e*), s		2.0	2.0	2.0	2.0	2.0		
Passage (*PT*), s		7.0	3.0	7.0	3.0	4.0		
Recall Mode		Min	Off	Min	Off	Off		
Dual Entry		Yes	No	Yes	No	Yes		
Walk (*Walk*), s		0.0	0.0	0.0	0.0	0.0		
Pedestrian Clearance Time (*PC*), s		0.0	0.0	0.0	0.0	0.0		

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0	No	25	0	No	25	0	No	25			
Walkway / Crosswalk Width / Length, ft	9.0	12	0	9.0	12	0	9.0	12	0			
Street Width / Island / Curb	0	0	No	0	0	No	0	0	No			
Width Outside / Bike Lane / Shoulder, ft	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0			
Pedestrian Signal / Occupied Parking	No	0.50		No	0.50		No	0.50				

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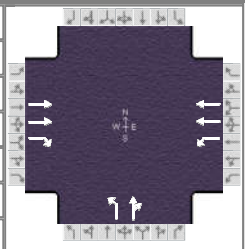
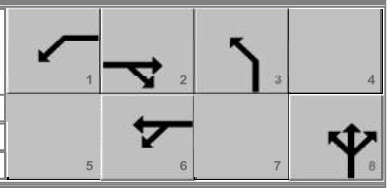
HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	GHA			Duration, h	0.25
Analyst	LMM	Analysis Date	Nov 9, 2017	Area Type	Other
Jurisdiction	DuDOT	Time Period	AM Peak	PHF	0.95
Urban Street	Ferry Road	Analysis Year	Existing	Analysis Period	1> 7:00
Intersection	Ferry Rd / Office Bldg	File Name	EX_Ferry Office_AM.xus		
Project Description	5244.900				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h		1258	0	0	656		0	0	0			

Signal Information			
Cycle, s	100.0	Reference Phase	2
Offset, s	0	Reference Point	Begin
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	0.0	94.0	0.0	0.0	0.0	0.0
Yellow	3.5	4.5	4.5	0.0	0.0	0.0
Red	0.0	1.5	1.5	0.0	0.0	0.0

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2	1	6		8		
Case Number		7.3	1.0	4.0		10.0		
Phase Duration, s		100.0	0.0	100.0		0.0		
Change Period, (*Y+R c*), s		6.0	3.5	6.0		6.0		
Max Allow Headway (*MAH*), s		0.0	0.0	0.0		0.0		
Queue Clearance Time (*g s*), s								
Green Extension Time (*g e*), s		0.0	0.0	0.0		0.0		
Phase Call Probability								
Max Out Probability								

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement		2	12	1	6		3	8	18			
Adjusted Flow Rate (*v*), veh/h		1324	0	0	691		0	0				
Adjusted Saturation Flow Rate (*s*), veh/h/ln		1889	1610	1810	1874		1810	0				
Queue Service Time (*g s*), s		0.0	0.0	0.0	0.0		0.0	0.0				
Cycle Queue Clearance Time (*g c*), s		0.0	0.0	0.0	0.0		0.0	0.0				
Green Ratio (*g/C*)		0.94	0.94	0.92	0.94							
Capacity (*c*), veh/h		3551	1514	469	3524		2					
Volume-to-Capacity Ratio (*X*)		0.373	0.000	0.000	0.196		0.000	0.000				
Back of Queue (*Q*), ft/ln (95 th percentile)		6.7	0	0	2.8		0	0				
Back of Queue (*Q*), veh/ln (95 th percentile)		0.3	0.0	0.0	0.1		0.0	0.0				
Queue Storage Ratio (*RQ*) (95 th percentile)		0.00	0.00	0.00	0.00		0.00	0.00				
Uniform Delay (*d 1*), s/veh		0.0	0.0	0.0	0.0		0.0					
Incremental Delay (*d 2*), s/veh		0.3	0.0	0.0	0.1		0.0	0.0				
Initial Queue Delay (*d 3*), s/veh		0.0	0.0	0.0	0.0		0.0	0.0				
Control Delay (*d*), s/veh		0.3	0.0	0.0	0.1		0.0					
Level of Service (LOS)		A			A							
Approach Delay, s/veh / LOS	0.3	A		0.1	A		0.0			0.0		
Intersection Delay, s/veh / LOS	0.2						A					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.1	B	1.7	B	2.9	C	2.9	C
Bicycle LOS Score / LOS	1.6	B	1.1	A	0.5	A		

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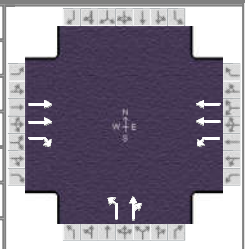
HCS7 Signalized Intersection Intermediate Values

General Information				Intersection Information	
Agency	GHA			Duration, h	0.25
Analyst	LMM	Analysis Date	Nov 9, 2017	Area Type	Other
Jurisdiction	DuDOT	Time Period	AM Peak	PHF	0.95
Urban Street	Ferry Road	Analysis Year	Existing	Analysis Period	1> 7:00
Intersection	Ferry Rd / Office Bldg	File Name	EX_Ferry Office_AM.xus		
Project Description	5244.900				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h		1258	0	0	656		0	0	0			

Signal Information			
Cycle, s	100.0	Reference Phase	2
Offset, s	0	Reference Point	Begin
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

							1	2	3	4
Green	0.0	94.0	0.0	0.0	0.0	0.0	5	6	7	8
Yellow	3.5	4.5	4.5	0.0	0.0	0.0				
Red	0.0	1.5	1.5	0.0	0.0	0.0				

Saturation Flow / Delay	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000			
Heavy Vehicles and Grade Factor (f_{HVg})	1.000	0.992	1.000	1.000	0.984	1.000	1.000	1.000	1.000			
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000			
Lane Utilization Adjustment Factor (f_{LU})	1.000	0.952	1.000	1.000	0.952	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})	1.000	1.000		0.952	0.000		0.952	0.000				
Right-Turn Adjustment Factor (f_{RT})		0.000	0.847		1.000	1.000		1.000	1.000			
Left-Turn Pedestrian Adjustment Factor (f_{Lpb})	1.000			1.000			1.000					
Right-Turn Ped-Bike Adjustment Factor (f_{Rpb})			1.000			1.000			1.000			
Work Zone Adjustment Factor (f_{wz})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000			
DDI Factor (f_{DDI})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000			
Movement Saturation Flow Rate (s), veh/h	0	3874	1610	1810	3843	0	1810	1900	0			
Proportion of Vehicles Arriving on Green (P)	0.00	1.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Incremental Delay Factor (k)		0.50			0.50							

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)		6.0	3.5	6.0		3.5		
Green Ratio (g/C)		0.94	0.92	0.94		0.00		
Permitted Saturation Flow Rate (s_p), veh/h/ln		765	421	0		1810		
Shared Saturation Flow Rate (s_{sh}), veh/h/ln		0						
Permitted Effective Green Time (g_p), s		0.0	96.0	0.0		0.0		
Permitted Service Time (g_u), s		0.0	94.0	0.0		0.0		
Permitted Queue Service Time (g_{ps}), s			0.0					
Time to First Blockage (g_f), s		94.0	0.0	0.0		0.0		
Queue Service Time Before Blockage (g_{fs}), s								
Protected Right Saturation Flow (s_R), veh/h/ln		0						
Protected Right Effective Green Time (g_R), s		0.0						

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	1.557	0.00	1.198	0.00	2.107	0.00	2.107	0.00
Pedestrian F_s / F_{delay}	0.000	-0.069	0.000	-0.069	0.000	0.162	0.000	0.161
Pedestrian M_{corner} / M_{cw}								
Bicycle c_b / d_b	1879.97	0.18	1879.98	0.18		57.25		55.13
Bicycle F_w / F_v	-3.64	1.09	-3.64	0.57	-3.64	0.00	-3.64	

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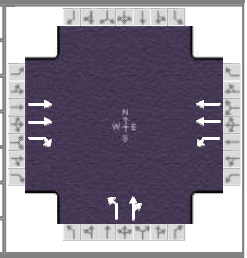
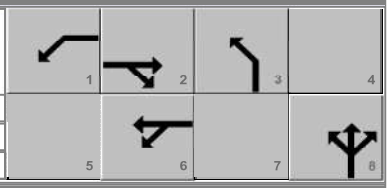
HCS7 Signalized Intersection Results Graphical Summary

General Information				Intersection Information	
Agency	GHA			Duration, h	0.25
Analyst	LMM	Analysis Date	Nov 9, 2017	Area Type	Other
Jurisdiction	DuDOT	Time Period	AM Peak	PHF	0.95
Urban Street	Ferry Road	Analysis Year	Existing	Analysis Period	1> 7:00
Intersection	Ferry Rd / Office Bldg	File Name	EX_Ferry Office_AM.xus		
Project Description	5244.900				

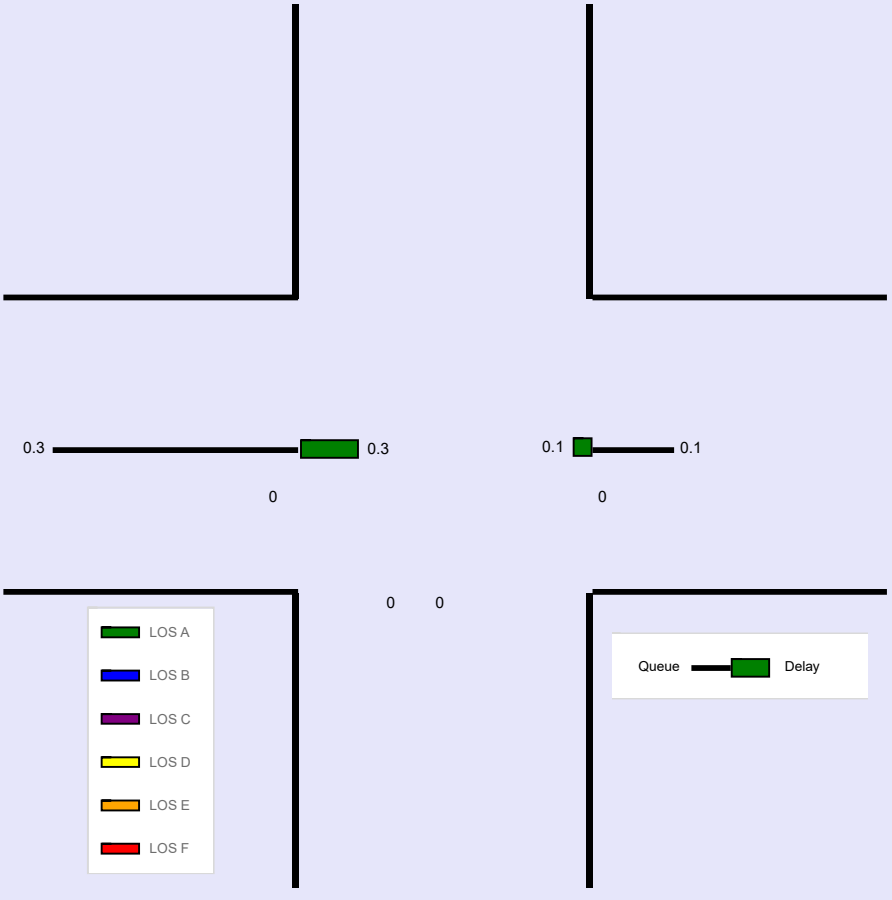


Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h		1258	0	0	656		0	0	0			

Signal Information					EB		WB			
Cycle, s	100.0	Reference Phase	2							
Offset, s	0	Reference Point	Begin							
Uncoordinated	No	Simult. Gap E/W	On	Green	0.0	94.0	0.0	0.0	0.0	0.0
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	3.5	4.5	4.5	0.0	0.0	0.0
				Red	0.0	1.5	1.5	0.0	0.0	0.0



Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Back of Queue (*Q*), ft/ln (95 th percentile)		6.7	0	0	2.8		0	0				
Back of Queue (*Q*), veh/ln (95 th percentile)		0.3	0.0	0.0	0.1		0.0	0.0				
Queue Storage Ratio (*RQ*) (95 th percentile)		0.00	0.00	0.00	0.00		0.00	0.00				
Control Delay (*d*), s/veh		0.3	0.0	0.0	0.1		0.0					
Level of Service (LOS)		A			A							
Approach Delay, s/veh / LOS	0.3	A		0.1	A		0.0			0.0		
Intersection Delay, s/veh / LOS	0.2						A					



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--- Messages ---

No errors or warnings exist.

--- Comments ---

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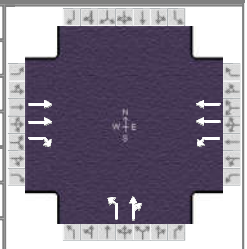
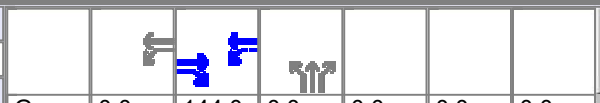
HCS7 Signalized Intersection Input Data

General Information				Intersection Information	
Agency	GHA			Duration, h	0.25
Analyst	LMM	Analysis Date	Nov 9, 2017	Area Type	Other
Jurisdiction	DuDOT	Time Period	PM Peak	PHF	0.95
Urban Street	Ferry Road	Analysis Year	Existing	Analysis Period	1> 5:00
Intersection	Ferry Rd / Office Bldg	File Name	EX_Ferry Office_PM.xus		
Project Description	5244.900				

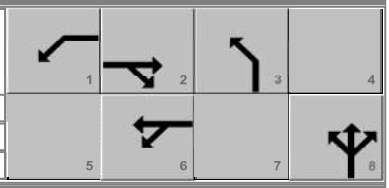


Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h		783	0	0	1267		0	0	0			

Signal Information			
Cycle, s	150.0	Reference Phase	2
Offset, s	0	Reference Point	Begin
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	0.0	144.0	0.0	0.0	0.0	0.0
Yellow	3.5	4.5	4.5	0.0	0.0	0.0
Red	0.0	1.5	1.5	0.0	0.0	0.0



Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h		783	0	0	1267		0	0	0			
Initial Queue (Q_b), veh/h		0	0	0	0		0	0	0			
Base Saturation Flow Rate (s_o), veh/h		2000	1900	1900	2000		1900	1900	1900			
Parking (N_m), man/h		None			None			None				
Heavy Vehicles (P_{HV}), %		1	0	0	1		0	0				
Ped / Bike / RTOR, /h	0	0		0	0		0	0		0	0	
Buses (N_b), buses/h		0	0	0	0		0	0	0			
Arrival Type (*AT*)		4	3	3	4		3	3	3			
Upstream Filtering (*I*)		1.00	1.00	1.00	1.00		1.00	1.00	1.00			
Lane Width (*W*), ft		12.0	12.0	12.0	12.0		12.0	12.0				
Turn Bay Length, ft		0	135	315	0		175	0				
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h		40	40	40	40		25	25	25			

Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s		84.0	27.0	111.0	22.0	39.0		
Yellow Change Interval (*Y*), s		4.5	3.5	4.5	3.5	4.5		
Red Clearance Interval (R_c), s		1.5	0.0	1.5	0.0	1.5		
Minimum Green (G_{min}), s		15	3	15	3	8		
Start-Up Lost Time (*lt*), s		2.0	2.0	2.0	2.0	2.0		
Extension of Effective Green (*e*), s		2.0	2.0	2.0	2.0	2.0		
Passage (*PT*), s		7.0	3.0	7.0	3.0	4.0		
Recall Mode		Min	Off	Min	Off	Off		
Dual Entry		Yes	Yes	Yes	Yes	Yes		
Walk (*Walk*), s		0.0	0.0	0.0	0.0	0.0		
Pedestrian Clearance Time (*PC*), s		0.0	0.0	0.0	0.0	0.0		

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0	No	25	0	No	25	0	No	25			
Walkway / Crosswalk Width / Length, ft	9.0	12	0	9.0	12	0	9.0	12	0			
Street Width / Island / Curb	0	0	No	0	0	No	0	0	No			
Width Outside / Bike Lane / Shoulder, ft	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0			
Pedestrian Signal / Occupied Parking	No	0.50		No	0.50		No	0.50				

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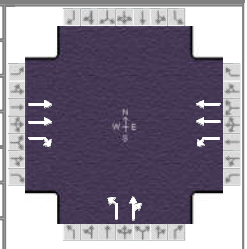
HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	GHA			Duration, h	0.25
Analyst	LMM	Analysis Date	Nov 9, 2017	Area Type	Other
Jurisdiction	DuDOT	Time Period	PM Peak	PHF	0.95
Urban Street	Ferry Road	Analysis Year	Existing	Analysis Period	1> 5:00
Intersection	Ferry Rd / Office Bldg	File Name	EX_Ferry Office_PM.xus		
Project Description	5244.900				

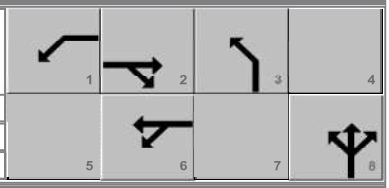


Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h		783	0	0	1267		0	0	0			

Signal Information			
Cycle, s	150.0	Reference Phase	2
Offset, s	0	Reference Point	Begin
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	0.0	144.0	0.0	0.0	0.0	0.0
Yellow	3.5	4.5	4.5	0.0	0.0	0.0
Red	0.0	1.5	1.5	0.0	0.0	0.0



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2	1	6		8		
Case Number		7.3	1.0	4.0		10.0		
Phase Duration, s		150.0	0.0	150.0		0.0		
Change Period, (*Y+R c*), s		6.0	3.5	6.0		6.0		
Max Allow Headway (*MAH*), s		0.0	0.0	0.0		0.0		
Queue Clearance Time (*g s*), s								
Green Extension Time (*g e*), s		0.0	0.0	0.0		0.0		
Phase Call Probability								
Max Out Probability								

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement		2	12	1	6		3	8	18			
Adjusted Flow Rate (*v*), veh/h		824	0	0	1334		0	0				
Adjusted Saturation Flow Rate (*s*), veh/h/ln		1889	1610	1810	1889		1810	0				
Queue Service Time (*g s*), s		0.0	0.0	0.0	0.0		0.0	0.0				
Cycle Queue Clearance Time (*g c*), s		0.0	0.0	0.0	0.0		0.0	0.0				
Green Ratio (*g/C*)		0.96	0.96	0.95	0.96							
Capacity (*c*), veh/h		3627	1546	697	3627		1					
Volume-to-Capacity Ratio (*X*)		0.227	0.000	0.000	0.368		0.000	0.000				
Back of Queue (*Q*), ft/ln (95 th percentile)		3.3	0	0	6.6		0	0				
Back of Queue (*Q*), veh/ln (95 th percentile)		0.1	0.0	0.0	0.3		0.0	0.0				
Queue Storage Ratio (*RQ*) (95 th percentile)		0.00	0.00	0.00	0.00		0.00	0.00				
Uniform Delay (*d 1*), s/veh		0.0	0.0	0.0	0.0		0.0					
Incremental Delay (*d 2*), s/veh		0.1	0.0	0.0	0.3		0.0	0.0				
Initial Queue Delay (*d 3*), s/veh		0.0	0.0	0.0	0.0		0.0	0.0				
Control Delay (*d*), s/veh		0.1	0.0	0.0	0.3		0.0					
Level of Service (LOS)		A			A							
Approach Delay, s/veh / LOS	0.1	A		0.3	A		0.0			0.0		
Intersection Delay, s/veh / LOS	0.2						A					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.1	B	1.7	B	2.9	C	2.9	C
Bicycle LOS Score / LOS	1.2	A	1.6	B	0.5	A		

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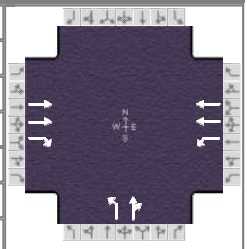
HCS7 Signalized Intersection Intermediate Values

General Information				Intersection Information	
Agency	GHA			Duration, h	0.25
Analyst	LMM	Analysis Date	Nov 9, 2017	Area Type	Other
Jurisdiction	DuDOT	Time Period	PM Peak	PHF	0.95
Urban Street	Ferry Road	Analysis Year	Existing	Analysis Period	1> 5:00
Intersection	Ferry Rd / Office Bldg	File Name	EX_Ferry Office_PM.xus		
Project Description	5244.900				

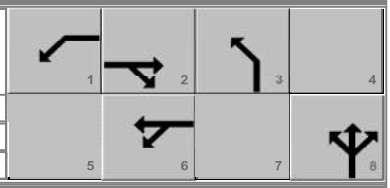


Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h		783	0	0	1267		0	0	0			

Signal Information			
Cycle, s	150.0	Reference Phase	2
Offset, s	0	Reference Point	Begin
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	0.0	144.0	0.0	0.0	0.0	0.0
Yellow	3.5	4.5	4.5	0.0	0.0	0.0
Red	0.0	1.5	1.5	0.0	0.0	0.0



Saturation Flow / Delay	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000			
Heavy Vehicles and Grade Factor (f_{HVg})	1.000	0.992	1.000	1.000	0.992	1.000	1.000	1.000	1.000			
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000			
Lane Utilization Adjustment Factor (f_{LU})	1.000	0.952	1.000	1.000	0.952	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})	1.000	1.000		0.952	0.000		0.952	0.000				
Right-Turn Adjustment Factor (f_{RT})		0.000	0.847		1.000	1.000		1.000	1.000			
Left-Turn Pedestrian Adjustment Factor (f_{Lpb})	1.000			1.000			1.000					
Right-Turn Ped-Bike Adjustment Factor (f_{Rpb})			1.000			1.000			1.000			
Work Zone Adjustment Factor (f_{wz})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000			
DDI Factor (f_{DDI})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000			
Movement Saturation Flow Rate (s), veh/h	0	3874	1610	1810	3874	0	1810	1900	0			
Proportion of Vehicles Arriving on Green (P)	0.00	1.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Incremental Delay Factor (k)		0.50			0.50							

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)		6.0	3.5	6.0		3.5		
Green Ratio (g/C)		0.96	0.95	0.96		0.00		
Permitted Saturation Flow Rate (s_p), veh/h/ln		417	675	0		1810		
Shared Saturation Flow Rate (s_{sh}), veh/h/ln		0						
Permitted Effective Green Time (g_p), s		0.0	146.0	0.0		0.0		
Permitted Service Time (g_u), s		0.0	144.0	0.0		0.0		
Permitted Queue Service Time (g_{ps}), s			0.0					
Time to First Blockage (g_f), s		144.0	0.0	0.0		0.0		
Queue Service Time Before Blockage (g_{fs}), s								
Protected Right Saturation Flow (s_R), veh/h/ln		0						
Protected Right Effective Green Time (g_R), s		0.0						

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	1.557	0.00	1.198	0.00	2.107	0.00	2.107	0.00
Pedestrian F_s / F_{delay}	0.000	-0.085	0.000	-0.085	0.000	0.177	0.000	0.176
Pedestrian M_{corner} / M_{cw}								
Bicycle c_b / d_b	1919.97	0.12	1919.98	0.12	-93.33	82.16	-66.67	80.08
Bicycle F_w / F_v	-3.64	0.68	-3.64	1.10	-3.64	0.00	-3.64	

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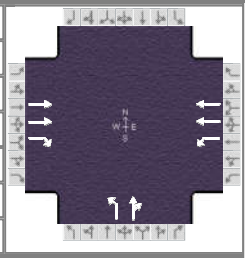
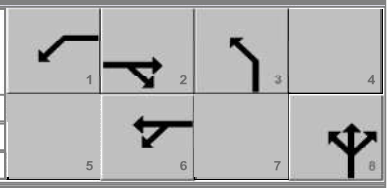
HCS7 Signalized Intersection Results Graphical Summary

General Information				Intersection Information	
Agency	GHA			Duration, h	0.25
Analyst	LMM	Analysis Date	Nov 9, 2017	Area Type	Other
Jurisdiction	DuDOT	Time Period	PM Peak	PHF	0.95
Urban Street	Ferry Road	Analysis Year	Existing	Analysis Period	1> 5:00
Intersection	Ferry Rd / Office Bldg	File Name	EX_Ferry Office_PM.xus		
Project Description	5244.900				

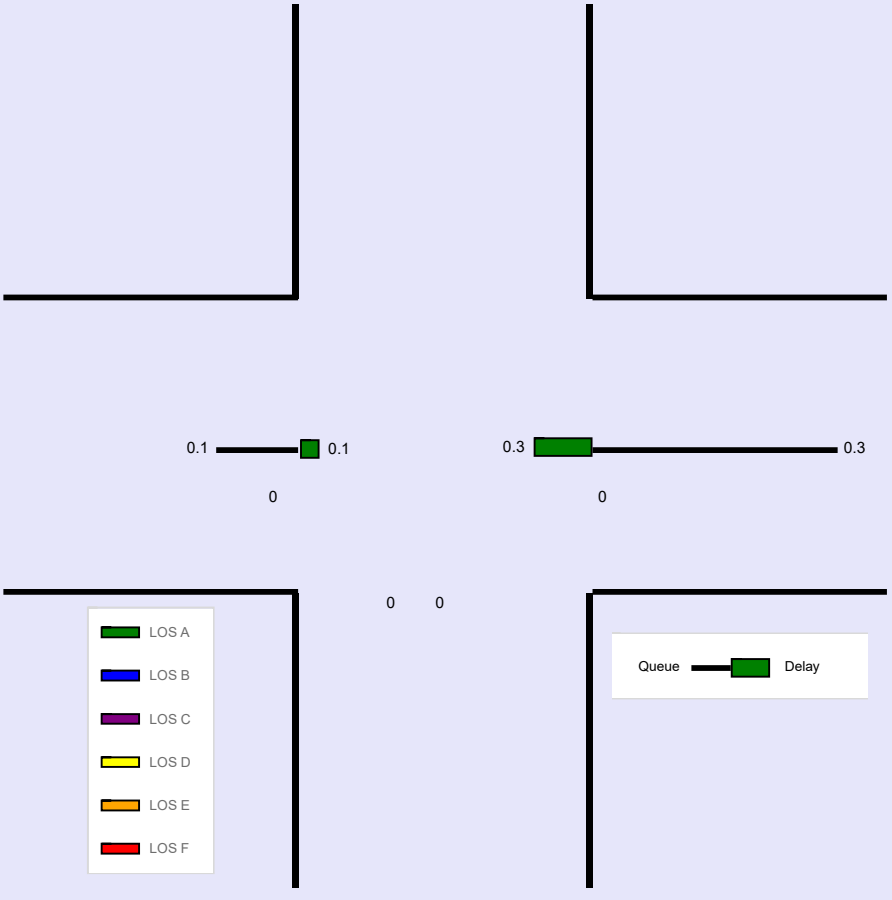


Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h		783	0	0	1267		0	0	0			

Signal Information					EB			WB			NB			SB		
Cycle, s	150.0	Reference Phase	2		L	T	R	L	T	R	L	T	R	L	T	R
Offset, s	0	Reference Point	Begin	Green	0.0	144.0	0.0	0.0	0.0	0.0						
Uncoordinated	No	Simult. Gap E/W	On	Yellow	3.5	4.5	4.5	0.0	0.0	0.0						
Force Mode	Fixed	Simult. Gap N/S	On	Red	0.0	1.5	1.5	0.0	0.0	0.0						



Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Back of Queue (*Q*), ft/ln (95 th percentile)		3.3	0	0	6.6		0	0				
Back of Queue (*Q*), veh/ln (95 th percentile)		0.1	0.0	0.0	0.3		0.0	0.0				
Queue Storage Ratio (*RQ*) (95 th percentile)		0.00	0.00	0.00	0.00		0.00	0.00				
Control Delay (*d*), s/veh		0.1	0.0	0.0	0.3		0.0					
Level of Service (LOS)		A			A							
Approach Delay, s/veh / LOS	0.1	A		0.3	A		0.0			0.0		
Intersection Delay, s/veh / LOS	0.2						A					



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--- Messages ---

No errors or warnings exist.

--- Comments ---

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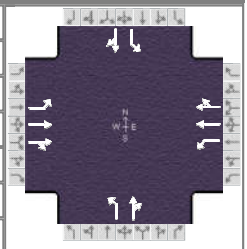
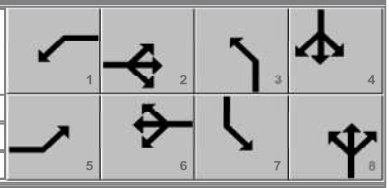
HCS7 Signalized Intersection Input Data

General Information				Intersection Information	
Agency	GHA			Duration, h	0.25
Analyst	LMM	Analysis Date	Nov 9, 2017	Area Type	Other
Jurisdiction	DuDOT	Time Period	AM Peak Hour	PHF	0.95
Urban Street	Ferry Road	Analysis Year	Existing	Analysis Period	1> 7:00
Intersection	Ferry Rd / River Rd	File Name	EX_Ferry River_AM.xus		
Project Description	5244.900				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	86	1229	19	24	618	14	0	0	1	28	2	72

Signal Information										
Cycle, s	100.0	Reference Phase	2							
Offset, s	0	Reference Point	Begin							
Uncoordinated	No	Simult. Gap E/W	On							
Force Mode	Fixed	Simult. Gap N/S	On							
				Green	3.0	0.8	66.7	0.0	3.3	7.1
				Yellow	3.5	0.0	4.5	3.5	3.5	4.5
				Red	0.0	0.0	1.5	0.0	0.0	1.5



Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	86	1229	19	24	618	14	0	0	1	28	2	72
Initial Queue (Q_b), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s_o), veh/h	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Parking (N_m), man/h		None			None			None			None	
Heavy Vehicles (P_{HV}), %	0	2		0	2		0	0		4	0	
Ped / Bike / RTOR, /h	0	0	0	0	0	0	0	0	0	0	0	0
Buses (N_b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (*AT*)	3	4	3	3	4	3	3	3	3	3	3	3
Upstream Filtering (*I*)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width (*W*), ft	12.0	12.0		12.0	12.0		12.0	12.0		12.0	12.0	
Turn Bay Length, ft	150	0		150	0		100	0		150	0	
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h	40	40	40	40	40	40	40	40	40	40	40	40

Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s	20.0	48.0	13.0	41.0	13.0	26.0	13.0	26.0
Yellow Change Interval (*Y*), s	3.5	4.5	3.5	4.5	3.5	4.5	3.5	4.5
Red Clearance Interval (R_c), s	0.0	1.5	0.0	1.5	0.0	1.5	0.0	1.5
Minimum Green (G_{min}), s	3	15	3	15	3	8	3	8
Start-Up Lost Time (*lt*), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (*e*), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Passage (*PT*), s	3.0	7.0	3.0	7.0	3.0	4.0	3.0	4.0
Recall Mode	Off	Min	Off	Min	Off	Off	Off	Off
Dual Entry	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Walk (*Walk*), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pedestrian Clearance Time (*PC*), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0	No	25	0	No	25	0	No	25	0	No	25
Walkway / Crosswalk Width / Length, ft	9.0	12	0	9.0	12	0	9.0	12	0	9.0	12	0
Street Width / Island / Curb	0	0	No	0	0	No	0	0	No	0	0	No
Width Outside / Bike Lane / Shoulder, ft	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50		No	0.50		No	0.50		No	0.50	

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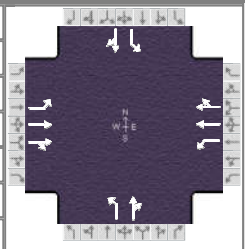
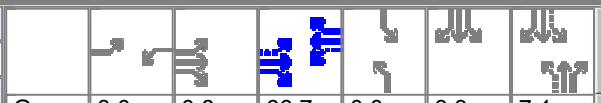
HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	GHA			Duration, h	0.25
Analyst	LMM	Analysis Date	Nov 9, 2017	Area Type	Other
Jurisdiction	DuDOT	Time Period	AM Peak Hour	PHF	0.95
Urban Street	Ferry Road	Analysis Year	Existing	Analysis Period	1> 7:00
Intersection	Ferry Rd / River Rd	File Name	EX_Ferry River_AM.xus		
Project Description	5244.900				

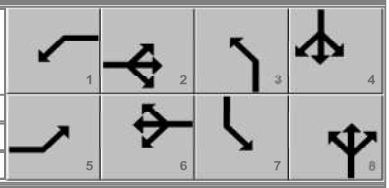


Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	86	1229	19	24	618	14	0	0	1	28	2	72

Signal Information			
Cycle, s	100.0	Reference Phase	2
Offset, s	0	Reference Point	Begin
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	3.0	0.8	66.7	0.0	3.3	7.1						
Yellow	3.5	0.0	4.5	3.5	3.5	4.5						
Red	0.0	0.0	1.5	0.0	0.0	1.5						



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6	3	8	7	4
Case Number	1.1	4.0	1.1	4.0	1.1	4.0	1.1	4.0
Phase Duration, s	7.3	73.6	6.5	72.7	0.0	13.1	6.8	19.9
Change Period, ($Y+R_c$), s	3.5	6.0	3.5	6.0	3.5	6.0	3.5	6.0
Max Allow Headway (*MAH*), s	4.0	0.0	4.0	0.0	0.0	5.2	4.0	5.2
Queue Clearance Time (g_s), s	3.6		2.4			2.1	3.5	6.4
Green Extension Time (g_e), s	0.3	0.0	0.0	0.0	0.0	0.3	0.0	0.4
Phase Call Probability	1.00		1.00			0.89	0.95	0.95
Max Out Probability	0.00		0.00			0.00	0.05	0.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (*v*), veh/h	91	658	655	25	334	331	0	1		29	78	
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1810	1870	1860	1810	1870	1856	1810	1610		1753	1617	
Queue Service Time (g_s), s	1.6	6.6	7.0	0.4	2.6	2.8	0.0	0.1		1.5	4.4	
Cycle Queue Clearance Time (g_c), s	1.6	6.6	7.0	0.4	2.6	2.8	0.0	0.1		1.5	4.4	
Green Ratio (*g/C*)	0.71	0.68	0.68	0.70	0.67	0.67	0.04	0.07		0.12	0.14	
Capacity (*c*), veh/h	641	1264	1257	375	1248	1239	169	114		229	225	
Volume-to-Capacity Ratio (*X*)	0.141	0.521	0.521	0.067	0.267	0.268	0.000	0.009		0.129	0.346	
Back of Queue (*Q*), ft/ln (95 th percentile)	21.4	83	86	6.1	39.9	42	0	1.1		29.9	79.4	
Back of Queue (*Q*), veh/ln (95 th percentile)	0.9	3.3	3.4	0.2	1.6	1.7	0.0	0.0		1.2	3.2	
Queue Storage Ratio (*RQ*) (95 th percentile)	0.14	0.00	0.00	0.04	0.00	0.00	0.00	0.00		0.20	0.00	
Uniform Delay (d_1), s/veh	4.6	1.9	2.1	5.0	2.0	2.2	0.0	43.2		39.0	38.9	
Incremental Delay (d_2), s/veh	0.1	1.5	1.5	0.1	0.5	0.5	0.0	0.0		0.3	1.3	
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Control Delay (*d*), s/veh	4.7	3.5	3.6	5.1	2.5	2.7	0.0	43.2		39.3	40.2	
Level of Service (LOS)	A	A	A	A	A	A		D		D	D	
Approach Delay, s/veh / LOS	3.6	A		2.7	A		43.2	D		39.9	D	
Intersection Delay, s/veh / LOS	5.1						A					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.2	B	2.2	B	2.9	C	2.9	C
Bicycle LOS Score / LOS	1.6	B	1.1	A	0.5	A	0.7	A

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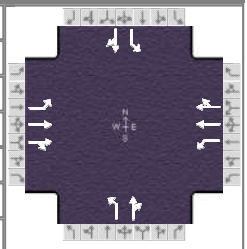
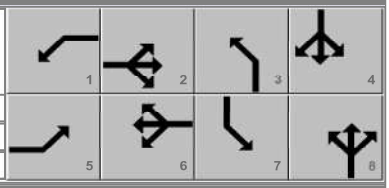
HCS7 Signalized Intersection Intermediate Values

General Information				Intersection Information	
Agency	GHA			Duration, h	0.25
Analyst	LMM	Analysis Date	Nov 9, 2017	Area Type	Other
Jurisdiction	DuDOT	Time Period	AM Peak Hour	PHF	0.95
Urban Street	Ferry Road	Analysis Year	Existing	Analysis Period	1> 7:00
Intersection	Ferry Rd / River Rd	File Name	EX_Ferry River_AM.xus		
Project Description	5244.900				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	86	1229	19	24	618	14	0	0	1	28	2	72

Signal Information												
Cycle, s	100.0	Reference Phase	2									
Offset, s	0	Reference Point	Begin									
Uncoordinated	No	Simult. Gap E/W	On									
Force Mode	Fixed	Simult. Gap N/S	On									
				Green	3.0	0.8	66.7	0.0	3.3	7.1		
				Yellow	3.5	0.0	4.5	3.5	3.5	4.5		
				Red	0.0	0.0	1.5	0.0	0.0	1.5		



Saturation Flow / Delay	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles and Grade Factor (f_{HVg})	1.000	0.984	1.000	1.000	0.984	1.000	1.000	1.000	1.000	0.969	1.000	1.000
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})	0.952	0.000		0.952	0.000		0.952	0.000		0.952	0.000	
Right-Turn Adjustment Factor (f_{RT})		0.995	0.995		0.992	0.992		0.847	0.847		0.851	0.851
Left-Turn Pedestrian Adjustment Factor (f_{Lpb})	1.000			1.000			1.000			1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{Rpb})			1.000			1.000			1.000			1.000
Work Zone Adjustment Factor (f_{wz})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
DDI Factor (f_{DDI})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Movement Saturation Flow Rate (s), veh/h	1810	3674	57	1810	3643	83	1810	0	1610	1753	44	1573
Proportion of Vehicles Arriving on Green (P)	0.04	0.90	0.68	0.03	0.89	0.67	0.00	0.00	0.07	0.03	0.14	0.14
Incremental Delay Factor (k)	0.11	0.50	0.50	0.11	0.50	0.50		0.15		0.11	0.15	

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)	3.5	6.0	3.5	6.0	3.5	6.0	3.5	6.0
Green Ratio (g/C)	0.71	0.68	0.70	0.67	0.04	0.07	0.12	0.14
Permitted Saturation Flow Rate (s_p), veh/h/ln	783	0	425	0	1342	0	1394	0
Shared Saturation Flow Rate (s_{sh}), veh/h/ln								
Permitted Effective Green Time (g_p), s	66.7	0.0	66.7	0.0	7.1	0.0	9.1	0.0
Permitted Service Time (g_u), s	63.9	0.0	58.5	0.0	7.1	0.0	7.1	0.0
Permitted Queue Service Time (g_{ps}), s	0.4		0.5		0.0		0.0	
Time to First Blockage (g_f), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Service Time Before Blockage (g_{fs}), s								
Protected Right Saturation Flow (s_R), veh/h/ln								
Protected Right Effective Green Time (g_R), s								

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	1.557	0.00	1.557	0.00	2.107	0.00	2.107	0.00
Pedestrian F_s / F_{delay}	0.000	0.067	0.000	0.069	0.000	0.151	0.000	0.145
Pedestrian M_{corner} / M_{cw}								
Bicycle c_b / d_b	1351.15	5.26	1334.98	5.53	142.15	43.14	278.84	37.03
Bicycle F_w / F_v	-3.64	1.16	-3.64	0.57	-3.64	0.00	-3.64	0.18

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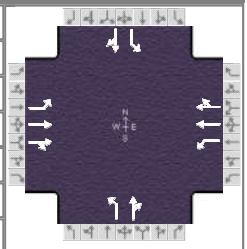
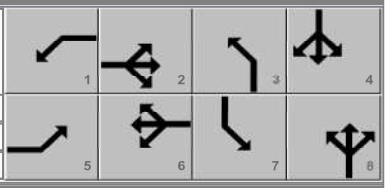
HCS7 Signalized Intersection Results Graphical Summary

General Information				Intersection Information	
Agency	GHA			Duration, h	0.25
Analyst	LMM	Analysis Date	Nov 9, 2017	Area Type	Other
Jurisdiction	DuDOT	Time Period	AM Peak Hour	PHF	0.95
Urban Street	Ferry Road	Analysis Year	Existing	Analysis Period	1> 7:00
Intersection	Ferry Rd / River Rd	File Name	EX_Ferry River_AM.xus		
Project Description	5244.900				

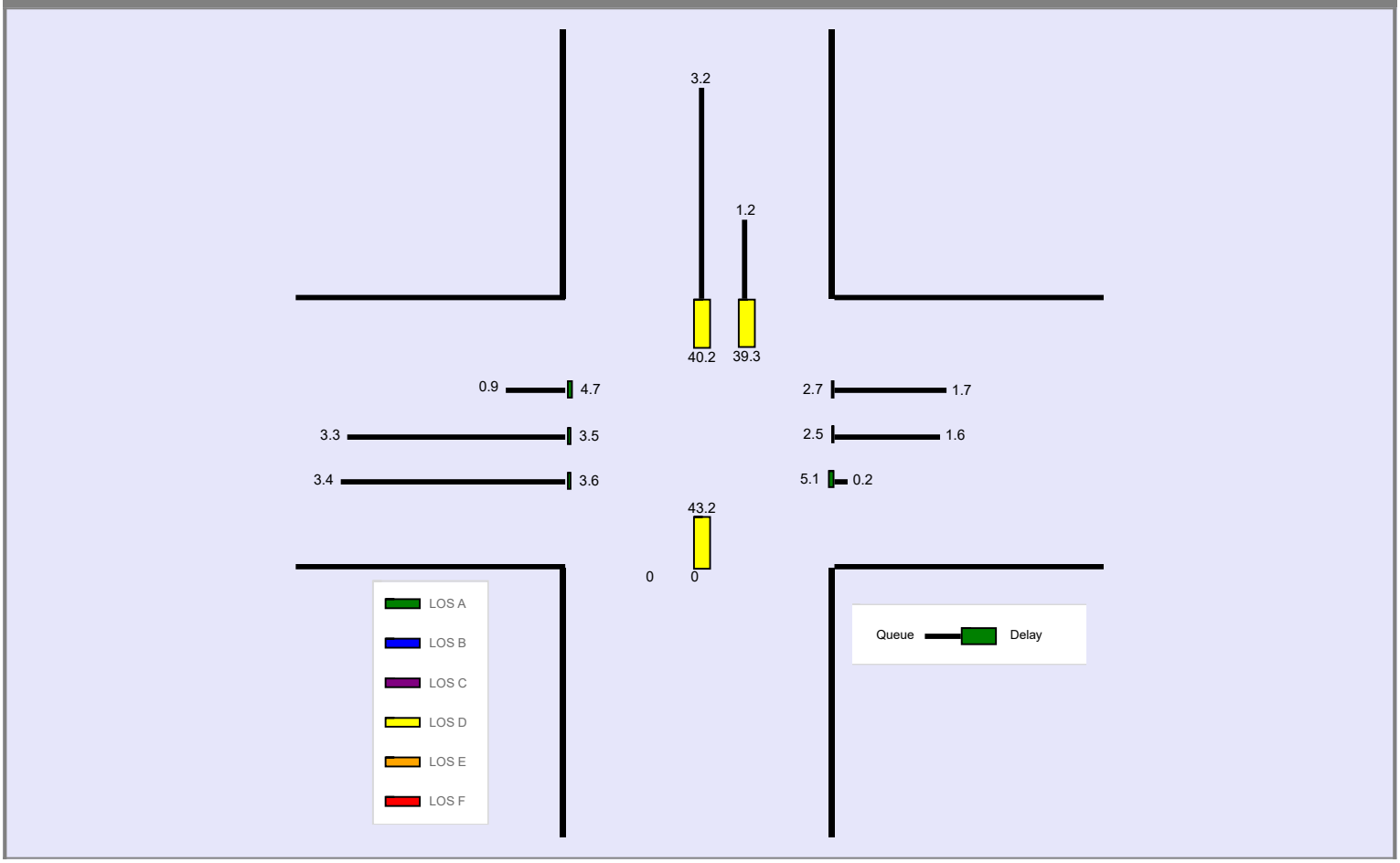


Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	86	1229	19	24	618	14	0	0	1	28	2	72

Signal Information												
Cycle, s	100.0	Reference Phase	2									
Offset, s	0	Reference Point	Begin									
Uncoordinated	No	Simult. Gap E/W	On									
Force Mode	Fixed	Simult. Gap N/S	On									
				Green	3.0	0.8	66.7	0.0	3.3	7.1		
				Yellow	3.5	0.0	4.5	3.5	3.5	4.5		
				Red	0.0	0.0	1.5	0.0	0.0	1.5		



Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Back of Queue (*Q*), ft/ln (95 th percentile)	21.4	83	86	6.1	39.9	42	0	1.1		29.9	79.4	
Back of Queue (*Q*), veh/ln (95 th percentile)	0.9	3.3	3.4	0.2	1.6	1.7	0.0	0.0		1.2	3.2	
Queue Storage Ratio (*RQ*) (95 th percentile)	0.14	0.00	0.00	0.04	0.00	0.00	0.00	0.00		0.20	0.00	
Control Delay (*d*), s/veh	4.7	3.5	3.6	5.1	2.5	2.7	0.0	43.2		39.3	40.2	
Level of Service (LOS)	A	A	A	A	A	A		D		D	D	
Approach Delay, s/veh / LOS	3.6	A		2.7	A		43.2	D		39.9	D	
Intersection Delay, s/veh / LOS	5.1						A					



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--- Messages ---

No errors or warnings exist.

--- Comments ---

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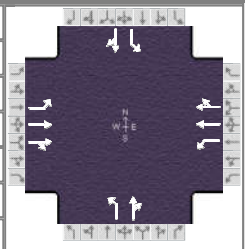
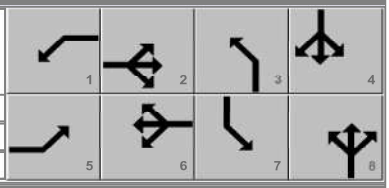
HCS7 Signalized Intersection Input Data

General Information				Intersection Information	
Agency	GHA			Duration, h	0.25
Analyst	LMM	Analysis Date	Nov 9, 2017	Area Type	Other
Jurisdiction	DuDOT	Time Period	PM Peak Hour	PHF	0.94
Urban Street	Ferry Road	Analysis Year	Existing	Analysis Period	1> 5:00
Intersection	Ferry Rd / River Rd	File Name	EX_Ferry River_PM.xus		
Project Description	5244.900				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	100	746	2	4	1229	34	31	3	21	16	0	77

Signal Information					EB			WB			NB		
Cycle, s	150.0	Reference Phase	2										
Offset, s	0	Reference Point	Begin	Green	3.0	1.4		112.3	3.3	1.0	9.9		
Uncoordinated	No	Simult. Gap E/W	On	Yellow	3.5	0.0		4.5	3.5	0.0	4.5		
Force Mode	Fixed	Simult. Gap N/S	On	Red	0.0	0.0		1.5	0.0	0.0	1.5		



Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	100	746	2	4	1229	34	31	3	21	16	0	77
Initial Queue (Q_b), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s_o), veh/h	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Parking (N_m), man/h		None			None			None			None	
Heavy Vehicles (P_{HV}), %	0	1		0	1		0	0		0	0	
Ped / Bike / RTOR, /h	0	0	0	0	0	0	0	0	0	0	0	0
Buses (N_b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (*AT*)	3	4	3	3	4	3	3	3	3	3	3	3
Upstream Filtering (*I*)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width (*W*), ft	12.0	12.0		12.0	12.0		12.0	12.0		12.0	12.0	
Turn Bay Length, ft	150	0		150	0		100	0		150	0	
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h	40	40	40	40	40	40	40	40	40	40	40	40

Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s	26.0	90.0	14.0	78.0	13.0	33.0	13.0	33.0
Yellow Change Interval (*Y*), s	3.5	4.5	3.5	4.5	3.5	4.5	3.5	4.5
Red Clearance Interval (R_c), s	0.0	1.5	0.0	1.5	0.0	1.5	0.0	1.5
Minimum Green (G_{min}), s	3	15	3	15	3	8	3	8
Start-Up Lost Time (*lt*), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (*e*), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Passage (*PT*), s	3.0	7.0	3.0	7.0	3.0	4.0	3.0	4.0
Recall Mode	Off	Min	Off	Min	Off	Off	Off	Off
Dual Entry	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Walk (*Walk*), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pedestrian Clearance Time (*PC*), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0	No	25	0	No	25	0	No	25	0	No	25
Walkway / Crosswalk Width / Length, ft	9.0	12	0	9.0	12	0	9.0	12	0	9.0	12	0
Street Width / Island / Curb	0	0	No	0	0	No	0	0	No	0	0	No
Width Outside / Bike Lane / Shoulder, ft	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50		No	0.50		No	0.50		No	0.50	

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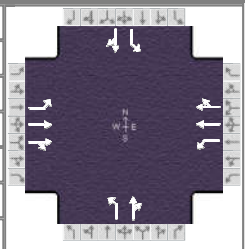
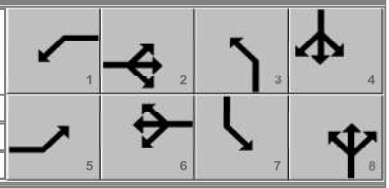
HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	GHA			Duration, h	0.25
Analyst	LMM	Analysis Date	Nov 9, 2017	Area Type	Other
Jurisdiction	DuDOT	Time Period	PM Peak Hour	PHF	0.94
Urban Street	Ferry Road	Analysis Year	Existing	Analysis Period	1> 5:00
Intersection	Ferry Rd / River Rd	File Name	EX_Ferry River_PM.xus		
Project Description	5244.900				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	100	746	2	4	1229	34	31	3	21	16	0	77

Signal Information					EB			WB			NB			SB		
Cycle, s	150.0	Reference Phase	2													
Offset, s	0	Reference Point	Begin	Green	3.0	1.4		112.3	3.3	1.0	9.9					
Uncoordinated	No	Simult. Gap E/W	On	Yellow	3.5	0.0		4.5	3.5	0.0	4.5					
Force Mode	Fixed	Simult. Gap N/S	On	Red	0.0	0.0		1.5	0.0	0.0	1.5					



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6	3	8	7	4
Case Number	1.1	4.0	1.1	4.0	1.1	4.0	1.1	4.0
Phase Duration, s	7.9	119.7	6.5	118.3	7.8	17.0	6.8	15.9
Change Period, ($Y+R_c$), s	3.5	6.0	3.5	6.0	3.5	6.0	3.5	6.0
Max Allow Headway (*MAH*), s	4.0	0.0	4.0	0.0	4.0	5.2	4.0	5.2
Queue Clearance Time (g_s), s	4.1		2.1		4.5	4.2	3.3	9.5
Green Extension Time (g_e), s	0.3	0.0	0.0	0.0	0.0	0.5	0.0	0.5
Phase Call Probability	1.00		1.00		0.96	1.00	1.00	0.99
Max Out Probability	0.00		0.00		0.24	0.00	0.02	0.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (*v*), veh/h	106	398	398	4	675	669	33	26		17	82	
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1810	1885	1883	1810	1885	1867	1810	1641		1810	1610	
Queue Service Time (g_s), s	2.1	0.0	0.1	0.1	0.2	1.5	2.5	2.2		1.3	7.5	
Cycle Queue Clearance Time (g_c), s	2.1	0.0	0.1	0.1	0.2	1.5	2.5	2.2		1.3	7.5	
Green Ratio (*g/C*)	0.78	0.76	0.76	0.77	0.75	0.75	0.10	0.07		0.09	0.07	
Capacity (*c*), veh/h	406	1429	1428	600	1411	1398	122	120		151	107	
Volume-to-Capacity Ratio (*X*)	0.262	0.279	0.279	0.007	0.478	0.479	0.270	0.212		0.112	0.768	
Back of Queue (*Q*), ft/ln (95 th percentile)	31.5	8.7	9.3	1.2	22.1	33.8	53.7	43.1		27.4	158.1	
Back of Queue (*Q*), veh/ln (95 th percentile)	1.3	0.3	0.4	0.0	0.9	1.4	2.1	1.7		1.1	6.3	
Queue Storage Ratio (*RQ*) (95 th percentile)	0.21	0.00	0.00	0.01	0.00	0.00	0.54	0.00		0.18	0.00	
Uniform Delay (d_1), s/veh	3.9	0.0	0.0	4.0	0.0	0.3	62.7	65.4		63.0	68.9	
Incremental Delay (d_2), s/veh	0.3	0.5	0.5	0.0	1.2	1.2	1.2	1.2		0.3	15.0	
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Control Delay (*d*), s/veh	4.3	0.5	0.5	4.0	1.2	1.5	63.9	66.7		63.3	83.9	
Level of Service (LOS)	A	A	A	A	A	A	E	E		E	F	
Approach Delay, s/veh / LOS	0.9	A		1.3	A		65.1	E		80.3	F	
Intersection Delay, s/veh / LOS	6.0						A					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.2	B	2.2	B	2.9	C	2.9	C
Bicycle LOS Score / LOS	1.2	A	1.6	B	0.6	A	0.7	A

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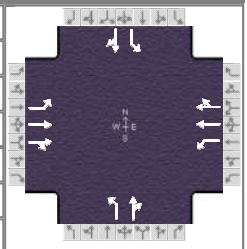
HCS7 Signalized Intersection Intermediate Values

General Information				Intersection Information	
Agency	GHA			Duration, h	0.25
Analyst	LMM	Analysis Date	Nov 9, 2017	Area Type	Other
Jurisdiction	DuDOT	Time Period	PM Peak Hour	PHF	0.94
Urban Street	Ferry Road	Analysis Year	Existing	Analysis Period	1> 5:00
Intersection	Ferry Rd / River Rd	File Name	EX_Ferry River_PM.xus		
Project Description	5244.900				

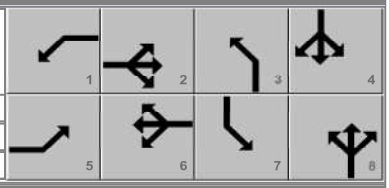


Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	100	746	2	4	1229	34	31	3	21	16	0	77

Signal Information			
Cycle, s	150.0	Reference Phase	2
Offset, s	0	Reference Point	Begin
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	3.0	1.4	112.3	3.3	1.0	9.9
Yellow	3.5	0.0	4.5	3.5	0.0	4.5
Red	0.0	0.0	1.5	0.0	0.0	1.5



Saturation Flow / Delay	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles and Grade Factor (f_{HVg})	1.000	0.992	1.000	1.000	0.992	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})	0.952	0.000		0.952	0.000		0.952	0.000		0.952	0.000	
Right-Turn Adjustment Factor (f_{RT})		0.999	0.999		0.990	0.990		0.864	0.864		0.847	0.847
Left-Turn Pedestrian Adjustment Factor (f_{Lpb})	1.000			1.000			1.000			1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{Rpb})			1.000			1.000			1.000			1.000
Work Zone Adjustment Factor (f_{wz})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
DDI Factor (f_{DDI})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Movement Saturation Flow Rate (s), veh/h	1810	3758	10	1810	3651	101	1810	205	1436	1810	0	1610
Proportion of Vehicles Arriving on Green (P)	0.03	1.00	0.76	0.02	1.00	0.75	0.03	0.07	0.07	0.02	0.00	0.07
Incremental Delay Factor (k)	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.15		0.11	0.15	

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)	3.5	6.0	3.5	6.0	3.5	6.0	3.5	6.0
Green Ratio (g/C)	0.78	0.76	0.77	0.75	0.10	0.07	0.09	0.07
Permitted Saturation Flow Rate (s_p), veh/h/ln	413	0	693	0	1337	0	1407	0
Shared Saturation Flow Rate (s_{sh}), veh/h/ln								
Permitted Effective Green Time (g_p), s	112.3	0.0	112.3	0.0	9.9	0.0	9.9	0.0
Permitted Service Time (g_u), s	110.7	0.0	111.6	0.0	2.4	0.0	6.8	0.0
Permitted Queue Service Time (g_{ps}), s	0.6		0.0		0.2		0.0	
Time to First Blockage (g_f), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Service Time Before Blockage (g_{fs}), s								
Protected Right Saturation Flow (s_R), veh/h/ln								
Protected Right Effective Green Time (g_R), s								

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	1.557	0.00	1.557	0.00	2.107	0.00	2.107	0.00
Pedestrian F_s / F_{delay}	0.000	0.059	0.000	0.062	0.000	0.167	0.000	0.168
Pedestrian M_{corner} / M_{cw}								
Bicycle c_b / d_b	1516.25	4.39	1497.45	4.74	146.53	64.41	132.55	65.39
Bicycle F_w / F_v	-3.64	0.74	-3.64	1.11	-3.64	0.10	-3.64	0.16

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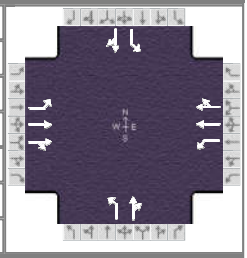
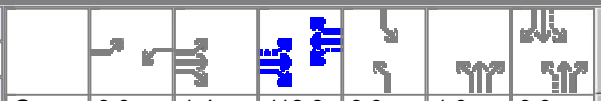
HCS7 Signalized Intersection Results Graphical Summary

General Information				Intersection Information	
Agency	GHA			Duration, h	0.25
Analyst	LMM	Analysis Date	Nov 9, 2017	Area Type	Other
Jurisdiction	DuDOT	Time Period	PM Peak Hour	PHF	0.94
Urban Street	Ferry Road	Analysis Year	Existing	Analysis Period	1> 5:00
Intersection	Ferry Rd / River Rd	File Name	EX_Ferry River_PM.xus		
Project Description	5244.900				

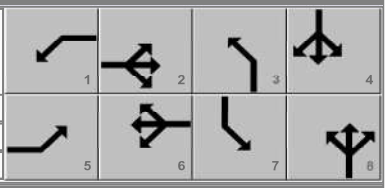


Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	100	746	2	4	1229	34	31	3	21	16	0	77

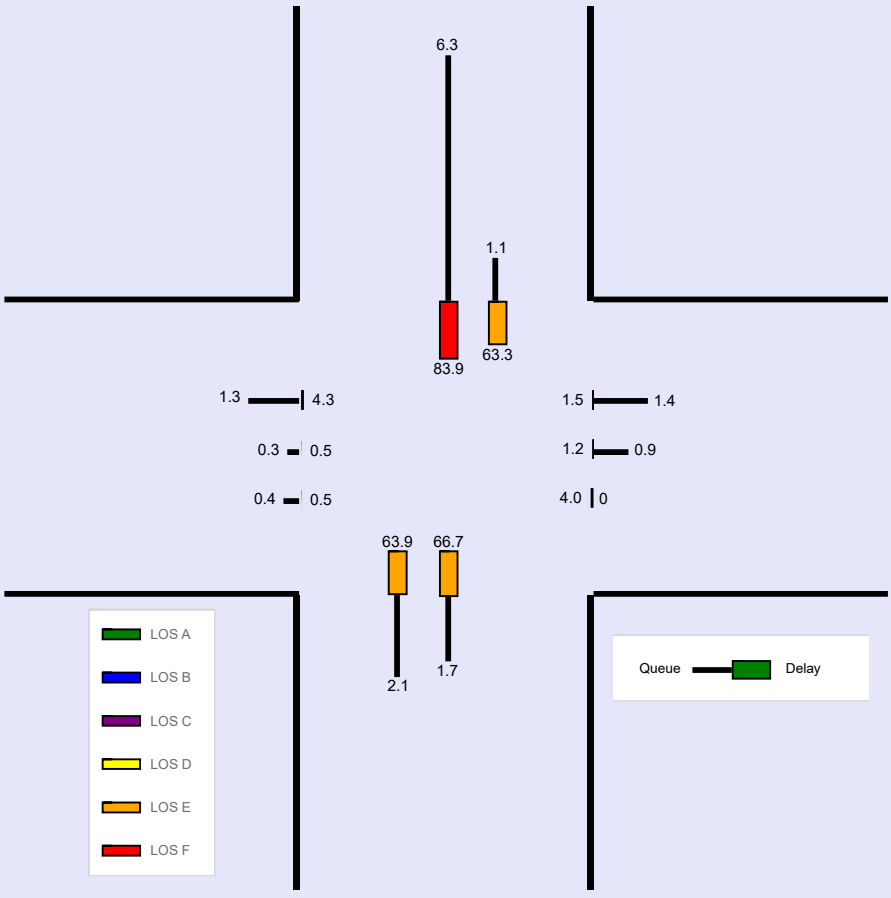
Signal Information			
Cycle, s	150.0	Reference Phase	2
Offset, s	0	Reference Point	Begin
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	3.0	1.4	112.3	3.3	1.0	9.9						
Yellow	3.5	0.0	4.5	3.5	0.0	4.5						
Red	0.0	0.0	1.5	0.0	0.0	1.5						



Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Back of Queue (*Q*), ft/ln (95 th percentile)	31.5	8.7	9.3	1.2	22.1	33.8	53.7	43.1		27.4	158.1	
Back of Queue (*Q*), veh/ln (95 th percentile)	1.3	0.3	0.4	0.0	0.9	1.4	2.1	1.7		1.1	6.3	
Queue Storage Ratio (*RQ*) (95 th percentile)	0.21	0.00	0.00	0.01	0.00	0.00	0.54	0.00		0.18	0.00	
Control Delay (*d*), s/veh	4.3	0.5	0.5	4.0	1.2	1.5	63.9	66.7		63.3	83.9	
Level of Service (LOS)	A	A	A	A	A	A	E	E		E	F	
Approach Delay, s/veh / LOS	0.9	A		1.3	A		65.1	E		80.3	F	
Intersection Delay, s/veh / LOS	6.0						A					



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--- Messages ---

No errors or warnings exist.

--- Comments ---

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HCS7 Two-Way Stop-Control Report

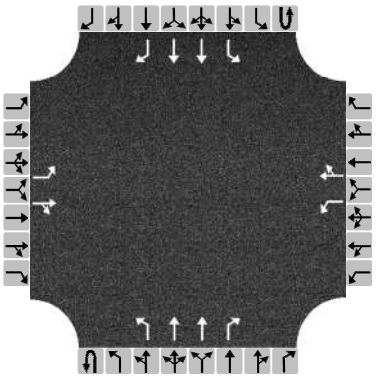
General Information

Analyst	LMM
Agency/Co.	GHA
Date Performed	11/9/2017
Analysis Year	2025
Time Analyzed	NoBuild AM
Intersection Orientation	North-South
Project Description	5244.902

Site Information

Intersection	Winfield Rd/McCormick Ln
Jurisdiction	DuDOT
East/West Street	McCormick Lane
North/South Street	Winfield Road
Peak Hour Factor	0.91
Analysis Time Period (hrs)	0.25

Lanes



Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		1	1	0		1	1	0	0	1	2	1	0	1	2	1
Configuration		L		TR		L		TR		L	T	R		L	T	R
Volume, V (veh/h)		13	1	11		34	0	14		2	1046	11		2	1319	4
Percent Heavy Vehicles (%)		0	0	0		0	0	0		0				0		
Proportion Time Blocked																
Percent Grade (%)	0				0											
Right Turn Channelized	No				No				No				No			
Median Type/Storage	Left + Thru								1							

Critical and Follow-up Headways

Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		14		13		37		15		2				2		
Capacity, c (veh/h)		107		317		141		467		472				609		
v/c Ratio		0.13		0.04		0.26		0.03		0.00				0.00		
95% Queue Length, Q_{95} (veh)		0.4		0.1		1.0		0.1		0.0				0.0		
Control Delay (s/veh)		43.5		16.8		39.5		13.0		12.7				10.9		
Level of Service, LOS		E		C		E		B		B				B		
Approach Delay (s/veh)	30.7				31.8				0.0				0.0			
Approach LOS	D				D											

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HCS7 Two-Way Stop-Control Report

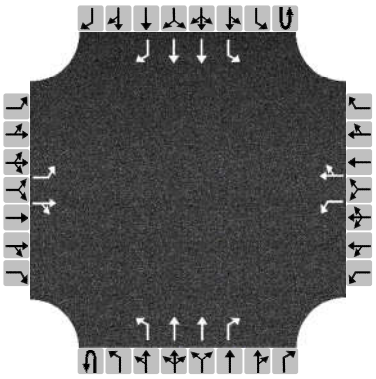
General Information

Analyst	LMM
Agency/Co.	GHA
Date Performed	11/9/2017
Analysis Year	2025
Time Analyzed	NoBuild PM
Intersection Orientation	North-South
Project Description	5244.902

Site Information

Intersection	Winfield Rd/McCormick Ln
Jurisdiction	DuDOT
East/West Street	McCormick Lane
North/South Street	Winfield Road
Peak Hour Factor	0.97
Analysis Time Period (hrs)	0.25

Lanes



Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		1	1	0		1	1	0	0	1	2	1	0	1	2	1
Configuration		L		TR		L		TR		L	T	R		L	T	R
Volume, V (veh/h)		13	0	5		11	0	12		13	1361	32		12	1222	11
Percent Heavy Vehicles (%)		0	0	0		0	0	0		0				0		
Proportion Time Blocked																
Percent Grade (%)		0				0										
Right Turn Channelized		No				No				No				No		
Median Type/Storage		Left + Thru								1						

Critical and Follow-up Headways

Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		13		5		11		12		13				12		
Capacity, c (veh/h)		119		429		105		385		554				479		
v/c Ratio		0.11		0.01		0.10		0.03		0.02				0.03		
95% Queue Length, Q_{95} (veh)		0.4		0.0		0.3		0.1		0.1				0.1		
Control Delay (s/veh)		38.9		13.5		43.2		14.6		11.7				12.7		
Level of Service, LOS		E		B		E		B		B				B		
Approach Delay (s/veh)		31.9				28.3				0.1				0.1		
Approach LOS		D				D										

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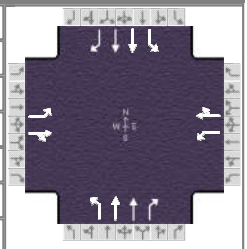
HCS7 Signalized Intersection Input Data

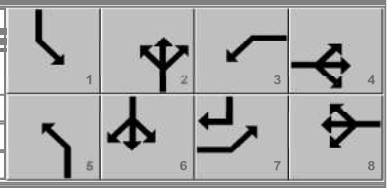
General Information				Intersection Information	
Agency	GHA			Duration, h	0.25
Analyst	LMM	Analysis Date	Nov 9, 2017	Area Type	Other
Jurisdiction	DuDOT	Time Period	AM Peak	PHF	0.97
Urban Street	Winfield Rd	Analysis Year	2025 NoBuild	Analysis Period	1> 7:00
Intersection	Winfield Rd / Torch Pkwy	File Name	25NB_Winfield_Torch_AM.xus		
Project Description	5244.900				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	3	0	27	1	0	4	131	1052	92	44	1266	54

Signal Information			
Cycle, s	130.0	Reference Phase	2
Offset, s	0	Reference Point	Begin
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	3.0	1.6	98.8	0.8	1.3	5.6						
Yellow	3.5	0.0	4.5	3.5	0.0	4.5						
Red	0.0	0.0	1.5	0.0	0.0	1.5						



Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	3	0	27	1	0	4	131	1052	92	44	1266	54
Initial Queue (Q_b), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s_o), veh/h	1900	1900	1900	1900	1900	1900	1900	2000	1900	1900	2000	1900
Parking (N_m), man/h		None			None			None			None	
Heavy Vehicles (P_{HV}), %	0	0		0	0		0	1	1	0	2	2
Ped / Bike / RTOR, /h	0	0	0	0	0	0	0	0	0	0	0	0
Buses (N_b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (*AT*)	3	3	3	3	3	3	3	4	3	3	4	3
Upstream Filtering (*I*)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width (*W*), ft	12.0	12.0		12.0	12.0		12.0	12.0	12.0	12.0	12.0	12.0
Turn Bay Length, ft	120	0		150	0		470	0	115	90	0	125
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h	25	25	25	25	25	25	40	40	40	40	40	40

Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s	13.0	32.0	13.0	32.0	13.0	72.0	13.0	72.0
Yellow Change Interval (*Y*), s	3.5	4.5	3.5	4.5	3.5	4.5	3.5	4.5
Red Clearance Interval (R_c), s	0.0	1.5	0.0	1.5	0.0	1.5	0.0	1.5
Minimum Green (G_{min}), s	3	8	3	8	3	15	3	15
Start-Up Lost Time (*lt*), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (*e*), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Passage (*PT*), s	3.0	4.0	3.0	4.0	3.0	7.0	3.0	7.0
Recall Mode	Off	Off	Off	Off	Off	Min	Off	Min
Dual Entry	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Walk (*Walk*), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pedestrian Clearance Time (*PC*), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0	No	25	0	No	25	0	No	25	0	No	25
Walkway / Crosswalk Width / Length, ft	9.0	12	0	9.0	12	0	9.0	12	0	9.0	12	0
Street Width / Island / Curb	0	0	No	0	0	No	0	0	No	0	0	No
Width Outside / Bike Lane / Shoulder, ft	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50		No	0.50		No	0.50		No	0.50	

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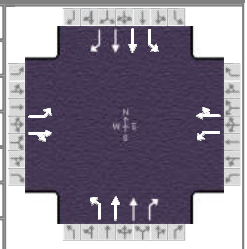
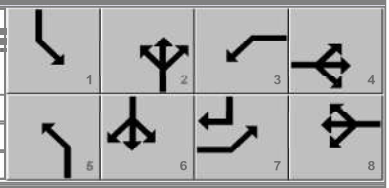
HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	GHA			Duration, h	0.25
Analyst	LMM	Analysis Date	Nov 9, 2017	Area Type	Other
Jurisdiction	DuDOT	Time Period	AM Peak	PHF	0.97
Urban Street	Winfield Rd	Analysis Year	2025 NoBuild	Analysis Period	1> 7:00
Intersection	Winfield Rd / Torch Pkwy	File Name	25NB_Winfield_Torch_AM.xus		
Project Description	5244.900				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	3	0	27	1	0	4	131	1052	92	44	1266	54

Signal Information			
Cycle, s	130.0	Reference Phase	2
Offset, s	0	Reference Point	Begin
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	3.0	1.6	98.8	0.8	1.3	5.6		
Yellow	3.5	0.0	4.5	3.5	0.0	4.5		
Red	0.0	0.0	1.5	0.0	0.0	1.5		

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	7	4	3	8	5	2	1	6
Case Number	1.1	4.0	1.1	4.0	1.1	3.0	1.1	3.0
Phase Duration, s	5.6	12.9	4.3	11.6	8.1	106.4	6.5	104.8
Change Period, ($Y+R_c$), s	3.5	6.0	3.5	6.0	3.5	6.0	3.5	6.0
Max Allow Headway (*MAH*), s	4.2	5.4	4.2	5.4	4.0	0.0	4.0	0.0
Queue Clearance Time (g_s), s	2.2	4.2	2.1	2.3	4.1		2.7	
Green Extension Time (g_e), s	0.0	0.1	0.0	0.1	0.4	0.0	0.1	0.0
Phase Call Probability	0.68	0.72	0.26	0.70	1.00		1.00	
Max Out Probability	0.00	0.00	0.00	0.00	0.00		0.00	

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (*v*), veh/h	3	28		1	4		135	1085	95	45	1305	56
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1810	1610		1810	1610		1810	1889	1598	1810	1874	1585
Queue Service Time (g_s), s	0.2	2.2		0.1	0.3		2.1	0.0	1.9	0.7	0.0	1.1
Cycle Queue Clearance Time (g_c), s	0.2	2.2		0.1	0.3		2.1	0.0	1.9	0.7	0.0	1.1
Green Ratio (*g/C*)	0.06	0.05		0.05	0.04		0.80	0.77	0.77	0.78	0.76	0.78
Capacity (*c*), veh/h	142	85		95	69		444	2917	1234	497	2849	1230
Volume-to-Capacity Ratio (*X*)	0.022	0.328		0.011	0.060		0.304	0.372	0.077	0.091	0.458	0.045
Back of Queue (*Q*), ft/ln (95 th percentile)	4.5	43.5		1.5	6.4		28.5	6.7	24.2	9.8	9.6	13.6
Back of Queue (*Q*), veh/ln (95 th percentile)	0.2	1.7		0.1	0.3		1.1	0.3	1.0	0.4	0.4	0.5
Queue Storage Ratio (*RQ*) (95 th percentile)	0.04	0.00		0.01	0.00		0.06	0.00	0.21	0.11	0.00	0.11
Uniform Delay (d_1), s/veh	57.7	59.4		58.9	59.7		2.9	0.0	3.6	3.1	0.0	3.4
Incremental Delay (d_2), s/veh	0.1	3.2		0.0	0.5		0.4	0.4	0.1	0.1	0.5	0.1
Initial Queue Delay (d_3), s/veh	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (*d*), s/veh	57.8	62.5		58.9	60.2		3.3	0.4	3.7	3.2	0.5	3.5
Level of Service (LOS)	E	E		E	E		A	A	A	A	A	A
Approach Delay, s/veh / LOS	62.0	E		60.0	E		0.9	A		0.7	A	
Intersection Delay, s/veh / LOS	1.6						A					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	3.0	C	3.0	C	2.2	B	2.2	B
Bicycle LOS Score / LOS	0.5	A	0.5	A	1.6	B	1.6	B

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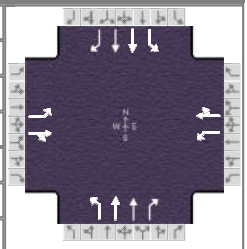
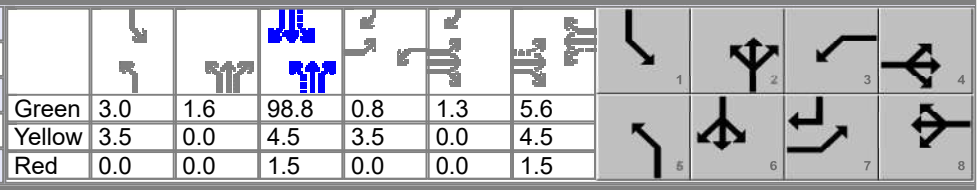
HCS7 Signalized Intersection Intermediate Values

General Information				Intersection Information	
Agency	GHA			Duration, h	0.25
Analyst	LMM	Analysis Date	Nov 9, 2017	Area Type	Other
Jurisdiction	DuDOT	Time Period	AM Peak	PHF	0.97
Urban Street	Winfield Rd	Analysis Year	2025 NoBuild	Analysis Period	1> 7:00
Intersection	Winfield Rd / Torch Pkwy	File Name	25NB_Winfield_Torch_AM.xus		
Project Description	5244.900				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	3	0	27	1	0	4	131	1052	92	44	1266	54

Signal Information			
Cycle, s	130.0	Reference Phase	2
Offset, s	0	Reference Point	Begin
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	3.0	1.6	98.8	0.8	1.3	5.6
Yellow	3.5	0.0	4.5	3.5	0.0	4.5
Red	0.0	0.0	1.5	0.0	0.0	1.5

Saturation Flow / Delay	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles and Grade Factor (f_{HVg})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.992	0.992	1.000	0.984	0.984
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.952	1.000	1.000	0.952	1.000
Left-Turn Adjustment Factor (f_{LT})	0.952	0.000		0.952	0.000		0.952	0.000		0.952	0.000	
Right-Turn Adjustment Factor (f_{RT})		0.847	0.847		0.847	0.847		0.000	0.847		0.000	0.847
Left-Turn Pedestrian Adjustment Factor (f_{Lpb})	1.000			1.000			1.000			1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{Rpb})			1.000			1.000			1.000			1.000
Work Zone Adjustment Factor (f_{wz})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
DDI Factor (f_{DDI})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Movement Saturation Flow Rate (s), veh/h	1810	0	1610	1810	0	1610	1810	3778	1598	1810	3749	1585
Proportion of Vehicles Arriving on Green (P)	0.02	0.00	0.05	0.01	0.00	0.04	0.04	1.00	0.77	0.02	1.00	0.76
Incremental Delay Factor (k)	0.11	0.15		0.11	0.15		0.11	0.50	0.50	0.11	0.50	0.50

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)	3.5	6.0	3.5	6.0	3.5	6.0	3.5	6.0
Green Ratio (g/C)	0.06	0.05	0.05	0.04	0.80	0.77	0.78	0.76
Permitted Saturation Flow Rate (s_p), veh/h/ln	1435	0	1404	0	428	0	528	0
Shared Saturation Flow Rate (s_{sh}), veh/h/ln								
Permitted Effective Green Time (g_p), s	5.6	0.0	5.6	0.0	98.9	0.0	98.8	0.0
Permitted Service Time (g_u), s	5.3	0.0	2.7	0.0	98.8	0.0	98.4	0.0
Permitted Queue Service Time (g_{ps}), s	0.0		0.0		0.0		0.0	
Time to First Blockage (g_f), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Service Time Before Blockage (g_{fs}), s								
Protected Right Saturation Flow (s_R), veh/h/ln						0		1585
Protected Right Effective Green Time (g_R), s						0.0		2.1

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	2.224	0.00	2.224	0.00	1.557	0.00	1.557	0.00
Pedestrian F_s / F_{delay}	0.000	0.163	0.000	0.164	0.000	0.049	0.000	0.053
Pedestrian M_{corner} / M_{cw}								
Bicycle c_b / d_b	105.40	58.33	85.69	59.55	1544.24	3.38	1520.24	3.74
Bicycle F_w / F_v	-3.64	0.05	-3.64	0.01	-3.64	1.08	-3.64	1.16

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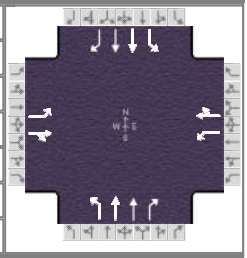
HCS7 Signalized Intersection Results Graphical Summary

General Information				Intersection Information	
Agency	GHA			Duration, h	0.25
Analyst	LMM	Analysis Date	Nov 9, 2017	Area Type	Other
Jurisdiction	DuDOT	Time Period	AM Peak	PHF	0.97
Urban Street	Winfield Rd	Analysis Year	2025 NoBuild	Analysis Period	1> 7:00
Intersection	Winfield Rd / Torch Pkwy	File Name	25NB_Winfield_Torch_AM.xus		
Project Description	5244.900				

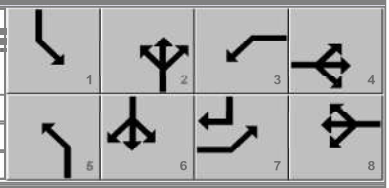


Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	3	0	27	1	0	4	131	1052	92	44	1266	54

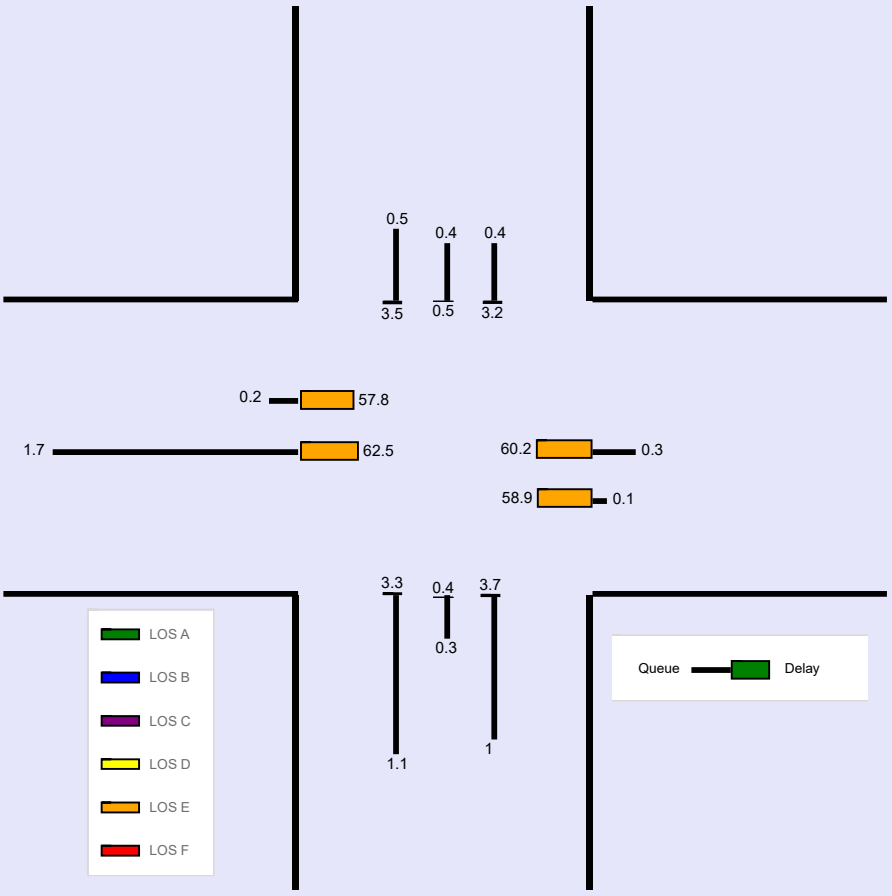
Signal Information			
Cycle, s	130.0	Reference Phase	2
Offset, s	0	Reference Point	Begin
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	3.0	1.6	98.8	0.8	1.3	5.6
Yellow	3.5	0.0	4.5	3.5	0.0	4.5
Red	0.0	0.0	1.5	0.0	0.0	1.5



Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Back of Queue (*Q*), ft/ln (95 th percentile)	4.5	43.5		1.5	6.4		28.5	6.7	24.2	9.8	9.6	13.6
Back of Queue (*Q*), veh/ln (95 th percentile)	0.2	1.7		0.1	0.3		1.1	0.3	1.0	0.4	0.4	0.5
Queue Storage Ratio (*RQ*) (95 th percentile)	0.04	0.00		0.01	0.00		0.06	0.00	0.21	0.11	0.00	0.11
Control Delay (*d*), s/veh	57.8	62.5		58.9	60.2		3.3	0.4	3.7	3.2	0.5	3.5
Level of Service (LOS)	E	E		E	E		A	A	A	A	A	A
Approach Delay, s/veh / LOS	62.0	E		60.0	E		0.9	A		0.7	A	
Intersection Delay, s/veh / LOS	1.6						A					



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--- Messages ---

No errors or warnings exist.

--- Comments ---

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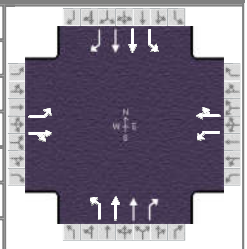
HCS7 Signalized Intersection Input Data

General Information				Intersection Information	
Agency	GHA			Duration, h	0.25
Analyst	LMM	Analysis Date	Nov 9, 2017	Area Type	Other
Jurisdiction	DuDOT	Time Period	PM Peak	PHF	0.94
Urban Street	Winfield Rd	Analysis Year	2025 NoBuild	Analysis Period	1> 5:00
Intersection	Winfield Rd / Torch Pkwy	File Name	25NB_Winfield_Torch_PM.xus		
Project Description	5244.900				

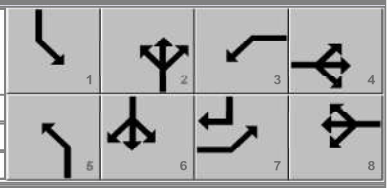


Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	52	0	162	56	0	58	23	1296	5	1	1233	4

Signal Information			
Cycle, s	150.0	Reference Phase	2
Offset, s	0	Reference Point	Begin
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	3.0	103.1	6.0	0.3	18.6	0.0
Yellow	3.5	4.5	3.5	0.0	4.5	0.0
Red	0.0	1.5	0.0	0.0	1.5	0.0



Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	52	0	162	56	0	58	23	1296	5	1	1233	4
Initial Queue (Q_b), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s_o), veh/h	1900	1900	1900	1900	1900	1900	1900	2000	1900	1900	2000	1900
Parking (N_m), man/h		None			None			None			None	
Heavy Vehicles (P_{HV}), %	0	0		0	0		0	1	0	0	1	0
Ped / Bike / RTOR, /h	0	0	0	0	0	0	0	0	0	0	0	0
Buses (N_b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (*AT*)	3	3	3	3	3	3	3	4	3	3	4	3
Upstream Filtering (*I*)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width (*W*), ft	12.0	12.0		12.0	12.0		12.0	12.0	12.0	12.0	12.0	12.0
Turn Bay Length, ft	120	0		150	0		470	0	115	90	0	125
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h	25	25	25	25	25	25	40	40	40	40	40	40

Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s	14.0	28.0	14.0	28.0	14.0	94.0	14.0	94.0
Yellow Change Interval (*Y*), s	3.5	4.5	3.5	4.5	3.5	4.5	3.5	4.5
Red Clearance Interval (R_c), s	0.0	1.5	0.0	1.5	0.0	1.5	0.0	1.5
Minimum Green (G_{min}), s	3	8	3	8	3	15	3	15
Start-Up Lost Time (*lt*), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (*e*), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Passage (*PT*), s	3.0	4.0	3.0	4.0	3.0	7.0	3.0	7.0
Recall Mode	Off	Off	Off	Off	Off	Min	Off	Min
Dual Entry	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Walk (*Walk*), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pedestrian Clearance Time (*PC*), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0	No	25	0	No	25	0	No	25	0	No	25
Walkway / Crosswalk Width / Length, ft	9.0	12	0	9.0	12	0	9.0	12	0	9.0	12	0
Street Width / Island / Curb	0	0	No	0	0	No	0	0	No	0	0	No
Width Outside / Bike Lane / Shoulder, ft	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50		No	0.50		No	0.50		No	0.50	

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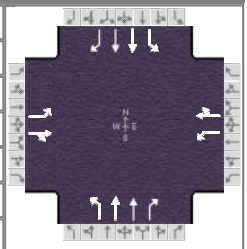
HCS7 Signalized Intersection Results Summary

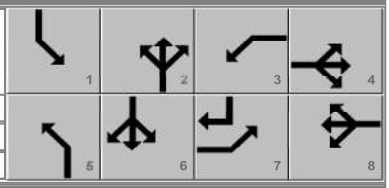
General Information				Intersection Information	
Agency	GHA			Duration, h	0.25
Analyst	LMM	Analysis Date	Nov 9, 2017	Area Type	Other
Jurisdiction	DuDOT	Time Period	PM Peak	PHF	0.94
Urban Street	Winfield Rd	Analysis Year	2025 NoBuild	Analysis Period	1> 5:00
Intersection	Winfield Rd / Torch Pkwy	File Name	25NB_Winfield_Torch_PM.xus		
Project Description	5244.900				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	52	0	162	56	0	58	23	1296	5	1	1233	4

Signal Information			
Cycle, s	150.0	Reference Phase	2
Offset, s	0	Reference Point	Begin
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	3.0	103.1	6.0	0.3	18.6	0.0	
Yellow	3.5	4.5	3.5	0.0	4.5	0.0	
Red	0.0	1.5	0.0	0.0	1.5	0.0	



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	7	4	3	8	5	2	1	6
Case Number	1.1	4.0	1.1	4.0	1.1	3.0	1.1	3.0
Phase Duration, s	9.5	24.6	9.8	24.9	6.5	109.1	6.5	109.1
Change Period, ($Y+R_c$), s	3.5	6.0	3.5	6.0	3.5	6.0	3.5	6.0
Max Allow Headway (*MAH*), s	4.2	5.4	4.2	5.4	4.0	0.0	4.0	0.0
Queue Clearance Time (g_s), s	6.0	17.8	6.3	7.2	2.6		2.0	
Green Extension Time (g_e), s	0.0	0.8	0.0	1.3	0.0	0.0	0.0	0.0
Phase Call Probability	1.00	1.00	1.00	1.00	1.00		1.00	
Max Out Probability	0.64	0.27	0.92	0.00	0.00		0.00	

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (*v*), veh/h	55	172		60	62		24	1379	5	1	1312	4
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1810	1610		1810	1610		1810	1889	1610	1810	1889	1610
Queue Service Time (g_s), s	4.0	15.8		4.3	5.2		0.6	8.9	0.2	0.0	8.1	0.1
Cycle Queue Clearance Time (g_c), s	4.0	15.8		4.3	5.2		0.6	8.9	0.2	0.0	8.1	0.1
Green Ratio (*g/C*)	0.16	0.12		0.17	0.13		0.71	0.69	0.69	0.71	0.69	0.73
Capacity (*c*), veh/h	226	199		147	203		348	2598	1107	330	2598	1172
Volume-to-Capacity Ratio (*X*)	0.245	0.865		0.405	0.305		0.070	0.531	0.005	0.003	0.505	0.004
Back of Queue (*Q*), ft/ln (95 th percentile)	84.1	304.6		92.2	100.5		10.2	101.8	2.4	0.4	95.8	1.6
Back of Queue (*Q*), veh/ln (95 th percentile)	3.4	12.2		3.7	4.0		0.4	4.0	0.1	0.0	3.8	0.1
Queue Storage Ratio (*RQ*) (95 th percentile)	0.70	0.00		0.61	0.00		0.02	0.00	0.02	0.00	0.00	0.01
Uniform Delay (d_1), s/veh	54.3	64.5		54.8	59.6		6.9	2.3	7.3	6.8	2.3	5.6
Incremental Delay (d_2), s/veh	0.6	20.1		1.8	1.2		0.1	0.8	0.0	0.0	0.7	0.0
Initial Queue Delay (d_3), s/veh	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (*d*), s/veh	54.8	84.6		56.6	60.8		6.9	3.1	7.4	6.8	3.0	5.6
Level of Service (LOS)	D	F		E	E		A	A	A	A	A	A
Approach Delay, s/veh / LOS	77.4	E		58.8	E		3.2	A		3.0	A	
Intersection Delay, s/veh / LOS	10.8						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	3.0	C	3.0	C	2.2	B	2.2	B
Bicycle LOS Score / LOS	0.9	A	0.7	A	1.6	B	1.6	B

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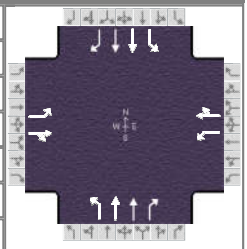
HCS7 Signalized Intersection Intermediate Values

General Information				Intersection Information	
Agency	GHA			Duration, h	0.25
Analyst	LMM	Analysis Date	Nov 9, 2017	Area Type	Other
Jurisdiction	DuDOT	Time Period	PM Peak	PHF	0.94
Urban Street	Winfield Rd	Analysis Year	2025 NoBuild	Analysis Period	1> 5:00
Intersection	Winfield Rd / Torch Pkwy	File Name	25NB_Winfield_Torch_PM.xus		
Project Description	5244.900				

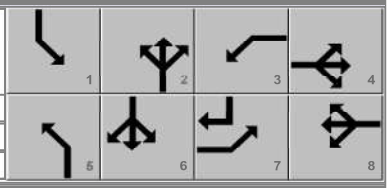


Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	52	0	162	56	0	58	23	1296	5	1	1233	4

Signal Information			
Cycle, s	150.0	Reference Phase	2
Offset, s	0	Reference Point	Begin
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	3.0	103.1	6.0	0.3	18.6	0.0
Yellow	3.5	4.5	3.5	0.0	4.5	0.0
Red	0.0	1.5	0.0	0.0	1.5	0.0



Saturation Flow / Delay	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles and Grade Factor (f_{HVg})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.992	1.000	1.000	0.992	1.000
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.952	1.000	1.000	0.952	1.000
Left-Turn Adjustment Factor (f_{LT})	0.952	0.000		0.952	0.000		0.952	0.000		0.952	0.000	
Right-Turn Adjustment Factor (f_{RT})		0.847	0.847		0.847	0.847		0.000	0.847		0.000	0.847
Left-Turn Pedestrian Adjustment Factor (f_{Lpb})	1.000			1.000			1.000			1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{Rpb})			1.000			1.000			1.000			1.000
Work Zone Adjustment Factor (f_{wz})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
DDI Factor (f_{DDI})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Movement Saturation Flow Rate (s), veh/h	1810	0	1610	1810	0	1610	1810	3778	1610	1810	3778	1610
Proportion of Vehicles Arriving on Green (P)	0.04	0.00	0.12	0.04	0.00	0.13	0.02	0.92	0.69	0.02	0.92	0.69
Incremental Delay Factor (k)	0.11	0.23		0.11	0.15		0.11	0.50	0.50	0.11	0.50	0.50

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)	3.5	6.0	3.5	6.0	3.5	6.0	3.5	6.0
Green Ratio (g/C)	0.16	0.12	0.17	0.13	0.71	0.69	0.71	0.69
Permitted Saturation Flow Rate (s_p), veh/h/ln	1362	0	1232	0	426	0	399	0
Shared Saturation Flow Rate (s_{sh}), veh/h/ln								
Permitted Effective Green Time (g_p), s	18.6	0.0	18.6	0.0	103.1	0.0	103.1	0.0
Permitted Service Time (g_u), s	11.6	0.0	2.8	0.0	93.1	0.0	92.3	0.0
Permitted Queue Service Time (g_{ps}), s	0.3		0.8		0.6		0.0	
Time to First Blockage (g_f), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Service Time Before Blockage (g_{fs}), s								
Protected Right Saturation Flow (s_R), veh/h/ln						0		1610
Protected Right Effective Green Time (g_R), s						0.0		6.0

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	2.224	0.00	2.224	0.00	1.557	0.00	1.557	0.00
Pedestrian F_s / F_{delay}	0.000	0.163	0.000	0.162	0.000	0.080	0.000	0.080
Pedestrian M_{corner} / M_{cw}								
Bicycle c_b / d_b	247.50	57.59	251.53	57.32	1375.23	7.32	1375.23	7.32
Bicycle F_w / F_v	-3.64	0.38	-3.64	0.20	-3.64	1.16	-3.64	1.09

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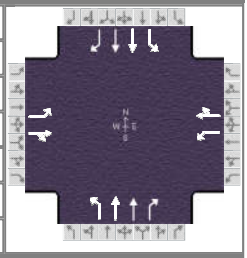
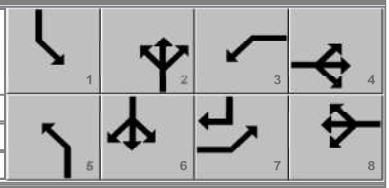
HCS7 Signalized Intersection Results Graphical Summary

General Information				Intersection Information	
Agency	GHA			Duration, h	0.25
Analyst	LMM	Analysis Date	Nov 9, 2017	Area Type	Other
Jurisdiction	DuDOT	Time Period	PM Peak	PHF	0.94
Urban Street	Winfield Rd	Analysis Year	2025 NoBuild	Analysis Period	1> 5:00
Intersection	Winfield Rd / Torch Pkwy	File Name	25NB_Winfield_Torch_PM.xus		
Project Description	5244.900				

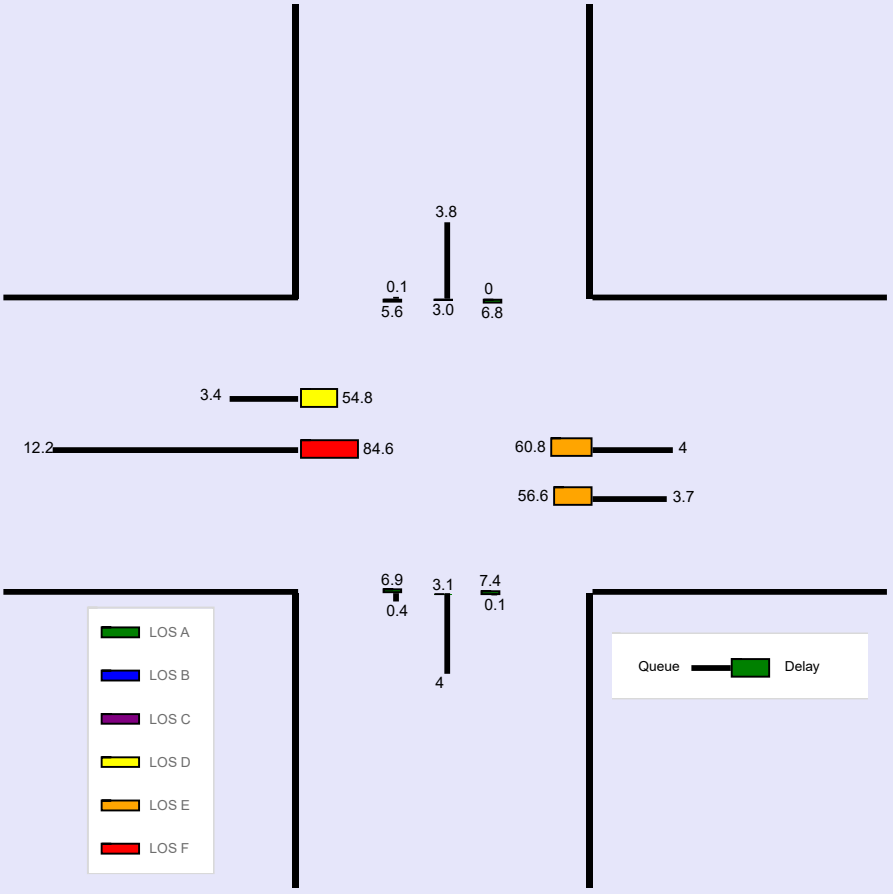


Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	52	0	162	56	0	58	23	1296	5	1	1233	4

Signal Information												
Cycle, s	150.0	Reference Phase	2									
Offset, s	0	Reference Point	Begin									
Uncoordinated	No	Simult. Gap E/W	On	Green	3.0	103.1	6.0	0.3	18.6	0.0		
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	3.5	4.5	3.5	0.0	4.5	0.0		
				Red	0.0	1.5	0.0	0.0	1.5	0.0		



Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Back of Queue (*Q*), ft/ln (95 th percentile)	84.1	304.6		92.2	100.5		10.2	101.8	2.4	0.4	95.8	1.6
Back of Queue (*Q*), veh/ln (95 th percentile)	3.4	12.2		3.7	4.0		0.4	4.0	0.1	0.0	3.8	0.1
Queue Storage Ratio (*RQ*) (95 th percentile)	0.70	0.00		0.61	0.00		0.02	0.00	0.02	0.00	0.00	0.01
Control Delay (*d*), s/veh	54.8	84.6		56.6	60.8		6.9	3.1	7.4	6.8	3.0	5.6
Level of Service (LOS)	D	F		E	E		A	A	A	A	A	A
Approach Delay, s/veh / LOS	77.4	E		58.8	E		3.2	A		3.0	A	
Intersection Delay, s/veh / LOS	10.8						B					



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--- Messages ---

No errors or warnings exist.

--- Comments ---

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HCS7 Two-Way Stop-Control Report

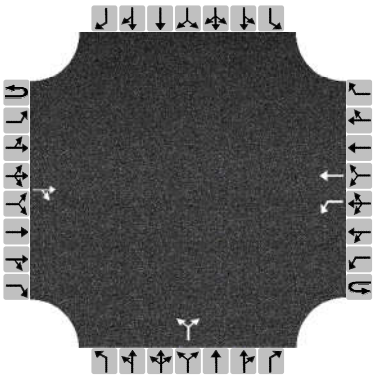
General Information

Analyst	LMM
Agency/Co.	GHA
Date Performed	11/9/2017
Analysis Year	2025
Time Analyzed	NoBuild AM
Intersection Orientation	East-West
Project Description	5244.902

Site Information

Intersection	Torch Pkwy / Office E
Jurisdiction	Local
East/West Street	Torch Parkway
North/South Street	office East
Peak Hour Factor	0.86
Analysis Time Period (hrs)	0.25

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	1	1	0		0	1	0		0	0	0
Configuration				TR		L	T				LR					
Volume, V (veh/h)			23	0		176	9			0		7				
Percent Heavy Vehicles (%)						0				0		0				
Proportion Time Blocked																
Percent Grade (%)										0						
Right Turn Channelized		No				No				No				No		
Median Type/Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						205					8					
Capacity, c (veh/h)						1600					1054					
v/c Ratio						0.13					0.01					
95% Queue Length, Q_{95} (veh)						0.4					0.0					
Control Delay (s/veh)						7.6					8.4					
Level of Service, LOS						A					A					
Approach Delay (s/veh)						7.2					8.4					
Approach LOS											A					

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HCS7 Two-Way Stop-Control Report

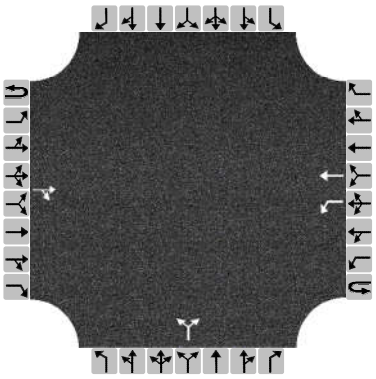
General Information

Analyst	LMM
Agency/Co.	GHA
Date Performed	11/9/2017
Analysis Year	2025
Time Analyzed	NoBuild PM
Intersection Orientation	East-West
Project Description	5244.902

Site Information

Intersection	Torch Pkwy / Office E
Jurisdiction	Local
East/West Street	Torch Parkway
North/South Street	office East
Peak Hour Factor	0.73
Analysis Time Period (hrs)	0.25

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	1	1	0		0	1	0		0	0	0
Configuration				TR		L	T				LR					
Volume, V (veh/h)			20	0		19	8			1		194				
Percent Heavy Vehicles (%)						0				0		0				
Proportion Time Blocked																
Percent Grade (%)										0						
Right Turn Channelized		No				No				No				No		
Median Type/Storage			Undivided													

Critical and Follow-up Headways

Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						26					267					
Capacity, c (veh/h)						1600					1054					
v/c Ratio						0.02					0.25					
95% Queue Length, Q_{95} (veh)						0.0					1.0					
Control Delay (s/veh)						7.3					9.6					
Level of Service, LOS						A					A					
Approach Delay (s/veh)						5.1					9.6					
Approach LOS											A					

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HCS7 Two-Way Stop-Control Report

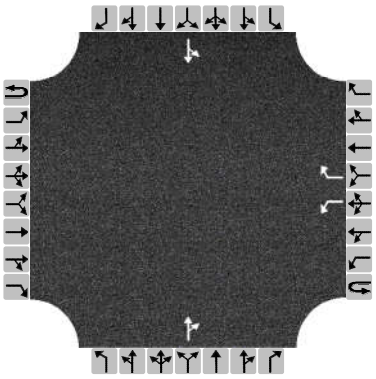
General Information

Analyst	LMM
Agency/Co.	GHA
Date Performed	11/9/2017
Analysis Year	2025
Time Analyzed	NoBuild AM
Intersection Orientation	East-West
Project Description	5244.902

Site Information

Intersection	Torch Pkwy/Kline/Office W
Jurisdiction	Local
East/West Street	Torch Parkway
North/South Street	Office West/Kline Circle
Peak Hour Factor	0.73
Analysis Time Period (hrs)	0.25

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	0	0	0	1	0	1		0	1	0		0	1	0
Configuration						L		R				TR		LT		
Volume, V (veh/h)						1		8			0	2		21	1	
Percent Heavy Vehicles (%)						0					0	0		0	0	
Proportion Time Blocked																
Percent Grade (%)									0				0			
Right Turn Channelized	No				No				No				No			
Median Type/Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						1						3		30		
Capacity, c (veh/h)						1636						1091		1024		
v/c Ratio						0.00						0.00		0.03		
95% Queue Length, Q_{95} (veh)						0.0						0.0		0.1		
Control Delay (s/veh)						7.2						8.3		8.6		
Level of Service, LOS						A						A		A		
Approach Delay (s/veh)					0.6				8.3				8.6			
Approach LOS									A				A			

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HCS7 Two-Way Stop-Control Report

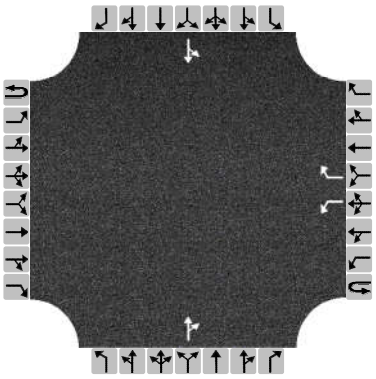
General Information

Analyst	LMM
Agency/Co.	GHA
Date Performed	11/9/2017
Analysis Year	2025
Time Analyzed	NoBuild PM
Intersection Orientation	East-West
Project Description	5244.902

Site Information

Intersection	Torch Pkwy/Kline/Office W
Jurisdiction	Local
East/West Street	Torch Parkway
North/South Street	Office West/Kline Circle
Peak Hour Factor	0.78
Analysis Time Period (hrs)	0.25

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	0	0	0	1	0	1		0	1	0		0	1	0
Configuration						L		R				TR		LT		
Volume, V (veh/h)						0		9			0	13		7	0	
Percent Heavy Vehicles (%)						0					0	0		0	0	
Proportion Time Blocked																
Percent Grade (%)									0				0			
Right Turn Channelized	No				No				No				No			
Median Type/Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						0						17		9		
Capacity, c (veh/h)						1636						1091		1029		
v/c Ratio						0.00						0.02		0.01		
95% Queue Length, Q_{95} (veh)						0.0						0.0		0.0		
Control Delay (s/veh)						7.2						8.4		8.5		
Level of Service, LOS						A						A		A		
Approach Delay (s/veh)					0.0				8.4				8.5			
Approach LOS									A				A			

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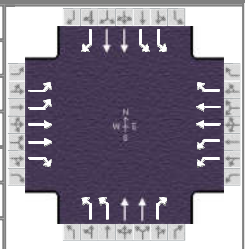
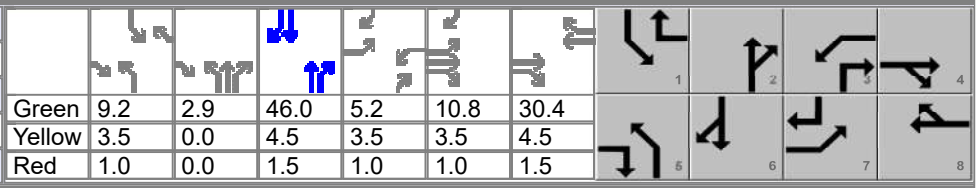
HCS7 Signalized Intersection Input Data

General Information				Intersection Information	
Agency	GHA			Duration, h	0.25
Analyst	LMM	Analysis Date	Nov 9, 2017	Area Type	Other
Jurisdiction	DuDOT	Time Period	AM Peak	PHF	0.95
Urban Street	Winfield Rd	Analysis Year	2025 NoBuild	Analysis Period	1> 7:00
Intersection	Winfield Rd / Ferry Rd	File Name	25NB_Winfield Ferry_AM.xus		
Project Description	5244.902				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	445	935	110	86	384	55	400	775	296	174	794	326

Signal Information			
Cycle, s	130.0	Reference Phase	2
Offset, s	0	Reference Point	Begin
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	9.2	2.9		46.0	5.2	10.8	30.4					
Yellow	3.5	0.0		4.5	3.5	3.5	4.5					
Red	1.0	0.0		1.5	1.0	1.0	1.5					

Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	445	935	110	86	384	55	400	775	296	174	794	326
Initial Queue (Q_b), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s_o), veh/h	1900	2000	1900	1900	2000	1900	1900	2000	1900	1900	2000	1900
Parking (N_m), man/h		None			None			None			None	
Heavy Vehicles (P_{HV}), %	1	1	1	1	2	1	1	1	1	2	2	2
Ped / Bike / RTOR, /h	0	0	0	0	0	0	0	0	0	0	0	0
Buses (N_b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (*AT*)	3	4	3	3	4	3	3	4	3	3	4	3
Upstream Filtering (*I*)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width (*W*), ft	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0
Turn Bay Length, ft	185	0	515	480	0	175	435	0	550	160	0	180
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h	40	40	40	40	40	40	40	40	40	40	40	40

Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s	35.0	47.0	15.0	27.0	16.0	45.0	23.0	52.0
Yellow Change Interval (*Y*), s	3.5	4.5	3.5	4.5	3.5	4.5	3.5	4.5
Red Clearance Interval (R_c), s	1.0	1.5	1.0	1.5	1.0	1.5	1.0	1.5
Minimum Green (G_{min}), s	3	15	3	15	3	15	3	15
Start-Up Lost Time (*lt*), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (*e*), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Passage (*PT*), s	3.0	7.0	3.0	7.0	3.0	7.0	3.0	7.0
Recall Mode	Off	Off	Off	Off	Off	Min	Off	Min
Dual Entry	No	Yes	No	Yes	No	Yes	No	Yes
Walk (*Walk*), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pedestrian Clearance Time (*PC*), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0	No	25	0	No	25	0	No	25	0	No	25
Walkway / Crosswalk Width / Length, ft	9.0	12	0	9.0	12	0	9.0	12	0	9.0	12	0
Street Width / Island / Curb	0	0	No	0	0	No	0	0	No	0	0	No
Width Outside / Bike Lane / Shoulder, ft	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50		No	0.50		No	0.50		No	0.50	

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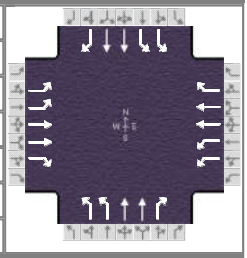
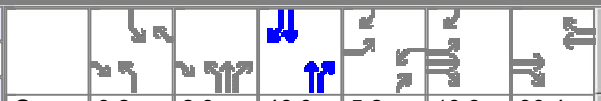
HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	GHA			Duration, h	0.25
Analyst	LMM	Analysis Date	Nov 9, 2017	Area Type	Other
Jurisdiction	DuDOT	Time Period	AM Peak	PHF	0.95
Urban Street	Winfield Rd	Analysis Year	2025 NoBuild	Analysis Period	1> 7:00
Intersection	Winfield Rd / Ferry Rd	File Name	25NB_Winfield Ferry_AM.xus		
Project Description	5244.902				

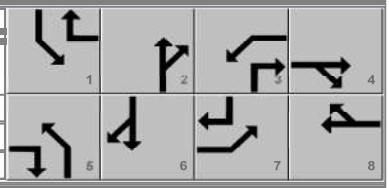


Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	445	935	110	86	384	55	400	775	296	174	794	326

Signal Information			
Cycle, s	130.0	Reference Phase	2
Offset, s	0	Reference Point	Begin
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	9.2	2.9	46.0	5.2	10.8	30.4	
Yellow	3.5	0.0	4.5	3.5	3.5	4.5	
Red	1.0	0.0	1.5	1.0	1.0	1.5	



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	7	4	3	8	5	2	1	6
Case Number	2.0	3.0	2.0	3.0	2.0	3.0	2.0	3.0
Phase Duration, s	25.0	51.7	9.7	36.4	16.6	54.9	13.7	52.0
Change Period, ($Y+R_c$), s	4.5	6.0	4.5	6.0	4.5	6.0	4.5	6.0
Max Allow Headway (*MAH*), s	4.0	11.2	4.0	11.2	4.0	0.0	4.0	0.0
Queue Clearance Time (g_s), s	19.0	29.6	5.3	13.3	14.1		8.8	
Green Extension Time (g_e), s	1.5	16.2	0.1	17.1	0.0	0.0	0.4	0.0
Phase Call Probability	1.00	1.00	0.96	1.00	1.00		1.00	
Max Out Probability	0.03	0.98	0.26	0.98	1.00		0.01	

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (*v*), veh/h	468	984	116	91	404	58	421	816	312	183	836	343
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1743	1889	1598	1743	1874	1598	1743	1889	1598	1730	1874	1585
Queue Service Time (g_s), s	17.0	27.6	5.6	3.3	11.3	3.4	12.1	19.7	18.4	6.8	21.8	17.6
Cycle Queue Clearance Time (g_c), s	17.0	27.6	5.6	3.3	11.3	3.4	12.1	19.7	18.4	6.8	21.8	17.6
Green Ratio (*g/C*)	0.16	0.35	0.44	0.04	0.23	0.30	0.09	0.38	0.42	0.07	0.35	0.51
Capacity (*c*), veh/h	550	1329	710	140	878	487	324	1421	665	244	1326	810
Volume-to-Capacity Ratio (*X*)	0.852	0.741	0.163	0.647	0.460	0.119	1.299	0.574	0.469	0.750	0.630	0.423
Back of Queue (*Q*), ft/ln (95 th percentile)	311	438.7	99	70.4	223.3	62.3	496.4	321.8	295.6	140.6	357.5	275.7
Back of Queue (*Q*), veh/ln (95 th percentile)	12.3	17.4	3.9	2.8	8.8	2.5	19.7	12.8	11.7	5.5	14.1	10.9
Queue Storage Ratio (*RQ*) (95 th percentile)	1.68	0.00	0.19	0.15	0.00	0.36	1.14	0.00	0.54	0.88	0.00	1.53
Uniform Delay (d_1), s/veh	53.3	29.7	21.6	61.5	38.1	32.6	59.0	25.1	27.5	59.3	28.0	19.8
Incremental Delay (d_2), s/veh	5.7	3.7	0.5	4.9	1.7	0.5	155.6	1.7	2.4	4.6	2.3	1.6
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (*d*), s/veh	59.0	33.4	22.1	66.4	39.8	33.1	214.6	26.8	29.9	63.9	30.2	21.4
Level of Service (LOS)	E	C	C	E	D	C	F	C	C	E	C	C
Approach Delay, s/veh / LOS	40.2	D		43.5	D		78.5	E		32.5	C	
Intersection Delay, s/veh / LOS	50.3						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	3.1	C	3.1	C	3.1	C	3.1	C
Bicycle LOS Score / LOS	1.8	B	0.9	A	1.8	B	1.6	B

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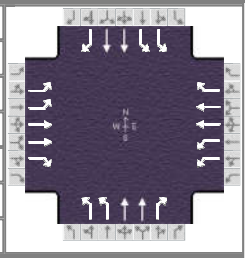
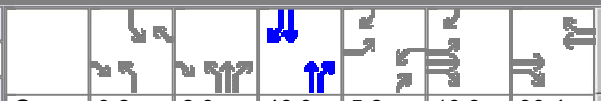
HCS7 Signalized Intersection Intermediate Values

General Information				Intersection Information	
Agency	GHA			Duration, h	0.25
Analyst	LMM	Analysis Date	Nov 9, 2017	Area Type	Other
Jurisdiction	DuDOT	Time Period	AM Peak	PHF	0.95
Urban Street	Winfield Rd	Analysis Year	2025 NoBuild	Analysis Period	1> 7:00
Intersection	Winfield Rd / Ferry Rd	File Name	25NB_Winfield Ferry_AM.xus		
Project Description	5244.902				

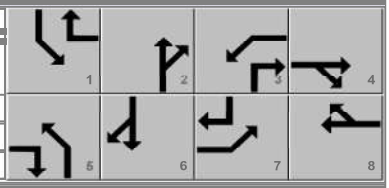


Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	445	935	110	86	384	55	400	775	296	174	794	326

Signal Information			
Cycle, s	130.0	Reference Phase	2
Offset, s	0	Reference Point	Begin
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	9.2	2.9	46.0	5.2	10.8	30.4
Yellow	3.5	0.0	4.5	3.5	3.5	4.5
Red	1.0	0.0	1.5	1.0	1.0	1.5



Saturation Flow / Delay	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles and Grade Factor (f_{HVg})	0.992	0.992	0.992	0.992	0.984	0.992	0.992	0.992	0.992	0.984	0.984	0.984
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	0.971	0.952	1.000	0.971	0.952	1.000	0.971	0.952	1.000	0.971	0.952	1.000
Left-Turn Adjustment Factor (f_{LT})	0.952	0.000		0.952	0.000		0.952	0.000		0.952	0.000	
Right-Turn Adjustment Factor (f_{RT})		0.000	0.847		0.000	0.847		0.000	0.847		0.000	0.847
Left-Turn Pedestrian Adjustment Factor (f_{Lpb})	1.000			1.000			1.000			1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{Rpb})			1.000			1.000			1.000			1.000
Work Zone Adjustment Factor (f_{wz})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
DDI Factor (f_{DDI})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Movement Saturation Flow Rate (s), veh/h	3487	3778	1598	3487	3749	1598	3487	3778	1598	3459	3749	1585
Proportion of Vehicles Arriving on Green (P)	0.16	0.47	0.35	0.04	0.31	0.23	0.09	0.50	0.38	0.07	0.47	0.35
Incremental Delay Factor (k)	0.16	0.50	0.50	0.11	0.50	0.50	0.50	0.50	0.50	0.11	0.50	0.50

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)	4.5	6.0	4.5	6.0	4.5	6.0	4.5	6.0
Green Ratio (g/C)	0.16	0.35	0.04	0.23	0.09	0.38	0.07	0.35
Permitted Saturation Flow Rate (s_p), veh/h/ln	0	0	0	0	0	0	0	0
Shared Saturation Flow Rate (s_{sh}), veh/h/ln								
Permitted Effective Green Time (g_p), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Permitted Service Time (g_u), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Permitted Queue Service Time (g_{ps}), s								
Time to First Blockage (g_f), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Service Time Before Blockage (g_{fs}), s								
Protected Right Saturation Flow (s_R), veh/h/ln		1598		1598		1598		1585
Protected Right Effective Green Time (g_R), s		12.1		9.2		5.2		20.5

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	2.336	0.00	2.336	0.00	2.336	0.00	2.336	0.00
Pedestrian F_s / F_{delay}	0.000	0.133	0.000	0.146	0.000	0.130	0.000	0.132
Pedestrian M_{corner} / M_{cw}								
Bicycle c_b / d_b	703.45	27.32	468.46	38.12	751.96	25.31	707.51	27.15
Bicycle F_w / F_v	-3.64	1.29	-3.64	0.46	-3.64	1.28	-3.64	1.12

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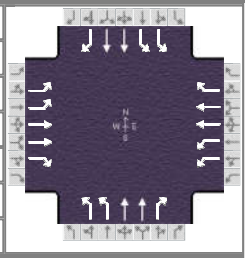
HCS7 Signalized Intersection Results Graphical Summary

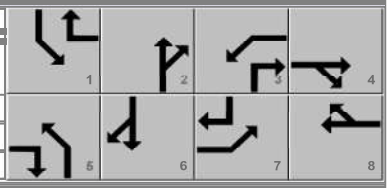
General Information				Intersection Information	
Agency	GHA			Duration, h	0.25
Analyst	LMM	Analysis Date	Nov 9, 2017	Area Type	Other
Jurisdiction	DuDOT	Time Period	AM Peak	PHF	0.95
Urban Street	Winfield Rd	Analysis Year	2025 NoBuild	Analysis Period	1> 7:00
Intersection	Winfield Rd / Ferry Rd	File Name	25NB_Winfield Ferry_AM.xus		
Project Description	5244.902				



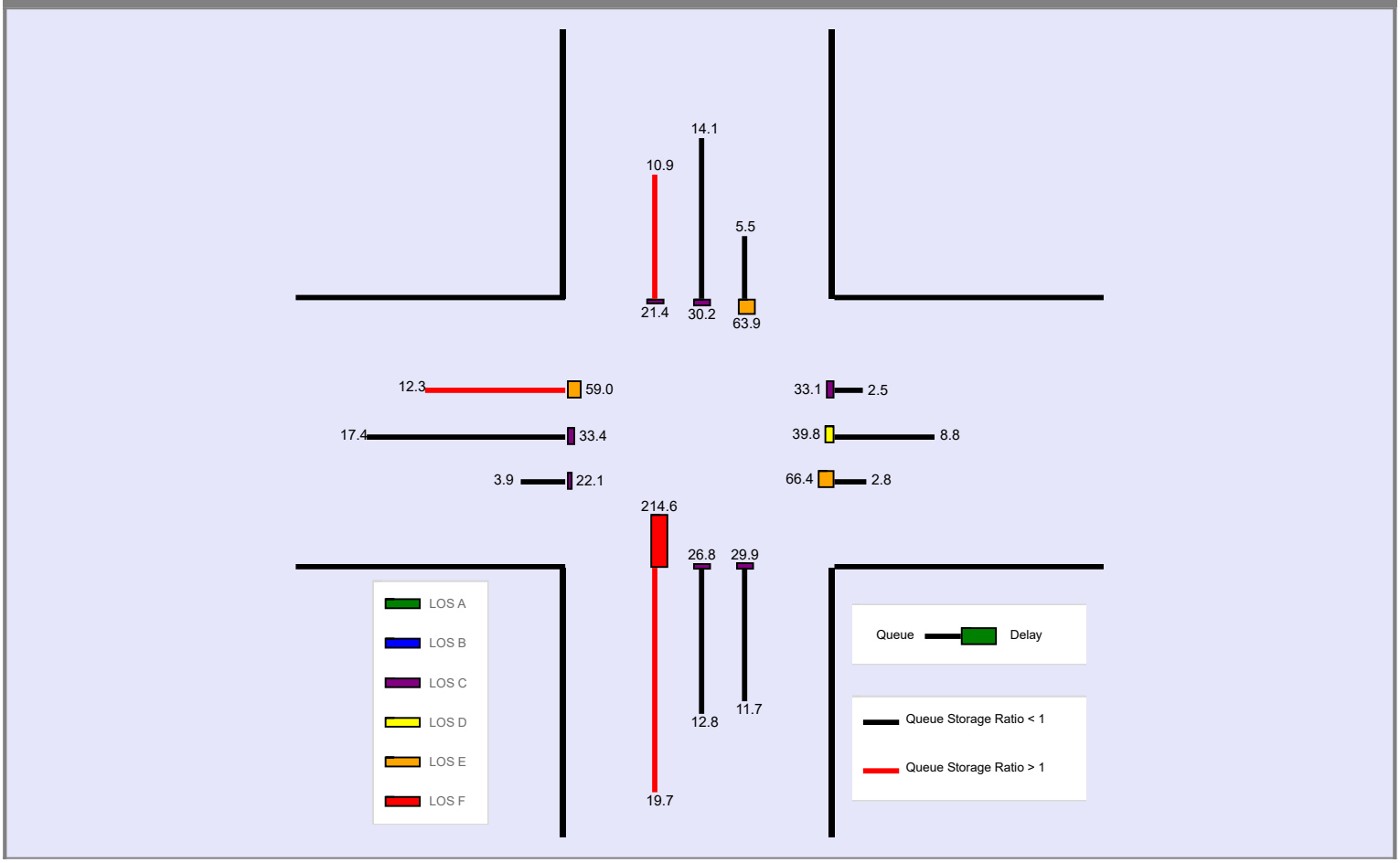
Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	445	935	110	86	384	55	400	775	296	174	794	326

Signal Information			
Cycle, s	130.0	Reference Phase	2
Offset, s	0	Reference Point	Begin
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	9.2	2.9	46.0	5.2	10.8	30.4	
Yellow	3.5	0.0	4.5	3.5	3.5	4.5	
Red	1.0	0.0	1.5	1.0	1.0	1.5	



Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Back of Queue (*Q*), ft/ln (95 th percentile)	311	438.7	99	70.4	223.3	62.3	496.4	321.8	295.6	140.6	357.5	275.7
Back of Queue (*Q*), veh/ln (95 th percentile)	12.3	17.4	3.9	2.8	8.8	2.5	19.7	12.8	11.7	5.5	14.1	10.9
Queue Storage Ratio (*RQ*) (95 th percentile)	1.68	0.00	0.19	0.15	0.00	0.36	1.14	0.00	0.54	0.88	0.00	1.53
Control Delay (*d*), s/veh	59.0	33.4	22.1	66.4	39.8	33.1	214.6	26.8	29.9	63.9	30.2	21.4
Level of Service (LOS)	E	C	C	E	D	C	F	C	C	E	C	C
Approach Delay, s/veh / LOS	40.2	D		43.5	D		78.5	E		32.5	C	
Intersection Delay, s/veh / LOS	50.3						D					



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--- Messages ---

WARNING: If demand exceeds capacity, a multiple-period analysis should be conducted.

WARNING: One or more minor street movements was assigned an Arrival Type input value other than 3; this implies signal coordination on the minor street.

WARNING: Since queue spillover from turn lanes and spillback into upstream intersections is not accounted for in the HCM procedures, use of a simulation tool may be advised in situations where the Queue Storage Ratio exceeds 1.0.

--- Comments ---

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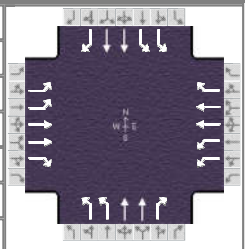
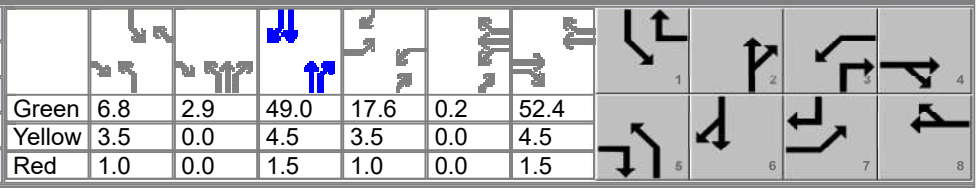
HCS7 Signalized Intersection Input Data

General Information				Intersection Information	
Agency	GHA			Duration, h	0.25
Analyst	LMM	Analysis Date	Nov 9, 2017	Area Type	Other
Jurisdiction	DuDOT	Time Period	PM Peak	PHF	0.95
Urban Street	Winfield Rd	Analysis Year	2025 NoBuild	Analysis Period	1> 5:00
Intersection	Winfield Rd / Ferry Rd	File Name	25NB_Winfield Ferry_PM.xus		
Project Description	5244.902				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	340	483	269	332	980	154	171	830	82	107	1010	334

Signal Information												
Cycle, s	150.0	Reference Phase	2									
Offset, s	0	Reference Point	Begin	Green	6.8	2.9	49.0	17.6	0.2	52.4		
Uncoordinated	No	Simult. Gap E/W	On	Yellow	3.5	0.0	4.5	3.5	0.0	4.5		
Force Mode	Fixed	Simult. Gap N/S	On	Red	1.0	0.0	1.5	1.0	0.0	1.5		



Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	340	483	269	332	980	154	171	830	82	107	1010	334
Initial Queue (Q_b), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s_o), veh/h	1900	2000	1900	1900	2000	1900	1900	2000	1900	1900	2000	1900
Parking (N_m), man/h		None			None			None			None	
Heavy Vehicles (P_{HV}), %	1	1	1	1	1	1	1	1	1	1	1	1
Ped / Bike / RTOR, /h	0	0	0	0	0	0	0	0	0	0	0	0
Buses (N_b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (*AT*)	3	4	3	3	4	3	3	4	3	3	4	3
Upstream Filtering (*I*)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width (*W*), ft	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0
Turn Bay Length, ft	185	0	515	480	0	175	435	0	550	160	0	180
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h	40	40	40	40	40	40	40	40	40	40	40	40

Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s	25.0	46.0	35.0	56.0	15.0	54.0	15.0	54.0
Yellow Change Interval (*Y*), s	3.5	4.5	3.5	4.5	3.5	4.5	3.5	4.5
Red Clearance Interval (R_c), s	1.0	1.5	1.0	1.5	1.0	1.5	1.0	1.5
Minimum Green (G_{min}), s	3	15	3	15	3	15	3	15
Start-Up Lost Time (*lt*), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (*e*), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Passage (*PT*), s	3.0	7.0	3.0	7.0	3.0	7.0	3.0	7.0
Recall Mode	Off	Off	Off	Off	Off	Min	Off	Min
Dual Entry	No	Yes	No	Yes	No	Yes	No	Yes
Walk (*Walk*), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pedestrian Clearance Time (*PC*), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0	No	25	0	No	25	0	No	25	0	No	25
Walkway / Crosswalk Width / Length, ft	9.0	12	0	9.0	12	0	9.0	12	0	9.0	12	0
Street Width / Island / Curb	0	0	No	0	0	No	0	0	No	0	0	No
Width Outside / Bike Lane / Shoulder, ft	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50		No	0.50		No	0.50		No	0.50	

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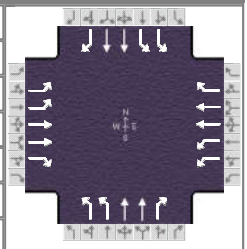
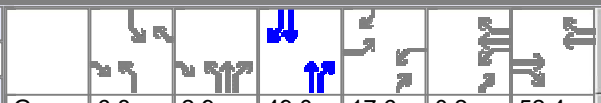
HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	GHA			Duration, h	0.25
Analyst	LMM	Analysis Date	Nov 9, 2017	Area Type	Other
Jurisdiction	DuDOT	Time Period	PM Peak	PHF	0.95
Urban Street	Winfield Rd	Analysis Year	2025 NoBuild	Analysis Period	1> 5:00
Intersection	Winfield Rd / Ferry Rd	File Name	25NB_Winfield Ferry_PM.xus		
Project Description	5244.902				

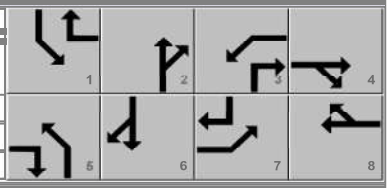


Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	340	483	269	332	980	154	171	830	82	107	1010	334

Signal Information			
Cycle, s	150.0	Reference Phase	2
Offset, s	0	Reference Point	Begin
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	6.8	2.9		49.0	17.6	0.2	52.4					
Yellow	3.5	0.0		4.5	3.5	0.0	4.5					
Red	1.0	0.0		1.5	1.0	0.0	1.5					



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	7	4	3	8	5	2	1	6
Case Number	2.0	3.0	2.0	3.0	2.0	3.0	2.0	3.0
Phase Duration, s	22.1	58.4	22.4	58.7	14.2	57.9	11.3	55.0
Change Period, ($Y+R_c$), s	4.5	6.0	4.5	6.0	4.5	6.0	4.5	6.0
Max Allow Headway (*MAH*), s	4.0	10.8	4.0	10.8	4.0	0.0	4.0	0.0
Queue Clearance Time (g_s), s	17.1	20.9	16.7	36.2	9.6		6.8	
Green Extension Time (g_e), s	0.5	31.0	1.1	16.4	0.1	0.0	0.1	0.0
Phase Call Probability	1.00	1.00	1.00	1.00	1.00		0.99	
Max Out Probability	1.00	0.98	0.00	0.99	1.00		1.00	

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (*v*), veh/h	358	508	283	349	1032	162	180	874	86	113	1063	352
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1743	1889	1598	1743	1889	1598	1743	1889	1598	1743	1889	1598
Queue Service Time (g_s), s	15.1	13.1	18.9	14.7	34.2	10.2	7.6	27.0	4.6	4.8	38.1	23.5
Cycle Queue Clearance Time (g_c), s	15.1	13.1	18.9	14.7	34.2	10.2	7.6	27.0	4.6	4.8	38.1	23.5
Green Ratio (*g/C*)	0.12	0.35	0.41	0.12	0.35	0.40	0.06	0.35	0.47	0.05	0.33	0.44
Capacity (*c*), veh/h	409	1320	662	415	1327	634	225	1307	743	159	1235	710
Volume-to-Capacity Ratio (*X*)	0.874	0.385	0.428	0.842	0.778	0.256	0.798	0.668	0.116	0.710	0.861	0.495
Back of Queue (*Q*), ft/ln (95 th percentile)	302.2	243.2	306.2	277.4	544.3	186.1	175	441	81.3	101.8	616.4	364.2
Back of Queue (*Q*), veh/ln (95 th percentile)	12.0	9.7	12.1	11.0	21.6	7.4	6.9	17.5	3.2	4.0	24.5	14.5
Queue Storage Ratio (*RQ*) (95 th percentile)	1.63	0.00	0.59	0.58	0.00	1.06	0.40	0.00	0.15	0.64	0.00	2.02
Uniform Delay (d_1), s/veh	65.1	29.6	31.3	64.7	35.0	30.4	69.2	33.7	22.7	70.6	39.2	29.7
Incremental Delay (d_2), s/veh	14.8	0.9	2.0	4.7	4.5	1.0	15.3	2.7	0.3	5.8	8.0	2.5
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (*d*), s/veh	79.9	30.4	33.3	69.4	39.5	31.4	84.5	36.4	23.0	76.4	47.3	32.2
Level of Service (LOS)	E	C	C	E	D	C	F	D	C	E	D	C
Approach Delay, s/veh / LOS	46.5	D		45.4	D		43.0	D		45.9	D	
Intersection Delay, s/veh / LOS	45.3						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	3.1	C	3.1	C	3.1	C	3.1	C
Bicycle LOS Score / LOS	1.4	A	1.8	B	1.4	A	1.7	B

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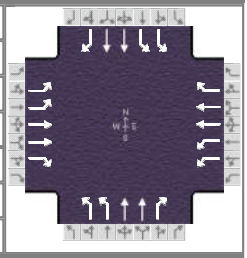
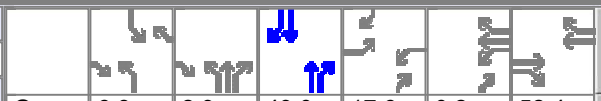
HCS7 Signalized Intersection Intermediate Values

General Information				Intersection Information	
Agency	GHA			Duration, h	0.25
Analyst	LMM	Analysis Date	Nov 9, 2017	Area Type	Other
Jurisdiction	DuDOT	Time Period	PM Peak	PHF	0.95
Urban Street	Winfield Rd	Analysis Year	2025 NoBuild	Analysis Period	1> 5:00
Intersection	Winfield Rd / Ferry Rd	File Name	25NB_Winfield Ferry_PM.xus		
Project Description	5244.902				

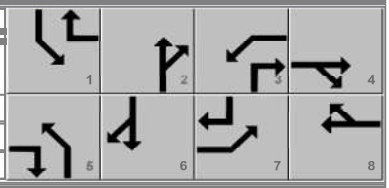


Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	340	483	269	332	980	154	171	830	82	107	1010	334

Signal Information			
Cycle, s	150.0	Reference Phase	2
Offset, s	0	Reference Point	Begin
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	6.8	2.9	49.0	17.6	0.2	52.4
Yellow	3.5	0.0	4.5	3.5	0.0	4.5
Red	1.0	0.0	1.5	1.0	0.0	1.5



Saturation Flow / Delay	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles and Grade Factor (f_{HVg})	0.992	0.992	0.992	0.992	0.992	0.992	0.992	0.992	0.992	0.992	0.992	0.992
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	0.971	0.952	1.000	0.971	0.952	1.000	0.971	0.952	1.000	0.971	0.952	1.000
Left-Turn Adjustment Factor (f_{LT})	0.952	0.000		0.952	0.000		0.952	0.000		0.952	0.000	
Right-Turn Adjustment Factor (f_{RT})		0.000	0.847		0.000	0.847		0.000	0.847		0.000	0.847
Left-Turn Pedestrian Adjustment Factor (f_{Lpb})	1.000			1.000			1.000			1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{Rpb})			1.000			1.000			1.000			1.000
Work Zone Adjustment Factor (f_{wz})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
DDI Factor (f_{DDI})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Movement Saturation Flow Rate (s), veh/h	3487	3778	1598	3487	3778	1598	3487	3778	1598	3487	3778	1598
Proportion of Vehicles Arriving on Green (P)	0.12	0.47	0.35	0.12	0.47	0.35	0.06	0.46	0.35	0.05	0.44	0.33
Incremental Delay Factor (k)	0.30	0.50	0.50	0.11	0.50	0.50	0.28	0.50	0.50	0.11	0.50	0.50

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)	4.5	6.0	4.5	6.0	4.5	6.0	4.5	6.0
Green Ratio (g/C)	0.12	0.35	0.12	0.35	0.06	0.35	0.05	0.33
Permitted Saturation Flow Rate (s_p), veh/h/ln	0	0	0	0	0	0	0	0
Shared Saturation Flow Rate (s_{sh}), veh/h/ln								
Permitted Effective Green Time (g_p), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Permitted Service Time (g_u), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Permitted Queue Service Time (g_{ps}), s								
Time to First Blockage (g_f), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Service Time Before Blockage (g_{fs}), s								
Protected Right Saturation Flow (s_R), veh/h/ln		1598		1598		1598		1598
Protected Right Effective Green Time (g_R), s		9.7		6.8		17.9		17.6

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	2.336	0.00	2.336	0.00	2.336	0.00	2.336	0.00
Pedestrian F_s / F_{delay}	0.000	0.139	0.000	0.138	0.000	0.139	0.000	0.141
Pedestrian M_{corner} / M_{cw}								
Bicycle c_b / d_b	698.96	31.74	702.26	31.58	691.89	32.08	653.56	33.99
Bicycle F_w / F_v	-3.64	0.95	-3.64	1.27	-3.64	0.94	-3.64	1.26

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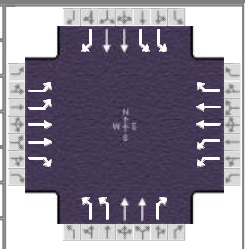
HCS7 Signalized Intersection Results Graphical Summary

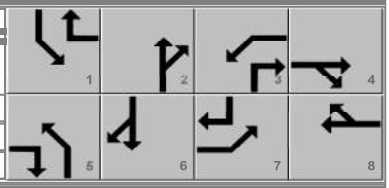
General Information				Intersection Information	
Agency	GHA			Duration, h	0.25
Analyst	LMM	Analysis Date	Nov 9, 2017	Area Type	Other
Jurisdiction	DuDOT	Time Period	PM Peak	PHF	0.95
Urban Street	Winfield Rd	Analysis Year	2025 NoBuild	Analysis Period	1> 5:00
Intersection	Winfield Rd / Ferry Rd	File Name	25NB_Winfield Ferry_PM.xus		
Project Description	5244.902				



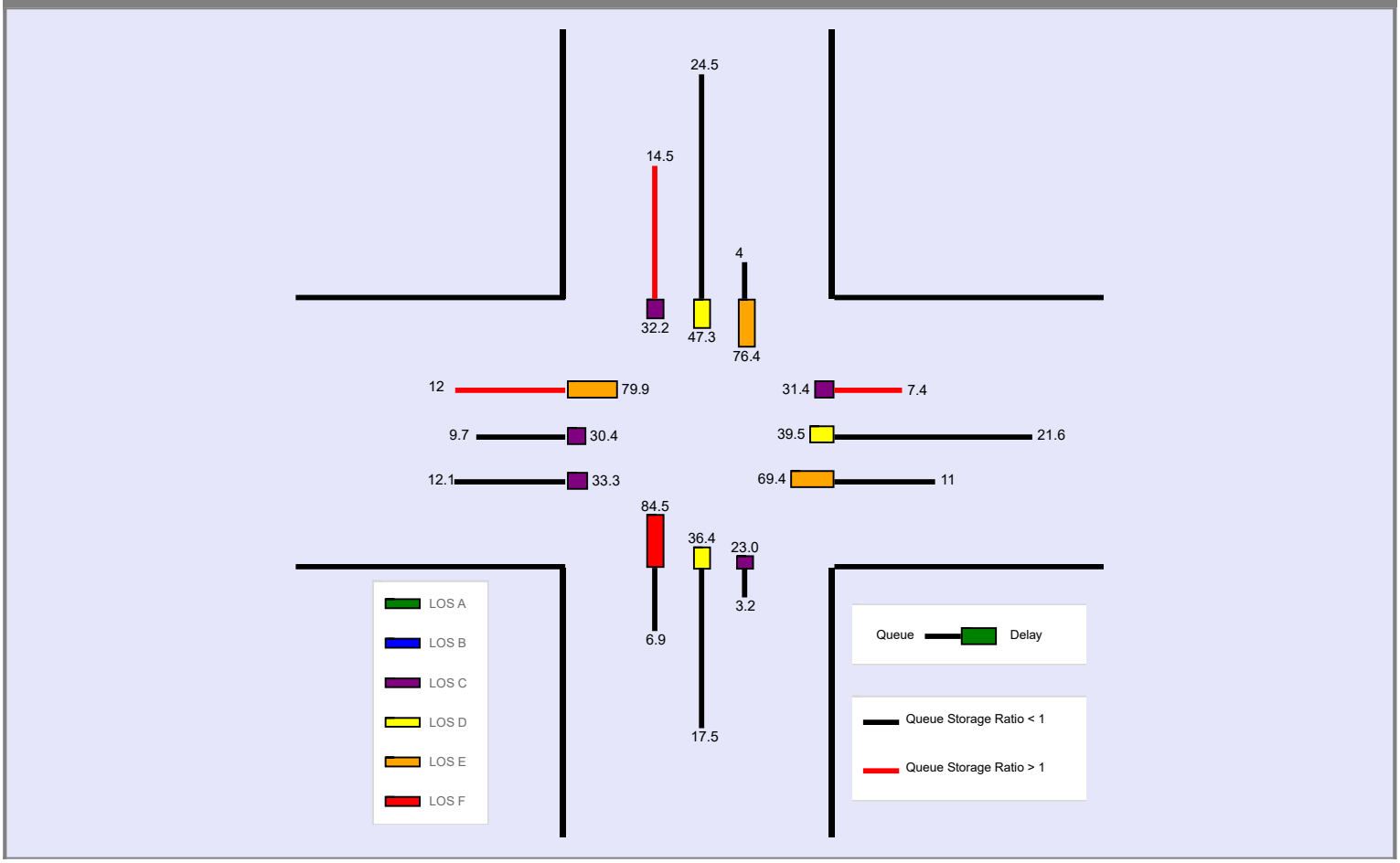
Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	340	483	269	332	980	154	171	830	82	107	1010	334

Signal Information			
Cycle, s	150.0	Reference Phase	2
Offset, s	0	Reference Point	Begin
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	6.8	2.9	49.0	17.6	0.2	52.4	
Yellow	3.5	0.0	4.5	3.5	0.0	4.5	
Red	1.0	0.0	1.5	1.0	0.0	1.5	



Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Back of Queue (*Q*), ft/ln (95 th percentile)	302.2	243.2	306.2	277.4	544.3	186.1	175	441	81.3	101.8	616.4	364.2
Back of Queue (*Q*), veh/ln (95 th percentile)	12.0	9.7	12.1	11.0	21.6	7.4	6.9	17.5	3.2	4.0	24.5	14.5
Queue Storage Ratio (*RQ*) (95 th percentile)	1.63	0.00	0.59	0.58	0.00	1.06	0.40	0.00	0.15	0.64	0.00	2.02
Control Delay (*d*), s/veh	79.9	30.4	33.3	69.4	39.5	31.4	84.5	36.4	23.0	76.4	47.3	32.2
Level of Service (LOS)	E	C	C	E	D	C	F	D	C	E	D	C
Approach Delay, s/veh / LOS	46.5	D		45.4	D		43.0	D		45.9	D	
Intersection Delay, s/veh / LOS	45.3						D					



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--- Messages ---

WARNING: One or more minor street movements was assigned an Arrival Type input value other than 3; this implies signal coordination on the minor street.

WARNING: Since queue spillover from turn lanes and spillback into upstream intersections is not accounted for in the HCM procedures, use of a simulation tool may be advised in situations where the Queue Storage Ratio exceeds 1.0.

--- Comments ---

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HCS7 Two-Way Stop-Control Report

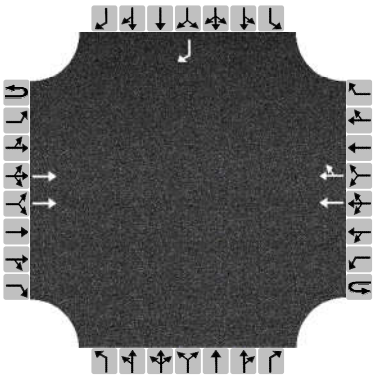
General Information

Analyst	LMM
Agency/Co.	GHA
Date Performed	11/9/2017
Analysis Year	2025
Time Analyzed	NoBulid AM
Intersection Orientation	East-West
Project Description	5244.902

Site Information

Intersection	Ferry Rd at Office RIRO
Jurisdiction	DuDOT
East/West Street	Ferry Rd
North/South Street	Office RIRO
Peak Hour Factor	0.90
Analysis Time Period (hrs)	0.25

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	2	0	0	0	2	0		0	0	0		0	0	1
Configuration			T				T	TR								R
Volume, V (veh/h)			1490				1024	86								6
Percent Heavy Vehicles (%)																0
Proportion Time Blocked																
Percent Grade (%)													0			
Right Turn Channelized	No				No				No				No			
Median Type/Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)																7
Capacity, c (veh/h)																438
v/c Ratio																0.02
95% Queue Length, Q_{95} (veh)																0.0
Control Delay (s/veh)																13.4
Level of Service, LOS																B
Approach Delay (s/veh)													13.4			
Approach LOS													B			

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HCS7 Two-Way Stop-Control Report

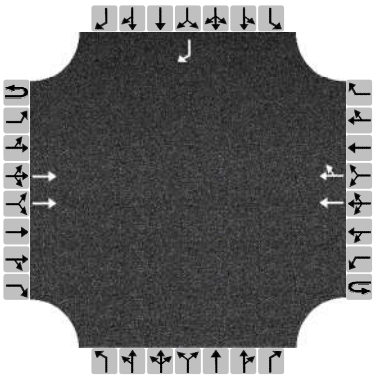
General Information

Analyst	LMM
Agency/Co.	GHA
Date Performed	11/9/2017
Analysis Year	2025
Time Analyzed	NoBuild PM
Intersection Orientation	East-West
Project Description	5244.902

Site Information

Intersection	Ferry Rd at Office RIRO
Jurisdiction	DuDOT
East/West Street	Ferry Rd
North/South Street	Office RIRO
Peak Hour Factor	0.90
Analysis Time Period (hrs)	0.25

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	2	0	0	0	2	0		0	0	0		0	0	1
Configuration			T				T	TR								R
Volume, V (veh/h)			1092				1482	4								59
Percent Heavy Vehicles (%)																0
Proportion Time Blocked																
Percent Grade (%)														0		
Right Turn Channelized		No				No				No				No		
Median Type/Storage			Undivided													

Critical and Follow-up Headways

Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)																66
Capacity, c (veh/h)																319
v/c Ratio																0.21
95% Queue Length, Q_{95} (veh)																0.8
Control Delay (s/veh)																19.2
Level of Service, LOS																C
Approach Delay (s/veh)														19.2		
Approach LOS														C		

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HCS7 Two-Way Stop-Control Report

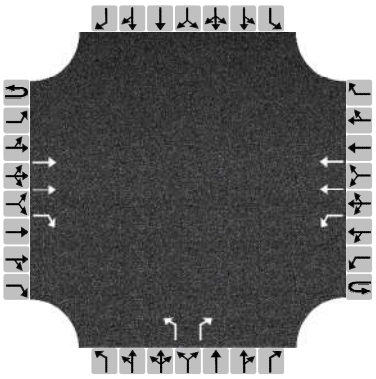
General Information

Analyst	LMM
Agency/Co.	GHA
Date Performed	11/9/2017
Analysis Year	2025
Time Analyzed	NoBuild AM Peak
Intersection Orientation	East-West
Project Description	5244.900

Site Information

Intersection	Ferry Road / Office East
Jurisdiction	DuDOT
East/West Street	Ferry Road
North/South Street	Office East
Peak Hour Factor	0.94
Analysis Time Period (hrs)	0.25

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	2	1	0	1	2	0		1	0	1		0	0	0
Configuration			T	R		L	T			L		R				
Volume, V (veh/h)			1487	61		127	903			0		3				
Percent Heavy Vehicles (%)						1				0		0				
Proportion Time Blocked																
Percent Grade (%)										0						
Right Turn Channelized		No				No				No				No		
Median Type/Storage		Left Only								1						

Critical and Follow-up Headways

Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						135				0		3				
Capacity, c (veh/h)						393				101		337				
v/c Ratio						0.34				0.00		0.01				
95% Queue Length, Q_{95} (veh)						1.5				0.0		0.0				
Control Delay (s/veh)						18.9				40.6		15.8				
Level of Service, LOS						C				E		C				
Approach Delay (s/veh)						2.3				15.8						
Approach LOS										C						

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HCS7 Two-Way Stop-Control Report

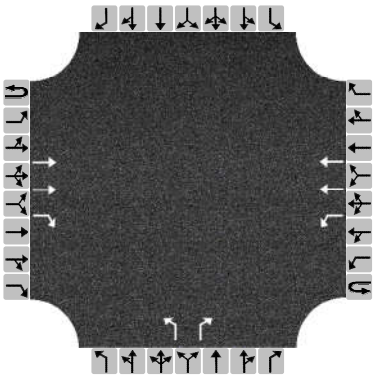
General Information

Analyst	LMM
Agency/Co.	GHA
Date Performed	11/09/2017
Analysis Year	2025
Time Analyzed	NoBuild PM Peak
Intersection Orientation	East-West
Project Description	5244.900

Site Information

Intersection	Ferry Road / Office East
Jurisdiction	DuDOT
East/West Street	Ferry Road
North/South Street	Office East
Peak Hour Factor	0.94
Analysis Time Period (hrs)	0.25

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	2	1	0	1	2	0		1	0	1		0	0	0
Configuration			T	R		L	T			L		R				
Volume, V (veh/h)			1029	5		25	1516			45		63				
Percent Heavy Vehicles (%)						0				0		0				
Proportion Time Blocked																
Percent Grade (%)										0						
Right Turn Channelized			No				No				No				No	
Median Type/Storage			Left Only								1					

Critical and Follow-up Headways

Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						27				48		67				
Capacity, c (veh/h)						642				171		486				
v/c Ratio						0.04				0.28		0.14				
95% Queue Length, Q_{95} (veh)						0.1				1.1		0.5				
Control Delay (s/veh)						10.9				34.1		13.6				
Level of Service, LOS						B				D		B				
Approach Delay (s/veh)						0.2				22.2						
Approach LOS										C						

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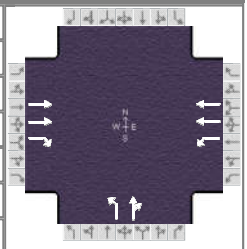
HCS7 Signalized Intersection Input Data

General Information				Intersection Information	
Agency	GHA			Duration, h	0.25
Analyst	LMM	Analysis Date	Nov 9, 2017	Area Type	Other
Jurisdiction	DuDOT	Time Period	AM Peak	PHF	0.95
Urban Street	Ferry Road	Analysis Year	2025 NoBuild	Analysis Period	1> 7:00
Intersection	Ferry Rd / Office Bldg	File Name	25NB_Ferry Office_AM.xus		
Project Description	5244.900				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h		1530	37	114	789		6	0	18			

Signal Information					EB			WB			NB			SB		
Cycle, s	100.0	Reference Phase	2													
Offset, s	0	Reference Point	Begin	Green	3.5	77.0		4.0	0.0	0.0	0.0					
Uncoordinated	No	Simult. Gap E/W	On	Yellow	3.5	4.5		4.5	0.0	0.0	0.0					
Force Mode	Fixed	Simult. Gap N/S	On	Red	0.0	1.5		1.5	0.0	0.0	0.0					

Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h		1530	37	114	789		6	0	18			
Initial Queue (Q_b), veh/h		0	0	0	0		0	0	0			
Base Saturation Flow Rate (s_o), veh/h		2000	1900	1900	2000		1900	1900	1900			
Parking (N_m), man/h		None			None			None				
Heavy Vehicles (P_{HV}), %		1	0	0	2		0	0				
Ped / Bike / RTOR, /h	0	0	0	0	0		0	0	0	0	0	
Buses (N_b), buses/h		0	0	0	0		0	0	0			
Arrival Type (*AT*)		4	3	3	4		3	3	3			
Upstream Filtering (*I*)		1.00	1.00	1.00	1.00		1.00	1.00	1.00			
Lane Width (*W*), ft		12.0	12.0	12.0	12.0		12.0	12.0				
Turn Bay Length, ft		0	135	315	0		175	0				
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h		40	40	40	40		25	25	25			

Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s		56.0	18.0	74.0	15.0	26.0		
Yellow Change Interval (*Y*), s		4.5	3.5	4.5	3.5	4.5		
Red Clearance Interval (R_c), s		1.5	0.0	1.5	0.0	1.5		
Minimum Green (G_{min}), s		15	3	15	3	8		
Start-Up Lost Time (*l1*), s		2.0	2.0	2.0	2.0	2.0		
Extension of Effective Green (*e*), s		2.0	2.0	2.0	2.0	2.0		
Passage (*PT*), s		7.0	3.0	7.0	3.0	4.0		
Recall Mode		Min	Off	Min	Off	Off		
Dual Entry		Yes	No	Yes	No	Yes		
Walk (*Walk*), s		0.0	0.0	0.0	0.0	0.0		
Pedestrian Clearance Time (*PC*), s		0.0	0.0	0.0	0.0	0.0		

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0	No	25	0	No	25	0	No	25			
Walkway / Crosswalk Width / Length, ft	9.0	12	0	9.0	12	0	9.0	12	0			
Street Width / Island / Curb	0	0	No	0	0	No	0	0	No			
Width Outside / Bike Lane / Shoulder, ft	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0			
Pedestrian Signal / Occupied Parking	No	0.50		No	0.50		No	0.50				

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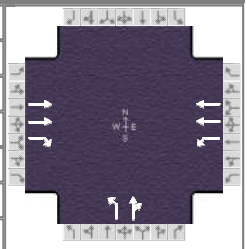
HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	GHA			Duration, h	0.25
Analyst	LMM	Analysis Date	Nov 9, 2017	Area Type	Other
Jurisdiction	DuDOT	Time Period	AM Peak	PHF	0.95
Urban Street	Ferry Road	Analysis Year	2025 NoBuild	Analysis Period	1> 7:00
Intersection	Ferry Rd / Office Bldg	File Name	25NB_Ferry Office_AM.xus		
Project Description	5244.900				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h		1530	37	114	789		6	0	18			

Signal Information			
Cycle, s	100.0	Reference Phase	2
Offset, s	0	Reference Point	Begin
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

							1	2	3	4
Green	3.5	77.0	4.0	0.0	0.0	0.0	5	6	7	8
Yellow	3.5	4.5	4.5	0.0	0.0	0.0				
Red	0.0	1.5	1.5	0.0	0.0	0.0				

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2	1	6		8		
Case Number		7.3	1.0	4.0		10.0		
Phase Duration, s		83.0	7.0	90.0		10.0		
Change Period, ($Y+R_c$), s		6.0	3.5	6.0		6.0		
Max Allow Headway (*MAH*), s		0.0	4.0	0.0		5.4		
Queue Clearance Time (g_s), s			3.2			3.1		
Green Extension Time (g_e), s		0.0	0.3	0.0		0.1		
Phase Call Probability			0.96			0.50		
Max Out Probability			0.00			0.00		

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement		2	12	1	6		3	8	18			
Adjusted Flow Rate (*v*), veh/h		1611	39	120	831		6	19				
Adjusted Saturation Flow Rate (*s*), veh/h/ln		1889	1610	1810	1874		1810	1610				
Queue Service Time (g_s), s		0.0	0.6	1.2	0.0		0.3	1.1				
Cycle Queue Clearance Time (g_c), s		0.0	0.6	1.2	0.0		0.3	1.1				
Green Ratio (*g/C*)		0.77	0.77	0.82	0.84		0.04	0.04				
Capacity (*c*), veh/h		2909	1240	381	3147		73	65				
Volume-to-Capacity Ratio (*X*)		0.554	0.031	0.315	0.264		0.086	0.292				
Back of Queue (*Q*), ft/ln (95 th percentile)		14	6.1	10.8	4.1		7.5	23.5				
Back of Queue (*Q*), veh/ln (95 th percentile)		0.6	0.2	0.4	0.2		0.3	0.9				
Queue Storage Ratio (*RQ*) (95 th percentile)		0.00	0.05	0.03	0.00		0.04	0.00				
Uniform Delay (d_1), s/veh		0.0	2.7	1.7	0.0		46.2	46.6				
Incremental Delay (d_2), s/veh		0.8	0.0	0.5	0.2		0.7	3.5				
Initial Queue Delay (d_3), s/veh		0.0	0.0	0.0	0.0		0.0	0.0				
Control Delay (*d*), s/veh		0.8	2.8	2.1	0.2		46.9	50.1				
Level of Service (LOS)		A	A	A	A		D	D				
Approach Delay, s/veh / LOS	0.8	A		0.5	A		49.3	D		0.0		
Intersection Delay, s/veh / LOS	1.1						A					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.2	B	1.8	B	2.9	C	2.9	C
Bicycle LOS Score / LOS	1.8	B	1.3	A	0.5	A		

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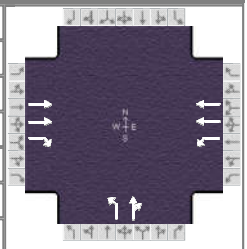
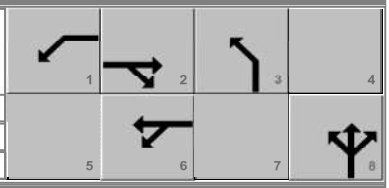
HCS7 Signalized Intersection Intermediate Values

General Information				Intersection Information	
Agency	GHA			Duration, h	0.25
Analyst	LMM	Analysis Date	Nov 9, 2017	Area Type	Other
Jurisdiction	DuDOT	Time Period	AM Peak	PHF	0.95
Urban Street	Ferry Road	Analysis Year	2025 NoBuild	Analysis Period	1> 7:00
Intersection	Ferry Rd / Office Bldg	File Name	25NB_Ferry Office_AM.xus		
Project Description	5244.900				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h		1530	37	114	789		6	0	18			

Signal Information			
Cycle, s	100.0	Reference Phase	2
Offset, s	0	Reference Point	Begin
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	3.5	77.0	4.0	0.0	0.0	0.0						
Yellow	3.5	4.5	4.5	0.0	0.0	0.0						
Red	0.0	1.5	1.5	0.0	0.0	0.0						

Saturation Flow / Delay	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000			
Heavy Vehicles and Grade Factor (f_{HVg})	1.000	0.992	1.000	1.000	0.984	1.000	1.000	1.000	1.000			
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000			
Lane Utilization Adjustment Factor (f_{LU})	1.000	0.952	1.000	1.000	0.952	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})	1.000	1.000		0.952	0.000		0.952	0.000				
Right-Turn Adjustment Factor (f_{RT})		0.000	0.847		1.000	1.000		0.847	0.847			
Left-Turn Pedestrian Adjustment Factor (f_{Lpb})	1.000			1.000			1.000					
Right-Turn Ped-Bike Adjustment Factor (f_{Rpb})			1.000			1.000			1.000			
Work Zone Adjustment Factor (f_{wz})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000			
DDI Factor (f_{DDI})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000			
Movement Saturation Flow Rate (s), veh/h	0	3874	1610	1810	3843	0	1810	0	1610			
Proportion of Vehicles Arriving on Green (P)	0.00	1.00	0.77	0.03	1.00	0.00	0.04	0.00	0.04	0.00	0.00	0.00
Incremental Delay Factor (k)		0.50	0.50	0.11	0.50		0.15	0.15				

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)		6.0	3.5	6.0		3.5		
Green Ratio (g/C)		0.77	0.82	0.84		0.04		
Permitted Saturation Flow Rate (s_p), veh/h/ln		671	320	0		1810		
Shared Saturation Flow Rate (s_{sh}), veh/h/ln		0						
Permitted Effective Green Time (g_p), s		0.0	79.0	0.0		0.0		
Permitted Service Time (g_u), s		0.0	77.0	0.0		0.0		
Permitted Queue Service Time (g_{ps}), s			1.2					
Time to First Blockage (g_f), s		77.0	0.0	0.0		0.0		
Queue Service Time Before Blockage (g_{fs}), s								
Protected Right Saturation Flow (s_R), veh/h/ln		0						
Protected Right Effective Green Time (g_R), s		0.0						

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	1.557	0.00	1.198	0.00	2.107	0.00	2.107	0.00
Pedestrian F_s / F_{delay}	0.000	0.039	0.000	0.010	0.000	0.162	0.000	0.161
Pedestrian M_{corner} / M_{cw}								
Bicycle c_b / d_b	1540.05	2.64	1679.30	1.29		57.25		55.13
Bicycle F_w / F_v	-3.64	1.36	-3.64	0.78	-3.64	0.04	-3.64	

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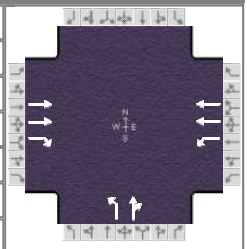
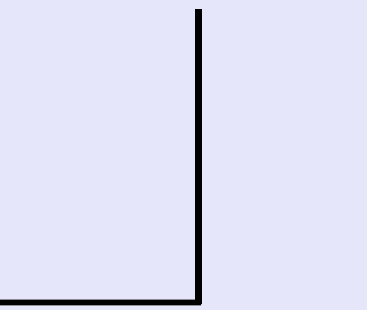
HCS7 Signalized Intersection Results Graphical Summary

General Information				Intersection Information	
Agency	GHA			Duration, h	0.25
Analyst	LMM	Analysis Date	Nov 9, 2017	Area Type	Other
Jurisdiction	DuDOT	Time Period	AM Peak	PHF	0.95
Urban Street	Ferry Road	Analysis Year	2025 NoBuild	Analysis Period	1> 7:00
Intersection	Ferry Rd / Office Bldg	File Name	25NB_Ferry Office_AM.xus		
Project Description	5244.900				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h		1530	37	114	789		6	0	18			

Signal Information					EB			WB			NB			SB		
Cycle, s	100.0	Reference Phase	2		L	T	R	L	T	R	L	T	R	L	T	R
Offset, s	0	Reference Point	Begin	Green	3.5	77.0	4.0	0.0	0.0	0.0						
Uncoordinated	No	Simult. Gap E/W	On	Yellow	3.5	4.5	4.5	0.0	0.0	0.0						
Force Mode	Fixed	Simult. Gap N/S	On	Red	0.0	1.5	1.5	0.0	0.0	0.0						



Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Back of Queue (*Q*), ft/ln (95 th percentile)		14	6.1	10.8	4.1		7.5	23.5				
Back of Queue (*Q*), veh/ln (95 th percentile)		0.6	0.2	0.4	0.2		0.3	0.9				
Queue Storage Ratio (*RQ*) (95 th percentile)		0.00	0.05	0.03	0.00		0.04	0.00				
Control Delay (*d*), s/veh		0.8	2.8	2.1	0.2		46.9	50.1				
Level of Service (LOS)		A	A	A	A		D	D				
Approach Delay, s/veh / LOS	0.8	A		0.5	A		49.3	D		0.0		
Intersection Delay, s/veh / LOS	1.1						A					

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--- Messages ---

No errors or warnings exist.

--- Comments ---

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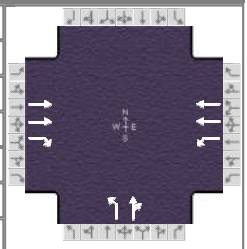
HCS7 Signalized Intersection Input Data

General Information				Intersection Information	
Agency	GHA			Duration, h	0.25
Analyst	LMM	Analysis Date	Nov 9, 2017	Area Type	Other
Jurisdiction	DuDOT	Time Period	PM Peak	PHF	0.95
Urban Street	Ferry Road	Analysis Year	2025 NoBuild	Analysis Period	1> 5:00
Intersection	Ferry Rd / Office Bldg	File Name	25NB_Ferry Office_PM.xus		
Project Description	5244.900				

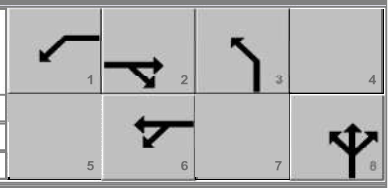


Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h		923	7	21	1540		37	0	111			

Signal Information			
Cycle, s	150.0	Reference Phase	2
Offset, s	0	Reference Point	Begin
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	3.0	118.1	13.4	0.0	0.0	0.0						
Yellow	3.5	4.5	4.5	0.0	0.0	0.0						
Red	0.0	1.5	1.5	0.0	0.0	0.0						



Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h		923	7	21	1540		37	0	111			
Initial Queue (Q_b), veh/h		0	0	0	0		0	0	0			
Base Saturation Flow Rate (s_o), veh/h		2000	1900	1900	2000		1900	1900	1900			
Parking (N_m), man/h		None			None			None				
Heavy Vehicles (P_{HV}), %		1	0	0	1		0	0				
Ped / Bike / RTOR, /h	0	0	0	0	0		0	0	0	0	0	
Buses (N_b), buses/h		0	0	0	0		0	0	0			
Arrival Type (*AT*)		4	3	3	4		3	3	3			
Upstream Filtering (*I*)		1.00	1.00	1.00	1.00		1.00	1.00	1.00			
Lane Width (*W*), ft		12.0	12.0	12.0	12.0		12.0	12.0				
Turn Bay Length, ft		0	135	315	0		175	0				
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h		40	40	40	40		25	25	25			

Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s		84.0	27.0	111.0	22.0	39.0		
Yellow Change Interval (*Y*), s		4.5	3.5	4.5	3.5	4.5		
Red Clearance Interval (R_c), s		1.5	0.0	1.5	0.0	1.5		
Minimum Green (G_{min}), s		15	3	15	3	8		
Start-Up Lost Time (*lt*), s		2.0	2.0	2.0	2.0	2.0		
Extension of Effective Green (*e*), s		2.0	2.0	2.0	2.0	2.0		
Passage (*PT*), s		7.0	3.0	7.0	3.0	4.0		
Recall Mode		Min	Off	Min	Off	Off		
Dual Entry		Yes	Yes	Yes	Yes	Yes		
Walk (*Walk*), s		0.0	0.0	0.0	0.0	0.0		
Pedestrian Clearance Time (*PC*), s		0.0	0.0	0.0	0.0	0.0		

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0	No	25	0	No	25	0	No	25			
Walkway / Crosswalk Width / Length, ft	9.0	12	0	9.0	12	0	9.0	12	0			
Street Width / Island / Curb	0	0	No	0	0	No	0	0	No			
Width Outside / Bike Lane / Shoulder, ft	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0			
Pedestrian Signal / Occupied Parking	No	0.50		No	0.50		No	0.50				

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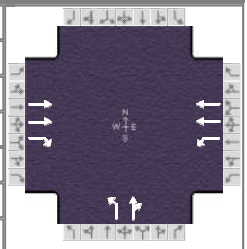
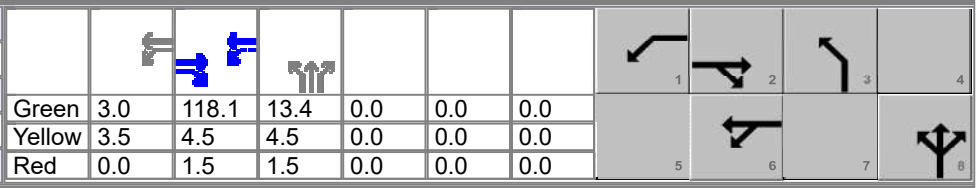
HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	GHA			Duration, h	0.25
Analyst	LMM	Analysis Date	Nov 9, 2017	Area Type	Other
Jurisdiction	DuDOT	Time Period	PM Peak	PHF	0.95
Urban Street	Ferry Road	Analysis Year	2025 NoBuild	Analysis Period	1> 5:00
Intersection	Ferry Rd / Office Bldg	File Name	25NB_Ferry Office_PM.xus		
Project Description	5244.900				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h		923	7	21	1540		37	0	111			

Signal Information			
Cycle, s	150.0	Reference Phase	2
Offset, s	0	Reference Point	Begin
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	3.0	118.1	13.4	0.0	0.0	0.0
Yellow	3.5	4.5	4.5	0.0	0.0	0.0
Red	0.0	1.5	1.5	0.0	0.0	0.0

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2	1	6		8		
Case Number		7.3	1.0	4.0		10.0		
Phase Duration, s		124.1	6.5	130.6		19.4		
Change Period, (*Y+R c*), s		6.0	3.5	6.0		6.0		
Max Allow Headway (*MAH*), s		0.0	4.0	0.0		5.4		
Queue Clearance Time (*g s*), s			2.3			12.7		
Green Extension Time (*g e*), s		0.0	0.0	0.0		0.8		
Phase Call Probability			1.00			1.00		
Max Out Probability			0.00			0.00		

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement		2	12	1	6		3	8	18			
Adjusted Flow Rate (*v*), veh/h		972	7	22	1621		39	117				
Adjusted Saturation Flow Rate (*s*), veh/h/ln		1889	1610	1810	1889		1810	1610				
Queue Service Time (*g s*), s		0.0	0.1	0.3	0.0		3.0	10.7				
Cycle Queue Clearance Time (*g c*), s		0.0	0.1	0.3	0.0		3.0	10.7				
Green Ratio (*g/C*)		0.79	0.79	0.82	0.83		0.09	0.09				
Capacity (*c*), veh/h		2974	1267	547	3137		162	144				
Volume-to-Capacity Ratio (*X*)		0.327	0.006	0.040	0.517		0.240	0.810				
Back of Queue (*Q*), ft/ln (95 th percentile)		5.5	2	4.3	12.1		65.3	216.9				
Back of Queue (*Q*), veh/ln (95 th percentile)		0.2	0.1	0.2	0.5		2.6	8.7				
Queue Storage Ratio (*RQ*) (95 th percentile)		0.00	0.01	0.01	0.00		0.37	0.00				
Uniform Delay (*d 1*), s/veh		0.0	3.4	2.5	0.0		63.5	67.0				
Incremental Delay (*d 2*), s/veh		0.3	0.0	0.0	0.6		1.1	14.0				
Initial Queue Delay (*d 3*), s/veh		0.0	0.0	0.0	0.0		0.0	0.0				
Control Delay (*d*), s/veh		0.3	3.4	2.5	0.6		64.6	81.1				
Level of Service (LOS)		A	A	A	A		E	F				
Approach Delay, s/veh / LOS	0.3	A		0.6	A		77.0	E		0.0		
Intersection Delay, s/veh / LOS	4.8						A					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.2	B	1.8	B	2.9	C	2.9	C
Bicycle LOS Score / LOS	1.3	A	1.8	B	0.7	A		

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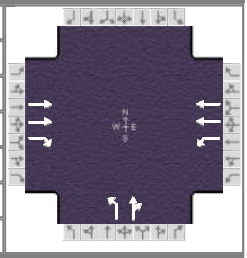
HCS7 Signalized Intersection Intermediate Values

General Information				Intersection Information	
Agency	GHA			Duration, h	0.25
Analyst	LMM	Analysis Date	Nov 9, 2017	Area Type	Other
Jurisdiction	DuDOT	Time Period	PM Peak	PHF	0.95
Urban Street	Ferry Road	Analysis Year	2025 NoBuild	Analysis Period	1> 5:00
Intersection	Ferry Rd / Office Bldg	File Name	25NB_Ferry Office_PM.xus		
Project Description	5244.900				

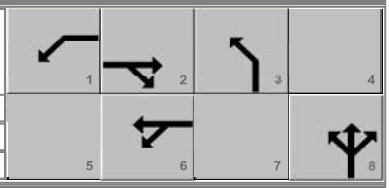


Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h		923	7	21	1540		37	0	111			

Signal Information			
Cycle, s	150.0	Reference Phase	2
Offset, s	0	Reference Point	Begin
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	3.0	118.1	13.4	0.0	0.0	0.0						
Yellow	3.5	4.5	4.5	0.0	0.0	0.0						
Red	0.0	1.5	1.5	0.0	0.0	0.0						



Saturation Flow / Delay	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000			
Heavy Vehicles and Grade Factor (f_{HVg})	1.000	0.992	1.000	1.000	0.992	1.000	1.000	1.000	1.000			
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000			
Lane Utilization Adjustment Factor (f_{LU})	1.000	0.952	1.000	1.000	0.952	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})	1.000	1.000		0.952	0.000		0.952	0.000				
Right-Turn Adjustment Factor (f_{RT})		0.000	0.847		1.000	1.000		0.847	0.847			
Left-Turn Pedestrian Adjustment Factor (f_{Lpb})	1.000			1.000			1.000					
Right-Turn Ped-Bike Adjustment Factor (f_{Rpb})			1.000			1.000			1.000			
Work Zone Adjustment Factor (f_{wz})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000			
DDI Factor (f_{DDI})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000			
Movement Saturation Flow Rate (s), veh/h	0	3874	1610	1810	3874	0	1810	0	1610			
Proportion of Vehicles Arriving on Green (P)	0.00	1.00	0.79	0.02	1.00	0.00	0.09	0.00	0.09	0.00	0.00	0.00
Incremental Delay Factor (k)		0.50	0.50	0.11	0.50		0.15	0.15				

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)		6.0	3.5	6.0		3.5		
Green Ratio (g/C)		0.79	0.82	0.83		0.09		
Permitted Saturation Flow Rate (s_p), veh/h/ln		316	588	0		1810		
Shared Saturation Flow Rate (s_{sh}), veh/h/ln		0						
Permitted Effective Green Time (g_p), s		0.0	120.1	0.0		0.0		
Permitted Service Time (g_u), s		0.0	118.0	0.0		0.0		
Permitted Queue Service Time (g_{ps}), s			0.1					
Time to First Blockage (g_f), s		118.1	0.0	0.0		0.0		
Queue Service Time Before Blockage (g_{fs}), s								
Protected Right Saturation Flow (s_R), veh/h/ln		0						
Protected Right Effective Green Time (g_R), s		0.0						

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	1.557	0.00	1.198	0.00	2.107	0.00	2.107	0.00
Pedestrian F_s / F_{delay}	0.000	0.049	0.000	0.031	0.000	0.177	0.000	0.176
Pedestrian M_{corner} / M_{cw}								
Bicycle c_b / d_b	1574.10	3.40	1660.78	2.16	-93.33	82.16	-66.67	80.08
Bicycle F_w / F_v	-3.64	0.81	-3.64	1.36	-3.64	0.26	-3.64	

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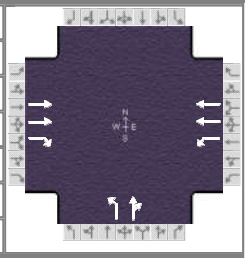
HCS7 Signalized Intersection Results Graphical Summary

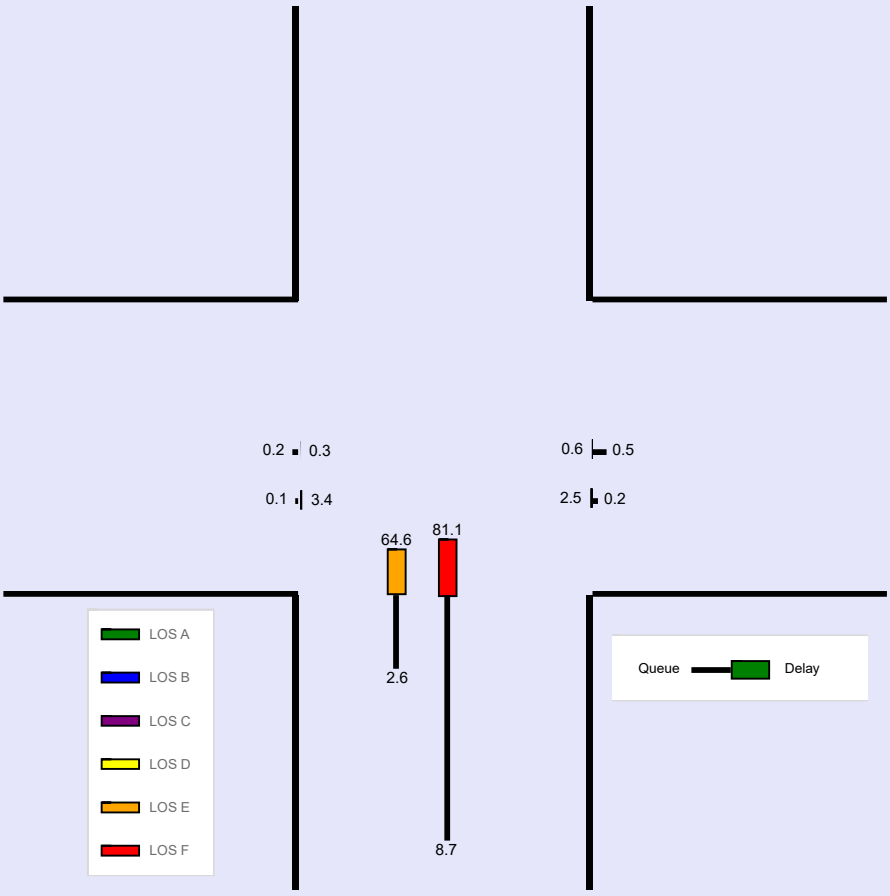
General Information				Intersection Information	
Agency	GHA			Duration, h	0.25
Analyst	LMM	Analysis Date	Nov 9, 2017	Area Type	Other
Jurisdiction	DuDOT	Time Period	PM Peak	PHF	0.95
Urban Street	Ferry Road	Analysis Year	2025 NoBuild	Analysis Period	1> 5:00
Intersection	Ferry Rd / Office Bldg	File Name	25NB_Ferry Office_PM.xus		
Project Description	5244.900				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h		923	7	21	1540		37	0	111			

Signal Information					EB			WB			NB			SB		
Cycle, s	150.0	Reference Phase	2													
Offset, s	0	Reference Point	Begin	Green	3.0	118.1		13.4	0.0	0.0	0.0					
Uncoordinated	No	Simult. Gap E/W	On	Yellow	3.5	4.5		4.5	0.0	0.0	0.0					
Force Mode	Fixed	Simult. Gap N/S	On	Red	0.0	1.5		1.5	0.0	0.0	0.0					

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Back of Queue (*Q*), ft/ln (95 th percentile)		5.5	2	4.3	12.1		65.3	216.9				
Back of Queue (*Q*), veh/ln (95 th percentile)		0.2	0.1	0.2	0.5		2.6	8.7				
Queue Storage Ratio (*RQ*) (95 th percentile)		0.00	0.01	0.01	0.00		0.37	0.00				
Control Delay (*d*), s/veh		0.3	3.4	2.5	0.6		64.6	81.1				
Level of Service (LOS)		A	A	A	A		E	F				
Approach Delay, s/veh / LOS	0.3	A		0.6	A		77.0	E		0.0		
Intersection Delay, s/veh / LOS	4.8						A					



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--- Messages ---

No errors or warnings exist.

--- Comments ---

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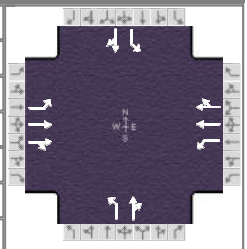
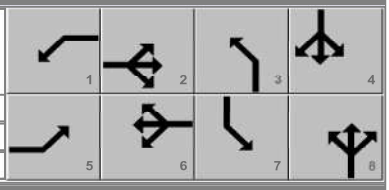
HCS7 Signalized Intersection Input Data

General Information				Intersection Information	
Agency	GHA			Duration, h	0.25
Analyst	LMM	Analysis Date	Nov 9, 2017	Area Type	Other
Jurisdiction	DuDOT	Time Period	AM Peak Hour	PHF	0.95
Urban Street	Ferry Road	Analysis Year	2025 NoBuild	Analysis Period	1> 7:00
Intersection	Ferry Rd / River Rd	File Name	25NB_Ferry River_AM.xus		
Project Description	5244.900				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	93	1517	19	24	752	18	0	0	1	49	2	78

Signal Information												
Cycle, s	100.0	Reference Phase	2									
Offset, s	0	Reference Point	Begin									
Uncoordinated	No	Simult. Gap E/W	On	Green	3.0	1.0	65.2	0.0	4.5	7.3		
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	3.5	0.0	4.5	3.5	3.5	4.5		
				Red	0.0	0.0	1.5	0.0	0.0	1.5		



Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	93	1517	19	24	752	18	0	0	1	49	2	78
Initial Queue (Q_b), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s_o), veh/h	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Parking (N_m), man/h		None			None			None			None	
Heavy Vehicles (P_{HV}), %	0	2		0	2		0	0		4	0	
Ped / Bike / RTOR, /h	0	0	0	0	0	0	0	0	0	0	0	0
Buses (N_b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (*AT*)	3	4	3	3	4	3	3	3	3	3	3	3
Upstream Filtering (*I*)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width (*W*), ft	12.0	12.0		12.0	12.0		12.0	12.0		12.0	12.0	
Turn Bay Length, ft	150	0		150	0		100	0		150	0	
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h	40	40	40	40	40	40	40	40	40	40	40	40

Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s	20.0	48.0	13.0	41.0	13.0	26.0	13.0	26.0
Yellow Change Interval (*Y*), s	3.5	4.5	3.5	4.5	3.5	4.5	3.5	4.5
Red Clearance Interval (R_c), s	0.0	1.5	0.0	1.5	0.0	1.5	0.0	1.5
Minimum Green (G_{min}), s	3	15	3	15	3	8	3	8
Start-Up Lost Time (*lt*), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (*e*), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Passage (*PT*), s	3.0	7.0	3.0	7.0	3.0	4.0	3.0	4.0
Recall Mode	Off	Min	Off	Min	Off	Off	Off	Off
Dual Entry	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Walk (*Walk*), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pedestrian Clearance Time (*PC*), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0	No	25	0	No	25	0	No	25	0	No	25
Walkway / Crosswalk Width / Length, ft	9.0	12	0	9.0	12	0	9.0	12	0	9.0	12	0
Street Width / Island / Curb	0	0	No	0	0	No	0	0	No	0	0	No
Width Outside / Bike Lane / Shoulder, ft	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50		No	0.50		No	0.50		No	0.50	

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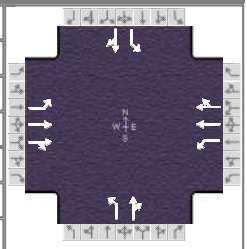
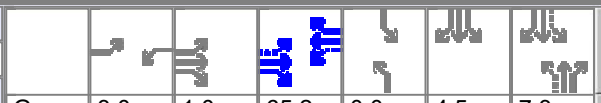
HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	GHA			Duration, h	0.25
Analyst	LMM	Analysis Date	Nov 9, 2017	Area Type	Other
Jurisdiction	DuDOT	Time Period	AM Peak Hour	PHF	0.95
Urban Street	Ferry Road	Analysis Year	2025 NoBuild	Analysis Period	1> 7:00
Intersection	Ferry Rd / River Rd	File Name	25NB_Ferry River_AM.xus		
Project Description	5244.900				

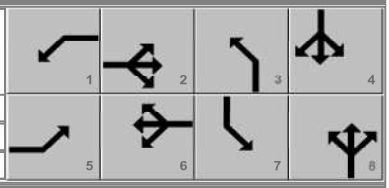


Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	93	1517	19	24	752	18	0	0	1	49	2	78

Signal Information			
Cycle, s	100.0	Reference Phase	2
Offset, s	0	Reference Point	Begin
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	3.0	1.0	65.2	0.0	4.5	7.3	
Yellow	3.5	0.0	4.5	3.5	3.5	4.5	
Red	0.0	0.0	1.5	0.0	0.0	1.5	



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6	3	8	7	4
Case Number	1.1	4.0	1.1	4.0	1.1	4.0	1.1	4.0
Phase Duration, s	7.5	72.2	6.5	71.2	0.0	13.3	8.0	21.3
Change Period, ($Y+R_c$), s	3.5	6.0	3.5	6.0	3.5	6.0	3.5	6.0
Max Allow Headway (*MAH*), s	4.0	0.0	4.0	0.0	0.0	5.2	4.0	5.2
Queue Clearance Time (g_s), s	3.8		2.5			2.1	4.6	6.7
Green Extension Time (g_e), s	0.3	0.0	0.0	0.0	0.0	0.4	0.0	0.4
Phase Call Probability	1.00		1.00			0.91	0.98	0.98
Max Out Probability	0.00		0.00			0.00	0.33	0.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (*v*), veh/h	98	809	807	25	407	404	0	1		52	84	
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1810	1870	1862	1810	1870	1855	1810	1610		1753	1616	
Queue Service Time (g_s), s	1.8	12.0	12.5	0.5	4.0	4.3	0.0	0.1		2.6	4.7	
Cycle Queue Clearance Time (g_c), s	1.8	12.0	12.5	0.5	4.0	4.3	0.0	0.1		2.6	4.7	
Green Ratio (*g/C*)	0.69	0.66	0.66	0.68	0.65	0.65	0.04	0.07		0.14	0.15	
Capacity (*c*), veh/h	561	1238	1233	290	1219	1209	171	117		252	247	
Volume-to-Capacity Ratio (*X*)	0.174	0.654	0.655	0.087	0.334	0.334	0.000	0.009		0.205	0.341	
Back of Queue (*Q*), ft/ln (95 th percentile)	25.1	133.3	136.1	6.7	59.7	62.4	0	1.1		52.1	84.4	
Back of Queue (*Q*), veh/ln (95 th percentile)	1.0	5.2	5.4	0.3	2.3	2.5	0.0	0.0		2.0	3.4	
Queue Storage Ratio (*RQ*) (95 th percentile)	0.17	0.00	0.00	0.04	0.00	0.00	0.00	0.00		0.35	0.00	
Uniform Delay (d_1), s/veh	5.1	2.7	2.8	6.1	2.5	2.8	0.0	43.0		38.3	37.9	
Incremental Delay (d_2), s/veh	0.1	2.7	2.7	0.1	0.7	0.7	0.0	0.0		0.4	1.2	
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Control Delay (*d*), s/veh	5.3	5.4	5.6	6.3	3.3	3.5	0.0	43.1		38.7	39.0	
Level of Service (LOS)	A	A	A	A	A	A		D		D	D	
Approach Delay, s/veh / LOS	5.5	A		3.5	A		43.1	D		38.9	D	
Intersection Delay, s/veh / LOS	6.5						A					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.2	B	2.2	B	2.9	C	2.9	C
Bicycle LOS Score / LOS	1.9	B	1.2	A	0.5	A	0.7	A

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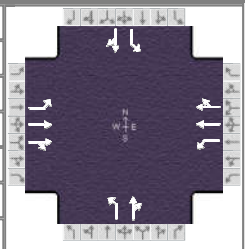
HCS7 Signalized Intersection Intermediate Values

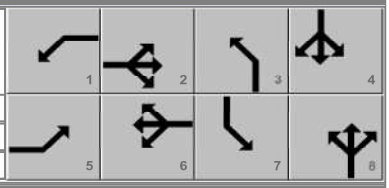
General Information				Intersection Information	
Agency	GHA			Duration, h	0.25
Analyst	LMM	Analysis Date	Nov 9, 2017	Area Type	Other
Jurisdiction	DuDOT	Time Period	AM Peak Hour	PHF	0.95
Urban Street	Ferry Road	Analysis Year	2025 NoBuild	Analysis Period	1> 7:00
Intersection	Ferry Rd / River Rd	File Name	25NB_Ferry River_AM.xus		
Project Description	5244.900				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	93	1517	19	24	752	18	0	0	1	49	2	78

Signal Information			
Cycle, s	100.0	Reference Phase	2
Offset, s	0	Reference Point	Begin
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	3.0	1.0	65.2	0.0	4.5	7.3						
Yellow	3.5	0.0	4.5	3.5	3.5	4.5						
Red	0.0	0.0	1.5	0.0	0.0	1.5						



Saturation Flow / Delay	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles and Grade Factor (f_{HVg})	1.000	0.984	1.000	1.000	0.984	1.000	1.000	1.000	1.000	0.969	1.000	1.000
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})	0.952	0.000		0.952	0.000		0.952	0.000		0.952	0.000	
Right-Turn Adjustment Factor (f_{RT})		0.996	0.996		0.992	0.992		0.847	0.847		0.851	0.851
Left-Turn Pedestrian Adjustment Factor (f_{Lpb})	1.000			1.000			1.000			1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{Rpb})			1.000			1.000			1.000			1.000
Work Zone Adjustment Factor (f_{wz})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
DDI Factor (f_{DDI})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Movement Saturation Flow Rate (s), veh/h	1810	3686	46	1810	3638	87	1810	0	1610	1753	40	1576
Proportion of Vehicles Arriving on Green (P)	0.04	0.88	0.66	0.03	0.87	0.65	0.00	0.00	0.07	0.05	0.15	0.15
Incremental Delay Factor (k)	0.11	0.50	0.50	0.11	0.50	0.50		0.15		0.11	0.15	

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)	3.5	6.0	3.5	6.0	3.5	6.0	3.5	6.0
Green Ratio (g/C)	0.69	0.66	0.68	0.65	0.04	0.07	0.14	0.15
Permitted Saturation Flow Rate (s_p), veh/h/ln	684	0	318	0	1334	0	1394	0
Shared Saturation Flow Rate (s_{sh}), veh/h/ln								
Permitted Effective Green Time (g_p), s	65.2	0.0	65.2	0.0	7.3	0.0	9.3	0.0
Permitted Service Time (g_u), s	60.8	0.0	51.7	0.0	7.3	0.0	7.2	0.0
Permitted Queue Service Time (g_{ps}), s	0.7		1.2		0.0		0.1	
Time to First Blockage (g_f), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Service Time Before Blockage (g_{fs}), s								
Protected Right Saturation Flow (s_R), veh/h/ln								
Protected Right Effective Green Time (g_R), s								

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	1.557	0.00	1.557	0.00	2.107	0.00	2.107	0.00
Pedestrian F_s / F_{delay}	0.000	0.070	0.000	0.072	0.000	0.151	0.000	0.144
Pedestrian M_{corner} / M_{cw}								
Bicycle c_b / d_b	1324.20	5.71	1303.39	6.07	145.03	43.01	305.79	35.88
Bicycle F_w / F_v	-3.64	1.41	-3.64	0.69	-3.64	0.00	-3.64	0.22

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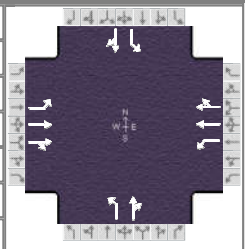
HCS7 Signalized Intersection Results Graphical Summary

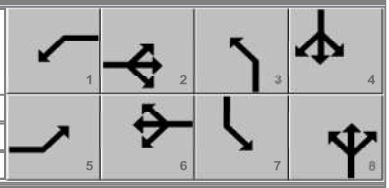
General Information				Intersection Information	
Agency	GHA			Duration, h	0.25
Analyst	LMM	Analysis Date	Nov 9, 2017	Area Type	Other
Jurisdiction	DuDOT	Time Period	AM Peak Hour	PHF	0.95
Urban Street	Ferry Road	Analysis Year	2025 NoBuild	Analysis Period	1> 7:00
Intersection	Ferry Rd / River Rd	File Name	25NB_Ferry River_AM.xus		
Project Description	5244.900				



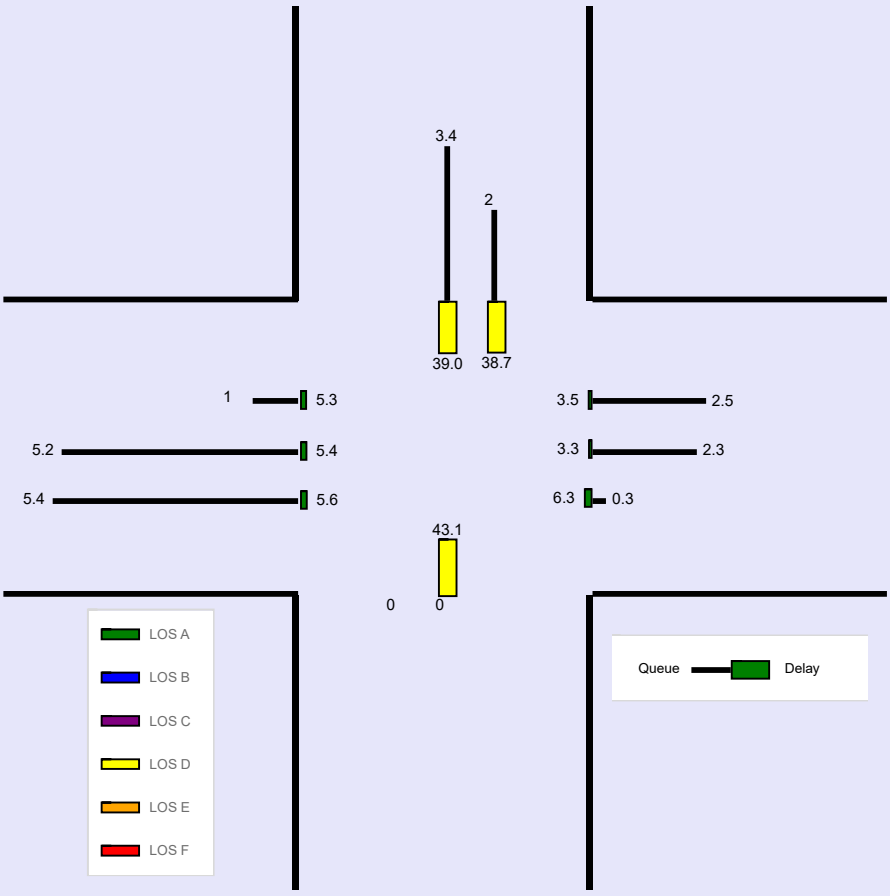
Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	93	1517	19	24	752	18	0	0	1	49	2	78

Signal Information			
Cycle, s	100.0	Reference Phase	2
Offset, s	0	Reference Point	Begin
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	3.0	1.0	65.2	0.0	4.5	7.3	
Yellow	3.5	0.0	4.5	3.5	3.5	4.5	
Red	0.0	0.0	1.5	0.0	0.0	1.5	



Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Back of Queue (*Q*), ft/ln (95 th percentile)	25.1	133.3	136.1	6.7	59.7	62.4	0	1.1		52.1	84.4	
Back of Queue (*Q*), veh/ln (95 th percentile)	1.0	5.2	5.4	0.3	2.3	2.5	0.0	0.0		2.0	3.4	
Queue Storage Ratio (*RQ*) (95 th percentile)	0.17	0.00	0.00	0.04	0.00	0.00	0.00	0.00		0.35	0.00	
Control Delay (*d*), s/veh	5.3	5.4	5.6	6.3	3.3	3.5	0.0	43.1		38.7	39.0	
Level of Service (LOS)	A	A	A	A	A	A		D		D	D	
Approach Delay, s/veh / LOS	5.5	A		3.5	A		43.1	D		38.9	D	
Intersection Delay, s/veh / LOS	6.5						A					



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--- Messages ---

No errors or warnings exist.

--- Comments ---

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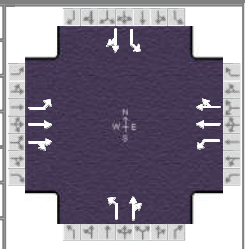
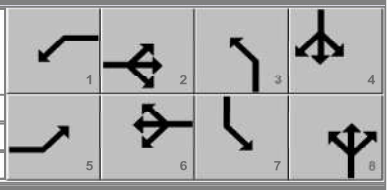
HCS7 Signalized Intersection Input Data

General Information				Intersection Information	
Agency	GHA			Duration, h	0.25
Analyst	LMM	Analysis Date	Nov 9, 2017	Area Type	Other
Jurisdiction	DuDOT	Time Period	PM Peak Hour	PHF	0.94
Urban Street	Ferry Road	Analysis Year	2025 NoBuild	Analysis Period	1> 5:00
Intersection	Ferry Rd / River Rd	File Name	25NB_Ferry River_PM.xus		
Project Description	5244.900				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	108	889	2	4	1517	56	31	3	21	20	0	83

Signal Information												
Cycle, s	150.0	Reference Phase	2									
Offset, s	0	Reference Point	Begin									
Uncoordinated	No	Simult. Gap E/W	On	Green	3.0	1.6	111.4	3.6	0.7	10.6		
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	3.5	0.0	4.5	3.5	0.0	4.5		
				Red	0.0	0.0	1.5	0.0	0.0	1.5		



Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	108	889	2	4	1517	56	31	3	21	20	0	83
Initial Queue (Q_b), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s_o), veh/h	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Parking (N_m), man/h		None			None			None			None	
Heavy Vehicles (P_{HV}), %	0	1		0	1		0	0		0	0	
Ped / Bike / RTOR, /h	0	0	0	0	0	0	0	0	0	0	0	0
Buses (N_b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (*AT*)	3	4	3	3	4	3	3	3	3	3	3	3
Upstream Filtering (*I*)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width (*W*), ft	12.0	12.0		12.0	12.0		12.0	12.0		12.0	12.0	
Turn Bay Length, ft	150	0		150	0		100	0		150	0	
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h	40	40	40	40	40	40	40	40	40	40	40	40

Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s	26.0	90.0	14.0	78.0	13.0	33.0	13.0	33.0
Yellow Change Interval (*Y*), s	3.5	4.5	3.5	4.5	3.5	4.5	3.5	4.5
Red Clearance Interval (R_c), s	0.0	1.5	0.0	1.5	0.0	1.5	0.0	1.5
Minimum Green (G_{min}), s	3	15	3	15	3	8	3	8
Start-Up Lost Time (*lt*), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (*e*), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Passage (*PT*), s	3.0	7.0	3.0	7.0	3.0	4.0	3.0	4.0
Recall Mode	Off	Min	Off	Min	Off	Off	Off	Off
Dual Entry	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Walk (*Walk*), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pedestrian Clearance Time (*PC*), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0	No	25	0	No	25	0	No	25	0	No	25
Walkway / Crosswalk Width / Length, ft	9.0	12	0	9.0	12	0	9.0	12	0	9.0	12	0
Street Width / Island / Curb	0	0	No	0	0	No	0	0	No	0	0	No
Width Outside / Bike Lane / Shoulder, ft	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50		No	0.50		No	0.50		No	0.50	

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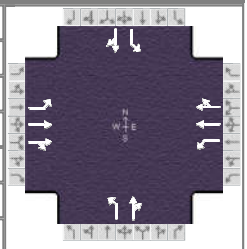
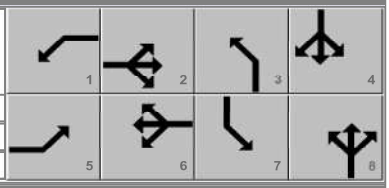
HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	GHA			Duration, h	0.25
Analyst	LMM	Analysis Date	Nov 9, 2017	Area Type	Other
Jurisdiction	DuDOT	Time Period	PM Peak Hour	PHF	0.94
Urban Street	Ferry Road	Analysis Year	2025 NoBuild	Analysis Period	1> 5:00
Intersection	Ferry Rd / River Rd	File Name	25NB_Ferry River_PM.xus		
Project Description	5244.900				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	108	889	2	4	1517	56	31	3	21	20	0	83

Signal Information													
Cycle, s	150.0	Reference Phase	2										
Offset, s	0	Reference Point	Begin										
Uncoordinated	No	Simult. Gap E/W	On										
Force Mode	Fixed	Simult. Gap N/S	On										
				Green	3.0	1.6	111.4	3.6	0.7	10.6			
				Yellow	3.5	0.0	4.5	3.5	0.0	4.5			
				Red	0.0	0.0	1.5	0.0	0.0	1.5			



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6	3	8	7	4
Case Number	1.1	4.0	1.1	4.0	1.1	4.0	1.1	4.0
Phase Duration, s	8.1	119.1	6.5	117.4	7.9	17.3	7.1	16.6
Change Period, ($Y+R_c$), s	3.5	6.0	3.5	6.0	3.5	6.0	3.5	6.0
Max Allow Headway (*MAH*), s	4.0	0.0	4.0	0.0	4.0	5.2	4.0	5.2
Queue Clearance Time (g_s), s	4.3		2.1		4.5	4.2	3.6	10.1
Green Extension Time (g_e), s	0.4	0.0	0.0	0.0	0.0	0.6	0.0	0.5
Phase Call Probability	1.00		1.00		0.96	1.00	1.00	1.00
Max Out Probability	0.00		0.00		0.24	0.00	0.05	0.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (*v*), veh/h	115	474	474	4	839	834	33	26		21	88	
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1810	1885	1884	1810	1885	1861	1810	1641		1810	1610	
Queue Service Time (g_s), s	2.3	0.0	0.1	0.1	1.6	4.4	2.5	2.2		1.6	8.1	
Cycle Queue Clearance Time (g_c), s	2.3	0.0	0.1	0.1	1.6	4.4	2.5	2.2		1.6	8.1	
Green Ratio (*g/C*)	0.77	0.75	0.75	0.76	0.74	0.74	0.10	0.08		0.09	0.07	
Capacity (*c*), veh/h	318	1421	1420	529	1400	1383	123	124		159	113	
Volume-to-Capacity Ratio (*X*)	0.361	0.334	0.334	0.008	0.599	0.603	0.269	0.206		0.134	0.778	
Back of Queue (*Q*), ft/ln (95 th percentile)	35.9	11.3	11.9	1.3	44.2	64.6	53.4	42.9		34	169.9	
Back of Queue (*Q*), veh/ln (95 th percentile)	1.4	0.4	0.5	0.1	1.8	2.6	2.1	1.7		1.4	6.8	
Queue Storage Ratio (*RQ*) (95 th percentile)	0.24	0.00	0.00	0.01	0.00	0.00	0.53	0.00		0.23	0.00	
Uniform Delay (d_1), s/veh	4.2	0.0	0.0	4.2	0.2	0.6	62.2	65.1		62.3	68.6	
Incremental Delay (d_2), s/veh	0.7	0.6	0.6	0.0	1.9	2.0	1.2	1.2		0.4	14.9	
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Control Delay (*d*), s/veh	4.9	0.6	0.7	4.2	2.1	2.5	63.3	66.3		62.6	83.5	
Level of Service (LOS)	A	A	A	A	A	A	E	E		E	F	
Approach Delay, s/veh / LOS	1.1	A		2.3	A		64.6	E		79.4	E	
Intersection Delay, s/veh / LOS	6.0						A					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.2	B	2.2	B	2.9	C	2.9	C
Bicycle LOS Score / LOS	1.4	A	1.9	B	0.6	A	0.7	A

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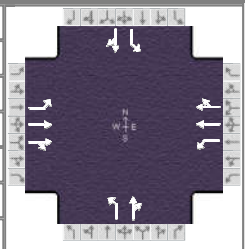
HCS7 Signalized Intersection Intermediate Values

General Information				Intersection Information	
Agency	GHA			Duration, h	0.25
Analyst	LMM	Analysis Date	Nov 9, 2017	Area Type	Other
Jurisdiction	DuDOT	Time Period	PM Peak Hour	PHF	0.94
Urban Street	Ferry Road	Analysis Year	2025 NoBuild	Analysis Period	1> 5:00
Intersection	Ferry Rd / River Rd	File Name	25NB_Ferry River_PM.xus		
Project Description	5244.900				

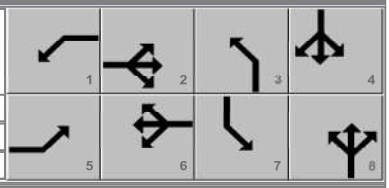


Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	108	889	2	4	1517	56	31	3	21	20	0	83

Signal Information			
Cycle, s	150.0	Reference Phase	2
Offset, s	0	Reference Point	Begin
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	3.0	1.6	111.4	3.6	0.7	10.6
Yellow	3.5	0.0	4.5	3.5	0.0	4.5
Red	0.0	0.0	1.5	0.0	0.0	1.5



Saturation Flow / Delay	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles and Grade Factor (f_{HVg})	1.000	0.992	1.000	1.000	0.992	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})	0.952	0.000		0.952	0.000		0.952	0.000		0.952	0.000	
Right-Turn Adjustment Factor (f_{RT})		0.999	0.999		0.987	0.987		0.864	0.864		0.847	0.847
Left-Turn Pedestrian Adjustment Factor (f_{Lpb})	1.000			1.000			1.000			1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{Rpb})			1.000			1.000			1.000			1.000
Work Zone Adjustment Factor (f_{wz})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
DDI Factor (f_{DDI})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Movement Saturation Flow Rate (s), veh/h	1810	3760	8	1810	3613	133	1810	205	1436	1810	0	1610
Proportion of Vehicles Arriving on Green (P)	0.03	1.00	0.75	0.02	0.99	0.74	0.03	0.08	0.08	0.02	0.00	0.07
Incremental Delay Factor (k)	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.15		0.11	0.15	

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)	3.5	6.0	3.5	6.0	3.5	6.0	3.5	6.0
Green Ratio (g/C)	0.77	0.75	0.76	0.74	0.10	0.08	0.09	0.07
Permitted Saturation Flow Rate (s_p), veh/h/ln	301	0	601	0	1329	0	1407	0
Shared Saturation Flow Rate (s_{sh}), veh/h/ln								
Permitted Effective Green Time (g_p), s	111.6	0.0	111.4	0.0	10.6	0.0	10.6	0.0
Permitted Service Time (g_u), s	106.9	0.0	111.0	0.0	2.5	0.0	7.1	0.0
Permitted Queue Service Time (g_{ps}), s	2.9		0.0		0.2		0.1	
Time to First Blockage (g_f), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Service Time Before Blockage (g_{fs}), s								
Protected Right Saturation Flow (s_R), veh/h/ln								
Protected Right Effective Green Time (g_R), s								

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	1.557	0.00	1.557	0.00	2.107	0.00	2.107	0.00
Pedestrian F_s / F_{delay}	0.000	0.061	0.000	0.064	0.000	0.167	0.000	0.167
Pedestrian M_{corner} / M_{cw}								
Bicycle c_b / d_b	1507.56	4.55	1485.57	4.96	150.90	64.11	140.96	64.80
Bicycle F_w / F_v	-3.64	0.88	-3.64	1.38	-3.64	0.10	-3.64	0.18

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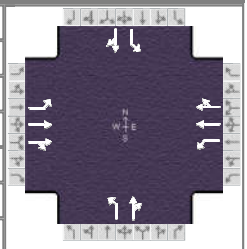
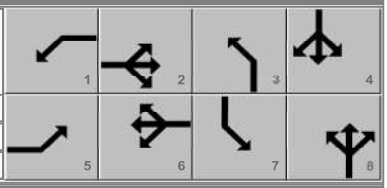
HCS7 Signalized Intersection Results Graphical Summary

General Information				Intersection Information	
Agency	GHA			Duration, h	0.25
Analyst	LMM	Analysis Date	Nov 9, 2017	Area Type	Other
Jurisdiction	DuDOT	Time Period	PM Peak Hour	PHF	0.94
Urban Street	Ferry Road	Analysis Year	2025 NoBuild	Analysis Period	1> 5:00
Intersection	Ferry Rd / River Rd	File Name	25NB_Ferry River_PM.xus		
Project Description	5244.900				

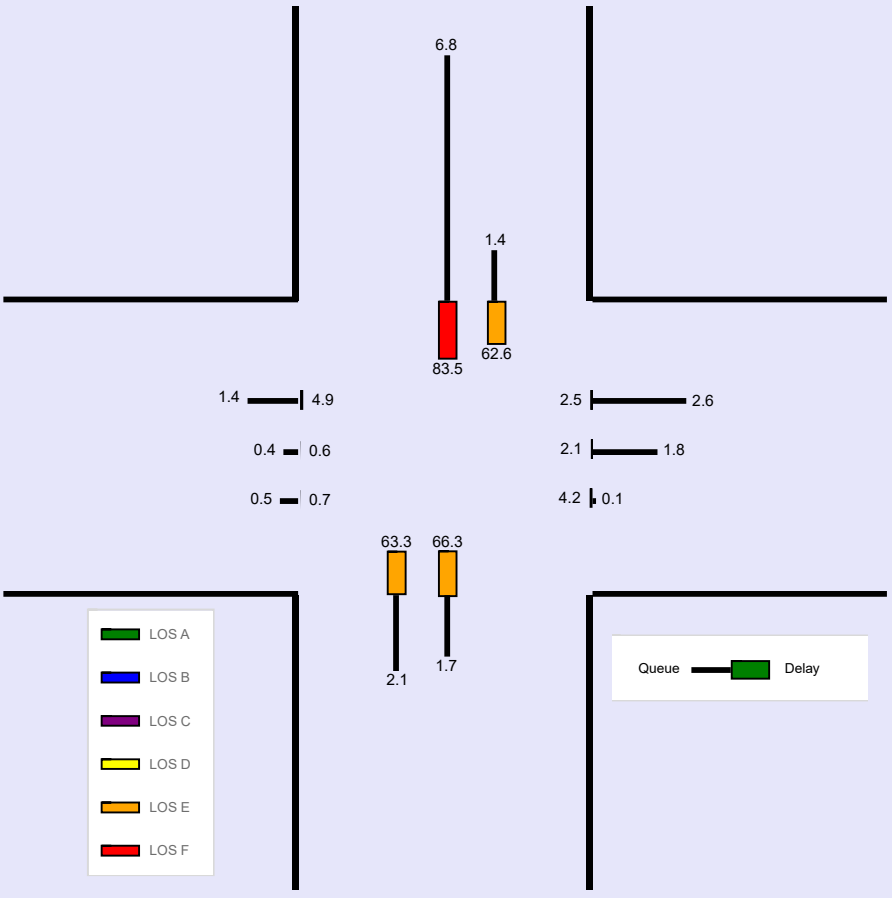


Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	108	889	2	4	1517	56	31	3	21	20	0	83

Signal Information					EB			WB			NB		
Cycle, s	150.0	Reference Phase	2										
Offset, s	0	Reference Point	Begin	Green	3.0	1.6		111.4	3.6	0.7	10.6		
Uncoordinated	No	Simult. Gap E/W	On	Yellow	3.5	0.0		4.5	3.5	0.0	4.5		
Force Mode	Fixed	Simult. Gap N/S	On	Red	0.0	0.0		1.5	0.0	0.0	1.5		



Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Back of Queue (*Q*), ft/ln (95 th percentile)	35.9	11.3	11.9	1.3	44.2	64.6	53.4	42.9		34	169.9	
Back of Queue (*Q*), veh/ln (95 th percentile)	1.4	0.4	0.5	0.1	1.8	2.6	2.1	1.7		1.4	6.8	
Queue Storage Ratio (*RQ*) (95 th percentile)	0.24	0.00	0.00	0.01	0.00	0.00	0.53	0.00		0.23	0.00	
Control Delay (*d*), s/veh	4.9	0.6	0.7	4.2	2.1	2.5	63.3	66.3		62.6	83.5	
Level of Service (LOS)	A	A	A	A	A	A	E	E		E	F	
Approach Delay, s/veh / LOS	1.1	A		2.3	A		64.6	E		79.4	E	
Intersection Delay, s/veh / LOS	6.0						A					



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--- Messages ---

No errors or warnings exist.

--- Comments ---

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HCS7 Two-Way Stop-Control Report

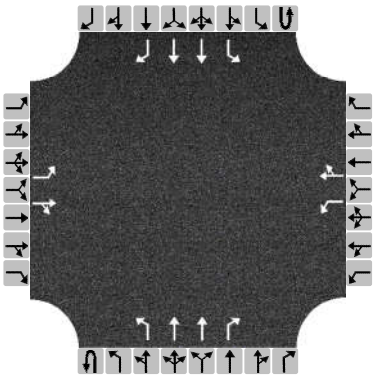
General Information

Analyst	LMM
Agency/Co.	GHA
Date Performed	11/9/2017
Analysis Year	2025
Time Analyzed	Total AM
Intersection Orientation	North-South
Project Description	5244.902

Site Information

Intersection	Winfield Rd/McCormick Ln
Jurisdiction	DuDOT
East/West Street	McCormick Lane
North/South Street	Winfield Road
Peak Hour Factor	0.91
Analysis Time Period (hrs)	0.25

Lanes



Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		1	1	0		1	1	0	0	1	2	1	0	1	2	1
Configuration		L		TR		L		TR		L	T	R		L	T	R
Volume, V (veh/h)		13	1	11		34	0	14		2	1106	11		2	1376	4
Percent Heavy Vehicles (%)		0	0	0		0	0	0		0				0		
Proportion Time Blocked																
Percent Grade (%)	0				0											
Right Turn Channelized	No				No				No				No			
Median Type/Storage	Left + Thru								1							

Critical and Follow-up Headways

Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		14		13		37		15		2				2		
Capacity, c (veh/h)		98		300		129		444		447				575		
v/c Ratio		0.14		0.04		0.29		0.03		0.00				0.00		
95% Queue Length, Q_{95} (veh)		0.5		0.1		1.1		0.1		0.0				0.0		
Control Delay (s/veh)		47.7		17.5		43.9		13.4		13.1				11.3		
Level of Service, LOS		E		C		E		B		B				B		
Approach Delay (s/veh)	33.2				35.1				0.0				0.0			
Approach LOS	D				E											

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HCS7 Two-Way Stop-Control Report

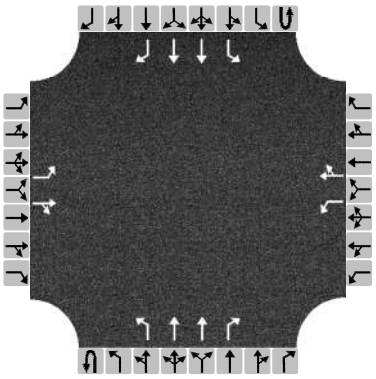
General Information

Analyst	LMM
Agency/Co.	GHA
Date Performed	11/9/2017
Analysis Year	2025
Time Analyzed	Total PM
Intersection Orientation	North-South
Project Description	5244.902

Site Information

Intersection	Winfield Rd/McCormick Ln
Jurisdiction	DuDOT
East/West Street	McCormick Lane
North/South Street	Winfield Road
Peak Hour Factor	0.97
Analysis Time Period (hrs)	0.25

Lanes



Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		1	1	0		1	1	0	0	1	2	1	0	1	2	1
Configuration		L		TR		L		TR		L	T	R		L	T	R
Volume, V (veh/h)		13	0	5		11	0	12		13	1413	32		12	1279	11
Percent Heavy Vehicles (%)		0	0	0		0	0	0		0				0		
Proportion Time Blocked																
Percent Grade (%)	0				0											
Right Turn Channelized	No				No				No				No			
Median Type/Storage	Left + Thru								1							

Critical and Follow-up Headways

Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		13		5		11		12		13				12		
Capacity, c (veh/h)		110		410		97		370		526				457		
v/c Ratio		0.12		0.01		0.11		0.03		0.02				0.03		
95% Queue Length, Q_{95} (veh)		0.4		0.0		0.4		0.1		0.1				0.1		
Control Delay (s/veh)		42.2		13.9		46.7		15.0		12.0				13.1		
Level of Service, LOS		E		B		E		C		B				B		
Approach Delay (s/veh)	34.3				30.2				0.1				0.1			
Approach LOS	D				D											

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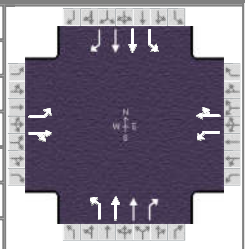
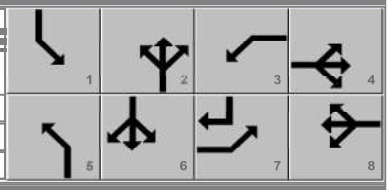
HCS7 Signalized Intersection Input Data

General Information				Intersection Information	
Agency	GHA			Duration, h	0.25
Analyst	LMM	Analysis Date	Nov 9, 2017	Area Type	Other
Jurisdiction	DuDOT	Time Period	AM Peak	PHF	0.97
Urban Street	Winfield Rd	Analysis Year	2025 Total	Analysis Period	1> 7:00
Intersection	Winfield Rd / Torch Pkwy	File Name	25T_Winfield_Torch_AM.xus		
Project Description	5244.900				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	107	5	41	1	5	4	138	1008	92	44	1250	127

Signal Information													
Cycle, s	130.0	Reference Phase	2										
Offset, s	0	Reference Point	Begin	Green	3.1	2.3	89.4	3.0	2.8	7.0			
Uncoordinated	No	Simult. Gap E/W	On	Yellow	3.5	0.0	4.5	3.5	3.5	4.5			
Force Mode	Fixed	Simult. Gap N/S	On	Red	0.0	0.0	1.5	0.0	0.0	1.5			



Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	107	5	41	1	5	4	138	1008	92	44	1250	127
Initial Queue (Q_b), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s_o), veh/h	1900	1900	1900	1900	1900	1900	1900	2000	1900	1900	2000	1900
Parking (N_m), man/h		None			None			None			None	
Heavy Vehicles (P_{HV}), %	0	0		0	0		0	1	1	0	2	2
Ped / Bike / RTOR, /h	0	0	0	0	0	0	0	0	0	0	0	0
Buses (N_b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (*AT*)	3	3	3	3	3	3	3	4	3	3	4	3
Upstream Filtering (*I*)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width (*W*), ft	12.0	12.0		12.0	12.0		12.0	12.0	12.0	12.0	12.0	12.0
Turn Bay Length, ft	120	0		150	0		470	0	115	90	0	125
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h	25	25	25	25	25	25	40	40	40	40	40	40

Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s	13.0	32.0	13.0	32.0	13.0	72.0	13.0	72.0
Yellow Change Interval (*Y*), s	3.5	4.5	3.5	4.5	3.5	4.5	3.5	4.5
Red Clearance Interval (R_c), s	0.0	1.5	0.0	1.5	0.0	1.5	0.0	1.5
Minimum Green (G_{min}), s	3	8	3	8	3	15	3	15
Start-Up Lost Time (*lt*), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (*e*), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Passage (*PT*), s	3.0	4.0	3.0	4.0	3.0	7.0	3.0	7.0
Recall Mode	Off	Off	Off	Off	Off	Min	Off	Min
Dual Entry	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Walk (*Walk*), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pedestrian Clearance Time (*PC*), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0	No	25	0	No	25	0	No	25	0	No	25
Walkway / Crosswalk Width / Length, ft	9.0	12	0	9.0	12	0	9.0	12	0	9.0	12	0
Street Width / Island / Curb	0	0	No	0	0	No	0	0	No	0	0	No
Width Outside / Bike Lane / Shoulder, ft	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50		No	0.50		No	0.50		No	0.50	

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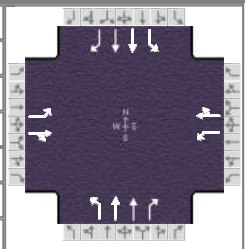
HCS7 Signalized Intersection Results Summary

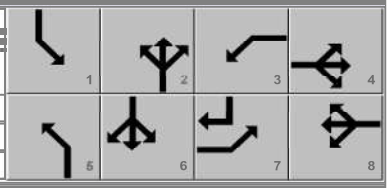
General Information				Intersection Information	
Agency	GHA			Duration, h	0.25
Analyst	LMM	Analysis Date	Nov 9, 2017	Area Type	Other
Jurisdiction	DuDOT	Time Period	AM Peak	PHF	0.97
Urban Street	Winfield Rd	Analysis Year	2025 Total	Analysis Period	1> 7:00
Intersection	Winfield Rd / Torch Pkwy	File Name	25T_Winfield_Torch_AM.xus		
Project Description	5244.900				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	107	5	41	1	5	4	138	1008	92	44	1250	127

Signal Information			
Cycle, s	130.0	Reference Phase	2
Offset, s	0	Reference Point	Begin
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	3.1	2.3	89.4	3.0	2.8	7.0						
Yellow	3.5	0.0	4.5	3.5	3.5	4.5						
Red	0.0	0.0	1.5	0.0	0.0	1.5						



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	7	4	3	8	5	2	1	6
Case Number	1.1	4.0	1.1	4.0	1.1	3.0	1.1	3.0
Phase Duration, s	12.7	19.3	6.5	13.0	8.8	97.7	6.6	95.4
Change Period, (*Y+R c*), s	3.5	6.0	3.5	6.0	3.5	6.0	3.5	6.0
Max Allow Headway (*MAH*), s	4.2	5.4	4.2	5.4	4.0	0.0	4.0	0.0
Queue Clearance Time (*g s*), s	9.3	5.5	2.1	2.7	4.9		3.0	
Green Extension Time (*g e*), s	0.0	0.2	0.0	0.2	0.4	0.0	0.1	0.0
Phase Call Probability	1.00	1.00	0.99	0.88	1.00		1.00	
Max Out Probability	1.00	0.00	0.00	0.00	0.00		0.00	

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (*v*), veh/h	110	47		1	9		142	1039	95	45	1289	131
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1810	1637		1810	1759		1810	1889	1598	1810	1874	1585
Queue Service Time (*g s*), s	7.3	3.5		0.1	0.7		2.9	3.4	2.4	1.0	6.8	2.8
Cycle Queue Clearance Time (*g c*), s	7.3	3.5		0.1	0.7		2.9	3.4	2.4	1.0	6.8	2.8
Green Ratio (*g/C*)	0.14	0.10		0.08	0.05		0.73	0.71	0.71	0.71	0.69	0.76
Capacity (*c*), veh/h	254	167		171	95		406	2665	1127	464	2578	1203
Volume-to-Capacity Ratio (*X*)	0.435	0.284		0.006	0.098		0.350	0.390	0.084	0.098	0.500	0.109
Back of Queue (*Q*), ft/ln (95 th percentile)	153.5	68.1		1.5	14		45.7	43.8	35.3	15.3	79.4	37.7
Back of Queue (*Q*), veh/ln (95 th percentile)	6.1	2.7		0.1	0.6		1.8	1.7	1.4	0.6	3.1	1.5
Queue Storage Ratio (*RQ*) (95 th percentile)	1.28	0.00		0.01	0.00		0.10	0.00	0.31	0.17	0.00	0.30
Uniform Delay (*d 1*), s/veh	51.2	54.0		55.4	58.5		5.3	1.2	6.0	5.6	2.0	4.1
Incremental Delay (*d 2*), s/veh	1.2	1.3		0.0	0.6		0.5	0.4	0.1	0.1	0.7	0.2
Initial Queue Delay (*d 3*), s/veh	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (*d*), s/veh	52.4	55.3		55.5	59.1		5.8	1.7	6.1	5.7	2.7	4.3
Level of Service (LOS)	D	E		E	E		A	A	A	A	A	A
Approach Delay, s/veh / LOS	53.2	D		58.8	E		2.5	A		2.9	A	
Intersection Delay, s/veh / LOS	5.6						A					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	3.0	C	3.0	C	2.2	B	2.2	B
Bicycle LOS Score / LOS	0.7	A	0.5	A	1.5	B	1.7	B

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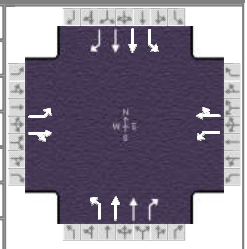
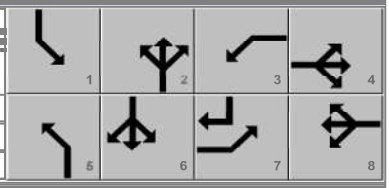
HCS7 Signalized Intersection Intermediate Values

General Information				Intersection Information	
Agency	GHA			Duration, h	0.25
Analyst	LMM	Analysis Date	Nov 9, 2017	Area Type	Other
Jurisdiction	DuDOT	Time Period	AM Peak	PHF	0.97
Urban Street	Winfield Rd	Analysis Year	2025 Total	Analysis Period	1> 7:00
Intersection	Winfield Rd / Torch Pkwy	File Name	25T_Winfield_Torch_AM.xus		
Project Description	5244.900				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	107	5	41	1	5	4	138	1008	92	44	1250	127

Signal Information			
Cycle, s	130.0	Reference Phase	2
Offset, s	0	Reference Point	Begin
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	3.1	2.3		89.4	3.0	2.8		7.0				
Yellow	3.5	0.0		4.5	3.5	3.5		4.5				
Red	0.0	0.0		1.5	0.0	0.0		1.5				

Saturation Flow / Delay	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles and Grade Factor (f_{HVg})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.992	0.992	1.000	0.984	0.984
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.952	1.000	1.000	0.952	1.000
Left-Turn Adjustment Factor (f_{LT})	0.952	0.000		0.952	0.000		0.952	0.000		0.952	0.000	
Right-Turn Adjustment Factor (f_{RT})		0.862	0.862		0.926	0.926		0.000	0.847		0.000	0.847
Left-Turn Pedestrian Adjustment Factor (f_{Lpb})	1.000			1.000			1.000			1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{Rpb})			1.000			1.000			1.000			1.000
Work Zone Adjustment Factor (f_{wz})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
DDI Factor (f_{DDI})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Movement Saturation Flow Rate (s), veh/h	1810	178	1459	1810	977	782	1810	3778	1598	1810	3749	1585
Proportion of Vehicles Arriving on Green (P)	0.07	0.10	0.10	0.02	0.05	0.05	0.04	0.94	0.71	0.02	0.92	0.69
Incremental Delay Factor (k)	0.11	0.15		0.11	0.15		0.11	0.50	0.50	0.11	0.50	0.50

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)	3.5	6.0	3.5	6.0	3.5	6.0	3.5	6.0
Green Ratio (g/C)	0.14	0.10	0.08	0.05	0.73	0.71	0.71	0.69
Permitted Saturation Flow Rate (s_p), veh/h/ln	1428	0	1380	0	435	0	552	0
Shared Saturation Flow Rate (s_{sh}), veh/h/ln								
Permitted Effective Green Time (g_p), s	9.0	0.0	7.0	0.0	90.2	0.0	89.4	0.0
Permitted Service Time (g_u), s	6.4	0.0	7.0	0.0	82.5	0.0	86.3	0.0
Permitted Queue Service Time (g_{ps}), s	0.2		0.0		3.7		0.3	
Time to First Blockage (g_f), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Service Time Before Blockage (g_{fs}), s								
Protected Right Saturation Flow (s_R), veh/h/ln						0		1585
Protected Right Effective Green Time (g_R), s						0.0		9.2

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	2.224	0.00	2.224	0.00	1.557	0.00	1.557	0.00
Pedestrian F_s / F_{delay}	0.000	0.159	0.000	0.163	0.000	0.069	0.000	0.074
Pedestrian M_{corner} / M_{cw}								
Bicycle c_b / d_b	204.25	52.40	107.78	58.18	1410.81	5.64	1375.63	6.33
Bicycle F_w / F_v	-3.64	0.26	-3.64	0.02	-3.64	1.05	-3.64	1.21

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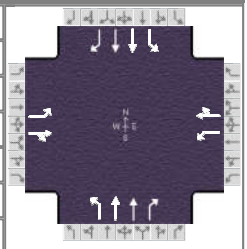
HCS7 Signalized Intersection Results Graphical Summary

General Information				Intersection Information	
Agency	GHA			Duration, h	0.25
Analyst	LMM	Analysis Date	Nov 9, 2017	Area Type	Other
Jurisdiction	DuDOT	Time Period	AM Peak	PHF	0.97
Urban Street	Winfield Rd	Analysis Year	2025 Total	Analysis Period	1> 7:00
Intersection	Winfield Rd / Torch Pkwy	File Name	25T_Winfield_Torch_AM.xus		
Project Description	5244.900				

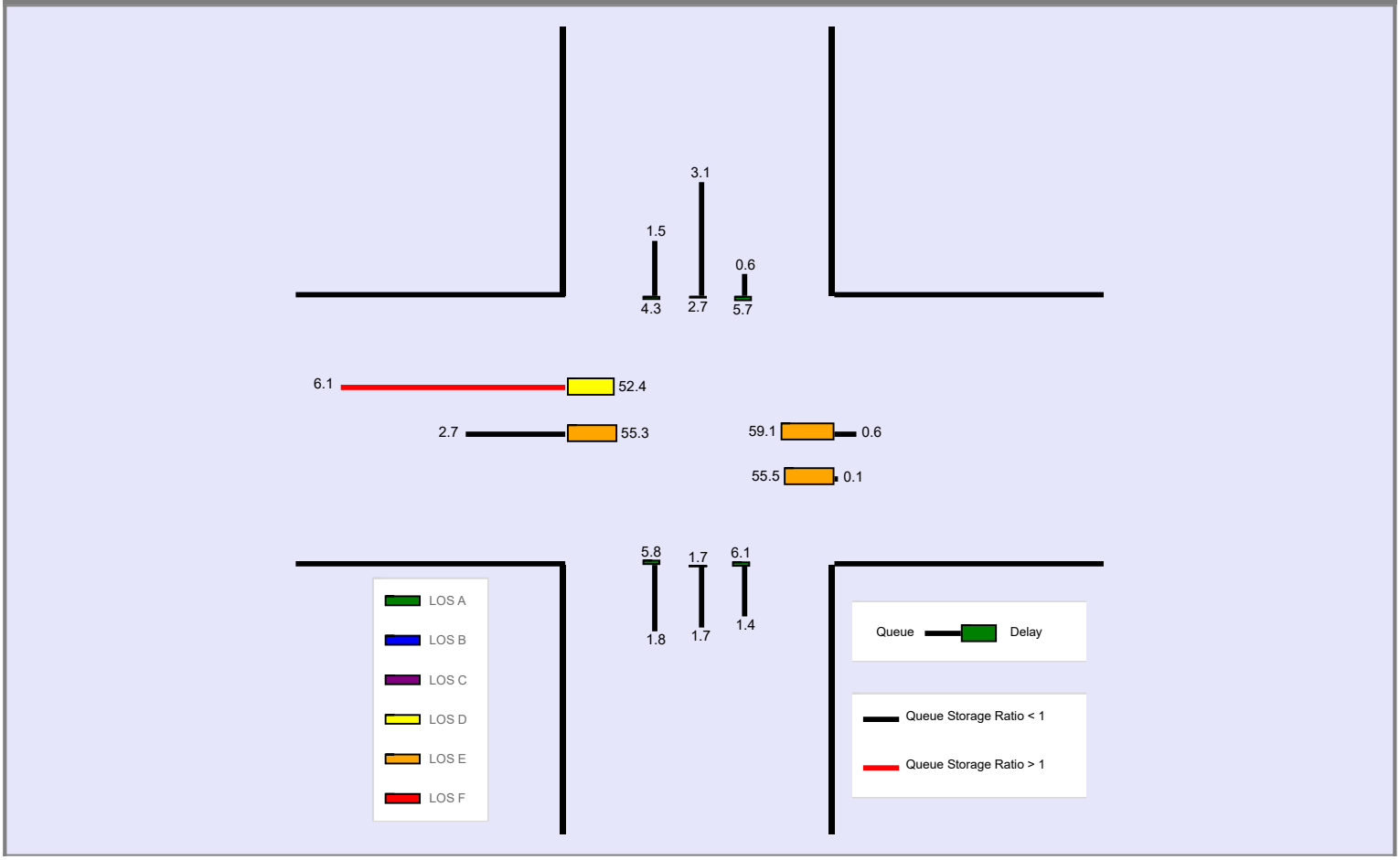


Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	107	5	41	1	5	4	138	1008	92	44	1250	127

Signal Information			
Cycle, s	130.0	Reference Phase	2
Offset, s	0	Reference Point	Begin
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	3.1	2.3	89.4	3.0	2.8	7.0	1	2	3	4		
Yellow	3.5	0.0	4.5	3.5	3.5	4.5	5	6	7	8		
Red	0.0	0.0	1.5	0.0	0.0	1.5						

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Back of Queue (*Q*), ft/ln (95 th percentile)	153.5	68.1		1.5	14		45.7	43.8	35.3	15.3	79.4	37.7
Back of Queue (*Q*), veh/ln (95 th percentile)	6.1	2.7		0.1	0.6		1.8	1.7	1.4	0.6	3.1	1.5
Queue Storage Ratio (*RQ*) (95 th percentile)	1.28	0.00		0.01	0.00		0.10	0.00	0.31	0.17	0.00	0.30
Control Delay (*d*), s/veh	52.4	55.3		55.5	59.1		5.8	1.7	6.1	5.7	2.7	4.3
Level of Service (LOS)	D	E		E	E		A	A	A	A	A	A
Approach Delay, s/veh / LOS	53.2	D		58.8	E		2.5	A		2.9	A	
Intersection Delay, s/veh / LOS	5.6						A					



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--- Messages ---

WARNING: Since queue spillover from turn lanes and spillback into upstream intersections is not accounted for in the HCM procedures, use of a simulation tool may be advised in situations where the Queue Storage Ratio exceeds 1.0.

--- Comments ---

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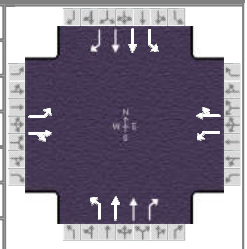
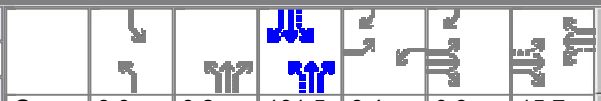
HCS7 Signalized Intersection Input Data

General Information				Intersection Information	
Agency	GHA			Duration, h	0.25
Analyst	LMM	Analysis Date	Nov 9, 2017	Area Type	Other
Jurisdiction	DuDOT	Time Period	PM Peak	PHF	0.94
Urban Street	Winfield Rd	Analysis Year	2025 Total	Analysis Period	1> 5:00
Intersection	Winfield Rd / Torch Pkwy	File Name	25T_Winfield_Torch_PM.xus		
Project Description	5244.900				

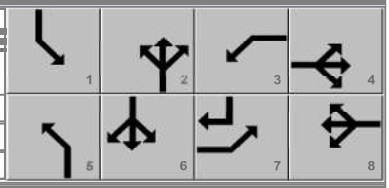


Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	137	5	171	56	5	58	43	1263	5	1	1206	88

Signal Information			
Cycle, s	150.0	Reference Phase	2
Offset, s	0	Reference Point	Begin
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	3.0	0.2	101.5	6.4	0.6	15.7
Yellow	3.5	0.0	4.5	3.5	3.5	4.5
Red	0.0	0.0	1.5	0.0	0.0	1.5



Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	137	5	171	56	5	58	43	1263	5	1	1206	88
Initial Queue (Q_b), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s_o), veh/h	1900	1900	1900	1900	1900	1900	1900	2000	1900	1900	2000	1900
Parking (N_m), man/h		None			None			None			None	
Heavy Vehicles (P_{HV}), %	0	0		0	0		0	1	0	0	1	0
Ped / Bike / RTOR, /h	0	0	0	0	0	0	0	0	0	0	0	0
Buses (N_b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (*AT*)	3	3	3	3	3	3	3	4	3	3	4	3
Upstream Filtering (*I*)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width (*W*), ft	12.0	12.0		12.0	12.0		12.0	12.0	12.0	12.0	12.0	12.0
Turn Bay Length, ft	120	0		150	0		470	0	115	90	0	125
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h	25	25	25	25	25	25	40	40	40	40	40	40

Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s	14.0	28.0	14.0	28.0	14.0	94.0	14.0	94.0
Yellow Change Interval (*Y*), s	3.5	4.5	3.5	4.5	3.5	4.5	3.5	4.5
Red Clearance Interval (R_c), s	0.0	1.5	0.0	1.5	0.0	1.5	0.0	1.5
Minimum Green (G_{min}), s	3	8	3	8	3	15	3	15
Start-Up Lost Time (*lt*), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (*e*), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Passage (*PT*), s	3.0	4.0	3.0	4.0	3.0	7.0	3.0	7.0
Recall Mode	Off	Off	Off	Off	Off	Min	Off	Min
Dual Entry	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Walk (*Walk*), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pedestrian Clearance Time (*PC*), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0	No	25	0	No	25	0	No	25	0	No	25
Walkway / Crosswalk Width / Length, ft	9.0	12	0	9.0	12	0	9.0	12	0	9.0	12	0
Street Width / Island / Curb	0	0	No	0	0	No	0	0	No	0	0	No
Width Outside / Bike Lane / Shoulder, ft	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50		No	0.50		No	0.50		No	0.50	

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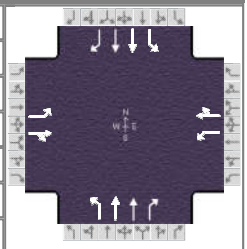
HCS7 Signalized Intersection Results Summary

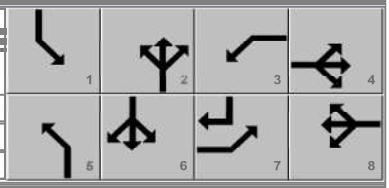
General Information				Intersection Information	
Agency	GHA			Duration, h	0.25
Analyst	LMM	Analysis Date	Nov 9, 2017	Area Type	Other
Jurisdiction	DuDOT	Time Period	PM Peak	PHF	0.94
Urban Street	Winfield Rd	Analysis Year	2025 Total	Analysis Period	1> 5:00
Intersection	Winfield Rd / Torch Pkwy	File Name	25T_Winfield_Torch_PM.xus		
Project Description	5244.900				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	137	5	171	56	5	58	43	1263	5	1	1206	88

Signal Information			
Cycle, s	150.0	Reference Phase	2
Offset, s	0	Reference Point	Begin
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	3.0	0.2	101.5	6.4	0.6	15.7						
Yellow	3.5	0.0	4.5	3.5	3.5	4.5						
Red	0.0	0.0	1.5	0.0	0.0	1.5						



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	7	4	3	8	5	2	1	6
Case Number	1.1	4.0	1.1	4.0	1.1	3.0	1.1	3.0
Phase Duration, s	14.0	25.8	9.9	21.7	6.7	107.8	6.5	107.5
Change Period, ($Y+R_c$), s	3.5	6.0	3.5	6.0	3.5	6.0	3.5	6.0
Max Allow Headway (*MAH*), s	4.2	5.4	4.2	5.4	4.0	0.0	4.0	0.0
Queue Clearance Time (g_s), s	12.5	19.0	6.4	7.8	3.2		2.0	
Green Extension Time (g_e), s	0.0	0.8	0.0	1.2	0.1	0.0	0.0	0.0
Phase Call Probability	1.00	1.00	1.00	1.00	1.00		1.00	
Max Out Probability	1.00	0.50	1.00	0.03	0.00		0.00	

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (*v*), veh/h	146	187		60	67		46	1344	5	1	1283	94
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1810	1617		1810	1630		1810	1889	1610	1810	1889	1610
Queue Service Time (g_s), s	10.5	17.0		4.4	5.8		1.2	9.7	0.2	0.0	9.1	2.3
Cycle Queue Clearance Time (g_c), s	10.5	17.0		4.4	5.8		1.2	9.7	0.2	0.0	9.1	2.3
Green Ratio (*g/C*)	0.19	0.13		0.15	0.10		0.70	0.68	0.68	0.70	0.68	0.75
Capacity (*c*), veh/h	265	214		131	171		357	2564	1093	332	2558	1203
Volume-to-Capacity Ratio (*X*)	0.551	0.876		0.453	0.392		0.128	0.524	0.005	0.003	0.502	0.078
Back of Queue (*Q*), ft/ln (95 th percentile)	220.4	329.9		95	113.3		20.1	113.8	2.5	0.5	110.1	34.1
Back of Queue (*Q*), veh/ln (95 th percentile)	8.8	13.2		3.8	4.5		0.8	4.5	0.1	0.0	4.4	1.4
Queue Storage Ratio (*RQ*) (95 th percentile)	1.84	0.00		0.63	0.00		0.04	0.00	0.02	0.01	0.00	0.27
Uniform Delay (d_1), s/veh	54.1	63.9		57.2	62.7		7.3	2.8	7.8	7.3	2.8	5.1
Incremental Delay (d_2), s/veh	2.4	22.6		2.4	2.1		0.2	0.8	0.0	0.0	0.7	0.1
Initial Queue Delay (d_3), s/veh	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (*d*), s/veh	56.5	86.5		59.6	64.8		7.5	3.5	7.8	7.3	3.5	5.2
Level of Service (LOS)	E	F		E	E		A	A	A	A	A	A
Approach Delay, s/veh / LOS	73.4	E		62.3	E		3.7	A		3.6	A	
Intersection Delay, s/veh / LOS	13.1						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	3.0	C	3.0	C	2.2	B	2.2	B
Bicycle LOS Score / LOS	1.0	A	0.7	A	1.6	B	1.6	B

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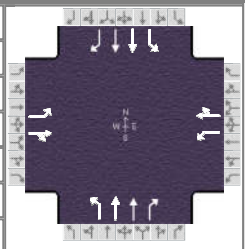
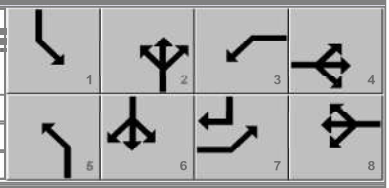
HCS7 Signalized Intersection Intermediate Values

General Information				Intersection Information	
Agency	GHA			Duration, h	0.25
Analyst	LMM	Analysis Date	Nov 9, 2017	Area Type	Other
Jurisdiction	DuDOT	Time Period	PM Peak	PHF	0.94
Urban Street	Winfield Rd	Analysis Year	2025 Total	Analysis Period	1> 5:00
Intersection	Winfield Rd / Torch Pkwy	File Name	25T_Winfield_Torch_PM.xus		
Project Description	5244.900				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	137	5	171	56	5	58	43	1263	5	1	1206	88

Signal Information			
Cycle, s	150.0	Reference Phase	2
Offset, s	0	Reference Point	Begin
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	3.0	0.2		101.5	6.4	0.6	15.7					
Yellow	3.5	0.0		4.5	3.5	3.5	4.5					
Red	0.0	0.0		1.5	0.0	0.0	1.5					

Saturation Flow / Delay	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles and Grade Factor (f_{HVg})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.992	1.000	1.000	0.992	1.000
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.952	1.000	1.000	0.952	1.000
Left-Turn Adjustment Factor (f_{LT})	0.952	0.000		0.952	0.000		0.952	0.000		0.952	0.000	
Right-Turn Adjustment Factor (f_{RT})		0.851	0.851		0.858	0.858		0.000	0.847		0.000	0.847
Left-Turn Pedestrian Adjustment Factor (f_{Lpb})	1.000			1.000			1.000			1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{Rpb})			1.000			1.000			1.000			1.000
Work Zone Adjustment Factor (f_{wz})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
DDI Factor (f_{DDI})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Movement Saturation Flow Rate (s), veh/h	1810	46	1571	1810	129	1501	1810	3778	1610	1810	3778	1610
Proportion of Vehicles Arriving on Green (P)	0.07	0.13	0.13	0.04	0.10	0.10	0.02	0.90	0.68	0.02	0.90	0.68
Incremental Delay Factor (k)	0.15	0.27		0.11	0.15		0.11	0.50	0.50	0.11	0.50	0.50

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)	3.5	6.0	3.5	6.0	3.5	6.0	3.5	6.0
Green Ratio (g/C)	0.19	0.13	0.15	0.10	0.70	0.68	0.70	0.68
Permitted Saturation Flow Rate (s_p), veh/h/ln	1355	0	1215	0	438	0	413	0
Shared Saturation Flow Rate (s_{sh}), veh/h/ln								
Permitted Effective Green Time (g_p), s	17.7	0.0	15.7	0.0	101.5	0.0	101.5	0.0
Permitted Service Time (g_u), s	10.0	0.0	0.8	0.0	92.5	0.0	90.1	0.0
Permitted Queue Service Time (g_{ps}), s	1.2		0.8		1.1		0.0	
Time to First Blockage (g_f), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Service Time Before Blockage (g_{fs}), s								
Protected Right Saturation Flow (s_R), veh/h/ln						0		1610
Protected Right Effective Green Time (g_R), s						0.0		10.5

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	2.224	0.00	2.224	0.00	1.557	0.00	1.557	0.00
Pedestrian F_s / F_{delay}	0.000	0.162	0.000	0.164	0.000	0.082	0.000	0.083
Pedestrian M_{corner} / M_{cw}								
Bicycle c_b / d_b	264.43	56.48	209.66	60.10	1357.01	7.75	1353.87	7.83
Bicycle F_w / F_v	-3.64	0.55	-3.64	0.21	-3.64	1.15	-3.64	1.14

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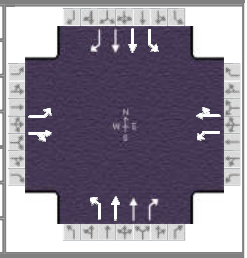
HCS7 Signalized Intersection Results Graphical Summary

General Information				Intersection Information	
Agency	GHA			Duration, h	0.25
Analyst	LMM	Analysis Date	Nov 9, 2017	Area Type	Other
Jurisdiction	DuDOT	Time Period	PM Peak	PHF	0.94
Urban Street	Winfield Rd	Analysis Year	2025 Total	Analysis Period	1> 5:00
Intersection	Winfield Rd / Torch Pkwy	File Name	25T_Winfield_Torch_PM.xus		
Project Description	5244.900				

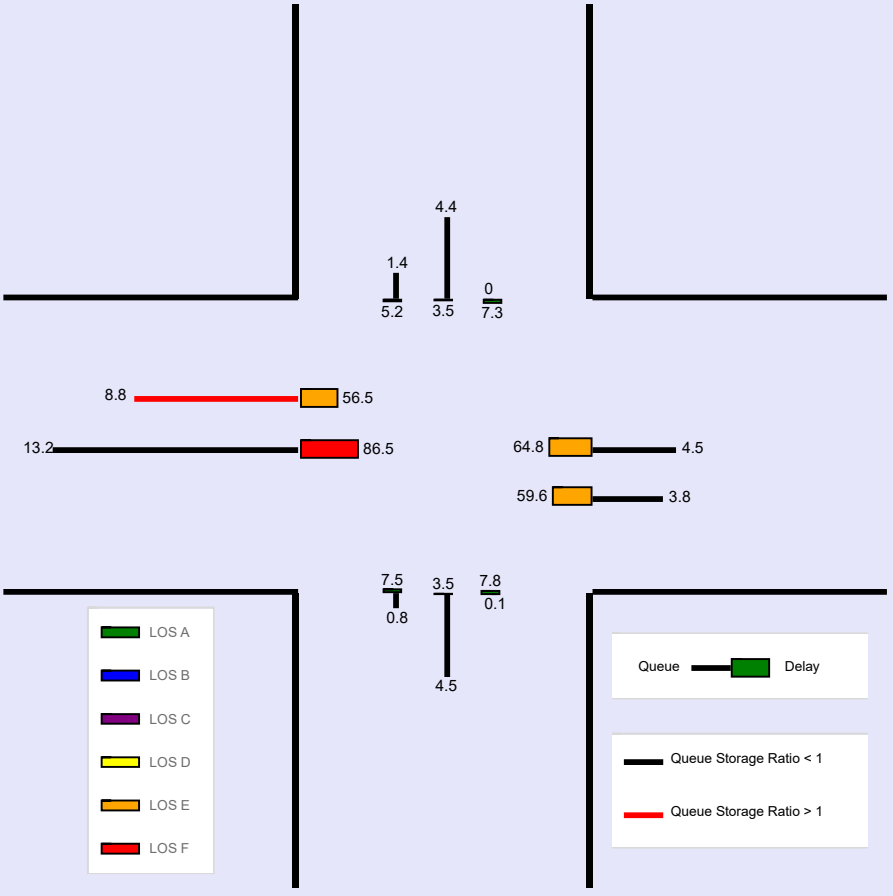


Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	137	5	171	56	5	58	43	1263	5	1	1206	88

Signal Information			
Cycle, s	150.0	Reference Phase	2
Offset, s	0	Reference Point	Begin
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	3.0	0.2	101.5	6.4	0.6	15.7	1	2	3	4		
Yellow	3.5	0.0	4.5	3.5	3.5	4.5	5	6	7	8		
Red	0.0	0.0	1.5	0.0	0.0	1.5						

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Back of Queue (*Q*), ft/ln (95 th percentile)	220.4	329.9		95	113.3		20.1	113.8	2.5	0.5	110.1	34.1
Back of Queue (*Q*), veh/ln (95 th percentile)	8.8	13.2		3.8	4.5		0.8	4.5	0.1	0.0	4.4	1.4
Queue Storage Ratio (*RQ*) (95 th percentile)	1.84	0.00		0.63	0.00		0.04	0.00	0.02	0.01	0.00	0.27
Control Delay (*d*), s/veh	56.5	86.5		59.6	64.8		7.5	3.5	7.8	7.3	3.5	5.2
Level of Service (LOS)	E	F		E	E		A	A	A	A	A	A
Approach Delay, s/veh / LOS	73.4	E		62.3	E		3.7	A		3.6	A	
Intersection Delay, s/veh / LOS	13.1						B					



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--- Messages ---

WARNING: Since queue spillover from turn lanes and spillback into upstream intersections is not accounted for in the HCM procedures, use of a simulation tool may be advised in situations where the Queue Storage Ratio exceeds 1.0.

--- Comments ---

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HCS7 Two-Way Stop-Control Report

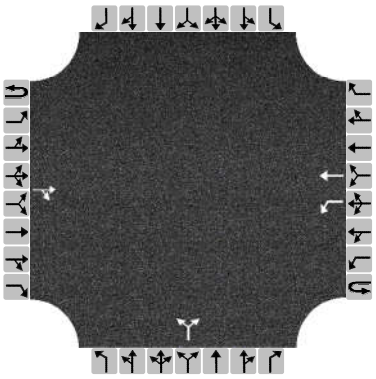
General Information

Analyst	LMM
Agency/Co.	GHA
Date Performed	11/9/2017
Analysis Year	2025
Time Analyzed	Total AM
Intersection Orientation	East-West
Project Description	5244.902

Site Information

Intersection	Torch Pkwy / Office E
Jurisdiction	Local
East/West Street	Torch Parkway
North/South Street	office East
Peak Hour Factor	0.86
Analysis Time Period (hrs)	0.25

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	1	1	0		0	1	0		0	0	0
Configuration				TR		L	T				LR					
Volume, V (veh/h)			141	0		176	89			0		7				
Percent Heavy Vehicles (%)						0				0		0				
Proportion Time Blocked																
Percent Grade (%)										0						
Right Turn Channelized		No				No				No				No		
Median Type/Storage			Undivided													

Critical and Follow-up Headways

Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						205					8					
Capacity, c (veh/h)						1427					886					
v/c Ratio						0.14					0.01					
95% Queue Length, Q_{95} (veh)						0.5					0.0					
Control Delay (s/veh)						7.9					9.1					
Level of Service, LOS						A					A					
Approach Delay (s/veh)						5.3					9.1					
Approach LOS											A					

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HCS7 Two-Way Stop-Control Report

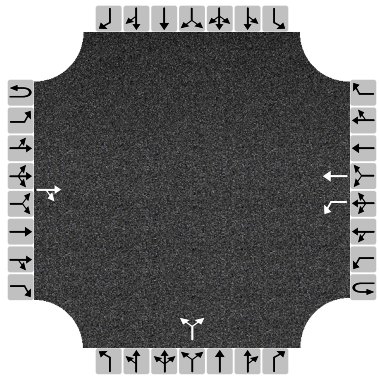
General Information

Analyst	LMM
Agency/Co.	GHA
Date Performed	11/9/2017
Analysis Year	2025
Time Analyzed	Total PM
Intersection Orientation	East-West
Project Description	5244.902

Site Information

Intersection	Torch Pkwy / Office E
Jurisdiction	Local
East/West Street	Torch Parkway
North/South Street	office East
Peak Hour Factor	0.73
Analysis Time Period (hrs)	0.25

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	1	1	0		0	1	0		0	0	0
Configuration				TR		L	T				LR					
Volume, V (veh/h)			114	0		19	112			1		194				
Percent Heavy Vehicles (%)						0				0		0				
Proportion Time Blocked																
Percent Grade (%)										0						
Right Turn Channelized		No				No				No				No		
Median Type/Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						26					267					
Capacity, c (veh/h)						1437					894					
v/c Ratio						0.02					0.30					
95% Queue Length, Q_{95} (veh)						0.1					1.3					
Control Delay (s/veh)						7.6					10.7					
Level of Service, LOS						A					B					
Approach Delay (s/veh)						1.1					10.7					
Approach LOS											B					

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HCS7 Two-Way Stop-Control Report

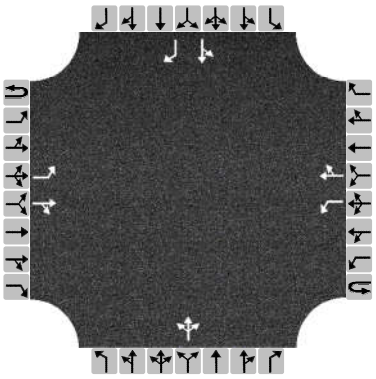
General Information

Analyst	LMM
Agency/Co.	GHA
Date Performed	11/9/2017
Analysis Year	2025
Time Analyzed	Total AM
Intersection Orientation	East-West
Project Description	5244.902

Site Information

Intersection	Torch Pkwy/Kline/Office W
Jurisdiction	Local
East/West Street	Torch Parkway
North/South Street	Office West/Kline Circle
Peak Hour Factor	0.73
Analysis Time Period (hrs)	0.25

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	1	1	0	0	1	1	0		0	1	0		0	1	1
Configuration		L		TR		L		TR			LTR			LT		R
Volume, V (veh/h)		1	118	1		1	80	8		1	0	2		21	1	1
Percent Heavy Vehicles (%)		0				0				0	0	0		0	0	0
Proportion Time Blocked																
Percent Grade (%)									0				0			
Right Turn Channelized	No				No				No				No			
Median Type/Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		1				1					4			30		1
Capacity, c (veh/h)		1479				1428					822			668		942
v/c Ratio		0.00				0.00					0.00			0.04		0.00
95% Queue Length, Q_{95} (veh)		0.0				0.0					0.0			0.1		0.0
Control Delay (s/veh)		7.4				7.5					9.4			10.6		8.8
Level of Service, LOS		A				A					A			B		A
Approach Delay (s/veh)	0.0				0.1				9.4				10.6			
Approach LOS									A				B			

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HCS7 Two-Way Stop-Control Report

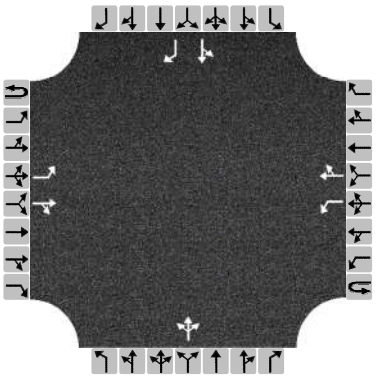
General Information

Analyst	LMM
Agency/Co.	GHA
Date Performed	11/9/2017
Analysis Year	2025
Time Analyzed	Total PM
Intersection Orientation	East-West
Project Description	5244.902

Site Information

Intersection	Torch Pkwy/Kline/Office W
Jurisdiction	Local
East/West Street	Torch Parkway
North/South Street	Office West/Kline Circle
Peak Hour Factor	0.78
Analysis Time Period (hrs)	0.25

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	1	1	0	0	1	1	0		0	1	0		0	1	1
Configuration		L		TR		L		TR			LTR			LT		R
Volume, V (veh/h)		1	94	1		1	104	9		1	0	13		7	0	1
Percent Heavy Vehicles (%)		0				0				0	0	0		0	0	0
Proportion Time Blocked																
Percent Grade (%)									0				0			
Right Turn Channelized	No				No				No				No			
Median Type/Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		1				1					18			9		1
Capacity, c (veh/h)		1450				1478					917			671		915
v/c Ratio		0.00				0.00					0.02			0.01		0.00
95% Queue Length, Q_{95} (veh)		0.0				0.0					0.1			0.0		0.0
Control Delay (s/veh)		7.5				7.4					9.0			10.4		8.9
Level of Service, LOS		A				A					A			B		A
Approach Delay (s/veh)	0.1				0.1				9.0				10.3			
Approach LOS									A				B			

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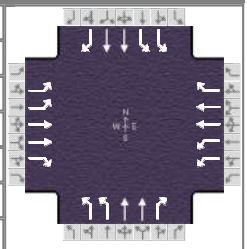
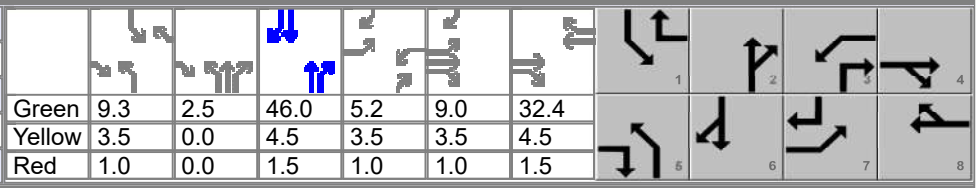
HCS7 Signalized Intersection Input Data

General Information				Intersection Information	
Agency	GHA			Duration, h	0.25
Analyst	LMM	Analysis Date	Nov 9, 2017	Area Type	Other
Jurisdiction	DuDOT	Time Period	AM Peak	PHF	0.95
Urban Street	Winfield Rd	Analysis Year	2025 Total	Analysis Period	1> 7:00
Intersection	Winfield Rd / Ferry Rd	File Name	25T_Winfield Ferry_AM.xus		
Project Description	5244.902				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	401	975	162	86	428	56	444	781	296	178	804	310

Signal Information			
Cycle, s	130.0	Reference Phase	2
Offset, s	0	Reference Point	Begin
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	9.3	2.5		46.0	5.2	9.0	32.4					
Yellow	3.5	0.0		4.5	3.5	3.5	4.5					
Red	1.0	0.0		1.5	1.0	1.0	1.5					

Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	401	975	162	86	428	56	444	781	296	178	804	310
Initial Queue (Q_b), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s_o), veh/h	1900	2000	1900	1900	2000	1900	1900	2000	1900	1900	2000	1900
Parking (N_m), man/h		None			None			None			None	
Heavy Vehicles (P_{HV}), %	1	1	1	1	2	1	1	1	1	2	2	2
Ped / Bike / RTOR, /h	0	0	0	0	0	0	0	0	0	0	0	0
Buses (N_b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (*AT*)	3	4	3	3	4	3	3	4	3	3	4	3
Upstream Filtering (*I*)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width (*W*), ft	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0
Turn Bay Length, ft	185	0	515	480	0	175	435	0	550	160	0	180
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h	40	40	40	40	40	40	40	40	40	40	40	40

Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s	35.0	47.0	15.0	27.0	16.0	45.0	23.0	52.0
Yellow Change Interval (*Y*), s	3.5	4.5	3.5	4.5	3.5	4.5	3.5	4.5
Red Clearance Interval (R_c), s	1.0	1.5	1.0	1.5	1.0	1.5	1.0	1.5
Minimum Green (G_{min}), s	3	15	3	15	3	15	3	15
Start-Up Lost Time (*lt*), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (*e*), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Passage (*PT*), s	3.0	7.0	3.0	7.0	3.0	7.0	3.0	7.0
Recall Mode	Off	Off	Off	Off	Off	Min	Off	Min
Dual Entry	No	Yes	No	Yes	No	Yes	No	Yes
Walk (*Walk*), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pedestrian Clearance Time (*PC*), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0	No	25	0	No	25	0	No	25	0	No	25
Walkway / Crosswalk Width / Length, ft	9.0	12	0	9.0	12	0	9.0	12	0	9.0	12	0
Street Width / Island / Curb	0	0	No	0	0	No	0	0	No	0	0	No
Width Outside / Bike Lane / Shoulder, ft	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50		No	0.50		No	0.50		No	0.50	

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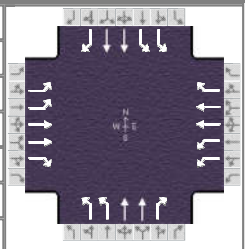
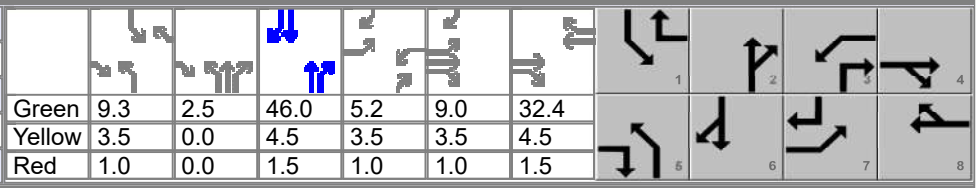
HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	GHA			Duration, h	0.25
Analyst	LMM	Analysis Date	Nov 9, 2017	Area Type	Other
Jurisdiction	DuDOT	Time Period	AM Peak	PHF	0.95
Urban Street	Winfield Rd	Analysis Year	2025 Total	Analysis Period	1> 7:00
Intersection	Winfield Rd / Ferry Rd	File Name	25T_Winfield Ferry_AM.xus		
Project Description	5244.902				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	401	975	162	86	428	56	444	781	296	178	804	310

Signal Information			
Cycle, s	130.0	Reference Phase	2
Offset, s	0	Reference Point	Begin
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	9.3	2.5	46.0	5.2	9.0	32.4
Yellow	3.5	0.0	4.5	3.5	3.5	4.5
Red	1.0	0.0	1.5	1.0	1.0	1.5

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	7	4	3	8	5	2	1	6
Case Number	2.0	3.0	2.0	3.0	2.0	3.0	2.0	3.0
Phase Duration, s	23.2	52.0	9.7	38.4	16.3	54.5	13.8	52.0
Change Period, ($Y+R_c$), s	4.5	6.0	4.5	6.0	4.5	6.0	4.5	6.0
Max Allow Headway (*MAH*), s	4.0	11.1	4.0	11.1	4.0	0.0	4.0	0.0
Queue Clearance Time (g_s), s	17.3	31.3	5.3	14.4	13.8		8.9	
Green Extension Time (g_e), s	1.4	14.7	0.1	17.9	0.0	0.0	0.4	0.0
Phase Call Probability	1.00	1.00	0.96	1.00	1.00		1.00	
Max Out Probability	0.01	0.99	0.26	0.99	1.00		0.01	

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (*v*), veh/h	422	1026	171	91	451	59	467	822	312	187	846	326
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1743	1889	1598	1743	1874	1598	1743	1889	1598	1730	1874	1585
Queue Service Time (g_s), s	15.3	29.3	8.6	3.3	12.4	3.4	11.8	20.0	18.5	6.9	22.2	16.9
Cycle Queue Clearance Time (g_c), s	15.3	29.3	8.6	3.3	12.4	3.4	11.8	20.0	18.5	6.9	22.2	16.9
Green Ratio (*g/C*)	0.14	0.35	0.44	0.04	0.25	0.32	0.09	0.37	0.41	0.07	0.35	0.50
Capacity (*c*), veh/h	502	1336	710	140	936	514	318	1409	660	249	1326	789
Volume-to-Capacity Ratio (*X*)	0.840	0.768	0.240	0.647	0.482	0.115	1.471	0.583	0.472	0.754	0.638	0.414
Back of Queue (*Q*), ft/ln (95 th percentile)	283	463.1	151.7	70.4	239.3	61.7	616.8	327.6	297.2	144	363	269
Back of Queue (*Q*), veh/ln (95 th percentile)	11.2	18.4	6.0	2.8	9.4	2.4	24.5	13.0	11.8	5.7	14.3	10.6
Queue Storage Ratio (*RQ*) (95 th percentile)	1.53	0.00	0.29	0.15	0.00	0.35	1.42	0.00	0.54	0.90	0.00	1.49
Uniform Delay (d_1), s/veh	54.2	29.9	22.4	61.5	36.7	31.1	59.1	25.5	27.8	59.2	28.1	20.6
Incremental Delay (d_2), s/veh	4.3	4.3	0.8	4.9	1.8	0.5	228.2	1.8	2.4	4.6	2.4	1.6
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (*d*), s/veh	58.5	34.2	23.2	66.4	38.5	31.5	287.3	27.3	30.2	63.8	30.4	22.2
Level of Service (LOS)	E	C	C	E	D	C	F	C	C	E	C	C
Approach Delay, s/veh / LOS	39.4	D		42.0	D		103.8	F		33.1	C	
Intersection Delay, s/veh / LOS	57.9						E					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	3.1	C	3.1	C	3.1	C	3.1	C
Bicycle LOS Score / LOS	1.8	B	1.0	A	1.8	B	1.6	B

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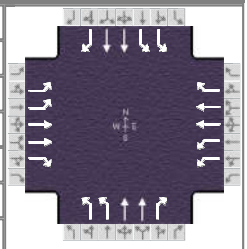
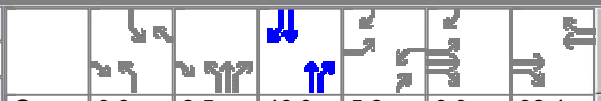
HCS7 Signalized Intersection Intermediate Values

General Information				Intersection Information	
Agency	GHA			Duration, h	0.25
Analyst	LMM	Analysis Date	Nov 9, 2017	Area Type	Other
Jurisdiction	DuDOT	Time Period	AM Peak	PHF	0.95
Urban Street	Winfield Rd	Analysis Year	2025 Total	Analysis Period	1> 7:00
Intersection	Winfield Rd / Ferry Rd	File Name	25T_Winfield Ferry_AM.xus		
Project Description	5244.902				

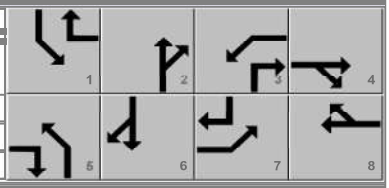


Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	401	975	162	86	428	56	444	781	296	178	804	310

Signal Information			
Cycle, s	130.0	Reference Phase	2
Offset, s	0	Reference Point	Begin
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	9.3	2.5	46.0	5.2	9.0	32.4
Yellow	3.5	0.0	4.5	3.5	3.5	4.5
Red	1.0	0.0	1.5	1.0	1.0	1.5



Saturation Flow / Delay	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles and Grade Factor (f_{HVg})	0.992	0.992	0.992	0.992	0.984	0.992	0.992	0.992	0.992	0.984	0.984	0.984
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	0.971	0.952	1.000	0.971	0.952	1.000	0.971	0.952	1.000	0.971	0.952	1.000
Left-Turn Adjustment Factor (f_{LT})	0.952	0.000		0.952	0.000		0.952	0.000		0.952	0.000	
Right-Turn Adjustment Factor (f_{RT})		0.000	0.847		0.000	0.847		0.000	0.847		0.000	0.847
Left-Turn Pedestrian Adjustment Factor (f_{Lpb})	1.000			1.000			1.000			1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{Rpb})			1.000			1.000			1.000			1.000
Work Zone Adjustment Factor (f_{wz})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
DDI Factor (f_{DDI})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Movement Saturation Flow Rate (s), veh/h	3487	3778	1598	3487	3749	1598	3487	3778	1598	3459	3749	1585
Proportion of Vehicles Arriving on Green (P)	0.14	0.47	0.35	0.04	0.33	0.25	0.09	0.50	0.37	0.07	0.47	0.35
Incremental Delay Factor (k)	0.12	0.50	0.50	0.11	0.50	0.50	0.50	0.50	0.50	0.11	0.50	0.50

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)	4.5	6.0	4.5	6.0	4.5	6.0	4.5	6.0
Green Ratio (g/C)	0.14	0.35	0.04	0.25	0.09	0.37	0.07	0.35
Permitted Saturation Flow Rate (s_p), veh/h/ln	0	0	0	0	0	0	0	0
Shared Saturation Flow Rate (s_{sh}), veh/h/ln								
Permitted Effective Green Time (g_p), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Permitted Service Time (g_u), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Permitted Queue Service Time (g_{ps}), s								
Time to First Blockage (g_f), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Service Time Before Blockage (g_{fs}), s								
Protected Right Saturation Flow (s_R), veh/h/ln		1598		1598		1598		1585
Protected Right Effective Green Time (g_R), s		11.8		9.3		5.2		18.7

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	2.336	0.00	2.336	0.00	2.336	0.00	2.336	0.00
Pedestrian F_s / F_{delay}	0.000	0.132	0.000	0.144	0.000	0.130	0.000	0.132
Pedestrian M_{corner} / M_{cw}								
Bicycle c_b / d_b	707.08	27.16	499.18	36.60	745.87	25.56	707.49	27.15
Bicycle F_w / F_v	-3.64	1.34	-3.64	0.50	-3.64	1.32	-3.64	1.12

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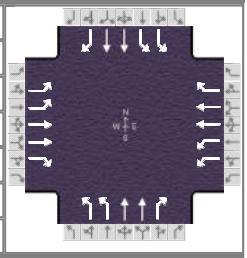
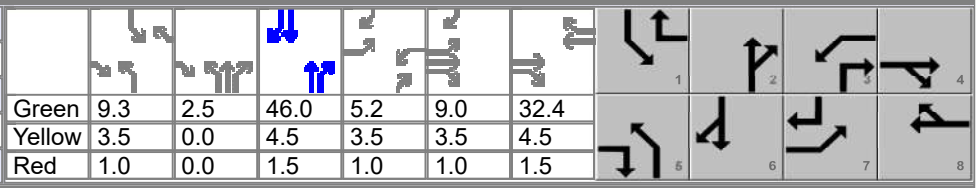
HCS7 Signalized Intersection Results Graphical Summary

General Information				Intersection Information	
Agency	GHA			Duration, h	0.25
Analyst	LMM	Analysis Date	Nov 9, 2017	Area Type	Other
Jurisdiction	DuDOT	Time Period	AM Peak	PHF	0.95
Urban Street	Winfield Rd	Analysis Year	2025 Total	Analysis Period	1> 7:00
Intersection	Winfield Rd / Ferry Rd	File Name	25T_Winfield Ferry_AM.xus		
Project Description	5244.902				



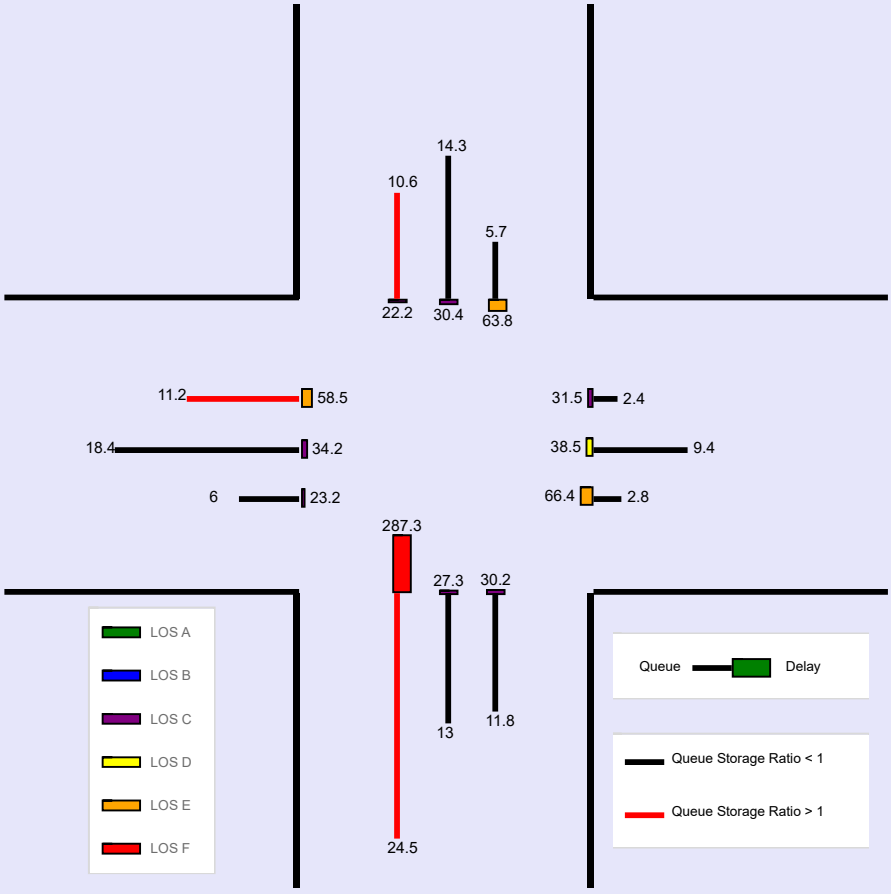
Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	401	975	162	86	428	56	444	781	296	178	804	310

Signal Information			
Cycle, s	130.0	Reference Phase	2
Offset, s	0	Reference Point	Begin
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	9.3	2.5	46.0	5.2	9.0	32.4						
Yellow	3.5	0.0	4.5	3.5	3.5	4.5						
Red	1.0	0.0	1.5	1.0	1.0	1.5						

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Back of Queue (*Q*), ft/ln (95 th percentile)	283	463.1	151.7	70.4	239.3	61.7	616.8	327.6	297.2	144	363	269
Back of Queue (*Q*), veh/ln (95 th percentile)	11.2	18.4	6.0	2.8	9.4	2.4	24.5	13.0	11.8	5.7	14.3	10.6
Queue Storage Ratio (*RQ*) (95 th percentile)	1.53	0.00	0.29	0.15	0.00	0.35	1.42	0.00	0.54	0.90	0.00	1.49
Control Delay (*d*), s/veh	58.5	34.2	23.2	66.4	38.5	31.5	287.3	27.3	30.2	63.8	30.4	22.2
Level of Service (LOS)	E	C	C	E	D	C	F	C	C	E	C	C
Approach Delay, s/veh / LOS	39.4	D		42.0	D		103.8	F		33.1	C	
Intersection Delay, s/veh / LOS	57.9						E					



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--- Messages ---

WARNING: If demand exceeds capacity, a multiple-period analysis should be conducted.

WARNING: One or more minor street movements was assigned an Arrival Type input value other than 3; this implies signal coordination on the minor street.

WARNING: Since queue spillover from turn lanes and spillback into upstream intersections is not accounted for in the HCM procedures, use of a simulation tool may be advised in situations where the Queue Storage Ratio exceeds 1.0.

--- Comments ---

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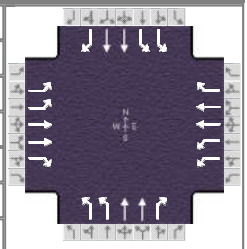
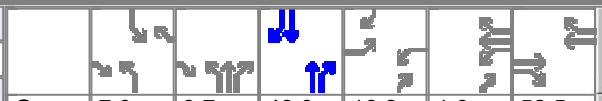
HCS7 Signalized Intersection Input Data

General Information				Intersection Information	
Agency	GHA			Duration, h	0.25
Analyst	LMM	Analysis Date	Nov 9, 2017	Area Type	Other
Jurisdiction	DuDOT	Time Period	PM Peak	PHF	0.95
Urban Street	Winfield Rd	Analysis Year	2025 Total	Analysis Period	1> 5:00
Intersection	Winfield Rd / Ferry Rd	File Name	25T_Winfield Ferry_PM.xus		
Project Description	5244.902				

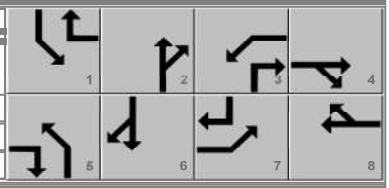


Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	307	520	313	332	1020	158	215	846	82	110	1016	307

Signal Information			
Cycle, s	150.0	Reference Phase	2
Offset, s	0	Reference Point	Begin
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	7.0	3.7	48.0	16.2	1.6	52.5
Yellow	3.5	0.0	4.5	3.5	0.0	4.5
Red	1.0	0.0	1.5	1.0	0.0	1.5



Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	307	520	313	332	1020	158	215	846	82	110	1016	307
Initial Queue (Q_b), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s_o), veh/h	1900	2000	1900	1900	2000	1900	1900	2000	1900	1900	2000	1900
Parking (N_m), man/h		None			None			None			None	
Heavy Vehicles (P_{HV}), %	1	1	1	1	1	1	1	1	1	1	1	1
Ped / Bike / RTOR, /h	0	0	0	0	0	0	0	0	0	0	0	0
Buses (N_b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (*AT*)	3	4	3	3	4	3	3	4	3	3	4	3
Upstream Filtering (*I*)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width (*W*), ft	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0
Turn Bay Length, ft	185	0	515	480	0	175	435	0	550	160	0	180
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h	40	40	40	40	40	40	40	40	40	40	40	40

Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s	25.0	46.0	35.0	56.0	15.0	54.0	15.0	54.0
Yellow Change Interval (*Y*), s	3.5	4.5	3.5	4.5	3.5	4.5	3.5	4.5
Red Clearance Interval (R_c), s	1.0	1.5	1.0	1.5	1.0	1.5	1.0	1.5
Minimum Green (G_{min}), s	3	15	3	15	3	15	3	15
Start-Up Lost Time (*lt*), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (*e*), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Passage (*PT*), s	3.0	7.0	3.0	7.0	3.0	7.0	3.0	7.0
Recall Mode	Off	Off	Off	Off	Off	Min	Off	Min
Dual Entry	No	Yes	No	Yes	No	Yes	No	Yes
Walk (*Walk*), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pedestrian Clearance Time (*PC*), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0	No	25	0	No	25	0	No	25	0	No	25
Walkway / Crosswalk Width / Length, ft	9.0	12	0	9.0	12	0	9.0	12	0	9.0	12	0
Street Width / Island / Curb	0	0	No	0	0	No	0	0	No	0	0	No
Width Outside / Bike Lane / Shoulder, ft	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50		No	0.50		No	0.50		No	0.50	

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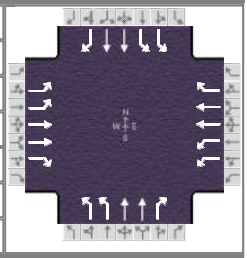
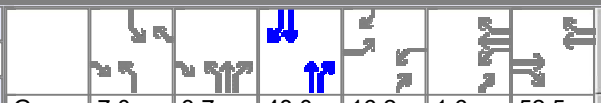
HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	GHA			Duration, h	0.25
Analyst	LMM	Analysis Date	Nov 9, 2017	Area Type	Other
Jurisdiction	DuDOT	Time Period	PM Peak	PHF	0.95
Urban Street	Winfield Rd	Analysis Year	2025 Total	Analysis Period	1> 5:00
Intersection	Winfield Rd / Ferry Rd	File Name	25T_Winfield Ferry_PM.xus		
Project Description	5244.902				

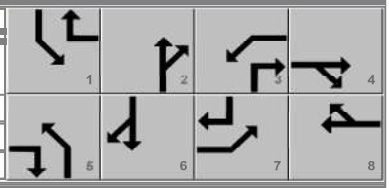


Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	307	520	313	332	1020	158	215	846	82	110	1016	307

Signal Information			
Cycle, s	150.0	Reference Phase	2
Offset, s	0	Reference Point	Begin
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	7.0	3.7	48.0	16.2	1.6	52.5
Yellow	3.5	0.0	4.5	3.5	0.0	4.5
Red	1.0	0.0	1.5	1.0	0.0	1.5



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	7	4	3	8	5	2	1	6
Case Number	2.0	3.0	2.0	3.0	2.0	3.0	2.0	3.0
Phase Duration, s	20.7	58.5	22.4	60.1	15.2	57.7	11.5	54.0
Change Period, ($Y+R_c$), s	4.5	6.0	4.5	6.0	4.5	6.0	4.5	6.0
Max Allow Headway (*MAH*), s	4.0	10.8	4.0	10.8	4.0	0.0	4.0	0.0
Queue Clearance Time (g_s), s	15.7	24.6	16.7	37.6	11.7		6.9	
Green Extension Time (g_e), s	0.6	27.7	1.1	16.5	0.0	0.0	0.1	0.0
Phase Call Probability	1.00	1.00	1.00	1.00	1.00		0.99	
Max Out Probability	0.60	0.99	0.00	1.00	1.00		1.00	

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (*v*), veh/h	323	547	329	349	1074	166	226	891	86	116	1069	323
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1743	1889	1598	1743	1889	1598	1743	1889	1598	1743	1889	1598
Queue Service Time (g_s), s	13.7	14.4	22.6	14.7	35.6	10.3	9.7	27.9	4.6	4.9	39.1	21.8
Cycle Queue Clearance Time (g_c), s	13.7	14.4	22.6	14.7	35.6	10.3	9.7	27.9	4.6	4.9	39.1	21.8
Green Ratio (*g/C*)	0.11	0.35	0.42	0.12	0.36	0.41	0.07	0.34	0.46	0.05	0.32	0.43
Capacity (*c*), veh/h	377	1322	673	415	1363	651	248	1302	741	162	1209	684
Volume-to-Capacity Ratio (*X*)	0.857	0.414	0.490	0.842	0.787	0.256	0.912	0.684	0.117	0.715	0.885	0.473
Back of Queue (*Q*), ft/ln (95 th percentile)	274.2	260.1	354	277.4	559.4	187.6	234.6	453.5	81.6	104.7	638.5	342.7
Back of Queue (*Q*), veh/ln (95 th percentile)	10.9	10.3	14.0	11.0	22.2	7.4	9.3	18.0	3.2	4.2	25.3	13.6
Queue Storage Ratio (*RQ*) (95 th percentile)	1.48	0.00	0.69	0.58	0.00	1.07	0.54	0.00	0.15	0.65	0.00	1.90
Uniform Delay (d_1), s/veh	65.8	29.8	31.7	64.7	34.1	29.4	69.2	34.1	22.8	70.5	40.5	30.8
Incremental Delay (d_2), s/veh	12.0	1.0	2.5	4.7	4.7	0.9	34.6	2.9	0.3	5.8	9.7	2.3
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (*d*), s/veh	77.7	30.8	34.2	69.4	38.8	30.4	103.8	37.0	23.1	76.3	50.1	33.1
Level of Service (LOS)	E	C	C	E	D	C	F	D	C	E	D	C
Approach Delay, s/veh / LOS	44.4	D		44.6	D		48.6	D		48.5	D	
Intersection Delay, s/veh / LOS	46.5						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	3.1	C	3.1	C	3.1	C	3.1	C
Bicycle LOS Score / LOS	1.5	A	1.8	B	1.5	A	1.7	B

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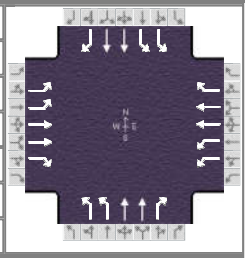
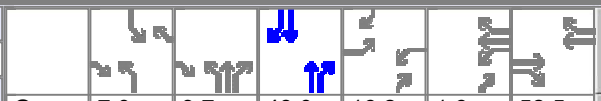
HCS7 Signalized Intersection Intermediate Values

General Information				Intersection Information	
Agency	GHA			Duration, h	0.25
Analyst	LMM	Analysis Date	Nov 9, 2017	Area Type	Other
Jurisdiction	DuDOT	Time Period	PM Peak	PHF	0.95
Urban Street	Winfield Rd	Analysis Year	2025 Total	Analysis Period	1> 5:00
Intersection	Winfield Rd / Ferry Rd	File Name	25T_Winfield Ferry_PM.xus		
Project Description	5244.902				

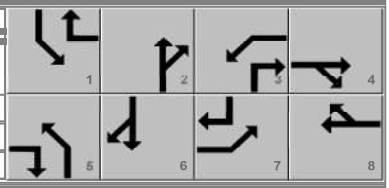


Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	307	520	313	332	1020	158	215	846	82	110	1016	307

Signal Information			
Cycle, s	150.0	Reference Phase	2
Offset, s	0	Reference Point	Begin
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	7.0	3.7	48.0	16.2	1.6	52.5
Yellow	3.5	0.0	4.5	3.5	0.0	4.5
Red	1.0	0.0	1.5	1.0	0.0	1.5



Saturation Flow / Delay	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles and Grade Factor (f_{HVg})	0.992	0.992	0.992	0.992	0.992	0.992	0.992	0.992	0.992	0.992	0.992	0.992
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	0.971	0.952	1.000	0.971	0.952	1.000	0.971	0.952	1.000	0.971	0.952	1.000
Left-Turn Adjustment Factor (f_{LT})	0.952	0.000		0.952	0.000		0.952	0.000		0.952	0.000	
Right-Turn Adjustment Factor (f_{RT})		0.000	0.847		0.000	0.847		0.000	0.847		0.000	0.847
Left-Turn Pedestrian Adjustment Factor (f_{Lpb})	1.000			1.000			1.000			1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{Rpb})			1.000			1.000			1.000			1.000
Work Zone Adjustment Factor (f_{wz})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
DDI Factor (f_{DDI})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Movement Saturation Flow Rate (s), veh/h	3487	3778	1598	3487	3778	1598	3487	3778	1598	3487	3778	1598
Proportion of Vehicles Arriving on Green (P)	0.11	0.47	0.35	0.12	0.48	0.36	0.07	0.46	0.34	0.05	0.43	0.32
Incremental Delay Factor (k)	0.25	0.50	0.50	0.11	0.50	0.50	0.43	0.50	0.50	0.11	0.50	0.50

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)	4.5	6.0	4.5	6.0	4.5	6.0	4.5	6.0
Green Ratio (g/C)	0.11	0.35	0.12	0.36	0.07	0.34	0.05	0.32
Permitted Saturation Flow Rate (s_p), veh/h/ln	0	0	0	0	0	0	0	0
Shared Saturation Flow Rate (s_{sh}), veh/h/ln								
Permitted Effective Green Time (g_p), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Permitted Service Time (g_u), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Permitted Queue Service Time (g_{ps}), s								
Time to First Blockage (g_f), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Service Time Before Blockage (g_{fs}), s								
Protected Right Saturation Flow (s_R), veh/h/ln		1598		1598		1598		1598
Protected Right Effective Green Time (g_R), s		10.7		7.0		17.9		16.2

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	2.336	0.00	2.336	0.00	2.336	0.00	2.336	0.00
Pedestrian F_s / F_{delay}	0.000	0.139	0.000	0.137	0.000	0.139	0.000	0.142
Pedestrian M_{corner} / M_{cw}								
Bicycle c_b / d_b	699.80	31.70	721.74	30.64	689.18	32.22	639.84	34.69
Bicycle F_w / F_v	-3.64	0.99	-3.64	1.31	-3.64	0.99	-3.64	1.24

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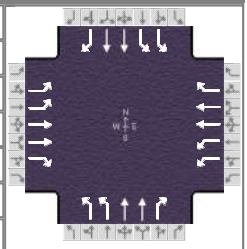
HCS7 Signalized Intersection Results Graphical Summary

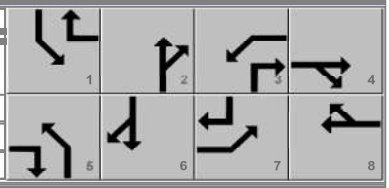
General Information				Intersection Information	
Agency	GHA			Duration, h	0.25
Analyst	LMM	Analysis Date	Nov 9, 2017	Area Type	Other
Jurisdiction	DuDOT	Time Period	PM Peak	PHF	0.95
Urban Street	Winfield Rd	Analysis Year	2025 Total	Analysis Period	1> 5:00
Intersection	Winfield Rd / Ferry Rd	File Name	25T_Winfield Ferry_PM.xus		
Project Description	5244.902				



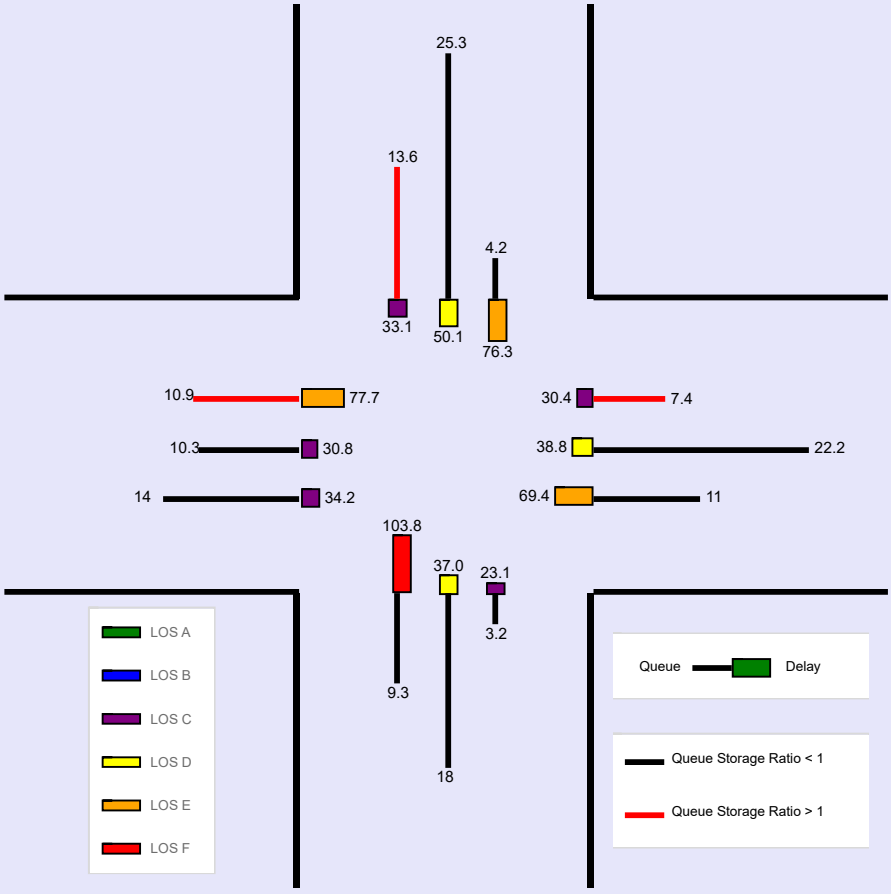
Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	307	520	313	332	1020	158	215	846	82	110	1016	307

Signal Information			
Cycle, s	150.0	Reference Phase	2
Offset, s	0	Reference Point	Begin
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	7.0	3.7	48.0	16.2	1.6	52.5
Yellow	3.5	0.0	4.5	3.5	0.0	4.5
Red	1.0	0.0	1.5	1.0	0.0	1.5



Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Back of Queue (*Q*), ft/ln (95 th percentile)	274.2	260.1	354	277.4	559.4	187.6	234.6	453.5	81.6	104.7	638.5	342.7
Back of Queue (*Q*), veh/ln (95 th percentile)	10.9	10.3	14.0	11.0	22.2	7.4	9.3	18.0	3.2	4.2	25.3	13.6
Queue Storage Ratio (*RQ*) (95 th percentile)	1.48	0.00	0.69	0.58	0.00	1.07	0.54	0.00	0.15	0.65	0.00	1.90
Control Delay (*d*), s/veh	77.7	30.8	34.2	69.4	38.8	30.4	103.8	37.0	23.1	76.3	50.1	33.1
Level of Service (LOS)	E	C	C	E	D	C	F	D	C	E	D	C
Approach Delay, s/veh / LOS	44.4	D		44.6	D		48.6	D		48.5	D	
Intersection Delay, s/veh / LOS	46.5						D					



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--- Messages ---

WARNING: One or more minor street movements was assigned an Arrival Type input value other than 3; this implies signal coordination on the minor street.

WARNING: Since queue spillover from turn lanes and spillback into upstream intersections is not accounted for in the HCM procedures, use of a simulation tool may be advised in situations where the Queue Storage Ratio exceeds 1.0.

--- Comments ---

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HCS7 Two-Way Stop-Control Report

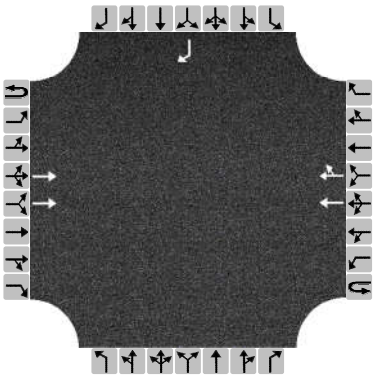
General Information

Analyst	LMM
Agency/Co.	GHA
Date Performed	11/9/2017
Analysis Year	2025
Time Analyzed	Total AM
Intersection Orientation	East-West
Project Description	5244.902

Site Information

Intersection	Ferry Rd at Office RIRO
Jurisdiction	DuDOT
East/West Street	Ferry Rd
North/South Street	Office RIRO
Peak Hour Factor	0.90
Analysis Time Period (hrs)	0.25

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	2	0	0	0	2	0		0	0	0		0	0	1
Configuration			T				T	TR								R
Volume, V (veh/h)			1538				1096	86								6
Percent Heavy Vehicles (%)																0
Proportion Time Blocked																
Percent Grade (%)													0			
Right Turn Channelized	No				No				No				No			
Median Type/Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)																7
Capacity, c (veh/h)																412
v/c Ratio																0.02
95% Queue Length, Q_{95} (veh)																0.1
Control Delay (s/veh)																13.9
Level of Service, LOS																B
Approach Delay (s/veh)													13.9			
Approach LOS													B			

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HCS7 Two-Way Stop-Control Report

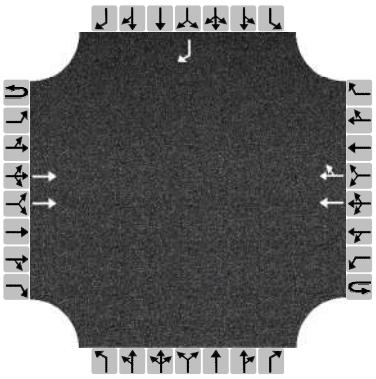
General Information

Analyst	LMM
Agency/Co.	GHA
Date Performed	11/9/2017
Analysis Year	2025
Time Analyzed	Total PM
Intersection Orientation	East-West
Project Description	5244.902

Site Information

Intersection	Ferry Rd at Office RIRO
Jurisdiction	DuDOT
East/West Street	Ferry Rd
North/South Street	Office RIRO
Peak Hour Factor	0.90
Analysis Time Period (hrs)	0.25

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	2	0	0	0	2	0		0	0	0		0	0	1
Configuration			T				T	TR								R
Volume, V (veh/h)			1140				1539	4								59
Percent Heavy Vehicles (%)																0
Proportion Time Blocked																
Percent Grade (%)													0			
Right Turn Channelized	No				No				No				No			
Median Type/Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)																66
Capacity, c (veh/h)																305
v/c Ratio																0.22
95% Queue Length, Q_{95} (veh)																0.8
Control Delay (s/veh)																20.0
Level of Service, LOS																C
Approach Delay (s/veh)													20.0			
Approach LOS													C			

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HCS7 Two-Way Stop-Control Report

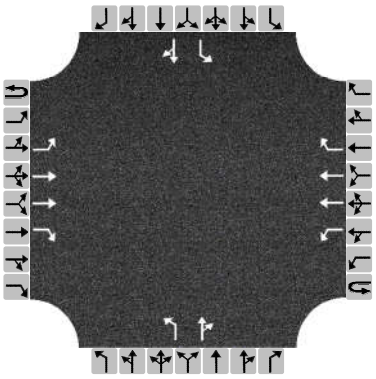
General Information

Analyst	LMM
Agency/Co.	GHA
Date Performed	11/9/2017
Analysis Year	2025
Time Analyzed	Total AM Peak
Intersection Orientation	East-West
Project Description	5244.900

Site Information

Intersection	Ferry Rd/Office E/Site E
Jurisdiction	DuDOT
East/West Street	Ferry Road
North/South Street	Office East/Site East
Peak Hour Factor	0.94
Analysis Time Period (hrs)	0.25

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	1	2	1	0	1	2	1		1	1	0		1	1	0
Configuration		L	T	R		L	T	R		L		TR		L		TR
Volume, V (veh/h)		19	1494	61		127	919	56		0	1	3		41	1	28
Percent Heavy Vehicles (%)		1				1				0	0	0		0	0	0
Proportion Time Blocked																
Percent Grade (%)										0				0		
Right Turn Channelized		No				No				No				No		
Median Type/Storage		Left + Thru								1						

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1				4.1				7.5	6.5	6.9		7.5	6.5	6.9
Critical Headway (sec)		4.12				4.12				7.50	6.50	6.90		7.50	6.50	6.90
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3		3.5	4.0	3.3
Follow-Up Headway (sec)		2.21				2.21				3.50	4.00	3.30		3.50	4.00	3.30

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		20				135				0		4		44		31
Capacity, c (veh/h)		672				391				68		172		76		196
v/c Ratio		0.03				0.35				0.00		0.02		0.58		0.16
95% Queue Length, Q_{95} (veh)		0.1				1.5				0.0		0.1		2.5		0.5
Control Delay (s/veh)		10.5				19.0				57.8		26.5		102.7		26.8
Level of Service, LOS		B				C				F		D		F		D
Approach Delay (s/veh)		0.1				2.2				26.5				71.3		
Approach LOS										D				F		

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HCS7 Two-Way Stop-Control Report

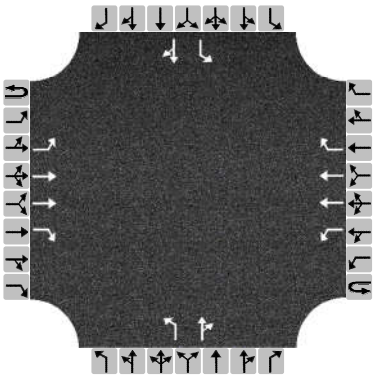
General Information

Analyst	LMM
Agency/Co.	GHA
Date Performed	11/09/2017
Analysis Year	2025
Time Analyzed	Total PM Peak
Intersection Orientation	East-West
Project Description	5244.900

Site Information

Intersection	Ferry Rd/Office E/ Site E
Jurisdiction	DuDOT
East/West Street	Ferry Road
North/South Street	Office East / Site East
Peak Hour Factor	0.94
Analysis Time Period (hrs)	0.25

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	1	2	1	0	1	2	1		1	1	0		1	1	0
Configuration		L	T	R		L	T	R		L		TR		L		TR
Volume, V (veh/h)		27	1040	5		25	1509	64		45	1	63		37	1	21
Percent Heavy Vehicles (%)		0				0				0	0	0		0	0	0
Proportion Time Blocked																
Percent Grade (%)									0				0			
Right Turn Channelized	No				No				No				No			
Median Type/Storage	Left + Thru								1							

Critical and Follow-up Headways

Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		29				27				48		68		39		23
Capacity, c (veh/h)		389				636				114		446		75		296
v/c Ratio		0.07				0.04				0.42		0.15		0.52		0.08
95% Queue Length, Q_{95} (veh)		0.2				0.1				1.8		0.5		2.2		0.3
Control Delay (s/veh)		15.0				10.9				57.6		14.5		95.9		18.2
Level of Service, LOS		C				B				F		B		F		C
Approach Delay (s/veh)	0.4				0.2				32.3				67.1			
Approach LOS									D				F			

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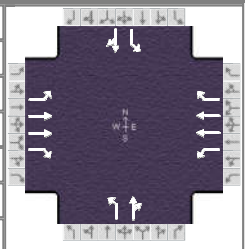
HCS7 Signalized Intersection Input Data

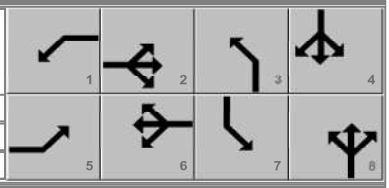
General Information				Intersection Information	
Agency	GHA			Duration, h	0.25
Analyst	LMM	Analysis Date	Nov 9, 2017	Area Type	Other
Jurisdiction	DuDOT	Time Period	AM Peak	PHF	0.95
Urban Street	Ferry Road	Analysis Year	2025 Total	Analysis Period	1> 7:00
Intersection	Ferry Rd / Office Bldg	File Name	25T_Ferry Office_Torch_AM.xus		
Project Description	5244.900				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	102	1505	37	110	788	49	6	1	17	52	4	77

Signal Information			
Cycle, s	100.0	Reference Phase	2
Offset, s	0	Reference Point	Begin
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	4.4	0.2	62.0	7.8	4.0	0.0	
Yellow	3.5	0.0	4.5	4.5	4.5	0.0	
Red	0.0	0.0	1.5	1.5	1.5	0.0	



Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	102	1505	37	110	788	49	6	1	17	52	4	77
Initial Queue (Q_b), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s_o), veh/h	1900	2000	1900	1900	2000	1900	1900	1900	1900	1900	1900	1900
Parking (N_m), man/h		None			None			None			None	
Heavy Vehicles (P_{HV}), %	0	1	0	0	2	0	0	0		0	0	
Ped / Bike / RTOR, /h	0	0	0	0	0	0	0	0	0	0	0	0
Buses (N_b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (*AT*)	3	4	3	3	4	3	3	3	3	3	3	3
Upstream Filtering (*I*)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width (*W*), ft	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0		12.0	12.0	
Turn Bay Length, ft	185	0	135	315	0	185	175	0		115	0	
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h	40	40	40	40	40	40	25	25	25	25	25	25

Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s	18.0	30.0	18.0	30.0	15.0	26.0	15.0	26.0
Yellow Change Interval (*Y*), s	3.5	4.5	3.5	4.5	3.5	4.5	3.5	4.5
Red Clearance Interval (R_c), s	0.0	1.5	0.0	1.5	0.0	1.5	0.0	1.5
Minimum Green (G_{min}), s	3	15	3	15	3	8	3	8
Start-Up Lost Time (*lt*), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (*e*), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Passage (*PT*), s	3.0	7.0	3.0	7.0	3.0	4.0	3.0	4.0
Recall Mode	Off	Min	Off	Min	Off	Off	Off	Off
Dual Entry	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Walk (*Walk*), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pedestrian Clearance Time (*PC*), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0	No	25	0	No	25	0	No	25	0	No	25
Walkway / Crosswalk Width / Length, ft	9.0	12	0	9.0	12	0	9.0	12	0	9.0	12	0
Street Width / Island / Curb	0	0	No	0	0	No	0	0	No	0	0	No
Width Outside / Bike Lane / Shoulder, ft	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50		No	0.50		No	0.50		No	0.50	

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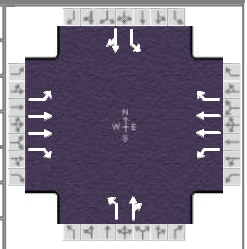
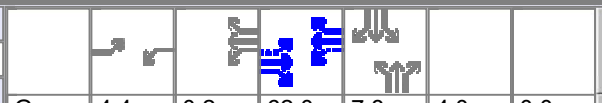
HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	GHA			Duration, h	0.25
Analyst	LMM	Analysis Date	Nov 9, 2017	Area Type	Other
Jurisdiction	DuDOT	Time Period	AM Peak	PHF	0.95
Urban Street	Ferry Road	Analysis Year	2025 Total	Analysis Period	1> 7:00
Intersection	Ferry Rd / Office Bldg	File Name	25T_Ferry Office_Torch_AM.xus		
Project Description	5244.900				

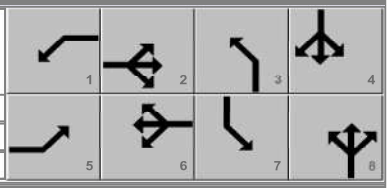


Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	102	1505	37	110	788	49	6	1	17	52	4	77

Signal Information			
Cycle, s	100.0	Reference Phase	2
Offset, s	0	Reference Point	Begin
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	4.4	0.2	62.0	7.8	4.0	0.0
Yellow	3.5	0.0	4.5	4.5	4.5	0.0
Red	0.0	0.0	1.5	1.5	1.5	0.0



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6		8		4
Case Number	1.1	3.0	1.1	3.0		10.0		10.0
Phase Duration, s	7.9	68.0	8.1	68.2		10.0		13.8
Change Period, ($Y+R_c$), s	3.5	6.0	3.5	6.0		6.0		6.0
Max Allow Headway (*MAH*), s	4.0	0.0	4.0	0.0		5.3		5.3
Queue Clearance Time (g_s), s	4.1		4.3			3.1		7.1
Green Extension Time (g_e), s	0.3	0.0	0.4	0.0		0.1		0.5
Phase Call Probability	1.00		1.00			0.50		0.98
Max Out Probability	0.00		0.00			0.00		0.01

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (*v*), veh/h	107	1584	39	116	829	52	6	19		55	85	
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1810	1889	1610	1810	1874	1610	1810	1624		1810	1622	
Queue Service Time (g_s), s	2.1	16.5	0.9	2.3	5.4	1.3	0.3	1.1		2.9	5.1	
Cycle Queue Clearance Time (g_c), s	2.1	16.5	0.9	2.3	5.4	1.3	0.3	1.1		2.9	5.1	
Green Ratio (*g/C*)	0.66	0.62	0.62	0.67	0.62	0.62	0.04	0.04		0.08	0.08	
Capacity (*c*), veh/h	520	2342	998	305	2331	1001	73	66		142	127	
Volume-to-Capacity Ratio (*X*)	0.206	0.676	0.039	0.380	0.356	0.052	0.086	0.289		0.386	0.671	
Back of Queue (*Q*), ft/ln (95 th percentile)	31.9	169.7	13.9	35.8	74.4	18.4	7.5	23.5		62.5	106.2	
Back of Queue (*Q*), veh/ln (95 th percentile)	1.3	6.7	0.6	1.4	2.9	0.7	0.3	0.9		2.5	4.2	
Queue Storage Ratio (*RQ*) (95 th percentile)	0.17	0.00	0.10	0.11	0.00	0.10	0.04	0.00		0.54	0.00	
Uniform Delay (d_1), s/veh	6.3	4.7	7.4	8.1	3.7	7.4	46.2	46.6		43.8	44.8	
Incremental Delay (d_2), s/veh	0.2	1.6	0.1	0.8	0.4	0.1	0.7	3.4		2.4	8.4	
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Control Delay (*d*), s/veh	6.5	6.3	7.5	8.9	4.1	7.5	46.9	50.0		46.2	53.2	
Level of Service (LOS)	A	A	A	A	A	A	D	D		D	D	
Approach Delay, s/veh / LOS	6.4	A		4.8	A		49.2	D		50.5	D	
Intersection Delay, s/veh / LOS	8.3						A					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.2	B	2.2	B	3.0	C	3.0	C
Bicycle LOS Score / LOS	1.9	B	1.3	A	0.5	A	0.7	A

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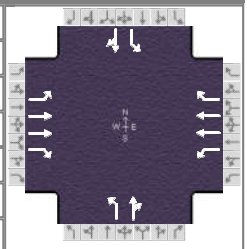
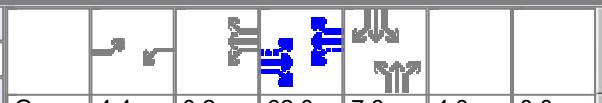
HCS7 Signalized Intersection Intermediate Values

General Information				Intersection Information	
Agency	GHA			Duration, h	0.25
Analyst	LMM	Analysis Date	Nov 9, 2017	Area Type	Other
Jurisdiction	DuDOT	Time Period	AM Peak	PHF	0.95
Urban Street	Ferry Road	Analysis Year	2025 Total	Analysis Period	1> 7:00
Intersection	Ferry Rd / Office Bldg	File Name	25T_Ferry Office_Torch_AM.xus		
Project Description	5244.900				

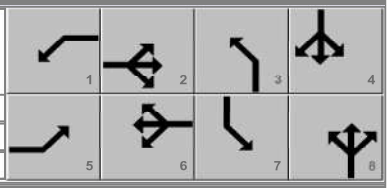


Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	102	1505	37	110	788	49	6	1	17	52	4	77

Signal Information			
Cycle, s	100.0	Reference Phase	2
Offset, s	0	Reference Point	Begin
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	4.4	0.2	62.0	7.8	4.0	0.0
Yellow	3.5	0.0	4.5	4.5	4.5	0.0
Red	0.0	0.0	1.5	1.5	1.5	0.0



Saturation Flow / Delay	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles and Grade Factor (f_{HVg})	1.000	0.992	1.000	1.000	0.984	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	1.000	0.952	1.000	1.000	0.952	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})	0.952	0.000		0.952	0.000		0.952	0.000		0.952	0.000	
Right-Turn Adjustment Factor (f_{RT})		0.000	0.847		0.000	0.847		0.855	0.855		0.854	0.854
Left-Turn Pedestrian Adjustment Factor (f_{Lpb})	1.000			1.000			1.000			1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{Rpb})			1.000			1.000			1.000			1.000
Work Zone Adjustment Factor (f_{wz})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
DDI Factor (f_{DDI})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Movement Saturation Flow Rate (s), veh/h	1810	3778	1610	1810	3749	1610	1810	90	1534	1810	80	1542
Proportion of Vehicles Arriving on Green (P)	0.04	0.83	0.62	0.05	0.83	0.62	0.04	0.04	0.04	0.08	0.08	0.08
Incremental Delay Factor (k)	0.11	0.50	0.50	0.11	0.50	0.50	0.15	0.15		0.15	0.15	

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)	3.5	6.0	3.5	6.0		6.0		3.5
Green Ratio (g/C)	0.66	0.62	0.67	0.62		0.04		0.08
Permitted Saturation Flow Rate (s_p), veh/h/ln	672	0	328	0		1810		1810
Shared Saturation Flow Rate (s_{sh}), veh/h/ln								
Permitted Effective Green Time (g_p), s	62.0	0.0	62.0	0.0		0.0		0.0
Permitted Service Time (g_u), s	54.8	0.0	45.4	0.0		0.0		0.0
Permitted Queue Service Time (g_{ps}), s	1.4		9.1					
Time to First Blockage (g_f), s	0.0	0.0	0.0	0.0		0.0		0.0
Queue Service Time Before Blockage (g_{fs}), s								
Protected Right Saturation Flow (s_R), veh/h/ln		0		0				
Protected Right Effective Green Time (g_R), s		0.0		0.0				

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	1.557	0.00	1.557	0.00	2.224	0.00	2.224	0.00
Pedestrian F_s / F_{delay}	0.000	0.079	0.000	0.079	0.000	0.162	0.000	0.154
Pedestrian M_{corner} / M_{cw}								
Bicycle c_b / d_b	1239.73	7.23	1243.60	7.15		57.25	80.70	46.05
Bicycle F_w / F_v	-3.64	1.43	-3.64	0.82	-3.64	0.04	-3.64	0.23

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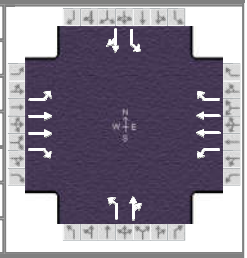
HCS7 Signalized Intersection Results Graphical Summary

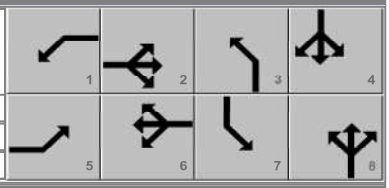
General Information				Intersection Information	
Agency	GHA			Duration, h	0.25
Analyst	LMM	Analysis Date	Nov 9, 2017	Area Type	Other
Jurisdiction	DuDOT	Time Period	AM Peak	PHF	0.95
Urban Street	Ferry Road	Analysis Year	2025 Total	Analysis Period	1> 7:00
Intersection	Ferry Rd / Office Bldg	File Name	25T_Ferry Office_Torch_AM.xus		
Project Description	5244.900				



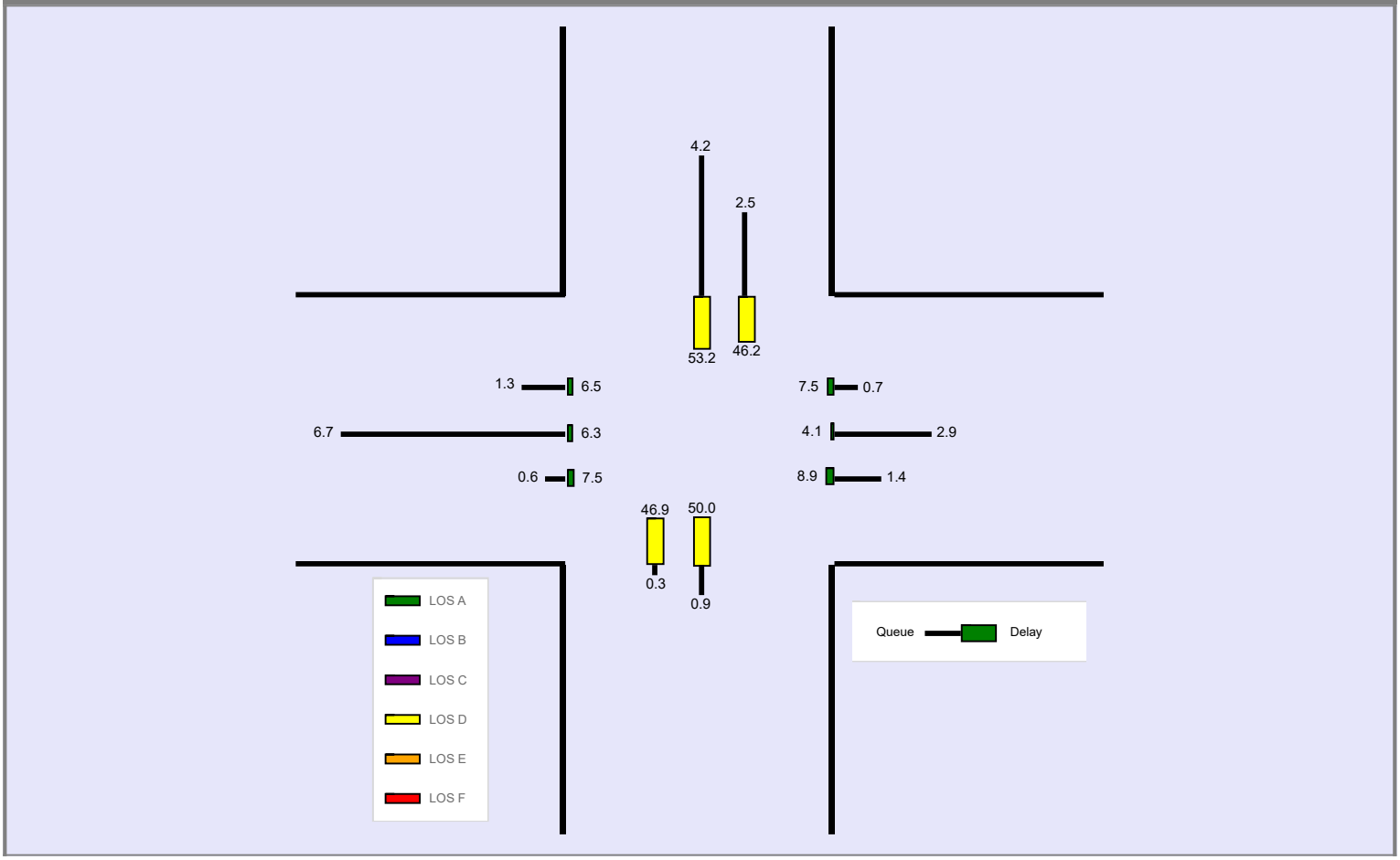
Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	102	1505	37	110	788	49	6	1	17	52	4	77

Signal Information			
Cycle, s	100.0	Reference Phase	2
Offset, s	0	Reference Point	Begin
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	4.4	0.2	62.0	7.8	4.0	0.0	
Yellow	3.5	0.0	4.5	4.5	4.5	0.0	
Red	0.0	0.0	1.5	1.5	1.5	0.0	



Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Back of Queue (*Q*), ft/ln (95 th percentile)	31.9	169.7	13.9	35.8	74.4	18.4	7.5	23.5		62.5	106.2	
Back of Queue (*Q*), veh/ln (95 th percentile)	1.3	6.7	0.6	1.4	2.9	0.7	0.3	0.9		2.5	4.2	
Queue Storage Ratio (*RQ*) (95 th percentile)	0.17	0.00	0.10	0.11	0.00	0.10	0.04	0.00		0.54	0.00	
Control Delay (*d*), s/veh	6.5	6.3	7.5	8.9	4.1	7.5	46.9	50.0		46.2	53.2	
Level of Service (LOS)	A	A	A	A	A	A	D	D		D	D	
Approach Delay, s/veh / LOS	6.4	A		4.8	A		49.2	D		50.5	D	
Intersection Delay, s/veh / LOS	8.3						A					



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--- Messages ---

No errors or warnings exist.

--- Comments ---

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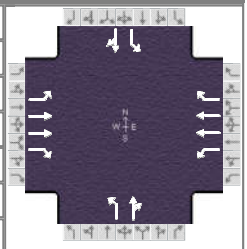
HCS7 Signalized Intersection Input Data

General Information				Intersection Information	
Agency	GHA			Duration, h	0.25
Analyst	LMM	Analysis Date	Nov 9, 2017	Area Type	Other
Jurisdiction	DuDOT	Time Period	PM Peak	PHF	0.95
Urban Street	Ferry Road	Analysis Year	2025 Total	Analysis Period	1> 5:00
Intersection	Ferry Rd / Office / Torch…	File Name	25T_Ferry Office_Torch_PM.xus		
Project Description	5244.900				

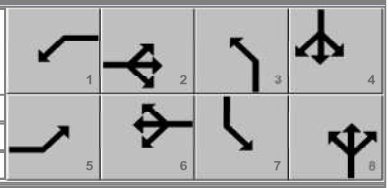


Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	76	920	7	20	1528	27	37	4	107	45	1	80

Signal Information			
Cycle, s	150.0	Reference Phase	2
Offset, s	0	Reference Point	Begin
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	3.0	1.0		107.6	4.9	0.6	13.8					
Yellow	3.5	0.0		4.5	3.5	0.0	4.5					
Red	0.0	0.0		1.5	0.0	0.0	1.5					



Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	76	920	7	20	1528	27	37	4	107	45	1	80
Initial Queue (Q_b), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s_o), veh/h	1900	2000	1900	1900	2000	1900	1900	1900	1900	1900	1900	1900
Parking (N_m), man/h		None			None			None			None	
Heavy Vehicles (P_{HV}), %	0	1	0	0	1	0	0	0		0	0	
Ped / Bike / RTOR, /h	0	0	0	0	0	0	0	0	0	0	0	0
Buses (N_b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (*AT*)	3	4	3	3	4	3	3	3	3	3	3	3
Upstream Filtering (*I*)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width (*W*), ft	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0		12.0	12.0	
Turn Bay Length, ft	185	0	135	315	0	185	175	0		115	0	
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h	40	40	40	40	40	40	25	25	25	25	25	25

Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s	27.0	62.0	27.0	62.0	22.0	39.0	22.0	39.0
Yellow Change Interval (*Y*), s	3.5	4.5	3.5	4.5	3.5	4.5	3.5	4.5
Red Clearance Interval (R_c), s	0.0	1.5	0.0	1.5	0.0	1.5	0.0	1.5
Minimum Green (G_{min}), s	3	15	3	15	3	8	3	8
Start-Up Lost Time (*lt*), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (*e*), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Passage (*PT*), s	3.0	7.0	3.0	7.0	3.0	4.0	3.0	4.0
Recall Mode	Off	Min	Off	Min	Off	Off	Off	Off
Dual Entry	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Walk (*Walk*), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pedestrian Clearance Time (*PC*), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0	No	25	0	No	25	0	No	25	0	No	25
Walkway / Crosswalk Width / Length, ft	9.0	12	0	9.0	12	0	9.0	12	0	9.0	12	0
Street Width / Island / Curb	0	0	No	0	0	No	0	0	No	0	0	No
Width Outside / Bike Lane / Shoulder, ft	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50		No	0.50		No	0.50		No	0.50	

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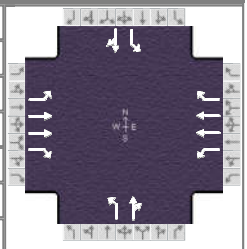
HCS7 Signalized Intersection Results Summary

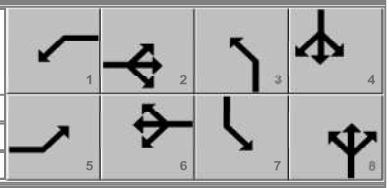
General Information				Intersection Information	
Agency	GHA			Duration, h	0.25
Analyst	LMM	Analysis Date	Nov 9, 2017	Area Type	Other
Jurisdiction	DuDOT	Time Period	PM Peak	PHF	0.95
Urban Street	Ferry Road	Analysis Year	2025 Total	Analysis Period	1> 5:00
Intersection	Ferry Rd / Office / Torch…	File Name	25T_Ferry Office_Torch_PM.xus		
Project Description	5244.900				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	76	920	7	20	1528	27	37	4	107	45	1	80

Signal Information			
Cycle, s	150.0	Reference Phase	2
Offset, s	0	Reference Point	Begin
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	3.0	1.0	107.6	4.9	0.6	13.8	
Yellow	3.5	0.0	4.5	3.5	0.0	4.5	
Red	0.0	0.0	1.5	0.0	0.0	1.5	



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6	3	8	7	4
Case Number	1.1	3.0	1.1	3.0	1.1	4.0	1.1	4.0
Phase Duration, s	7.5	114.6	6.5	113.6	8.4	19.8	9.1	20.5
Change Period, ($Y+R_c$), s	3.5	6.0	3.5	6.0	3.5	6.0	3.5	6.0
Max Allow Headway (*MAH*), s	4.0	0.0	4.0	0.0	4.2	5.4	4.2	5.4
Queue Clearance Time (g_s), s	3.8		2.5		4.9	12.6	5.5	9.6
Green Extension Time (g_e), s	0.2	0.0	0.0	0.0	0.1	1.3	0.1	1.3
Phase Call Probability	1.00		1.00		1.00	1.00	1.00	1.00
Max Out Probability	0.00		0.00		0.00	0.00	0.00	0.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (*v*), veh/h	80	968	7	21	1608	28	39	117		47	85	
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1810	1889	1610	1810	1889	1610	1810	1619		1810	1613	
Queue Service Time (g_s), s	1.8	2.0	0.2	0.5	6.5	0.8	2.9	10.6		3.5	7.6	
Cycle Queue Clearance Time (g_c), s	1.8	2.0	0.2	0.5	6.5	0.8	2.9	10.6		3.5	7.6	
Green Ratio (*g/C*)	0.74	0.72	0.72	0.74	0.72	0.72	0.13	0.09		0.13	0.10	
Capacity (*c*), veh/h	312	2735	1166	495	2709	1155	151	149		143	156	
Volume-to-Capacity Ratio (*X*)	0.256	0.354	0.006	0.043	0.594	0.025	0.257	0.782		0.330	0.548	
Back of Queue (*Q*), ft/ln (95 th percentile)	29.2	29.5	2.9	7.5	67.6	11.5	62.1	213.9		75.9	150	
Back of Queue (*Q*), veh/ln (95 th percentile)	1.2	1.2	0.1	0.3	2.7	0.5	2.5	8.6		3.0	6.0	
Queue Storage Ratio (*RQ*) (95 th percentile)	0.16	0.00	0.02	0.02	0.00	0.06	0.35	0.00		0.66	0.00	
Uniform Delay (d_1), s/veh	5.3	0.8	5.7	5.3	1.1	6.1	58.9	66.6		58.8	64.6	
Incremental Delay (d_2), s/veh	0.4	0.4	0.0	0.0	1.0	0.0	0.9	11.9		1.3	4.2	
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Control Delay (*d*), s/veh	5.8	1.1	5.8	5.3	2.0	6.2	59.8	78.5		60.1	68.9	
Level of Service (LOS)	A	A	A	A	A	A	E	E		E	E	
Approach Delay, s/veh / LOS	1.5	A		2.2	A		73.8	E		65.7	E	
Intersection Delay, s/veh / LOS	8.5						A					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.2	B	2.2	B	3.0	C	3.0	C
Bicycle LOS Score / LOS	1.4	A	1.9	B	0.7	A	0.7	A

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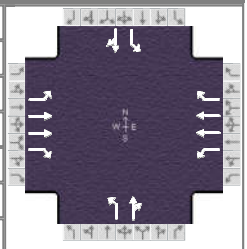
HCS7 Signalized Intersection Intermediate Values

General Information				Intersection Information	
Agency	GHA			Duration, h	0.25
Analyst	LMM	Analysis Date	Nov 9, 2017	Area Type	Other
Jurisdiction	DuDOT	Time Period	PM Peak	PHF	0.95
Urban Street	Ferry Road	Analysis Year	2025 Total	Analysis Period	1> 5:00
Intersection	Ferry Rd / Office / Torch…	File Name	25T_Ferry Office_Torch_PM.xus		
Project Description	5244.900				

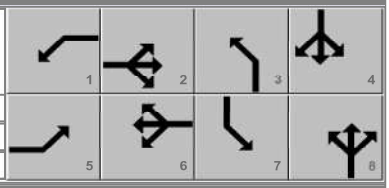


Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	76	920	7	20	1528	27	37	4	107	45	1	80

Signal Information			
Cycle, s	150.0	Reference Phase	2
Offset, s	0	Reference Point	Begin
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	3.0	1.0	107.6	4.9	0.6	13.8
Yellow	3.5	0.0	4.5	3.5	0.0	4.5
Red	0.0	0.0	1.5	0.0	0.0	1.5



Saturation Flow / Delay	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles and Grade Factor (f_{HVg})	1.000	0.992	1.000	1.000	0.992	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	1.000	0.952	1.000	1.000	0.952	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})	0.952	0.000		0.952	0.000		0.952	0.000		0.952	0.000	
Right-Turn Adjustment Factor (f_{RT})		0.000	0.847		0.000	0.847		0.852	0.852		0.849	0.849
Left-Turn Pedestrian Adjustment Factor (f_{Lpb})	1.000			1.000			1.000			1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{Rpb})			1.000			1.000			1.000			1.000
Work Zone Adjustment Factor (f_{wz})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
DDI Factor (f_{DDI})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Movement Saturation Flow Rate (s), veh/h	1810	3778	1610	1810	3778	1610	1810	58	1561	1810	20	1593
Proportion of Vehicles Arriving on Green (P)	0.03	0.97	0.72	0.02	0.96	0.72	0.03	0.09	0.09	0.04	0.10	0.10
Incremental Delay Factor (k)	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.15		0.11	0.15	

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)	3.5	6.0	3.5	6.0	3.5	6.0	3.5	6.0
Green Ratio (g/C)	0.74	0.72	0.74	0.72	0.13	0.09	0.13	0.10
Permitted Saturation Flow Rate (s_p), veh/h/ln	320	316	590	0	1333	0	1295	0
Shared Saturation Flow Rate (s_{sh}), veh/h/ln								
Permitted Effective Green Time (g_p), s	107.6	56.0	107.6	0.0	13.8	0.0	13.8	0.0
Permitted Service Time (g_u), s	101.0	0.0	104.5	0.0	4.9	0.0	3.3	0.0
Permitted Queue Service Time (g_{ps}), s	2.2		0.1		0.3		0.4	
Time to First Blockage (g_f), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Service Time Before Blockage (g_{fs}), s								
Protected Right Saturation Flow (s_R), veh/h/ln		0		0				
Protected Right Effective Green Time (g_R), s		0.0		0.0				

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	1.557	0.00	1.557	0.00	2.224	0.00	2.224	0.00
Pedestrian F_s / F_{delay}	0.000	0.070	0.000	0.072	0.000	0.165	0.000	0.165
Pedestrian M_{corner} / M_{cw}								
Bicycle c_b / d_b	1447.76	5.72	1434.07	6.01	184.56	61.80	193.05	61.22
Bicycle F_w / F_v	-3.64	0.87	-3.64	1.37	-3.64	0.26	-3.64	0.22

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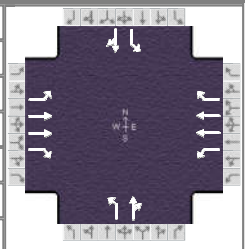
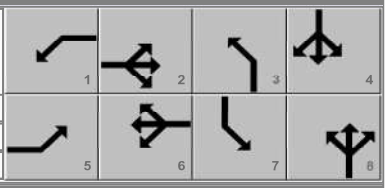
HCS7 Signalized Intersection Results Graphical Summary

General Information				Intersection Information	
Agency	GHA			Duration, h	0.25
Analyst	LMM	Analysis Date	Nov 9, 2017	Area Type	Other
Jurisdiction	DuDOT	Time Period	PM Peak	PHF	0.95
Urban Street	Ferry Road	Analysis Year	2025 Total	Analysis Period	1> 5:00
Intersection	Ferry Rd / Office / Torch…	File Name	25T_Ferry Office_Torch_PM.xus		
Project Description	5244.900				

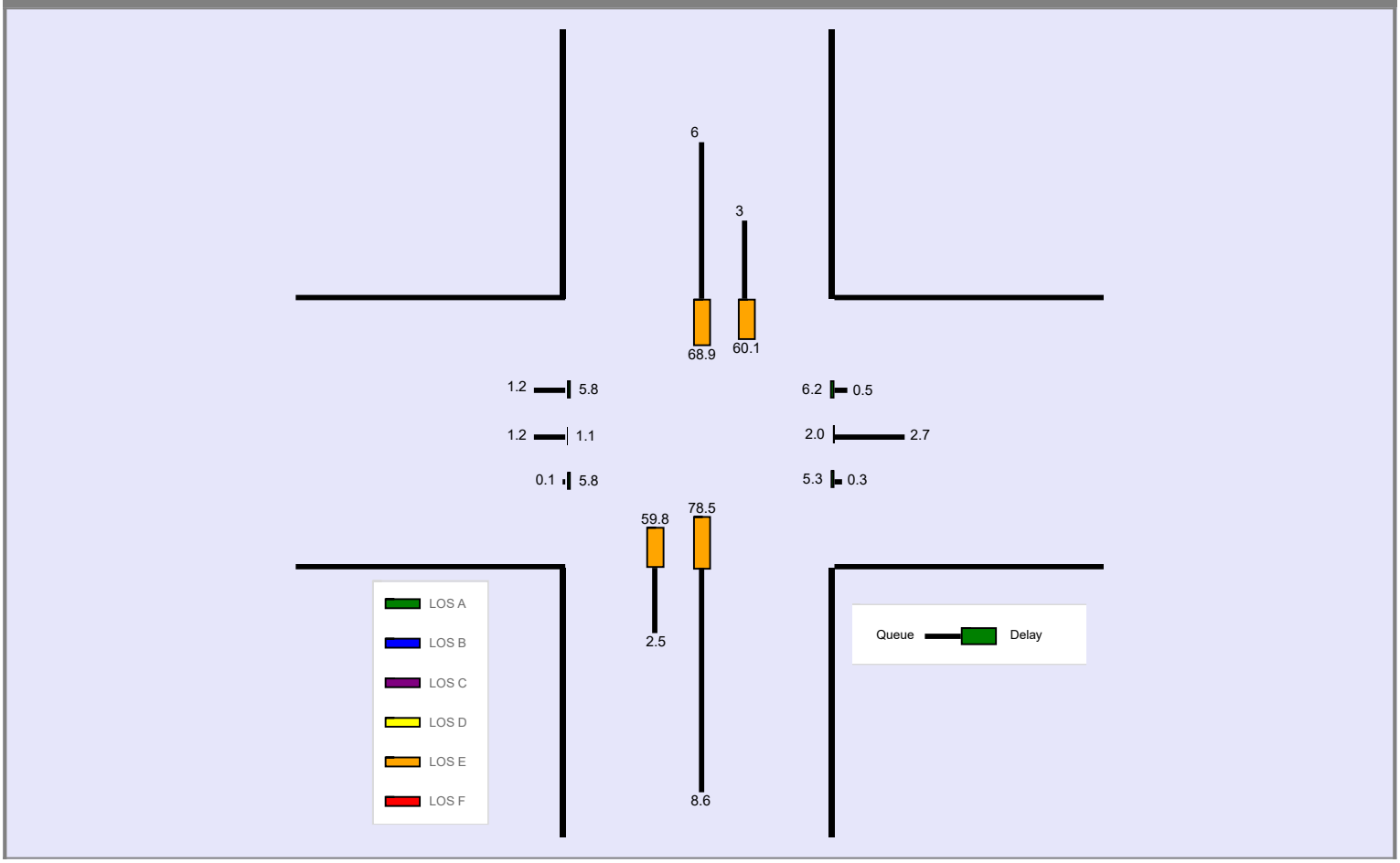


Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	76	920	7	20	1528	27	37	4	107	45	1	80

Signal Information												
Cycle, s	150.0	Reference Phase	2									
Offset, s	0	Reference Point	Begin									
Uncoordinated	No	Simult. Gap E/W	On	Green	3.0	1.0	107.6	4.9	0.6	13.8		
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	3.5	0.0	4.5	3.5	0.0	4.5		
				Red	0.0	0.0	1.5	0.0	0.0	1.5		



Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Back of Queue (*Q*), ft/ln (95 th percentile)	29.2	29.5	2.9	7.5	67.6	11.5	62.1	213.9		75.9	150	
Back of Queue (*Q*), veh/ln (95 th percentile)	1.2	1.2	0.1	0.3	2.7	0.5	2.5	8.6		3.0	6.0	
Queue Storage Ratio (*RQ*) (95 th percentile)	0.16	0.00	0.02	0.02	0.00	0.06	0.35	0.00		0.66	0.00	
Control Delay (*d*), s/veh	5.8	1.1	5.8	5.3	2.0	6.2	59.8	78.5		60.1	68.9	
Level of Service (LOS)	A	A	A	A	A	A	E	E		E	E	
Approach Delay, s/veh / LOS	1.5	A		2.2	A		73.8	E		65.7	E	
Intersection Delay, s/veh / LOS	8.5						A					



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--- Messages ---

No errors or warnings exist.

--- Comments ---

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HCS7 Two-Way Stop-Control Report

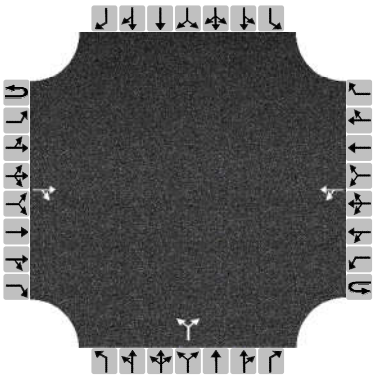
General Information

Analyst	LMM
Agency/Co.	GHA
Date Performed	11/9/2017
Analysis Year	2025
Time Analyzed	Total - AM Peak
Intersection Orientation	East-West
Project Description	5244.902

Site Information

Intersection	Torch Pkwy @ N/S Internal
Jurisdiction	Local
East/West Street	Torch Parkway
North/South Street	North South Internal
Peak Hour Factor	0.90
Analysis Time Period (hrs)	0.25

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	1	0		0	0	0
Configuration				TR		LT					LR					
Volume, V (veh/h)			68	1		43	40			1		48				
Percent Heavy Vehicles (%)						0				0		0				
Proportion Time Blocked																
Percent Grade (%)										0						
Right Turn Channelized		No				No				No				No		
Median Type/Storage			Undivided													

Critical and Follow-up Headways

Base Critical Headway (sec)						4.1				7.1		6.2				
Critical Headway (sec)						4.10				6.40		6.20				
Base Follow-Up Headway (sec)						2.2				3.5		3.3				
Follow-Up Headway (sec)						2.20				3.50		3.30				

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						48					54					
Capacity, c (veh/h)						1535					985					
v/c Ratio						0.03					0.05					
95% Queue Length, Q_{95} (veh)						0.1					0.2					
Control Delay (s/veh)						7.4					8.9					
Level of Service, LOS						A					A					
Approach Delay (s/veh)						4.0				8.9						
Approach LOS										A						

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HCS7 Two-Way Stop-Control Report

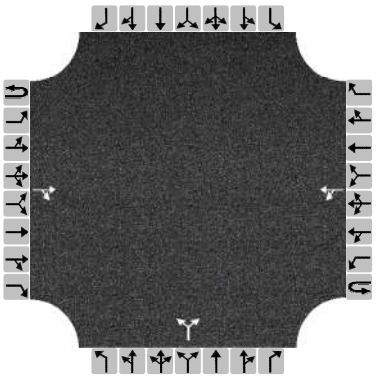
General Information

Analyst	LMM
Agency/Co.	GHA
Date Performed	11/9/2017
Analysis Year	2025
Time Analyzed	Total - PM Peak
Intersection Orientation	East-West
Project Description	5244.902

Site Information

Intersection	Torch Pkwy @ N/S Internal
Jurisdiction	Local
East/West Street	Torch Parkway
North/South Street	North South Internal
Peak Hour Factor	0.90
Analysis Time Period (hrs)	0.25

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	1	0		0	0	0
Configuration				TR		LT					LR					
Volume, V (veh/h)			47	1		63	42			1		49				
Percent Heavy Vehicles (%)						0				0		0				
Proportion Time Blocked																
Percent Grade (%)										0						
Right Turn Channelized		No				No				No				No		
Median Type/Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)						4.1				7.1		6.2				
Critical Headway (sec)						4.10				6.40		6.20				
Base Follow-Up Headway (sec)						2.2				3.5		3.3				
Follow-Up Headway (sec)						2.20				3.50		3.30				

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						70					55					
Capacity, c (veh/h)						1566					1014					
v/c Ratio						0.04					0.05					
95% Queue Length, Q_{95} (veh)						0.1					0.2					
Control Delay (s/veh)						7.4					8.8					
Level of Service, LOS						A					A					
Approach Delay (s/veh)						4.6				8.8						
Approach LOS										A						

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HCS7 Two-Way Stop-Control Report

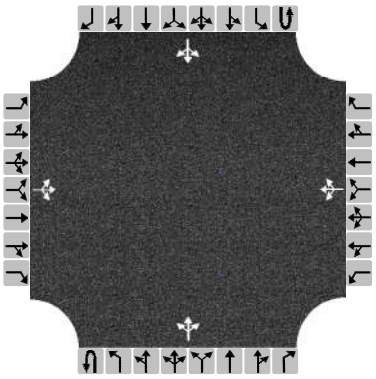
General Information

Analyst	LMM
Agency/Co.	GHA
Date Performed	11/9/2017
Analysis Year	2025
Time Analyzed	Total - AM Peak
Intersection Orientation	North-South
Project Description	5244.902

Site Information

Intersection	Internal N/S @ Multi E/W
Jurisdiction	Private
East/West Street	Muliti-Family E/W
North/South Street	Internal N/S
Peak Hour Factor	0.90
Analysis Time Period (hrs)	0.25

Lanes



Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	1	0	0	0	1	0	0	0	1	0
Configuration			LTR				LTR				LTR				LTR	
Volume, V (veh/h)		19	1	37		1	1	6		11	23	1		3	32	8
Percent Heavy Vehicles (%)		0	0	0		0	0	0		0				0		
Proportion Time Blocked																
Percent Grade (%)		0				0										
Right Turn Channelized		No				No				No				No		
Median Type/Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1	6.5	6.2		7.1	6.5	6.2		4.1				4.1		
Critical Headway (sec)		7.10	6.50	6.20		7.10	6.50	6.20		4.10				4.10		
Base Follow-Up Headway (sec)		3.5	4.0	3.3		3.5	4.0	3.3		2.2				2.2		
Follow-Up Headway (sec)		3.50	4.00	3.30		3.50	4.00	3.30		2.20				2.20		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			63				9			12				3		
Capacity, c (veh/h)			971				987			1576				1600		
v/c Ratio			0.06				0.01			0.01				0.00		
95% Queue Length, Q_{95} (veh)			0.2				0.0			0.0				0.0		
Control Delay (s/veh)			9.0				8.7			7.3				7.3		
Level of Service, LOS			A				A			A				A		
Approach Delay (s/veh)		9.0				8.7				2.3				0.5		
Approach LOS		A				A										

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HCS7 Two-Way Stop-Control Report

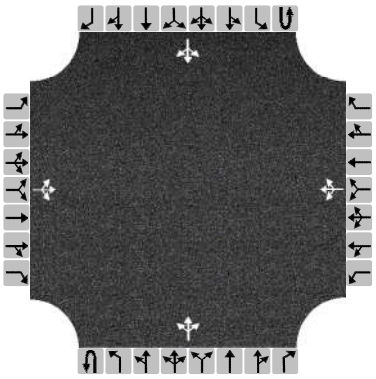
General Information

Analyst	LMM
Agency/Co.	GHA
Date Performed	11/9/2017
Analysis Year	2025
Time Analyzed	Total - PM Peak
Intersection Orientation	North-South
Project Description	5244.902

Site Information

Intersection	Internal N/S @ Multi E/W
Jurisdiction	Private
East/West Street	Muliti-Family E/W
North/South Street	Internal N/S
Peak Hour Factor	0.90
Analysis Time Period (hrs)	0.25

Lanes



Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	1	0	0	0	1	0	0	0	1	0
Configuration			LTR				LTR				LTR				LTR	
Volume, V (veh/h)		11	1	23		1	1	4		31	34	1		8	34	21
Percent Heavy Vehicles (%)		0	0	0		0	0	0		0				0		
Proportion Time Blocked																
Percent Grade (%)		0				0										
Right Turn Channelized		No				No				No				No		
Median Type/Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1	6.5	6.2		7.1	6.5	6.2		4.1				4.1		
Critical Headway (sec)		7.10	6.50	6.20		7.10	6.50	6.20		4.10				4.10		
Base Follow-Up Headway (sec)		3.5	4.0	3.3		3.5	4.0	3.3		2.2				2.2		
Follow-Up Headway (sec)		3.50	4.00	3.30		3.50	4.00	3.30		2.20				2.20		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			39				6			34				9		
Capacity, c (veh/h)			920				903			1555				1584		
v/c Ratio			0.04				0.01			0.02				0.01		
95% Queue Length, Q_{95} (veh)			0.1				0.0			0.1				0.0		
Control Delay (s/veh)			9.1				9.0			7.4				7.3		
Level of Service, LOS			A				A			A				A		
Approach Delay (s/veh)		9.1				9.0				3.5				1.0		
Approach LOS		A				A										

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HCS7 Two-Way Stop-Control Report

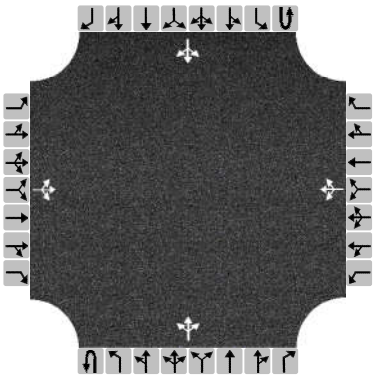
General Information

Analyst	LMM
Agency/Co.	GHA
Date Performed	11/9/2017
Analysis Year	2025
Time Analyzed	Total AM Peak
Intersection Orientation	North-South
Project Description	5244.902

Site Information

Intersection	Internal N/S Commercial
Jurisdiction	Private
East/West Street	Commercial E/W
North/South Street	Internal N/W
Peak Hour Factor	0.90
Analysis Time Period (hrs)	0.25

Lanes



Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	1	0	0	0	1	0	0	0	1	0
Configuration			LTR				LTR				LTR				LTR	
Volume, V (veh/h)		17	6	9		15	4	6		39	12	24		10	45	34
Percent Heavy Vehicles (%)		0	0	0		0	0	0		0				0		
Proportion Time Blocked																
Percent Grade (%)		0				0										
Right Turn Channelized		No				No				No				No		
Median Type/Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			36				28			43				11		
Capacity, c (veh/h)			768				767			1521				1583		
v/c Ratio			0.05				0.04			0.03				0.01		
95% Queue Length, Q_{95} (veh)			0.1				0.1			0.1				0.0		
Control Delay (s/veh)			9.9				9.9			7.4				7.3		
Level of Service, LOS			A				A			A				A		
Approach Delay (s/veh)		9.9				9.9				4.0				0.9		
Approach LOS		A				A										

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HCS7 Two-Way Stop-Control Report

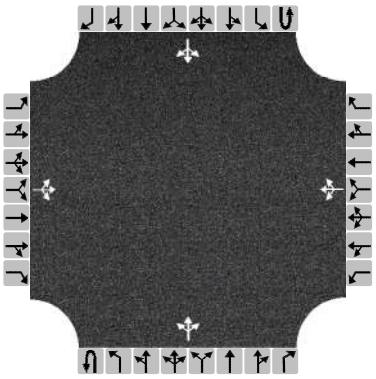
General Information

Analyst	LMM
Agency/Co.	GHA
Date Performed	11/9/2017
Analysis Year	2025
Time Analyzed	Total PM Peak
Intersection Orientation	North-South
Project Description	5244.902

Site Information

Intersection	Internal N/S Commercial
Jurisdiction	Private
East/West Street	Commercial E/W
North/South Street	Internal N/W
Peak Hour Factor	0.90
Analysis Time Period (hrs)	0.25

Lanes



Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	1	0	0	0	1	0	0	0	1	0
Configuration			LTR				LTR				LTR				LTR	
Volume, V (veh/h)		39	6	14		20	6	9		39	32	20		9	24	31
Percent Heavy Vehicles (%)		0	0	0		0	0	0		0				0		
Proportion Time Blocked																
Percent Grade (%)		0				0										
Right Turn Channelized		No				No				No				No		
Median Type/Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			66				39			43				10		
Capacity, c (veh/h)			772				765			1555				1559		
v/c Ratio			0.09				0.05			0.03				0.01		
95% Queue Length, Q_{95} (veh)			0.3				0.2			0.1				0.0		
Control Delay (s/veh)			10.1				10.0			7.4				7.3		
Level of Service, LOS			B				A			A				A		
Approach Delay (s/veh)		10.1				10.0				3.3				1.1		
Approach LOS		B				A										

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HCS7 Two-Way Stop-Control Report

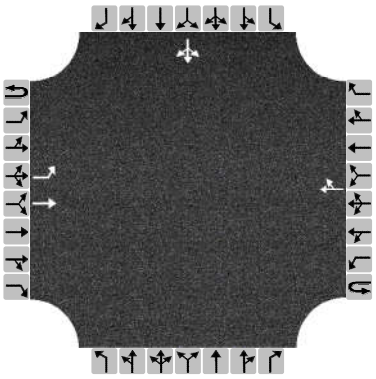
General Information

Analyst	LMM
Agency/Co.	GHA
Date Performed	11/9/2017
Analysis Year	2025
Time Analyzed	Total - AM Peak
Intersection Orientation	East-West
Project Description	5244.902

Site Information

Intersection	Torch Pkwy at Commercial
Jurisdiction	Local
East/West Street	Commercial E/W
North/South Street	Torch Parkway
Peak Hour Factor	0.90
Analysis Time Period (hrs)	0.25

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	1	1	0	0	0	1	0		0	0	0		0	1	0
Configuration		L	T					TR							LTR	
Volume, V (veh/h)		48	104				89	18						4	44	0
Percent Heavy Vehicles (%)		0												0	0	0
Proportion Time Blocked																
Percent Grade (%)														0		
Right Turn Channelized		No				No				No				No		
Median Type/Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1												7.1	6.5	6.2
Critical Headway (sec)		4.10												6.40	6.50	6.20
Base Follow-Up Headway (sec)		2.2												3.5	4.0	3.3
Follow-Up Headway (sec)		2.20												3.50	4.00	3.30

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		53													53	
Capacity, c (veh/h)		1482													576	
v/c Ratio		0.04													0.09	
95% Queue Length, Q_{95} (veh)		0.1													0.3	
Control Delay (s/veh)		7.5													11.9	
Level of Service, LOS		A													B	
Approach Delay (s/veh)		2.4												11.9		
Approach LOS														B		

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HCS7 Two-Way Stop-Control Report

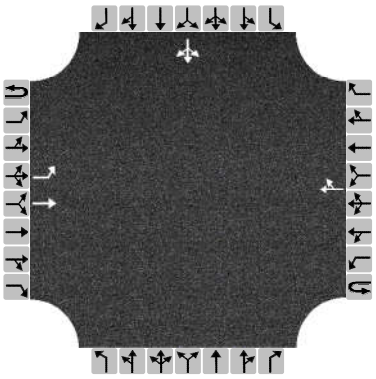
General Information

Analyst	LMM
Agency/Co.	GHA
Date Performed	11/9/2017
Analysis Year	2025
Time Analyzed	Total - PM Peak
Intersection Orientation	East-West
Project Description	5244.902

Site Information

Intersection	Torch Pkwy at Commercial
Jurisdiction	Local
East/West Street	Commercial E/W
North/South Street	Torch Parkway
Peak Hour Factor	0.90
Analysis Time Period (hrs)	0.25

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	1	1	0	0	0	1	0		0	0	0		0	1	0
Configuration		L	T					TR							LTR	
Volume, V (veh/h)		45	62				86	11						2	40	0
Percent Heavy Vehicles (%)		0												0	0	0
Proportion Time Blocked																
Percent Grade (%)														0		
Right Turn Channelized		No				No				No				No		
Median Type/Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1												7.1	6.5	6.2
Critical Headway (sec)		4.10												6.40	6.50	6.20
Base Follow-Up Headway (sec)		2.2												3.5	4.0	3.3
Follow-Up Headway (sec)		2.20												3.50	4.00	3.30

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		50													46	
Capacity, c (veh/h)		1495													621	
v/c Ratio		0.03													0.07	
95% Queue Length, Q_{95} (veh)		0.1													0.2	
Control Delay (s/veh)		7.5													11.3	
Level of Service, LOS		A													B	
Approach Delay (s/veh)		3.1												11.3		
Approach LOS														B		

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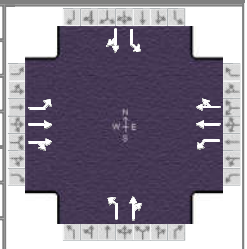
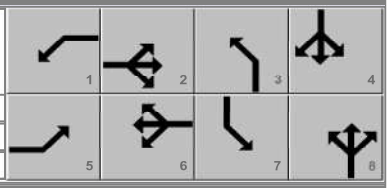
HCS7 Signalized Intersection Input Data

General Information				Intersection Information	
Agency	GHA			Duration, h	0.25
Analyst	LMM	Analysis Date	Nov 9, 2017	Area Type	Other
Jurisdiction	DuDOT	Time Period	AM Peak Hour	PHF	0.95
Urban Street	Ferry Road	Analysis Year	2025 Total	Analysis Period	1> 7:00
Intersection	Ferry Rd / River Rd	File Name	25T_Ferry River_AM.xus		
Project Description	5244.900				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	93	1583	19	24	816	30	0	0	1	60	2	78

Signal Information												
Cycle, s	100.0	Reference Phase	2									
Offset, s	0	Reference Point	Begin									
Uncoordinated	No	Simult. Gap E/W	On	Green	3.0	1.1	64.5	0.0	5.2	7.3		
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	3.5	0.0	4.5	3.5	3.5	4.5		
				Red	0.0	0.0	1.5	0.0	0.0	1.5		



Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	93	1583	19	24	816	30	0	0	1	60	2	78
Initial Queue (Q_b), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s_o), veh/h	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Parking (N_m), man/h		None			None			None			None	
Heavy Vehicles (P_{HV}), %	0	2		0	2		0	0		4	0	
Ped / Bike / RTOR, /h	0	0	0	0	0	0	0	0	0	0	0	0
Buses (N_b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (*AT*)	3	4	3	3	4	3	3	3	3	3	3	3
Upstream Filtering (*I*)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width (*W*), ft	12.0	12.0		12.0	12.0		12.0	12.0		12.0	12.0	
Turn Bay Length, ft	150	0		150	0		100	0		150	0	
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h	40	40	40	40	40	40	40	40	40	40	40	40

Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s	20.0	48.0	13.0	41.0	13.0	26.0	13.0	26.0
Yellow Change Interval (*Y*), s	3.5	4.5	3.5	4.5	3.5	4.5	3.5	4.5
Red Clearance Interval (R_c), s	0.0	1.5	0.0	1.5	0.0	1.5	0.0	1.5
Minimum Green (G_{min}), s	3	15	3	15	3	8	3	8
Start-Up Lost Time (*lt*), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (*e*), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Passage (*PT*), s	3.0	7.0	3.0	7.0	3.0	4.0	3.0	4.0
Recall Mode	Off	Min	Off	Min	Off	Off	Off	Off
Dual Entry	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Walk (*Walk*), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pedestrian Clearance Time (*PC*), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0	No	25	0	No	25	0	No	25	0	No	25
Walkway / Crosswalk Width / Length, ft	9.0	12	0	9.0	12	0	9.0	12	0	9.0	12	0
Street Width / Island / Curb	0	0	No	0	0	No	0	0	No	0	0	No
Width Outside / Bike Lane / Shoulder, ft	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50		No	0.50		No	0.50		No	0.50	

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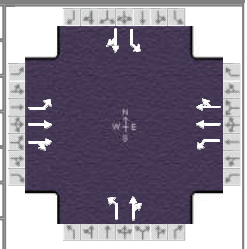
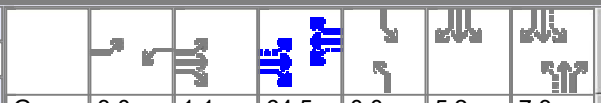
HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	GHA			Duration, h	0.25
Analyst	LMM	Analysis Date	Nov 9, 2017	Area Type	Other
Jurisdiction	DuDOT	Time Period	AM Peak Hour	PHF	0.95
Urban Street	Ferry Road	Analysis Year	2025 Total	Analysis Period	1> 7:00
Intersection	Ferry Rd / River Rd	File Name	25T_Ferry River_AM.xus		
Project Description	5244.900				

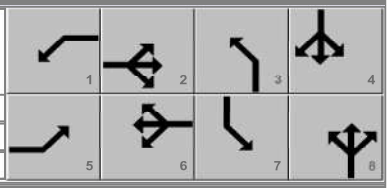


Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	93	1583	19	24	816	30	0	0	1	60	2	78

Signal Information			
Cycle, s	100.0	Reference Phase	2
Offset, s	0	Reference Point	Begin
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	3.0	1.1	64.5	0.0	5.2	7.3
Yellow	3.5	0.0	4.5	3.5	3.5	4.5
Red	0.0	0.0	1.5	0.0	0.0	1.5



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6	3	8	7	4
Case Number	1.1	4.0	1.1	4.0	1.1	4.0	1.1	4.0
Phase Duration, s	7.6	71.6	6.5	70.5	0.0	13.3	8.7	21.9
Change Period, ($Y+R_c$), s	3.5	6.0	3.5	6.0	3.5	6.0	3.5	6.0
Max Allow Headway (*MAH*), s	4.0	0.0	4.0	0.0	0.0	5.2	4.0	5.2
Queue Clearance Time (g_s), s	3.8		2.5			2.1	5.2	6.6
Green Extension Time (g_e), s	0.3	0.0	0.0	0.0	0.0	0.4	0.0	0.4
Phase Call Probability	1.00		1.00			0.91	0.98	0.98
Max Out Probability	0.00		0.00			0.00	0.70	0.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (*v*), veh/h	98	844	842	25	448	442	0	1		63	84	
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1810	1870	1862	1810	1870	1847	1810	1610		1753	1616	
Queue Service Time (g_s), s	1.8	14.2	14.7	0.5	4.9	5.4	0.0	0.1		3.2	4.6	
Cycle Queue Clearance Time (g_c), s	1.8	14.2	14.7	0.5	4.9	5.4	0.0	0.1		3.2	4.6	
Green Ratio (*g/C*)	0.69	0.66	0.66	0.68	0.65	0.65	0.04	0.07		0.14	0.16	
Capacity (*c*), veh/h	521	1227	1222	271	1207	1192	171	117		263	257	
Volume-to-Capacity Ratio (*X*)	0.188	0.688	0.689	0.093	0.371	0.371	0.000	0.009		0.241	0.328	
Back of Queue (*Q*), ft/ln (95 th percentile)	26.1	154	156.7	7	71.3	76.3	0	1.1		63.7	83.4	
Back of Queue (*Q*), veh/ln (95 th percentile)	1.0	6.1	6.3	0.3	2.8	3.1	0.0	0.0		2.5	3.3	
Queue Storage Ratio (*RQ*) (95 th percentile)	0.17	0.00	0.00	0.05	0.00	0.00	0.00	0.00		0.42	0.00	
Uniform Delay (d_1), s/veh	5.4	3.0	3.2	6.7	2.8	3.2	0.0	43.0		38.0	37.3	
Incremental Delay (d_2), s/veh	0.2	3.2	3.2	0.1	0.9	0.9	0.0	0.0		0.5	1.0	
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Control Delay (*d*), s/veh	5.6	6.2	6.4	6.8	3.7	4.1	0.0	43.1		38.5	38.4	
Level of Service (LOS)	A	A	A	A	A	A		D		D	D	
Approach Delay, s/veh / LOS	6.3	A		4.0	A		43.1	D		38.4	D	
Intersection Delay, s/veh / LOS	7.2						A					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.2	B	2.2	B	2.9	C	2.8	C
Bicycle LOS Score / LOS	2.0	B	1.2	A	0.5	A	0.7	A

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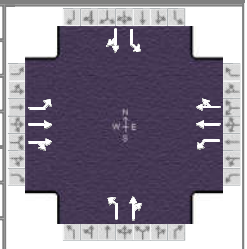
HCS7 Signalized Intersection Intermediate Values

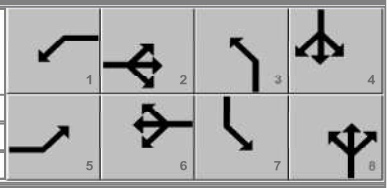
General Information				Intersection Information	
Agency	GHA			Duration, h	0.25
Analyst	LMM	Analysis Date	Nov 9, 2017	Area Type	Other
Jurisdiction	DuDOT	Time Period	AM Peak Hour	PHF	0.95
Urban Street	Ferry Road	Analysis Year	2025 Total	Analysis Period	1> 7:00
Intersection	Ferry Rd / River Rd	File Name	25T_Ferry River_AM.xus		
Project Description	5244.900				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	93	1583	19	24	816	30	0	0	1	60	2	78

Signal Information			
Cycle, s	100.0	Reference Phase	2
Offset, s	0	Reference Point	Begin
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	3.0	1.1	64.5	0.0	5.2	7.3						
Yellow	3.5	0.0	4.5	3.5	3.5	4.5						
Red	0.0	0.0	1.5	0.0	0.0	1.5						



Saturation Flow / Delay	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles and Grade Factor (f_{HVg})	1.000	0.984	1.000	1.000	0.984	1.000	1.000	1.000	1.000	0.969	1.000	1.000
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})	0.952	0.000		0.952	0.000		0.952	0.000		0.952	0.000	
Right-Turn Adjustment Factor (f_{RT})		0.996	0.996		0.987	0.987		0.847	0.847		0.851	0.851
Left-Turn Pedestrian Adjustment Factor (f_{Lpb})	1.000			1.000			1.000			1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{Rpb})			1.000			1.000			1.000			1.000
Work Zone Adjustment Factor (f_{wz})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
DDI Factor (f_{DDI})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Movement Saturation Flow Rate (s), veh/h	1810	3689	44	1810	3585	132	1810	0	1610	1753	40	1576
Proportion of Vehicles Arriving on Green (P)	0.04	0.87	0.66	0.03	0.86	0.65	0.00	0.00	0.07	0.05	0.16	0.16
Incremental Delay Factor (k)	0.11	0.50	0.50	0.11	0.50	0.50		0.15		0.11	0.15	

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)	3.5	6.0	3.5	6.0	3.5	6.0	3.5	6.0
Green Ratio (g/C)	0.69	0.66	0.68	0.65	0.04	0.07	0.14	0.16
Permitted Saturation Flow Rate (s_p), veh/h/ln	634	0	297	0	1334	0	1394	0
Shared Saturation Flow Rate (s_{sh}), veh/h/ln								
Permitted Effective Green Time (g_p), s	64.5	0.0	64.5	0.0	7.3	0.0	9.3	0.0
Permitted Service Time (g_u), s	59.1	0.0	48.8	0.0	7.3	0.0	7.2	0.0
Permitted Queue Service Time (g_{ps}), s	1.0		1.5		0.0		0.1	
Time to First Blockage (g_f), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Service Time Before Blockage (g_{fs}), s								
Protected Right Saturation Flow (s_R), veh/h/ln								
Protected Right Effective Green Time (g_R), s								

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	1.557	0.00	1.557	0.00	2.107	0.00	2.107	0.00
Pedestrian F_s / F_{delay}	0.000	0.071	0.000	0.074	0.000	0.151	0.000	0.143
Pedestrian M_{corner} / M_{cw}								
Bicycle c_b / d_b	1311.94	5.92	1290.47	6.29	145.03	43.01	318.05	35.36
Bicycle F_w / F_v	-3.64	1.47	-3.64	0.76	-3.64	0.00	-3.64	0.24

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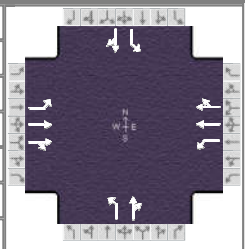
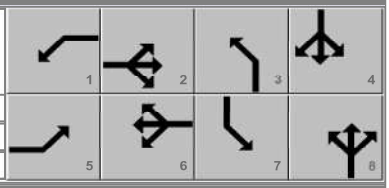
HCS7 Signalized Intersection Results Graphical Summary

General Information				Intersection Information	
Agency	GHA			Duration, h	0.25
Analyst	LMM	Analysis Date	Nov 9, 2017	Area Type	Other
Jurisdiction	DuDOT	Time Period	AM Peak Hour	PHF	0.95
Urban Street	Ferry Road	Analysis Year	2025 Total	Analysis Period	1> 7:00
Intersection	Ferry Rd / River Rd	File Name	25T_Ferry River_AM.xus		
Project Description	5244.900				

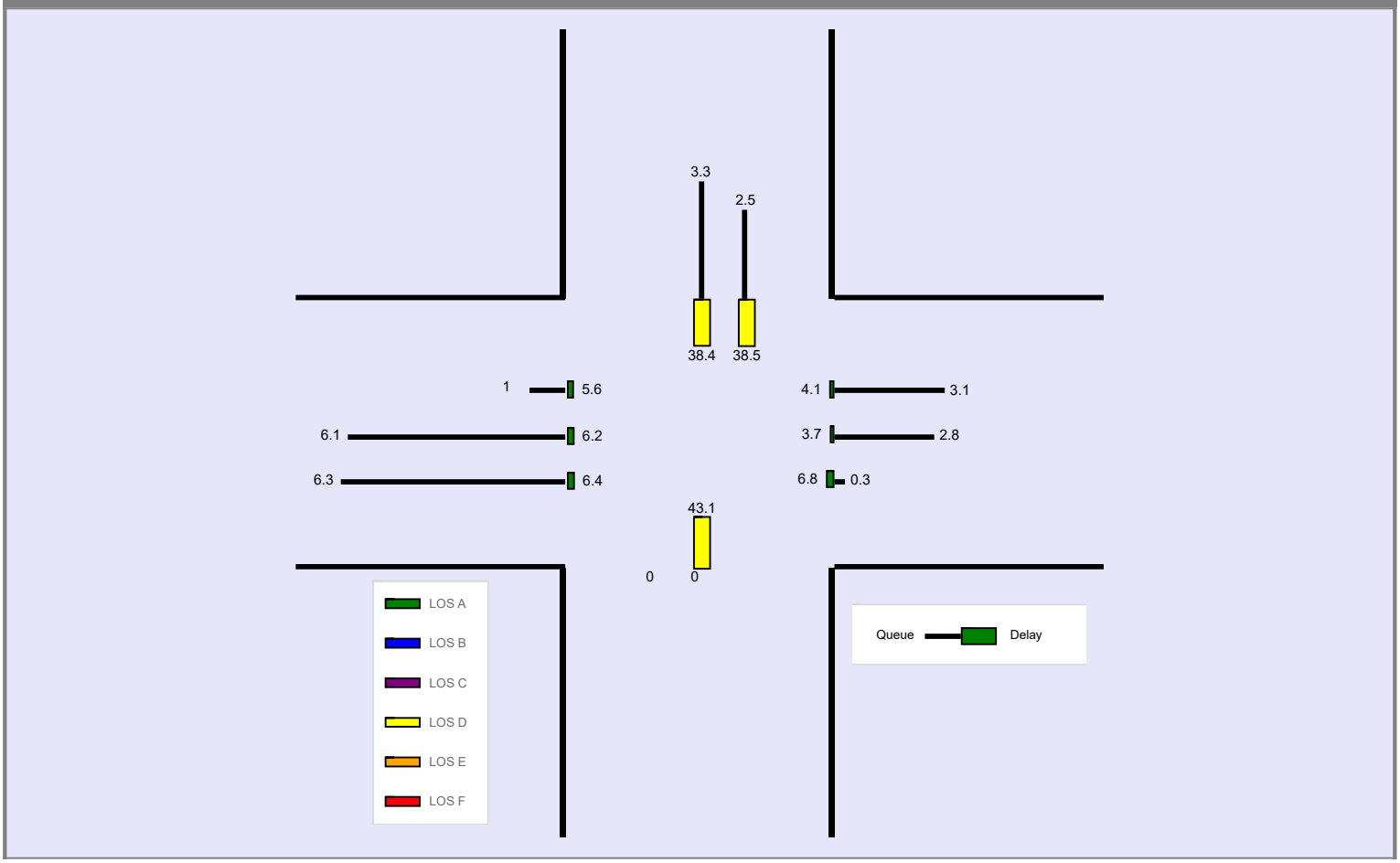


Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	93	1583	19	24	816	30	0	0	1	60	2	78

Signal Information					EB			WB			NB			SB		
Cycle, s	100.0	Reference Phase	2		L	T	R	L	T	R	L	T	R	L	T	R
Offset, s	0	Reference Point	Begin	Green	3.0	1.1		64.5	0.0	5.2	7.3					
Uncoordinated	No	Simult. Gap E/W	On	Yellow	3.5	0.0		4.5	3.5	3.5	4.5					
Force Mode	Fixed	Simult. Gap N/S	On	Red	0.0	0.0		1.5	0.0	0.0	1.5					



Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Back of Queue (*Q*), ft/ln (95 th percentile)	26.1	154	156.7	7	71.3	76.3	0	1.1		63.7	83.4	
Back of Queue (*Q*), veh/ln (95 th percentile)	1.0	6.1	6.3	0.3	2.8	3.1	0.0	0.0		2.5	3.3	
Queue Storage Ratio (*RQ*) (95 th percentile)	0.17	0.00	0.00	0.05	0.00	0.00	0.00	0.00		0.42	0.00	
Control Delay (*d*), s/veh	5.6	6.2	6.4	6.8	3.7	4.1	0.0	43.1		38.5	38.4	
Level of Service (LOS)	A	A	A	A	A	A		D		D	D	
Approach Delay, s/veh / LOS	6.3	A		4.0	A		43.1	D		38.4	D	
Intersection Delay, s/veh / LOS	7.2						A					



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--- Messages ---

No errors or warnings exist.

--- Comments ---

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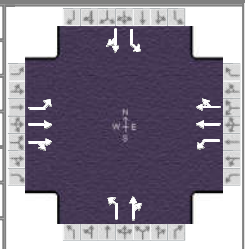
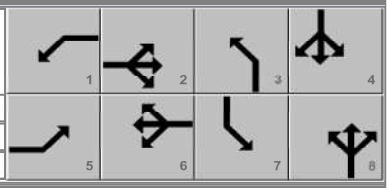
HCS7 Signalized Intersection Input Data

General Information				Intersection Information	
Agency	GHA			Duration, h	0.25
Analyst	LMM	Analysis Date	Nov 9, 2017	Area Type	Other
Jurisdiction	DuDOT	Time Period	PM Peak Hour	PHF	0.94
Urban Street	Ferry Road	Analysis Year	2025 Total	Analysis Period	1> 5:00
Intersection	Ferry Rd / River Rd	File Name	25T_Ferry River_PM.xus		
Project Description	5244.900				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	108	951	2	4	1574	67	31	3	21	31	0	83

Signal Information					EB			WB			NB			SB		
Cycle, s	150.0	Reference Phase	2													
Offset, s	0	Reference Point	Begin	Green	3.0	1.7		111.3	4.4	10.6	0.0					
Uncoordinated	No	Simult. Gap E/W	On	Yellow	3.5	0.0		4.5	3.5	4.5	0.0					
Force Mode	Fixed	Simult. Gap N/S	On	Red	0.0	0.0		1.5	0.0	1.5	0.0					



Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	108	951	2	4	1574	67	31	3	21	31	0	83
Initial Queue (Q_b), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s_o), veh/h	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Parking (N_m), man/h		None			None			None			None	
Heavy Vehicles (P_{HV}), %	0	1		0	1		0	0		0	0	
Ped / Bike / RTOR, /h	0	0	0	0	0	0	0	0	0	0	0	0
Buses (N_b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (*AT*)	3	4	3	3	4	3	3	3	3	3	3	3
Upstream Filtering (*I*)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width (*W*), ft	12.0	12.0		12.0	12.0		12.0	12.0		12.0	12.0	
Turn Bay Length, ft	150	0		150	0		100	0		150	0	
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h	40	40	40	40	40	40	40	40	40	40	40	40

Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s	26.0	90.0	14.0	78.0	13.0	33.0	13.0	33.0
Yellow Change Interval (*Y*), s	3.5	4.5	3.5	4.5	3.5	4.5	3.5	4.5
Red Clearance Interval (R_c), s	0.0	1.5	0.0	1.5	0.0	1.5	0.0	1.5
Minimum Green (G_{min}), s	3	15	3	15	3	8	3	8
Start-Up Lost Time (*lt*), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (*e*), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Passage (*PT*), s	3.0	7.0	3.0	7.0	3.0	4.0	3.0	4.0
Recall Mode	Off	Min	Off	Min	Off	Off	Off	Off
Dual Entry	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Walk (*Walk*), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pedestrian Clearance Time (*PC*), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0	No	25	0	No	25	0	No	25	0	No	25
Walkway / Crosswalk Width / Length, ft	9.0	12	0	9.0	12	0	9.0	12	0	9.0	12	0
Street Width / Island / Curb	0	0	No	0	0	No	0	0	No	0	0	No
Width Outside / Bike Lane / Shoulder, ft	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50		No	0.50		No	0.50		No	0.50	

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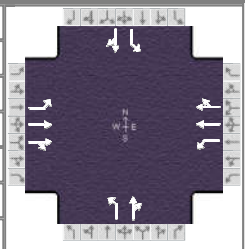
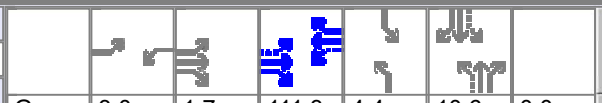
HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	GHA			Duration, h	0.25
Analyst	LMM	Analysis Date	Nov 9, 2017	Area Type	Other
Jurisdiction	DuDOT	Time Period	PM Peak Hour	PHF	0.94
Urban Street	Ferry Road	Analysis Year	2025 Total	Analysis Period	1> 5:00
Intersection	Ferry Rd / River Rd	File Name	25T_Ferry River_PM.xus		
Project Description	5244.900				

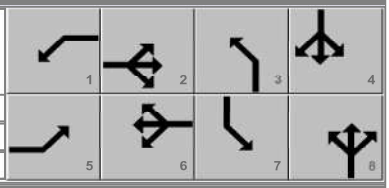


Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	108	951	2	4	1574	67	31	3	21	31	0	83

Signal Information			
Cycle, s	150.0	Reference Phase	2
Offset, s	0	Reference Point	Begin
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	3.0	1.7	111.3	4.4	10.6	0.0
Yellow	3.5	0.0	4.5	3.5	4.5	0.0
Red	0.0	0.0	1.5	0.0	1.5	0.0



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6	3	8	7	4
Case Number	1.1	4.0	1.1	4.0	1.1	4.0	1.1	4.0
Phase Duration, s	8.2	119.0	6.5	117.3	7.9	16.5	8.0	16.6
Change Period, ($Y+R_c$), s	3.5	6.0	3.5	6.0	3.5	6.0	3.5	6.0
Max Allow Headway (*MAH*), s	4.0	0.0	4.0	0.0	4.0	5.2	4.0	5.2
Queue Clearance Time (g_s), s	4.3		2.1		4.5	4.2	4.5	10.1
Green Extension Time (g_e), s	0.4	0.0	0.0	0.0	0.0	0.6	0.0	0.5
Phase Call Probability	1.00		1.00		0.98	1.00	1.00	1.00
Max Out Probability	0.00		0.00		0.24	0.00	0.24	0.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (*v*), veh/h	115	507	507	4	875	871	33	26		33	88	
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1810	1885	1884	1810	1885	1858	1810	1641		1810	1610	
Queue Service Time (g_s), s	2.3	0.0	0.1	0.1	1.9	5.5	2.5	2.2		2.5	8.1	
Cycle Queue Clearance Time (g_c), s	2.3	0.0	0.1	0.1	1.9	5.5	2.5	2.2		2.5	8.1	
Green Ratio (*g/C*)	0.77	0.75	0.75	0.76	0.74	0.74	0.10	0.07		0.10	0.07	
Capacity (*c*), veh/h	302	1420	1419	502	1399	1379	106	115		180	114	
Volume-to-Capacity Ratio (*X*)	0.381	0.357	0.357	0.008	0.626	0.631	0.312	0.222		0.183	0.777	
Back of Queue (*Q*), ft/ln (95 th percentile)	36.3	12.6	13.1	1.3	49.4	74.3	53.8	43.3		52.7	169.8	
Back of Queue (*Q*), veh/ln (95 th percentile)	1.5	0.5	0.5	0.1	2.0	3.0	2.2	1.7		2.1	6.8	
Queue Storage Ratio (*RQ*) (95 th percentile)	0.24	0.00	0.00	0.01	0.00	0.00	0.54	0.00		0.35	0.00	
Uniform Delay (d_1), s/veh	4.3	0.0	0.0	4.3	0.2	0.7	62.3	65.9		61.9	68.5	
Incremental Delay (d_2), s/veh	0.8	0.7	0.7	0.0	2.1	2.2	1.7	1.4		0.5	14.8	
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Control Delay (*d*), s/veh	5.1	0.7	0.7	4.3	2.3	2.9	63.9	67.3		62.4	83.4	
Level of Service (LOS)	A	A	A	A	A	A	E	E		E	F	
Approach Delay, s/veh / LOS	1.2	A		2.6	A		65.4	E		77.6	E	
Intersection Delay, s/veh / LOS	6.2						A					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.2	B	2.2	B	2.9	C	2.9	C
Bicycle LOS Score / LOS	1.4	A	1.9	B	0.6	A	0.7	A

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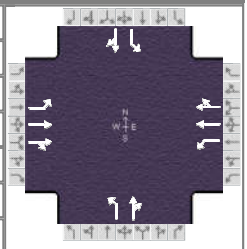
HCS7 Signalized Intersection Intermediate Values

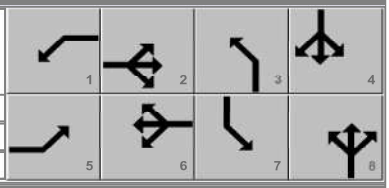
General Information				Intersection Information	
Agency	GHA			Duration, h	0.25
Analyst	LMM	Analysis Date	Nov 9, 2017	Area Type	Other
Jurisdiction	DuDOT	Time Period	PM Peak Hour	PHF	0.94
Urban Street	Ferry Road	Analysis Year	2025 Total	Analysis Period	1> 5:00
Intersection	Ferry Rd / River Rd	File Name	25T_Ferry River_PM.xus		
Project Description	5244.900				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	108	951	2	4	1574	67	31	3	21	31	0	83

Signal Information			
Cycle, s	150.0	Reference Phase	2
Offset, s	0	Reference Point	Begin
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	3.0	1.7		111.3	4.4	10.6	0.0					
Yellow	3.5	0.0		4.5	3.5	4.5	0.0					
Red	0.0	0.0		1.5	0.0	1.5	0.0					



Saturation Flow / Delay	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles and Grade Factor (f_{HVg})	1.000	0.992	1.000	1.000	0.992	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})	0.952	0.000		0.952	0.000		0.952	0.000		0.952	0.000	
Right-Turn Adjustment Factor (f_{RT})		0.999	0.999		0.985	0.985		0.864	0.864		0.847	0.847
Left-Turn Pedestrian Adjustment Factor (f_{Lpb})	1.000			1.000			1.000			1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{Rpb})			1.000			1.000			1.000			1.000
Work Zone Adjustment Factor (f_{wz})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
DDI Factor (f_{DDI})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Movement Saturation Flow Rate (s), veh/h	1810	3761	8	1810	3591	152	1810	205	1436	1810	0	1610
Proportion of Vehicles Arriving on Green (P)	0.03	1.00	0.75	0.02	0.99	0.74	0.03	0.07	0.07	0.03	0.00	0.07
Incremental Delay Factor (k)	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.15		0.11	0.15	

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)	3.5	6.0	3.5	6.0	3.5	6.0	3.5	6.0
Green Ratio (g/C)	0.77	0.75	0.76	0.74	0.10	0.07	0.10	0.07
Permitted Saturation Flow Rate (s_p), veh/h/ln	280	0	565	0	1329	0	1407	0
Shared Saturation Flow Rate (s_{sh}), veh/h/ln								
Permitted Effective Green Time (g_p), s	111.5	0.0	111.3	0.0	10.5	0.0	10.5	0.0
Permitted Service Time (g_u), s	105.7	0.0	110.9	0.0	0.5	0.0	8.3	0.0
Permitted Queue Service Time (g_{ps}), s	4.0		0.0		0.3		0.1	
Time to First Blockage (g_f), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Service Time Before Blockage (g_{fs}), s								
Protected Right Saturation Flow (s_R), veh/h/ln								
Protected Right Effective Green Time (g_R), s								

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	1.557	0.00	1.557	0.00	2.107	0.00	2.107	0.00
Pedestrian F_s / F_{delay}	0.000	0.061	0.000	0.064	0.000	0.167	0.000	0.167
Pedestrian M_{corner} / M_{cw}								
Bicycle c_b / d_b	1506.54	4.57	1484.49	4.98	139.93	64.87	141.14	64.79
Bicycle F_w / F_v	-3.64	0.93	-3.64	1.44	-3.64	0.10	-3.64	0.20

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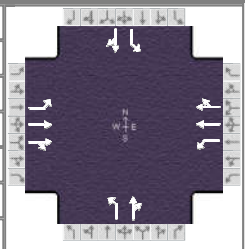
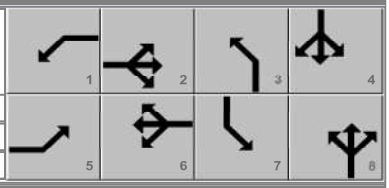
HCS7 Signalized Intersection Results Graphical Summary

General Information				Intersection Information	
Agency	GHA			Duration, h	0.25
Analyst	LMM	Analysis Date	Nov 9, 2017	Area Type	Other
Jurisdiction	DuDOT	Time Period	PM Peak Hour	PHF	0.94
Urban Street	Ferry Road	Analysis Year	2025 Total	Analysis Period	1> 5:00
Intersection	Ferry Rd / River Rd	File Name	25T_Ferry River_PM.xus		
Project Description	5244.900				

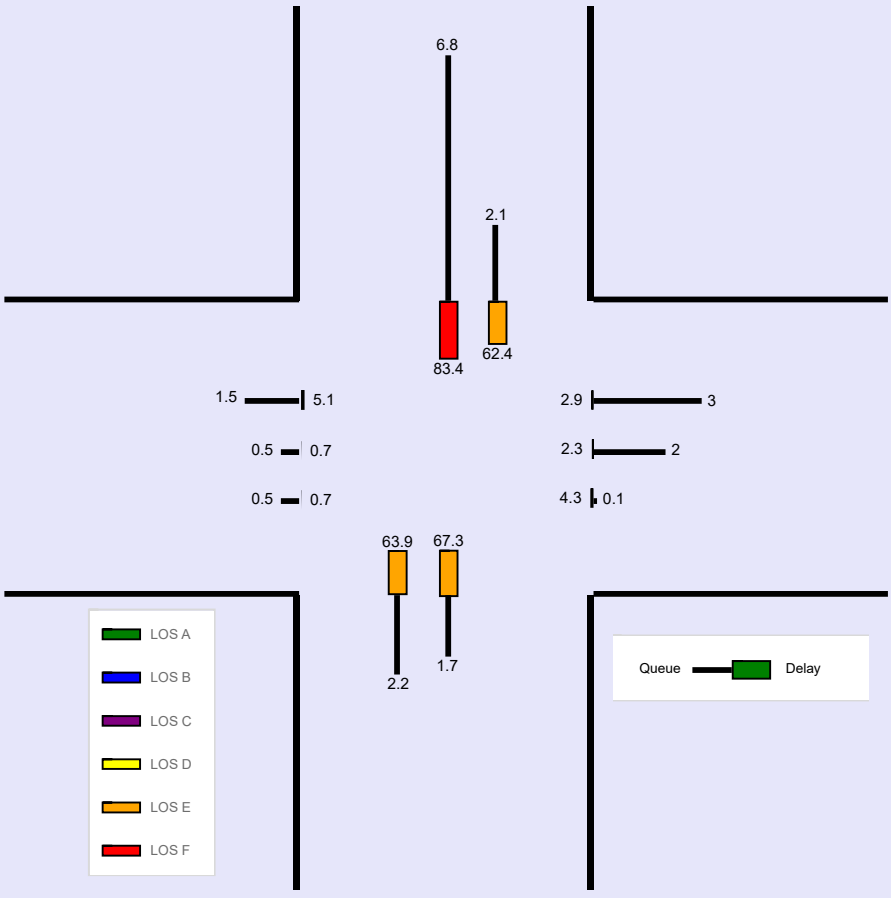


Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	108	951	2	4	1574	67	31	3	21	31	0	83

Signal Information												
Cycle, s	150.0	Reference Phase	2									
Offset, s	0	Reference Point	Begin									
Uncoordinated	No	Simult. Gap E/W	On	Green	3.0	1.7	111.3	4.4	10.6	0.0		
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	3.5	0.0	4.5	3.5	4.5	0.0		
				Red	0.0	0.0	1.5	0.0	1.5	0.0		



Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Back of Queue (*Q*), ft/ln (95 th percentile)	36.3	12.6	13.1	1.3	49.4	74.3	53.8	43.3		52.7	169.8	
Back of Queue (*Q*), veh/ln (95 th percentile)	1.5	0.5	0.5	0.1	2.0	3.0	2.2	1.7		2.1	6.8	
Queue Storage Ratio (*RQ*) (95 th percentile)	0.24	0.00	0.00	0.01	0.00	0.00	0.54	0.00		0.35	0.00	
Control Delay (*d*), s/veh	5.1	0.7	0.7	4.3	2.3	2.9	63.9	67.3		62.4	83.4	
Level of Service (LOS)	A	A	A	A	A	A	E	E		E	F	
Approach Delay, s/veh / LOS	1.2	A		2.6	A		65.4	E		77.6	E	
Intersection Delay, s/veh / LOS	6.2						A					



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--- Messages ---

No errors or warnings exist.

--- Comments ---

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APPENDIX F

Shared Parking Analysis

Use	Multi-Family				Shopping Center				Fast-Food Restaurant				Coffee Shop with Drive-Thru				Total
	Resident		Visitor		Employee		Customer		Employee		Customer		Employee		Customer		
Size	364 Units				31,050 SF				2,500 SF				2,000 SF				--
Peak Demand	546		55		22		90		6		32		5		26		782
Hour	% of Peak	Demand	% of Peak	Demand	% of Peak	Demand	% of Peak	Demand	% of Peak	Demand	% of Peak	Demand	% of Peak	Demand	% of Peak	Demand	--
7:00 AM	90%	491	10%	6	15%	3	5%	5	20%	1	10%	3	100%	5	73%	19	533
8:00 AM	85%	464	20%	11	40%	9	15%	14	30%	2	20%	6	100%	5	100%	26	537
9:00 AM	80%	437	20%	11	75%	17	35%	32	40%	2	30%	10	100%	5	63%	16	530
10:00 AM	75%	410	20%	11	85%	19	65%	59	75%	5	55%	18	100%	5	57%	15	542
11:00 AM	70%	382	20%	11	95%	21	85%	77	100%	6	85%	27	100%	5	42%	11	540
Noon	65%	355	20%	11	100%	22	95%	86	100%	6	100%	32	100%	5	39%	10	527
1:00 PM	70%	382	20%	11	100%	22	100%	90	100%	6	100%	32	100%	5	27%	7	555
2:00 PM	70%	382	20%	11	100%	22	95%	86	95%	6	90%	29	95%	5	27%	7	548
3:00 PM	70%	382	20%	11	100%	22	90%	81	70%	4	60%	19	70%	4	27%	7	530
4:00 PM	75%	410	20%	11	100%	22	90%	81	60%	4	55%	18	60%	3	27%	7	556
5:00 PM	85%	464	40%	22	95%	21	95%	86	70%	4	60%	19	70%	4	27%	7	627
6:00 PM	90%	491	60%	33	95%	21	95%	86	90%	5	85%	27	90%	5	27%	7	675
7:00 PM	**97%**	**530**	**100%**	**55**	**95%**	**21**	**95%**	**86**	**90%**	**5**	**80%**	**26**	**90%**	**5**	**27%**	**7**	**735**
8:00 PM	98%	535	100%	55	90%	20	80%	72	60%	4	50%	16	60%	3	27%	7	712
9:00 PM	99%	541	100%	55	75%	17	50%	45	40%	2	30%	10	40%	2	27%	7	679
10:00 PM	100%	546	100%	55	10%	2	30%	27	30%	2	20%	6	30%	2	20%	5	645

Source: ULI Shared Parking Manual, 2nd Edition.
ITE Parking Generation, 4th Edition, for coffee-shop time of day splits.

GEWALT HAMILTON ASSOCIATES, INC.

Appendix F
Shared Parking Analysis
Weekday

Use	Multi-Family				Shopping Center				Fast-Food Restaurant				Coffee Shop with Drive-Thru				Total
	Resident		Visitor		Employee		Customer		Employee		Customer		Employee		Customer		
Size	364 Units				31,050 SF				2,500 SF				2,000 SF				--
Peak Demand	546		55		25		99		5		30		4		24		788
Hour	% of Peak	Demand	% of Peak	Demand	% of Peak	Demand	% of Peak	Demand	% of Peak	Demand	% of Peak	Demand	% of Peak	Demand	% of Peak	Demand	--
7:00 AM	90%	491	20%	11	15%	4	5%	5	20%	1	10%	3	100%	4	100%	24	543
8:00 AM	85%	464	20%	11	40%	10	10%	10	30%	2	20%	6	100%	4	90%	22	529
9:00 AM	80%	437	20%	11	75%	19	30%	30	40%	2	30%	9	100%	4	80%	19	531
10:00 AM	75%	410	20%	11	85%	21	50%	50	75%	4	55%	17	100%	4	65%	16	533
11:00 AM	70%	382	20%	11	95%	24	65%	64	100%	5	85%	26	100%	4	62%	15	531
Noon	65%	355	20%	11	100%	25	80%	79	100%	5	100%	30	100%	4	40%	10	519
1:00 PM	70%	382	20%	11	100%	25	90%	89	100%	5	100%	30	100%	4	32%	8	554
2:00 PM	70%	382	20%	11	100%	25	100%	99	95%	5	90%	27	95%	4	32%	8	561
3:00 PM	70%	382	20%	11	100%	25	100%	99	70%	4	60%	18	70%	3	32%	8	550
4:00 PM	75%	410	20%	11	100%	25	95%	94	60%	3	55%	17	60%	2	32%	8	570
5:00 PM	85%	464	40%	22	95%	24	90%	89	70%	4	60%	18	70%	3	32%	8	632
6:00 PM	90%	491	60%	33	85%	21	80%	79	90%	5	85%	26	90%	4	32%	8	667
7:00 PM	**97%**	**530**	**100%**	**55**	**80%**	**20**	**75%**	**74**	**90%**	**5**	**80%**	**24**	**90%**	**4**	**32%**	**8**	**720**
8:00 PM	98%	535	100%	55	75%	19	65%	64	60%	3	50%	15	60%	2	32%	8	701
9:00 PM	99%	541	100%	55	65%	16	50%	50	40%	2	30%	9	40%	2	30%	7	682
10:00 PM	100%	546	100%	55	45%	11	35%	35	30%	2	20%	6	30%	1	20%	5	661

Source: ULI Shared Parking Manual, 2nd Edition.
ITE Parking Generation, 4th Edition, for coffee-shop time of day splits.

GHA GEWALT HAMILTON ASSOCIATES, INC.

Appendix F
Shared Parking Analysis
Weekend

GHA GEWALT HAMILTON ASSOCIATES, INC.
CONSULTING ENGINEERS
625 Forest Edge Drive, Vernon Hills, IL 60061
TEL 847.478.9700 ■ FAX 847.478.9701
www.gha-engineers.com

Memorandum

To: **John Schiess**
jcsa

From: Bill Grieve, P.E., PTOE
Senior Transportation Engineer

Date: April 8, 2019

Subject: ***Riverview West – Warrenville, Illinois***

Gewalt Hamilton Associates, Inc. (GHA) has reviewed the previous City Ordinance 1439 that requires the removal of the right-in portion of the Cantera Meadows Office Center driveway to Ferry Road. We offer the following thoughts:

- The GHA Traffic Impact Study (TIS) dated December 4, 2017 analyzed the EN Engineering drive. The results indicate that the intersection operates very efficiently at Level of Service (LOS) B in the morning (AM) peak hour and LOS C in the evening (PM) peak hour for all three analysis horizons; existing, Year 2025 No-build, and Year 2025 Total traffic.

- The westbound right turn from Ferry Road to the EN Engineering drive is busiest during the AM peak hour, when 86 vehicles turned.

- Westbound through traffic in the Year 2025 Total Traffic horizon is 30% less during the AM peak hour; 1096 vs. 1539 vehicles.

- The Year 2025 No-build traffic on westbound Ferry Road at the EN Engineering drive is 1024 vehicles during the AM peak hour and 1482 vehicles during the PM peak hour.

- Existing westbound through traffic on Ferry Road during the AM peak hour is 777 vehicles and 1188 vehicles in the PM peak hour.

  Discussion Point. Based on the above, GHA analyzed about a 40% increase in westbound through traffic on Ferry Road, with the EN Engineering drive still operating at very efficient LOS B (AM peak hour) and LOS C (PM peak hour) levels. These findings indicate that the right turn in portion of the EN Engineering drive should be maintained. As the Riverview West development proceeds, travel patterns and traffic volumes should be monitored to ascertain the actual growth and help determine if the desire to close the right turn portion of the EN Engineering drive should be reconsidered.

GHA GEWALT HAMILTON ASSOCIATES, INC.
CONSULTING ENGINEERS
625 Forest Edge Drive, Vernon Hills, IL 60061
TEL 847.478.9700 ■ FAX 847.478.9701
www.gha-engineers.com

Memorandum

To: **Kevin Kenniff**
BLA, Inc.

From: Lynn Means and Bill Grieve

Date: March 15, 2019

Subject: ***DuPage County DOT Traffic Impact Study Comments***
Riverview West – Warrenville, Illinois

We offer the following responses to the comments from DuPage County DOT that you forwarded on the GHA Traffic Impact Study (TIS) for Riverview West in Warrenville, Illinois.

1. Page 6 – We note that the TIS indicates a minimum turn lane length of 115 feet. However, the capacity analysis reports a 95th percentile SB TH queue of 150 feet, which may block the SB LT lane. We recommend the storage length be sufficient to accommodate the 95th percentile queue without blockages, if possible.

   Response: The southbound left turn lane provides approximately 150 feet of storage, which can accommodate the 95th-percentile queue lengths.

2. Exhibit 4 – We note that the during the PM peak period the SB queue at the signalized intersection of Torch Parkway at Ferry may block the internal traffic on Torch from accessing the east-west internal roadway. We recommend reviewing the spacing of this intersection to minimize the likelihood of blockages and gridlock.

   Response: The southbound left turn lane provides approximately 150 feet of storage, which can accommodate the 95th-percentile queue lengths, which is not anticipated to block the internal intersection. Supplemental signing can also be provided, i.e. “Do Not Block Intersection” on the retail drive westbound approach to Torch Parkway to minimize potential for queueing / blocking.

3. Exhibit 6 – Please confirm that LUC 820 Shopping Center is appropriate for this location. Most of the example sites used by ITE represent large square footage retail centers, which is not what is proposed.

   Response: ITE LUC 820, Shopping Center, was assumed to provide a conservative analysis scenario, since the current tenants are undefined. Furthermore, per ITE for this land use, shopping centers range in size from 1,700 to 2.2 million square-feet of gross leasable area, which is applicable to the approximately 31,000 square-feet proposed. The data plots for this land use, also show considerable samples of similar size.

4. Exhibit 6A – We note that the proposed volume entering the site from Ferry Road at the unsignalized driveway east of Torch Parkway is very low. Given the site distance concerns we have previously noted about permissive lefts from Ferry into this proposed site access driveway, we recommend converting this access point to three-quarter (right-in/right-out/left-out) access.

Response: Please see attached sight distance exhibits, which illustrate there is amble sight distance available for left-turning vehicles entering the site, along with left- and right-turn exiting movements. Allowing full access provides optimal site access flexibility, internal circulation, as well as minimizes the eastbound left-turning impact at the Ferry Road and Torch Parkway intersection.

5. Exhibit 10 – The site generated traffic has a significant impact on the NB Left turn movement on Winfield at Ferry during the AM peak period. The delay increases by 73 seconds from the No-Build (214 seconds) to the Build condition (287 seconds). Further the queueing for the Build condition is shown to exceed the available dual left-turn lane storage. Both of these conditions need to be addressed as part of the proposed development.

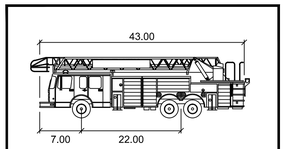
   Response: The HCS reports indicate that through traffic on Winfield Road northbound is LOS C or better during the weekday AM peak hour at both Ferry Road and Torch Parkway. Accordingly, it is recommended that the traffic signal system be re-optimized to perhaps provide additional green arrow time for the northbound left-turn movements on Winfield Road at Ferry Road to reduce the 95th-percentile queue lengths.

6. Trip Generation supporting materials – The trip generation rates forms were provided for all land uses except 820.

   Response: See attached.

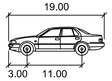
Design Firm License No. 184-001129

60 0 30 60
1 inch = 60 Ft.



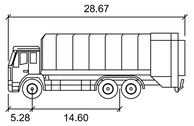
Aerial Fire Truck

	feet
Width	: 8.50
Track	: 8.50
Lock to Lock Time	: 6.0
Steering Angle	: 33.3



P

	feet
Width	: 7.00
Track	: 6.00
Lock to Lock Time	: 6.0
Steering Angle	: 31.6



REFUSE 3AXLE feet

Width	: 8.20
Track	: 8.20
Lock to Lock Time	: 6.0
Steering Angle	: 35.3

WEST BRANCH DUPAGE RIVER

TORCH PARKWAY

RIVERVIEW DRIVE PRIVATE ROAD

FERRY ROAD

364 UNITS MULTIFAMILY BUILDING W/ GARAGE

TORCH PARKWAY:
335 LF INTERSECTION SIGHT DISTANCE FOR 30 MPH DESIGN SPEED FROM CITY ORDINANCE TABLE 10-1 & ILLUSTRATION 10-A

N-S RESIDENTIAL DRIVE:
280 LF INTERSECTION SIGHT DISTANCE FOR 25 MPH DESIGN SPEED FROM CITY ORDINANCE TABLE 10-1 & ILLUSTRATION 10-A

FERRY ROAD:
500LF INTERTSECTION SIGHT DISTANCE FOR 45 MPH DESIGN SPEED FROM CITY ORDINANCE TABLE 10-1 & ILLUSTRATION 10-A

JOB NO: 080-020
FIELD BOOK: N/A
FIELD BOOK: N/A
DRAWN BY: MK
CHECKED BY: KEK
COMPLETED: 04/07/18

REVISIONS:
1. 09-18-18: REVSD PER CITY COMMENTS
2. 11-05-18: REVSD PER FPD COMMENTS
3. 01-18-19: REVSD PER CITY COMMENTS
4. 02-18-19: REVSD PER CITY COMMENTS

FILE: I:\080-020 Cantera Lot 2 Sub Area C\Engineering\Drawings\Final Engineering

PREPARED FOR:
CANTERA DEVELOPMENT HOLDINGS, LLC.
TWO NORTHFIELD PLAZA, SUITE 320
NORTHFIELD, IL 60093
TEL. :(847) 562-2001

Bollinger, Lach & Associates, Inc.
CONSULTING ENGINEERS
339 PIERCE ROAD SUITE 200 ITASCA, IL 60143
P: (630) 438 8400 F: (630) 438 8444 www.bollingerlach.com
ITASCA * CHICAGO * ALGONQUIN * LAKE GENEVA * SOUTH BEND * INDIANAPOLIS

TURNING MOVEMENT & SIGHT DISTANCE PLAN

RIVER VIEW WEST
CITY OF WARRENVILLE, ILLINOIS

SHEET NUMBER
49
OF 51

This space reserved for Recorder's use only.

MASTER DECLARATION OF COVENANTS, CONDITIONS RESTIUCTIONS AND EASEMENTS FOR THE RIVERVIEW WEST SUBDIVISION

THIS INSTRUMENT PREPARED BY AND AFTER RECORDING RETURN TO:

Nazar Kashuba LLC
Two Northfield Plaza, Suite 310
Northfield, Illinois 60093

PERMANENT REAL ESTATE INDEX NUMBERS:

ADDRESS OF PROPERTY:

THIS MASTER DECLARATION is made and entered into by CANTERA APPARTMENTS LLC, an Illinois limited liability company (the "Declarant"):

RECITALS:

A. The capitalized terms used in these Recitals, if not otherwise defined herein, shall have the meanings set forth in Article II hereof (Definitions).

B. Declarant is the owner of the real property situated in Warrenville, Illinois and legally described in Exhibit A attached hereto and known as The Riverview West Subdivision ("Property");

C. Declarant intends to develop the Property into a mixed residential/commercial community consisting of 364-unit rental apartment building (hereinafter referred to as the "Rental Parcel" and described on **Exhibit B** attached hereto), 60 townhome units (hereinafter referred to as the "Townhome Parcel" and described on **Exhibit C** attached hereto), and 40,000 square foot commercial plaza (hereinafter referred to as the "Commercial Parcel" and described on **Exhibit D** attached hereto);

D. Declarant intends that the Townhome Parcel and the Commercial Parcel will be submitted to further Declarations that will establish the further governance of the particular dwelling units within such Parcels in a manner consistent with the terms of this Master Declaration.

E. Declarant desires by this Master Declaration to provide for the upkeep and maintenance of the Maintenance Area and the Off-Site Improvements, and to protect the respective values of each such Parcel, by providing for, declaring and creating certain easements, covenants, and restrictions against and affecting the Rental, the Townhome and the Commercial Parcels, or of any portion thereof or interest or estate therein, which will be binding upon all present and future Owners, and which will inure to the benefit of all present and future Owners, to the extent provided hetein.

NOW, THEREFORE, Declarant hereby declares that the Property and any part thereof is and shall be owned, held, developed, mortgaged, leased or otherwise encumbered, transferred, assigned, sold, conveyed and accepted subject to this Declaration, and declares that each of the following easements, covenants, conditions, restrictions, burdens, uses, privileges and charges created hereunder shall exist at all times hereafter amongst, and be binding upon and inure, to the extent provided herein, to the benefit of all parties having or acquiring any right, title or interest in or to any portion of, or interest or estate in, the Property and each of the foregoing shall run with the land subject to this Declaration.

ARTICLE I
Incorporation of Recitals

The foregoing Recitals are hereby incorporated by reference in the body of this Master Declaration as if fully set forth herein.

ARTICLE II
Definitions

2.1 "Annual Budget" shall mean the projection of expenses, reserve and income provided for in Section 4.6 below.

2.2 "Assessment" means the sums required to be paid by Owners to pay for Common Expenses pursuant to this Master Declaration. The term Assessment shall also include sums required to

be paid for reserves.

2.3 "Association" shall mean an Illinois not-for-profit corporation formed as a homeowner's/common interest community for the purpose of governing Townhome Parcel and/or Commercial Parcel.

2.4 “City” shall mean the City of Warrenville.

2.5 "Common Expenses" shall mean: i) the reasonable costs to execute the Maintenance, including without limitation, landscape maintenance costs, watering costs, electrical utility costs, snow removal costs) property manager fees and insurance premiums; ii) the reasonable costs to administer the Maintenance Fund; iii) the reasonable costs to enforce the terms of this Master Declaration (including reasonable litigation expenses; iv) such amounts specifically identified as Common Expenses under this Master Declaration; and v) such other costs, consistent with the subparagraphs (i) through (iv) of this subparagraph that may be included in the Annual Budget.

2.6 "Commercial Parcel" shall have the meaning set forth in Paragraph C of the Recitals of this Master Declaration

2.7 "Commercial Units Declaration" shall mean a declaration, approved by the City prior to its execution and recordation, that may be recorded against the Commercial Parcel (or portion thereof) for purposes of submitting the Lots within the Commercial Parcel to the terms of said Declaration.

2.8 “Community”, referenced in Section 4.4 of this Declaration, shall mean the owners of the Rental Parcel, the Townhome Parcel, and/or Commercial Parcel.

2.9 "Declarant" means CANTERA APPARTMENTS LLC, and Illinois limited liability company, its successors and assigns.

2.10 "Easements" means all easements granted, reserved, provided for, or created pursuant to or in accordance with the terms and provisions of this Master Declaration.

2.11 "Improvement" or "Improvements" shall mean and include any and all subdivision signage, landscaping, watering facilities and lighting facilities, pedestrian walkways, fences, landscaping, planters, trees, flowers, bushes, shrubs ground cover, and such other amenities installed by the Declarant or the Manager or a governmental body from time to time in the Maintenance Area,

2.12 "Initial Purchaser" means the grantee under a Deed to an entire Parcel from the Declarant to a third party. In the event that a grantee is an Illinois land trust, the term Initial Purchaser shall jointly and severally include the beneficiary of such land trust.

2.13 "Lot" shall mean a lot of record established by the Plat of Subdivision.

2.14 "Maintenance" means and includes operating, managing, maintaining, repairing and replacing when necessary or desirable the Improvements in order to keep Maintenance Area and the Off-Site Improvements in a neat, healthy and sightly condition consistent with a first-class, development and in compliance with the approved PUD plans and documents, including but not limited to the following:

a. stormwater management system on the Property and Outlot A in accordance with the approved PUD plans and documents; [need exhibit]
b. landscaping of Outlot A in accordance with the approved PUD plans and documents; [need exhibit]

c. landscaping within ROW for the proposed newly dedicated section of Torch Parkway; [need exhibit]
d. ground and directional signage for and/or within the Property;
e. the private north-south street between Torch Parkway and Ferry Road
f. Access to the DuPage Forest Preserve path along the river and all pathways illustrated on the PUD plans. [need exhibit]

2.15 "Maintenance Area" shall mean all real property described as **Exhibit E** attached hereto.

2.16 "Maintenance Fund" shall mean the segregated account maintained by the Manager into which all Assessments, except reserves, and other sums collected by the Manager pursuant to this Master Declaration shall be deposited and from which Common Expenses shall be paid.

2.17 "Manager" shall mean the person responsible to supervise the Maintenance and administer the Maintenance Funds pursuant to Article IV of this Master Declaration.

2.18 "Master Declaration" means this Master Declaration of Covenants, Conditions, Restrictions and Easements, as amended from time to time.

2.19 "Off-Site Improvements" means parcels of land designated as "Outlot A" and the "Torch Parkway Island." [Need Exhibit]

2.20 "Owner" means the record owner(s) of the of a fee simple interest in any Lot, common element, townhome unit or portion thereof in the Property.

2.21 "Plat" shall mean the plat for The Riverview West Subdivision, as recorded in the Office of the Recorder of Deeds of DuPage County, State of Illinois as Document No. _____.

2.22 "Property" means the real property legally described on **Exhibit "A"** attached hereto.

2.23 "Reserve Fund" shall mean the segregated account into which all reserves shall be deposited and from which capital expenditures and/or short falls in the Maintenance Fund may be paid.

2.24 "Recorder" means the Recorder of Deeds of DuPage County, Illinois.

2.25 "Townhome Declaration" shall mean a declaration, approved by the City prior to its execution and recordation, that may be recorded against the Townhome Parcel (or portion thereof) for purposes of submitting the Lots within the Townhome Parcel to the terms of said Declaration. At the election of the Initial Purchaser of the Townhome Parcel, the Townhome Parcel may be submitted to the Illinois Condominium Property Act and be governed by a Condominium Declaration.

2.26 "Townhome Parcel" shall have the meaning set forth in Paragraph C of the Recitals of this Master Declaration.

2.27 "Turnover Date" means the date upon which the Declarant's right to amend this Declaration is terminated pursuant to Section 9.2 hereof.

ARTICLE III
Easements in Favor of the Manager

3.1. Subject to the limitations set forth in Section 3.2 hereof, the following Easements in, to,

under, over, upon, through and about the Maintenance Area in favor of the Manager and the Declarant and their respective contractors and licensees are hereby granted, reserved, declared and created:

(a) A non-exclusive Easement for the purpose of installing and maintaining the Improvements,
(b) A non-exclusive Easement for ingress and egress for persons, material and equipment to carry out the Maintenance.

3.2 No portion of the Maintenance Area that is owned by a governmental body shall be deemed burdened by Easements unless such governmental body records an instrument granting such Easements.

3.3. The rights and responsibilities relating to the Easements created under this Article shall be exercised and enjoyed not by any individual Unit Owner, but, rather, by the duly authorized representative of the Manager or the Declarant.

ARTICLE IV
Operation, Manager, Maintenance, Assessments

4.1 The Declarant shall, at its expense, cause such Improvements to be installed in the Maintenance Area as required by the landscape plan approved by the City. The Declarant shall cause the Maintenance Area to be completed through _____, and the Maintenance shall be undertaken by the Manager as a Common Expense thereafter.

4.2 The Declarant shall, at its expense, cause the Off-Site Improvements to be installed and completed as required by the Easement, Improvement and Maintenance Agreement (Detention Pond) dated November 12, 2018 and recorded as Document No. R2018- 108094 ("Detention Pond Easement"). All terms, provisions and conditions of the Detention Pond Easement are restated and incorporated in the Master Declaration and Declarations of the Parcels. The Maintenance of the Off-Site Improvements shall be undertaken by the Manager as a Common Expense thereafter.

4.3 The Declarant shall initially serve as the Manager. Upon installation of the Improvements by the Declarant and formation of the Associations governing the Townhome and Commercial Parcels, the rights and responsibilities of the Manager shall be deemed transferred to the owner of Rental Parcel, which shall retain the role of Manager indefinitely.

4.4 The Manager shall cause the Maintenance to be carried out in a timely fashion. The Manager may employ such contractors, vendors, property managers and professionals as may be reasonably required to execute the Maintenance and the costs thereof shall be considered a Common Expense.

4.5 Membership in this Master Association shall be mandatory for each Association for a particular Parcel, and each property owner and successive owner within the Townhome Parcel, Commercial Parcel and Rental Parcel.

4.6 Each Community shall pay its pro rata share of the Common Expenses by means of an assessment to be levied by the Master Association, that meets the requirements for becoming a lien on the property in accordance with statutes of the State of Illinois, according to the following percentages:

Rental Parcel	364 units	62%
Townhome Parcel	60 units	22.5%
Commercial Parcel	40,000 sq. feet	15.5%

Except as otherwise provided herein, these percentages shall apply regardless of the number of

dwelling/commercial units actually construed on a Parcel.

4.7 Upon the failure of an Association of a particular Parcel to pay its Assessment as required, the individual Lot Owners within that particular Parcel shall be jointly and severally liable to pay the Assessment for their Parcel on behalf of their Association.

4.8 An Annual Budget for the projected Common Expenses and contingency reserves for each year shall be prepared by the Manager in consultation with a committee composed of three (3) members, one designated by each president of the respective Associations. Prior to the incorporation of an Association for a particular Parcel the Initial Purchaser of the particular Parcel shall serve on the committee in the place of a president's appointee. A vote on the Annual Budget will be made by the committee and the decision of the majority of the members shall control. Upon its adoption, the Manager shall be bound by the Annual Budget. The committee may adopt rules and procedures to govern its operation. The Annual Budget shall be published every November 1st and shall be effective for the ensuing calendar year. The Annual Budget shall be binding on the Owners and shall not be subject to further ratification or approval by their respective Associations. Failure to establish an Annual Budget shall not relieve any Association or Owner from paying an Assessment for a given year; rather, the Annual Budget and Assessment for the prior year shall be deemed applicable for the current year. In the event that extraordinary Common Expenses are incurred and there are insufficient sums in the Maintenance Funds (including reserves) the Manager may call a special meeting of the committee and the committee shall adopt an Amendment to the Annual Budget. The Assessments shall be increased with the next quarterly payment in accordance with the same percentages set forth in Section 4.7 below to reflect the Amendment to the Budget.

4.9 Upon notice by the Manager, the Owners shall pay their entire Annual Assessment into the Maintenance Fund pursuant to the Annual Budget on January 1st of each year. Interest shall accrue on unpaid Assessments at rate of eighteen (18%) percent per annum.

4.10 The Manager shall maintain separate books and records relating to Common Expenses, the Maintenance Fund and the Reserve Fund. Such books and records shall be subject to review and copying by the duly authorized representatives of the Associations on a quarterly basis during regular business hours and upon reasonable advance notice.

4.11 Each Initial Purchaser of the Commercial Parcel and the Townhome Parcel shall cause their respective Declarations and Townhome Declarations to conform to the terms of this Master Declaration and specifically to require payment of the Assessments as provided for herein.

4.12 Upon the request of the Manager or the Declarant, each Association shall furnish a current roster of the names and addresses of its Members.

4.13 Nothing herein shall preclude the Manager from receiving a fee for its services and such fee being paid as a budgeted Common Expense, provided such fee shall be reasonable and no greater than such fees charged by independent property managers operating in the Warrenville area for comparable services.

ARTICLE V
Insurance

5.1 The Manager shall procure and maintain the following insurance policies as a Common Expense:

a) A policy insuring the Maintenance Area against loss or damage by fire and such hazards

as are customarily contained in fire and extended coverage, vandalism and malicious mischief endorsements,

b) A policy providing general liability coverage against claims for personal and bodily injury or property damage occurring in, on; under, within upon or about the Maintenance Area or as a result of operations thereon.

c) A policy providing such other or additional coverage as the Manager may deem appropriate using its reasonable and prudent business judgment.

5.2 All such policies shall be in such amounts as may be required by law from time to time and in such amounts as the Manager may deem reasonable and prudent

5.3 Such policies shall name as additional insureds; each Owner, the Associations, their respective boards and officers and, until the Turnover Date, the Declarant. Certificates delineating all forms of coverage and endorsements required hereunder shall be delivered to each Association upon their request.

ARTICLE VI
Rights and Remedies

6.1 The Manager and the City shall have all remedies available at law or in equity in enforcing the terms of this Master Declaration. However, it shall be the duty of the Manager to enforce the terms of this Master Declaration using its reasonable and prudent business judgment.

6.2 If any Owner or Association fails to pay his Assessment or is otherwise in default of this Master Declaration, the Manager may, within ten (10) days after written notice or demand by the Manager and failure of the defaulting patty to cure the default, file suit in the circuit court against such Owner or Association. In the event such suit is filed, the defaulting Owner or Association shall be liable for all costs and fees, including reasonable attorney's fees, incurred by the Manager. Any sums collected by the Manager shall be deposited into the Maintenance Fund.

6.3 If, within ten (10) days after written notice or demand by the City, any Association of a particular Parcel fails to perform any maintenance or repair work pursuant to the terms of this Master Declaration or Declarations for a particular parcel, the City shall be granted the right to perform such maintenance or repair work that the such Association has neglected to perform, to assess the cost for such work against Association, and to have a lien against the property of any Association failing to pay such assessment. For this purpose alone, the City shall have all the rights and powers of the Association and its governing body under the agreements and declarations creating each Association.

ARTICLE VII
Estoppel Certificates

7.1 The Manager or its designee shall be permitted to issue certificates to Owners and third parties, including lenders and title insurance companies indicating whether:

(a) the terms and provision of this Declaration are unmodified and are in full force and effect or if modified, identifying any such modifications;

(b) whether there is any existing default hereunder and if so1 the nature of the default; and
(c) such other information as may be reasonably requested.

7.2 The Manager, may charge the requesting person a reasonable fee for preparing executing and delivering the certificate. Such fees shall be considered a Common Expense.

ARTICLE VIII
Associations Acting for Owners

8.1 Except for either the Declarant or an Initial Purchaser or an Association who may also be an Owner, no individual Owner shall have the right to take any action under this Master Declaration or to enforce any of the rights or privileges granted by this Master Declaration for the benefit of the particular Parcel in which his/her/its Lot or Unit is situated. Rather, all such action shall be taken by or through the Association which has jurisdiction over the Parcel in which Owner's Lot (or portion thereof or unit) is situated. In the event of any such action taken by an Association, the Owner shall be bound as if such Owners had expressly consented and agreed to such actions by such Association. Except as otherwise noted herein, any requirement for any Owner to furnish a notice or deliver a document may also be performed by the Association of which such Owner is a member.

ARTICLE IX
Amendments to Declaration

9.1 All changes, amendments and modifications to the Master Declaration that relate to the scope of the Maintenance of the Maintenance Area and Off-Site Improvements or any obligations contained in the final approval ordinance shall require a written approval by the City.

9.2 Until the Turnover Date, the Declarant reserves the right and power to record an amendment to and/or an amendment and restatement of this Master Declaration ("Amendment") at any time and from time to time. An Amendment, may, among other things: (i) correct clerical or typographical errors in this Master Declaration; (ii) revise or grant additional Easements (including, without limitation, on, over, under, in, across, through and about the areas depicted on the Plat as may be necessary, in Declarant's sole judgment, in order to effectuate the Maintenance; (iii) modify definition of Maintenance Area and/or other provisions as may be required to comply with the requirements of the City or other governmental agency; (iv) modify the percentages of Common Expenses pursuant to paragraph 4.4(b); (v) modify the terms of Section 12.4 hereof, subject to the written consent of the City of Warrenville; and (vi) make such other modifications of, or additions or deletions to this Master Declaration as may be necessary, in Declarant's sole judgment, in order to more efficiently and effectively provide for the Maintenance and the administration of this Master Declaration, In furtherance of the foregoing, a power coupled with an interest is hereby reserved and granted to the Declarant to vote in favor of, make, or consent to an Amendment on behalf of each Owner as proxy or attorney-in-fact, as the case may be. Each deed, mortgage, trust deed, other evidence of obligation, or other instrument affecting any portion of the Property, and the acceptance thereof shall be deemed to be a grant and acknowledgment of, and a consent to the reservation of, the power to the Declarant to vote in favor of, make, execute and record Amendments. Each Amendment shall be recorded with the Recorder and shall be effective from and after the date of recording,

9.3 The Declarant's right to amend or restate the Master Declaration shall terminate upon the earlier of December 31, _____, or b) such time as the Declarant shall voluntarily turn over the right to amend this Master Declaration to the Manager by written notice to each Association and the Manager.

9.4 From and after the Turnover Date, the power to amend or restate this Master Declaration shall be deemed transferred from the Declarant to the Manager for the same purposes and under the same terms as provided in Section 9.1 hereof; provided any such Amendment by the Manager shall be countersigned by the president and secretary of the Association for the Townhome Parcel, the president and secretary the Association for the Commercial Parcel and the Owner of the Rental Parcel prior to taking

effect and prior to filing with the Recorder.

ARTICLE X
Notices

l0.1 All notices, demands, elections or other communications required, permitted or desired to be served hereunder ("Notices") shall be in writing and shall be delivered in person or mailed as certified or registered mail, postage prepaid, return receipt requested, addressed as below stated:

For Notices to the Declarant:

_____
_____
_____

For Notices to the Rental Owners:

_____
_____
_____

For Notices to the Townhome Owners:

_____
_____
_____

For Notices to the Commercial Owners:

_____
_____
_____

The foregoing notwithstanding, at such time as an Association for a Parcel is created, notices to the Owners within such Parcel shall be delivered or mailed, as aforesaid, to any officer, director or managing agent of the applicable Association to such address as may appear in any public record instead of the addresses set fo1th above.

10.2 So long as any portion of a Parcel remains subject to a Declaration establishing an Association for its particular Community, (i) an Owner or Association of another Parcel may, but shall not be obligated to, give personal notice to any Owner, and notice to the Association shall be deemed sufficient and effective notice to all Owners within such Parcel, and (ii) the Association alone shall be empowered to give notice on behalf of any or all Owners falling within its Parcel, which notice shall be binding on such Owners.

10.3 Any Notice mailed as aforesaid shall be deemed received three (3) business days after deposit in the United States mail with proper postage prepaid1 or upon actual receipt, whichever is earlier. Addresses for service of Notice may be changed by written notice served as hereinabove provided at least thirty (30) days prior to the effective date of such address change, nothing herein contained, however, shall be construed to preclude service of any Notice in the same manner that service of a summons or legal process may be made.

ARTICLE XI
Limitation of Liability

11.1 Except for willful and fraudulent acts, Declarant nor the Manager, their Boards, officers and their respective employees and agents shall be liable to the Owners or any Association or third party for any mistake of judgment or for any acts or omissions of any nature whatsoever, in their respective positions, except for such acts or omissions found by a court of competent jurisdiction to constitute willful misfeasance, gross negligence or fraud. The Owners and their respective Associations shall indemnify, hold harmless, protect and defend the foregoing parties against all claims, suits, losses, damages, costs and expenses, including without limitation, reasonable attorney's fees and amounts paid in reasonable settlement or compromise incurred in connection therewith. The burden of the foregoing indemnity shall be borne by the Owners and their respective Associations at the time such loss, damage, cost or expense is incurred in the same proportion as Assessments are borne by the Owners and their respective Associations as provided in Section 4.4 and 4.5 hereof.

ARTICLE XII
General

12.1 Nothing contained in this Master Declaration shall be deemed to bind the City of Warrenville without its express written consent. To the extent that any portion of the Maintenance Area falls within a public right of way, the Maintenance of such area shall be subject to compliance with the rules, regulations, laws and ordinances of the pertinent governmental agency having jurisdiction over such right of way.

12.2 The illegality, invalidity or unenforceability under law of any covenant, restriction or condition or any other provision of this Master Declaration shall not impair or affect in any manner the validity, enforceability or effect of the remaining provisions of this Master Declaration.

12.3 The headings of Articles in this Master Declaration are for convenience of reference and shall not in any way limit or define the content, substance or effect of the Articles.

12.4 The Easements, covenants, conditions and restrictions contained in this Master Declaration shall be enforceable by the Association, the Declarant, the City, the Manager and the Associations and the Owners and their respective successors and assigns for a term of forty (40) years from the date this Master Declaration is recorded, after which time said Easements, covenants, conditions and restrictions shall be automatically extended without further act or deed of the Owners, except as may be required by law and as provided below, for successive periods of ten (10) years each, subject to the provisions of Article IX hereof or this Section 12.4.

12.5 All the Easements, covenants, restrictions and conditions herein contained shall run with the land and shall inure to the benefit of and be binding upon Declarant and each subsequent holder of any interest in any portion of the Property and their grantees, mortgagees, heirs, successors, personal representatives and assigns with the same full force and effect for all purposes as though set forth at length in each and every conveyance of the Property or any part thereof or interest herein.

12.6 Easements created hereunder shall not be presumed abandoned by nonuse or the occurrence of damage or destruction of a portion of the Improvements subject to an Easement unless the Associations benefited by such Easement state in writing their intention to abandon the Easement or unless the Easement has been abandoned for an uninterrupted period in excess of two (2) years.

12.7 This Master Declaration and said other instruments shall, in all respects, be governed, construed, applied and enforced in accordance with the laws of Illinois including, without limitation, matters affecting title to all real property described herein.

12.8 This Master Declaration is not intended to give or confer any benefits, rights, privileges, claims, actions or remedies to any person or entity as a third-party beneficiary under any statutes, laws, codes, ordinances, rules, regulations, orders, decrees or otherwise.

12.9 Each provision of the Recitals to this Master Declaration and each Exhibit attached hereto is hereby incorporated in this Master Declaration and is an integral part hereof.

12.10 No charges shall be made for any Easements or rights granted hereunder or for any services provided hereunder unless otherwise provided or permitted under the terms of this Declaration.

IN WITNESS WHEREOF, CANTERA APPARTMENTS LLC, as Declarant, has caused its seal to be affixed hereunto and caused its name to be signed in these presents by a Manager this __th day of _____, 2019.

CANTERA APPARTMENTS LLC,
an Illinois limited liability company

By: _____
_____, Its Manager

Exhibit A

Legal Description of the Property

Exhibit B

Legal Description of the Rental Parcel

Exhibit C

Legal Description of the Townhome Parcel

Exhibit D

Legal Description of the Commercial Parcel

Exhibit E

Maintenance Area

ATTACHMENT A

4/22/19

Architectural

A-1 Title Sheet/Site Plan (color) - revised
A-2 Construction Phasing Plan- background updated
A-3 Site Plan - revised
A-4 Court Yards - no change
A-5 First Floor Plan (Residential Building) - denotations added
A-6 Second floor plan (Residential Building) - denotations added
A-7 Third and fourth floor plan (Residential Building) - denotations added
A-8 Typical Wall Sections - no change
A-9 Color Elevations - denotations added
A-10 Monument, Wall and Directional Signs- directional signs revised, visibility diagrams added.
A-11 Bench Details, typ. Fence Detail, RTU Visibility Diagram – visibility diagram removed
A-12 Green Areas- background updated
A-13 Walking Path Plan- background updated
A-14 Townhome Guest Parking Diagram- background updated
A-15 Emergency Response Diagram- background updated
A-16 Building Elevation 1, 2, 3 - denotations added
A-17 Building Elevation 4, 5 - denotations added
A-18 Building Elevation 6, 7, 8 - denotations added
A-19 Building Elevation 9, 10 - denotations added
A-20 Building Elevation 11, 12, 13, 14 - denotations added
A-21 Building Elevation 15, 16 - denotations added
A-22 Building Elevation 17, 18, 19, 20 - denotations added
A-23 Building Elevation 21, 22 - denotations added
A-24 Building Elevation 23, 24 - denotations added
A-25 Building Elevation 25, 26 - denotations added
A-26 Building Elevation 27, 28, 29 - denotations added
A-27 Building Elevation 30, 31, 32 - denotations added
A-28 Material summary - no change
A-29 Material summary - no change

Engineering

1) Revised Proposed Site Improvement Plans for Riverview West, dated April 19, 2019.

2) Revised Stormwater Management Report, dated April 19, 2019.

3) Revised Engineer's Opinion of Probable Construction Cost, dated April 19, 2019.

Landscaping

1. Cover Sheet
2. Tree Preservation Plan
3. Tree Preservation Plan
4. Landscape Plan, Notes & Maintenance Matrix
5. Landscape Plan
6. Landscape Plan, Plant Legend & Sections
7. Landscape Plan
8. Landscape Plan
9. Landscape Plan & Planting Details
10. Landscape Plan
11. Landscape Plan
12. Landscape Plan
13. Landscape Plan, Details & PUD Data Tables

Surveyor

1. Final Plat Of Subdivision, CANTERA SUB-AREA "C", LOT 2 SUBDIVISION, 4 sheets.

Traffic

1. Letter of Opinion
2. Trip Generation Report
3. Turning Movement & Sight Distance Plan by BLA
4. Sight Distance Exhibit (sheet 1 and 2) by BLA

Photometric Study and Cut Sheets

PH-1 Photometric Plan - multi-family, commercial, and parking - no change
PH-2 Photometric Plan - Torch Parkway - revised
PH-3 Photometric Plan - west side of Commercial Drive - no change
PH-4 Photometric Plan - monument signs - no change

CS-1 Typical balcony connection detail - no change
CS-2 Typical balcony drawing - no change
CS-3 Typical balcony product data - no change
CS-4 Typical bicycle rack - no change
CS-5 Typical Hardie panels and siding - no change
CS-6 Typical magic pak product data – no change
CS-7 Typical patio screen wall detail - dimension added
CS-8 Typical pool fence - note added
CS-9 Rooftop Units - new
CS-10 Generator - new
CS-11 Color chart - new
LD-1 Typical light detail (light pole and monument sign) - multi-family, commercial, and parking - no change
LD-2 Typical light detail - west side of Commercial Drive - no change
LD-3 Typical light detail - Torch Parkway - no change
LD-4 Typical balcony light fixture - residential - no change
LD-5 Typical wall mount light fixture - residential - no change
LD-6 Typical Sign Lighting – new

john conrad schiess architect, ltd
7706 Central Avenue
River Forest Illinois 60305
john@jcsarchitect.com

Riverview West Development

Report Date: April 2, 2019

Topic: Status of School District Boundary agreements between district 200 and district 203

Requested By: Mr. Ron Mentzer
City of Warrenville

On Monday April 1, 2019 the author received an email from William Farley and then an email from Mr. Robert Ross on April 2, 2019 regarding their positions on the school boundary relocation.

Mr. Farley stated the joint decision to have the developer start the process of boundary relocation. Mr. Farley included two items in his email outlining the process.

The author then forwarded the emails from Mr. Farley and Mr. ross which included the process outline to the Interforum principals, Igor Blumin and Alex Zdanov. Mr. Blumin reported that he will have their attorneys review the documents and begin the process as outlined.

The author will report any updates as the redistricting process continues.

Submitted by:

John Schiess,

John Conrad Schiess, Architect, Ltd.

Attachments:

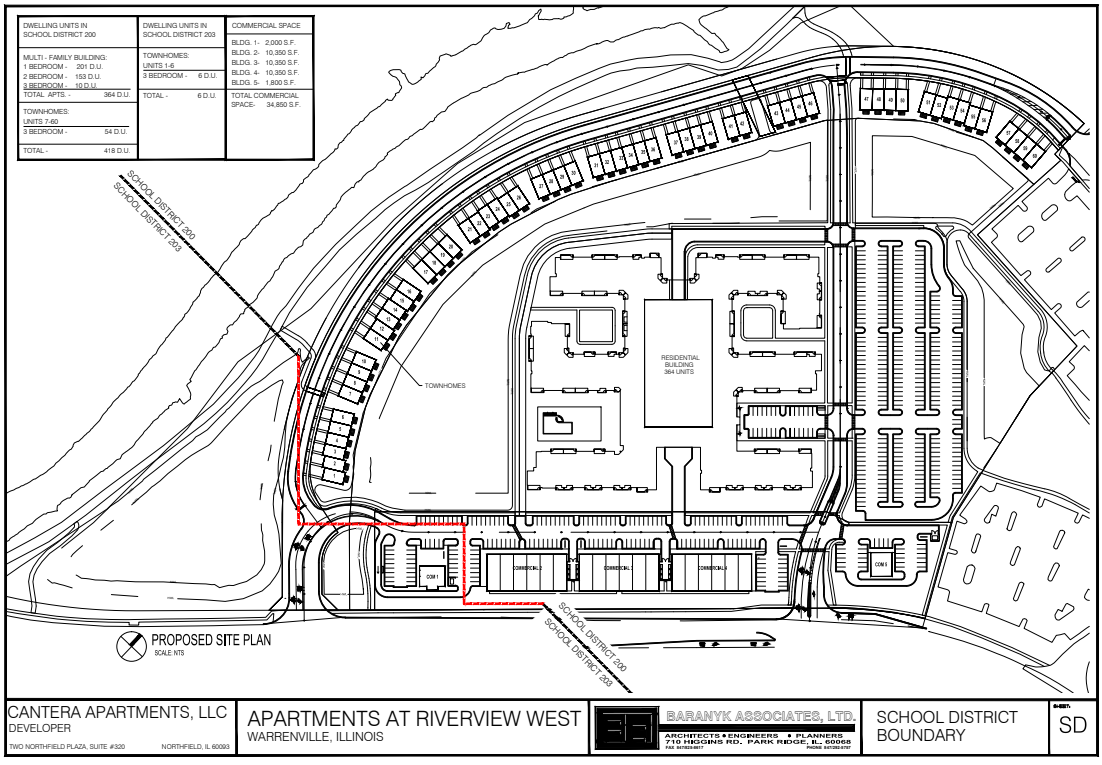
Proposed School District Boundary relocation
Braranyk and Associates drawing “SD”

Copy:

Bob Ross
Chief Operating Officer
Naperville Community Unit School District 203

William R. Farley
Assistant Superintendent of Business Operations, CSBO

Igor Blumin
Interforum Holdings, Inc.



April 24, 2019

Mr. Ron Mentzer
Community Development Director, City of Warrenville

RE: Riverview West Final PUD Applicant Responses to Staff Comments -2nd Review

Our Team has reviewed the Staff Comments dated April 11, 2019 for the Subject Project and submit the following responses:

1. **List of Documents Submitted:** Provide a list of all final revised documents for this project with your next submittal, including the name of the document, the name of company prepared the document and the date of the document. The list should include all cut sheets, specifications, documents and plans.

Response: See Index of documents submitted as Attachment A

2. **School District Boundary Negotiation**: Provide an update on the status of the boundary adjustment agreement negotiation between School Districts 200 and 203.

Response: See Memorandum on the School District Boundary Negotiation submitted as Attachment B

3. **Civil Engineering Review**: Address review comments and recommendations contained in the April 11, 2019, review memo from City/Consulting Civil Engineers (attached).

Response: See BLA letter dated April 19, 2019 containing Engineering responses submitted as Attachment C

4. **Warrenville Fire Protection District Review**: Address all City of Warrenville code-required comments contained in the Warrenville Fire Protection District's review memo dated April 10, 2018 (attached).

Response: See Baranyk and Associates letter dated April 19, 2019 containing responses to Fire Protection District comments submitted as Attachment D

5. **Apartment Building:**
    a. **Roof top equipment:** The location of roof top equipment is illustrated on Sheet A-3. The requested details on the proposed roof top equipment height and its screening are not provided. Any positive staff recommendation on this project will include the following condition: "All roof top equipment must be fully screened. The top of parapet walls or roof screens shall be at least as high as all roof top equipment. Screens must be consistent with the architecture and color scheme of the building. Details illustrating the locations of roof top equipment, the equipment height, and screening design shall be provided for staff review and approval prior to the issuance of a building permit".

Response: See page 3 of 5 Baranyk and Associates letter submitted as Attachment D
Additionally, the Applicant request that Staff make a recommendation to Council that the Applicant can revisit the screening issue once the roof top equipment have been more clearly defined and located on the roof with the plan to provide screening in conditions where the equipment is visible within a 500 foot radius around the building at grade level.

    b. **Fence Detail:** Three separate fence detail cut sheets are provided for fence around pool, section of ponds and court yards, however the fence material type and color are not specified. Any positive staff recommendation on this project will include condition requiring the fence be constructed of high quality, black aluminum.

Response: See page 3 of 5 Baranyk and Associates letter submitted as Attachment D

    c. **Screen walls/fences:** Cut sheets for screen walls/fences proposed around first floor unit patios refer to "cedar board". The architectural plans refer to "wood fence at patio". Provide information on height and color of the proposed screen walls.

Response: See page 3 of 5 Baranyk and Associates letter submitted as Attachment D

    d. **Ground Sign Lighting:** Provide cut sheet with (specified selected options) for lights proposed to illuminate ground signs.

Response: See page 3 of 5 Baranyk and Associates letter submitted as Attachment D

e. **Balcony Details:** Provide construction detail for proposed balconies that illustrates what flooring/base materials are being proposed. Explain what measures will be taken to minimize corrosion on these exterior painted steel architectural improvements.

Response: See page 3 of 5 Baranyk and Associates letter submitted as Attachment D

f. **Building Elevation Colors:** Provide information on color scheme for the proposed apartment building.

Response: See page 3 of 5 Baranyk and Associates letter submitted as Attachment D

g. **EV Charging Stations:** Any positive recommendation on this project will include a condition requiring installation of EV charging stations for apartment residents.

Response: See page 3 of 5 Baranyk and Associates letter submitted as Attachment D

6. **Site Plan and Landscape Plan:**
   a. **Site Plan:** Illustrate all proposed property lines on the Site Plan, sheet A-3.
   b. **Ferry Road Street Trees:** Landscaping along Ferry Road should be consistent with the Cantera parkway landscaping design, which includes a double row of consistent species of shade trees along the entire frontage of the Subject Property, including Outlot A. The proposed Landscape Plan illustrates the required double row of parkway trees. Any positive staff recommendation on this project will include a condition requiring the City Arborist review and approval of the parkway tree species selection.

Response: See page 3 of 5 and 4 of 5 Baranyk and Associates letter submitted as Attachment D
See page 1 The Lannert Group letter submitted as Attachment E

c. **Access Drive Median Planting:** Landscaping of the medians within north-south access drive shall be illustrated on the Landscape Plan. The Cantera Development Control Regulations require median strips be planted with highly ornamental perennials and/or low shrub masses. The landscape median at the entrance of Diehl Road (north of the sidewalk) should be planted with low shrubs not exceeding 24 inches in height at maturity. The wider median area located further to the north should be planted with combination of trees and shrub masses.

Response: See page 1 The Lannert Group letter submitted as Attachment E

d. **Groundcover:** Groundcover should be noted and specified on the Landscape Plan.

Response: See page 1 The Lannert Group letter submitted as Attachment E

e. **Turf Details:** Except where occupied by planting beds, all landscaping areas shall be sodded, planted with native or adapted plant materials, or planted with seed/erosion control blanket combination. The Landscape Plan should clearly illustrate areas to be seeded/sodded.

Response: See page 1 The Lannert Group letter submitted as Attachment E

f. **Generator**: An emergency backup generator is proposed on top level of the garage. Provide generator specifications and dimensions, including height, width and length and provide enclosure/screening details, including type of wall, its height.

Response: See page 4 of 5 Baranyk and Associates letter submitted as Attachment D

g. **Trash and Recycling Station:** Explain the proposed refuse collection improvements and the planned refuse pickup/removal system. Will recycling facilities be incorporated in the refuse collection system/improvements? If so, provide details and illustrate on the plans.

Response: See page 4 of 5 Baranyk and Associates letter submitted as Attachment D

h. **Mailroom:** Explain where mail will be delivered to/picked up.

Response: See page 4 of 5 Baranyk and Associates letter submitted as Attachment D

i. **Loading Area:** Illustrate loading area on the Site Plan.

Response: See page 4 of 5 Baranyk and Associates letter submitted as Attachment D

j. **Planting Calculations:** The Landscape Plan should include calculations confirming compliance with various quantitative landscape requirements of the Cantera Development Control Regulations and the Zoning Ordinance. This includes parking lot landscaping, perimeter parking lot landscaping, site perimeter landscaping, parkway tree planting (1 shade tree every 40 feet of the roadway), and SWM detention facility landscaping. See Section 11.K of the Zoning Ordinance for detention pond requirements and Section VI.C of the Cantera Development Control Regulations for detailed landscape requirements for all other areas. An example of the required landscape calculations for a similar mixed-use project is available on the City website at https://www.warrenville.il.us/DocumentCenter/View/10572

Response: See page 1 The Lannert Group letter submitted as Attachment E

k. **Building Foundation landscaping:** The submitted 3D color rendering for the building illustrates shrub rows in front of the proposed patio wooden screens on the ground level. The Landscape Plan does not illustrate any landscaping along wooden fence/screen walls. Staff recommends the landscape design incorporates shrub rows and/or ornamental grasses or similar landscape materials along the proposed wooden screen walls/fences to soften their appearance.

Response: See page 1 The Lannert Group letter submitted as Attachment E

l. **Light Poles:** All light poles should be illustrated on the Landscape Plan to eliminate conflicts with proposed location of trees.

Response: See page 1 The Lannert Group letter submitted as Attachment E

7. **Covenants:** Revise Master Declaration dated December 15, 2017 to address review comments outlined in the outlined on the attached Exhibit A.

Response: See revised Master Declaration of Codes, Covenants and Restrictions that is submitted as part of this response

8. **Signage:**
    a. **Monument Sign Setbacks**: Monument signs shall be setback from the street right-of-way line at least 12.5 feet and shall be outside of vision clearance triangle as defined in the Zoning Ordinance. In addition, signs are not permitted within 75 feet from the centerline of Ferry Road per Section V.D.5 of the Cantera DCRs.
    Based on the provided location of signs it is not clear whether they comply with setback requirements. Revise sign locations and provide dimensions on the Site Plan confirming compliance with the setback requirements. Illustrate setbacks from all right-of-way lines, including the new Torch Parkway right-of-way (not only Diehl Road).

Response: See page 4 of 5 Baranyk and Associates letter submitted as Attachment D

    b. **Site Wayfinding Signage**: Parking lot regulation/directional signage is limited to 9 square feet per face. The proposed directional signs #1 and 2 are approximately 30-square foot per face and thus exceed the maximum allowed area. The signs shall be revised to comply with the maximum area or a variation from the Sign Ordinance shall be applied for and approved.

Response: See page 4 of 5 Baranyk and Associates letter submitted as Attachment D

    c. **Apartment Building Wall Signs**: Wall signs are not permitted in the Cantera Special Development Multi-Family Use area, which the Subject Property is zoned for. Wall signage may not be installed unless a special approval for wall signage is applied for and received.

Response: See page 4 of 5 Baranyk and Associates letter submitted as Attachment D

9. **Irrigation:** A detailed Irrigation Plan shall be required at the time of Building Permit issuance for this project.

Response: See page 1 The Lannert Group letter submitted as Attachment E

10. **Commercial Lot Design Requirements:** Any positive staff recommendation on this project will include a condition requiring commercial component of this project be developed in accordance with the Commercial Lot Development Design Guidelines. Such guidelines are being finalized by City staff and will be provided separately.

Response: Understood and recommendation accepted

11. **Sanitary Sewer:** The Applicant shall pay the required sanitary sewer capacity fee (the amount to be finalized by the City of Naperville) prior to the final Plat and final PUD ordinance recording with the DuPage County.

Response: Understood and recommendation accepted

12. **School, Park and Library Contributions**: Unless otherwise approved by the City Council, the City Code requires the Applicant to pay the required school, park and library contributions for the subdivision at the time of building permit issuance for each building.

Response: Understood and recommendation accepted

13. **Fees and Security Guaranteeing Completion of Public Improvements**: The Applicant shall pay/submit all applicable review and inspection fees and the required security guaranteeing completion of public improvements prior to recording of Final Plat of Subdivision and Ordinance approving Final PUD for this project.

Response: Understood and recommendation accepted

14. **Traffic Enforcement Agreement**: A Private Property Traffic Enforcement Agreement (in a form acceptable to the City) shall be executed by the Property Owner and recorded by the City prior to any building permit issuance for this project.

Response: Understood and recommendation accepted

15. **DuPage County Traffic Impact Fee**: The DuPage County Traffic Impact Fee must be paid prior to the City's issuance of a building permit for this project. The information and application can be obtained at the DuPage County Division of Transportation at (630) 407-6674.

Response: Understood and recommendation accepted

16. **DuDOT Permit**: A Permit to perform work within County ROW Ferry Road is required from DuPage County DOT. A copy of the issued Permit shall be provided to City staff prior to commencement of such work.

Response: Understood and recommendation accepted

END OF RESPONSES

Submitted by:

John Schiess

John Conrad Schiess Architect, Ltd
7706 Central Avenue
River Forest, IL 60305

Attachments:

Attachment A - Document Index

Attachment B - School District Boundary Negotiation

Attachment C - BLA letter dated April 19, 2019 containing Engineering responses

Attachment D - Baranyk and Associates letter dated April 19, 2019 containing responses to Fire Protection District comments

Attachment E The Lannert Group letter dated April 16, 2019

Attachment F United Survey letter dated April 22, 2019

EXHIBIT D

FINAL PLAT OF SUBDIVISION

FINAL PLAT OF SUBDIVISION
CANTERA SUB-AREA "C", LOT 2 SUBDIVISION

0'10' 50' 100' 150' 200'

PERMANENT INDEX NUMBERS:
07 - 02 - 206 - 006 (AFFECTS LOT 2)
07 - 02 - 201 - 016 (AFFECTS OUTLOT "A")

BASIS OF BEARINGS:
ASSUMED THE NORTH LINE OF FERRY ROAD TO BE S46°22'27"W

OF PART OF THE NORTHEAST 1/4 OF SECTION 2, TOWNSHIP 38 NORTH, RANGE 9, EAST OF THE THIRD PRINCIPAL MERIDIAN, IN DUPAGE COUNTY, ILLINOIS.

AREA SUMMARY:
COMMERICAL USE AREA
LOT 1 AREA = 191,688 SQ. FT. OR 4.401 ACRES

MULTIFAMILY - APARTMENTS
LOT 2 AREA = 771,258 SQ. FT. OR 17.706 ACRES

MULTIFAMILY - TOWNHOMES
OUTLOT "A" AREA = 172,254 SQ. FT. OR 3.954 ACRES
AREA IN TORCH PARKWAY R.O.W. = 132,897 SQ. FT. OR 3.051 ACRES
LOT 3 AREA = 146,718 SQ. FT. OR 3.368 ACRES

TOTAL SUBDIVISION AREA = 1,414,815 SQ. FT. OR 32.480 ACRES

"FOR APPROVAL OF THIS PLAT SEE ORDINANCE
_____

WINFIELD TOWNSHIP

NAPERVILLE TOWNSHIP

CANTERA VILLAGE CONDO
PER DOCUMENT R99-028856

SOUTH LINE OF SECTION 35 - 39 - 9

NORTH LINE OF SECTION 2 - 38 - 9

N88°35'19"E 23.83'

ARC=217.83' RAD.=472.77' CH.=215.91' N60°33'16"E

ARC=126.48' RAD.=536.99' CH.=126.19' N80°33'39"E

ARC=245.48' RAD.=532.77' CH.=243.31' N60°33'16"E

ARC=109.89' RAD.=300.00' CH.=109.27' N84°14'51"E

80' R.O.W. HERETOFORE DEDICATED AS FOR PUBLIC STREET PURPOSES
TORCH PARKWAY
RECORDED FEBRUARY 7, 1996
PER DOCUMENT R96-020336

S00°28'26"W 69.77'

22.32' S85°15'33"E

10.21' S00°28'26"W

68.22'

20' PUBLIC UTILITY EASEMENT PER DOCUMENT R96-020336

ARC=16.19' RAD.=453.00' CH.=16.19' S89°09'25"E

S84°15'32"W 22.44'

S88°07'05" W 103.54'

OUTLOT "A"

N89°51'35"E 119.66'

N23°09'01"E 95.65'

77.71' N47°21'46"E

S49°04'44"W 116.75'

S56°43'47"W 26.74'

S65°47'16"W 97.99'

142.21'

S04°47'16"W 210.43'

S85°12'44"E 280.85'

S00°00'05"W 128.27'

N05°26'25"E 77.99'

S30°42'55"W 110.75' ARC=104.55' RAD.=360.00' CH.=104.18' S39°02'05"W

ARC=87.12' RAD.=300.00' CH.=86.82' N39°02'05"E

63.62' S42°38'49"W

N13°09'26"E 64.59'

N30°42'55"E 41.60'

N64°58'59"E 62.12'

STORMWATER MANAGEMENT EASEMENT HEREBY GRANTED

STORMWATER MANAGEMENT EASEMENT HEREBY GRANTED

STORMWATER MANAGEMENT EASEMENT PER DOCUMENT R2010-007747

WEST BRANCH OF DUPAGE RIVER

N27°10'52"E 326.54'

S30°42'55"W 271.24'

N30°42'55"E 423.58'

S30°42'55"W 388.67'

60' R.O.W. HEREBY DEDICATED AS FOR PUBLIC STREET PURPOSES
TORCH PARKWAY

N30°42'55"E

LOT 3

LOT 2

S11°13'04"E 271.32'

LOT 1

PLAT OF RESUBDIVISION OF CANTERA SUB-AREA "C" LOTS C1 AMD C2
RECORDED JANUARY 19, 2010 AS DOCUMENT R2010-007747

S27°46'11"E 9.28'

S27°46'11"E 187.46'

CROSS-ACCESS EASEMENT HEREBY GRANTED

N15°09'01"E 148.07'

60.00'

S24°23'15"W 26.91'

S28°45'13"W 77.99'

S30°26'52"W 29.38'

S13°24'33"W 26.55'

S18°54'54"W 99.99'

S7°54'11"W

N05°09'01"E 158.64'

LOT 2

PLAT OF RESUBDIVISION OF CANTERA SUB-AREA "C" LOTS C1 AMD C2
RECORDED JANUARY 19, 2010 AS DOCUMENT R2010-007747

194.07' S46°35'25"W

46.14' S72°11'35"W

ARC=903.60' RAD.=795.12' CH.=855.76' N01°51'00"W

ARC=835.25' RAD.=735.12' CH.=791.10' N01°50'37"W

S2°24'33"W 26.20'

S04°02'18"E 121.99'

S10°28'33"E 25.90'

S19°54'48"E 71.69'

S23°20'49"E 25.86'

S29°55'05"E 84.38'

N00°20'59"W 229.78'

N10°30'35"E 74.87'

59.40' S12°45'22"E

ARC=164.97' RAD.=484.76' CH.=164.18' N01°00'07"W

ARC=0.33' RAD.=34.46' CH.=0.33' S34°35'45"E

ARC=47.30' RAD.=808.60' CH.=47.30' S36°27'15"E

50.42' S09°10'36"W

ARC=59.36' RAD.=108.26' CH.=58.62' S55°09'58"E

N09°36'58"E 61.96'

OUTLOT "A"

AMOCO BUSINESS CENTER
FINAL PLAT OF SUBDIVISION
CANTERA SUBAREA "C"
RECORDED FEBRUARY 7, 1996
PER DOCUMENT R96-020336

STORMWATER MANAGEMENT EASEMENT

N01°34'09"E 131.14'

N13°11'18"E 194.73'

N11°36'53"E 82.27'

ARC=300.27' RAD.=1085.92' CH.=2299.31' S53°40'51"W

ARC=34.47' RAD.=48.48' CH.=33.75' N60°47'07"W

N38°24'58"W CH.=43.24' RAD.=54.66' ARC=43.25'

S38°55'13" 135.13'

76.78' N80°29'14"W

S43°24'35"E 184.56'

S43°35'26"E 164.11'

ARC=66.19' RAD.=808.60' CH.=66.17' N41°33'29"W

N43°37'24"W 60.10'

N43°13'38"W 162.24'

129.62'

46.96

22.01'

N01°23'54"E 35.37'

42.42' N88°37'34"W

60.00'

60.00'

S46°22'27"W 237.89'

S46°22'27"W 852.50'

S46°22'27"W 1288.98'

850.94' S46°35'25"W

10.00'

176.07'

70.00'

ROAD

FERRY

10' SIDEWALK EASEMENT
RECORDED JANUARY 19, 2010
PER DOCUMENT R2010-007747

WHEATON-WARRENVILLE COMMUNITY UNIT SCHOOL DISTRICT 200

APPROXIMATE LOCATION OF SCHOOL DISTRICT BOUNDARY LINE

NAPERVILLE COMMUNITY UNIT SCHOOL DISTRICT 203

R.O.W.- VARIES HERETOFORE DEDICATED AS FOR PUBLIC STREET PURPOSES RECORDED MARCH 21, 1995 PER DOCUMENT R95-032985

NOTE: MONUMENTS HAVE BEEN PLACED AT ALL CORNERS, AT EACH END OF ALL CURVES, AT THE POINT WHERE A CURVE CHANGES ITS RADIUS, AT ALL ANGLE POINTS IN ANY LINE AND AT ALL ANGLE POINTS ALONG A MEANDER LINE.

PROJECT No.:	2017-24719-1
ISSUE DATE:	12/4/17
SCALE:	1"=80'
SHEET NUMBER	1 OF 4

PETITIONER:
CANTERA DEVELOPMENT HOLDINGS LLC
TWO NORTHFIELD PLAZA,
SUITE # 320
NORTHFIELD, IL 60093

PLAT PREPARED BY:
UNITED SURVEY SERVICE, LLC
CONSTRUCTION AND LAND SURVEYORS
7710 CENTRAL AVENUE, RIVER FOREST, IL 60305
TEL.: (847) 299 - 1010 FAX : (847) 299 - 5887
E-MAIL: USURVEY@USANDCS.COM

NO.	REVISIONS	DATE
1	REVISED PER COMMENTS	12/20/17
2	REVISED LOTS AND AREAS	01/05/18
3	REVISED PER COMMENTS	01/08/18
4	ADDED CERTIFICATES & NOTE	05/21/18
5	REVISED	06/22/18
6	REVISED PER COMMENTS	1/22/19
7	REVISED	02/12/19
8	REVISED PER COMMENTS	04/17/19

FINAL PLAT OF SUBDIVISION

CANTERA SUB-AREA "C", LOT 2 SUBDIVISION

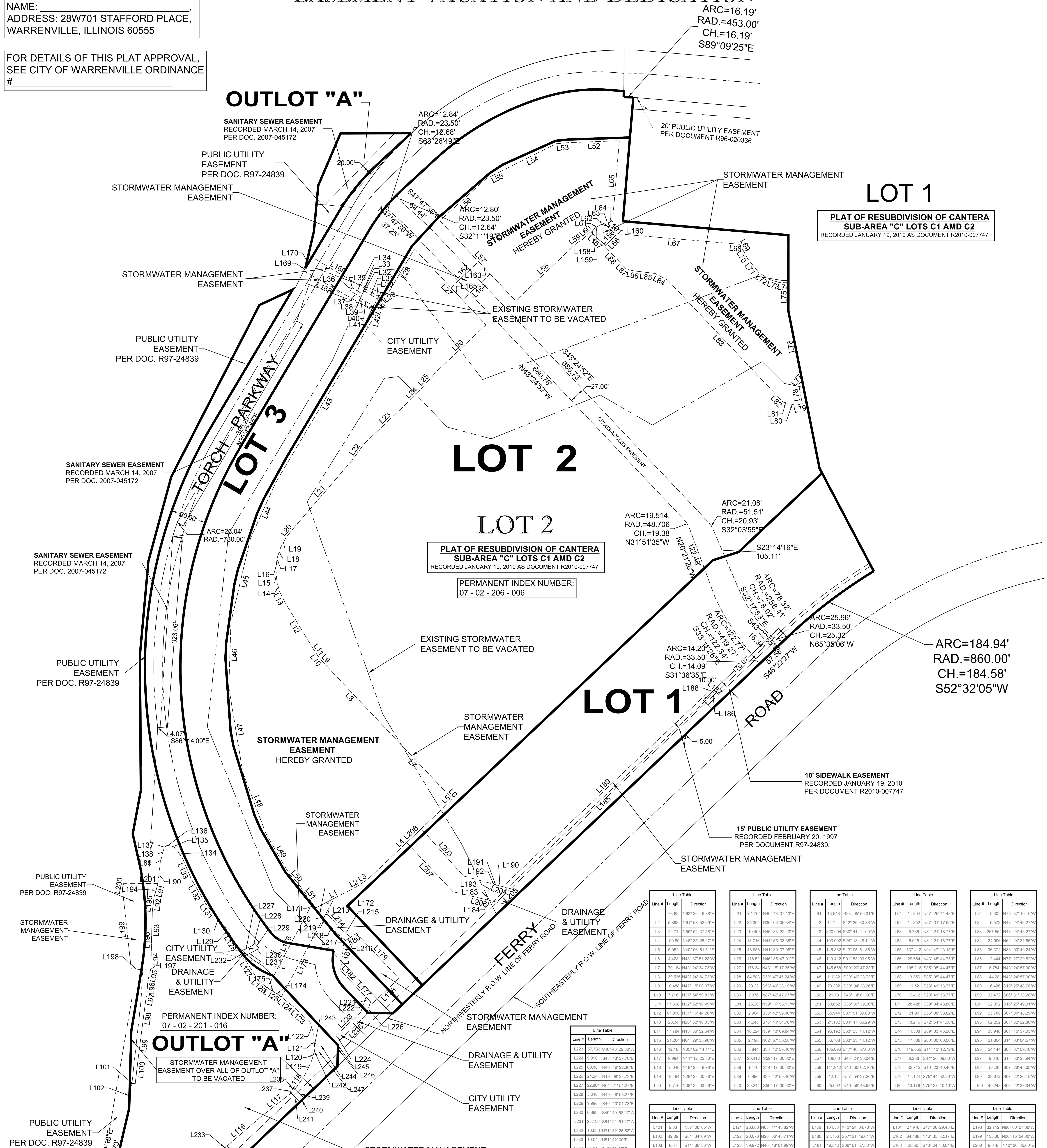
OF PART OF THE NORTHEAST 1/4 OF SECTION 2, TOWNSHIP 38 NORTH, RANGE 9, EAST OF THE THIRD PRINCIPAL MERIDIAN, IN DUPAGE COUNTY, ILLINOIS

EASEMENT VACATION AND DEDICATION

0'10' 50' 100' 150' 200'

THIS PLAT HAS BEEN SUBMITTED FOR RECORDING BY AND RETURN TO:
NAME: ____________________________,
ADDRESS: 28W701 STAFFORD PLACE,
WARRENVILLE, ILLINOIS 60555

FOR DETAILS OF THIS PLAT APPROVAL, SEE CITY OF WARRENVILLE ORDINANCE
#______________________________



LEGEND	
(solid heavy line)	LOT BOUNDARY LINE
(dashed line)	EASEMENT LINE
(dash-dot line)	CENTER LINE
(long dash line)	EASEMENT TO BE VACATED

LEGEND	
LOT #	EXISTING LOT NUMBER
LOT #	PROPOSED LOT NUMBER

BASIS OF BEARINGS:
ASSUMED THE NORTH LINE OF FERRY ROAD TO BE S46°22'27"W

Line Table

Line #	Length	Direction
L1	73.62	N62° 30' 49.88"E
L2	5.868	N61° 53' 52.69"E
L3	22.74	N55° 54' 37.58"E
L4	190.80	N46° 35' 25.27"E
L5	5.052	N40° 06' 51.51"E
L6	4.428	N43° 37' 51.28"W
L7	170.184	N43° 24' 34.73"W
L8	139.536	N43° 24' 34.73"W
L9	10.488	N42° 15' 00.07"W
L10	7.716	N37° 54' 50.83"W
L11	17.568	N32° 52' 10.49"W
L12	87.996	N31° 16' 44.28"W
L13	20.34	N26° 32' 16.33"W
L14	17.784	N15° 36' 52.64"W
L15	21.204	N04° 29' 35.90"W
L16	12.18	N05° 02' 14.11"E
L17	9.984	N11° 12' 22.30"E
L18	15.648	N18° 25' 48.79"E
L19	19.464	N28° 28' 30.88"E
L20	19.716	N38° 32' 03.66"E

Line Table

Line #	Length	Direction
L21	151.764	N40° 48' 37.13"E
L22	35.304	N36° 06' 06.34"E
L23	110.496	N46° 33' 22.43"E
L24	13.716	N44° 55' 33.35"E
L25	46.956	N41° 39' 37.98"E
L26	116.52	N46° 35' 47.91"E
L27	176.34	N43° 15' 17.35"W
L28	84.588	S30° 47' 46.24"W
L29	20.22	S53° 40' 28.19"W
L30	2.976	N87° 42' 47.67"W
L31	25.26	N59° 10' 58.13"W
L32	2.964	S30° 42' 59.40"W
L33	4.248	S75° 44' 54.78"W
L34	16.224	N59° 13' 09.84"W
L35	2.196	N62° 57' 56.58"W
L36	5.844	S30° 42' 59.40"W
L37	20.412	S59° 17' 00.60"E
L38	1.416	S14° 17' 00.60"E
L39	0.996	S30° 42' 59.40"W
L40	20.244	S59° 17' 00.60"E

Line Table

Line #	Length	Direction
L41	13.548	S23° 05' 56.31"E
L42	14.724	S12° 36' 30.36"W
L43	320.004	S30° 41' 21.00"W
L44	103.092	S24° 18' 48.11"W
L45	145.332	S13° 05' 51.85"W
L46	110.412	S01° 53' 06.95"W
L47	145.668	S09° 20' 47.23"E
L48	110.82	S20° 40' 28.73"E
L49	79.392	S30° 04' 38.26"E
L50	21.78	S43° 14' 01.60"E
L51	50.652	S35° 39' 39.26"E
L52	85.944	S87° 51' 39.00"W
L53	21.132	S84° 47' 56.29"W
L54	96.192	S63° 23' 44.12"W
L55	36.768	S63° 23' 44.12"W
L56	105.096	S47° 46' 57.06"W
L57	186.60	S43° 24' 30.04"E
L58	141.912	N46° 35' 02.10"E
L59	12.18	N57° 54' 37.20"E
L60	25.992	N46° 58' 48.93"E

Line Table

Line #	Length	Direction
L61	11.304	N57° 25' 41.48"E
L62	11.352	N67° 31' 17.55"E
L63	5.736	N81° 21' 18.77"E
L64	5.916	N81° 21' 18.77"E
L65	137.412	N04° 47' 23.15"E
L66	29.664	N43° 45' 44.75"E
L67	195.216	S85° 05' 44.47"E
L68	13.356	S85° 05' 44.47"E
L69	11.52	S28° 41' 53.77"E
L70	17.412	S28° 41' 53.77"E
L71	28.428	S39° 04' 43.80"E
L72	21.90	S56° 38' 58.82"E
L73	18.216	S72° 54' 41.30"E
L74	14.508	S89° 33' 45.20"E
L75	47.808	S00° 00' 00.00"E
L76	119.652	S11° 13' 12.72"E
L77	9.288	S37° 26' 09.63"W
L78	32.712	S10° 23' 40.40"E
L79	11.124	S75° 44' 52.29"W
L80	13.176	N75° 37' 10.10"W

Line Table

Line #	Length	Direction
L81	9.30	N75° 37' 10.10"W
L82	16.572	N43° 24' 46.27"W
L83	267.564	N43° 24' 46.27"W
L84	24.096	N62° 24' 31.65"W
L85	36.372	N83° 00' 40.24"W
L86	12.444	N77° 27' 20.82"W
L87	8.784	N43° 24' 57.90"W
L88	44.28	N43° 24' 57.90"W
L89	16.428	S10° 25' 48.78"W
L90	32.472	S06° 31' 33.28"W
L91	22.392	S16° 25' 49.91"W
L92	25.788	S07° 04' 48.29"W
L93	62.292	S01° 32' 22.80"W
L94	33.948	S01° 15' 37.03"W
L95	21.804	S14° 03' 04.57"W
L96	24.144	S03° 07' 59.48"W
L97	9.648	S13° 30' 28.94"W
L98	58.26	S07° 26' 45.05"W
L99	33.612	S07° 22' 20.15"W
L100	49.248	S06° 42' 33.04"W

Line Table

Line #	Length	Direction
L223	57.732	S46° 46' 22.30"W
L224	9.996	S43° 13' 37.70"E
L225	60.18	N46° 46' 22.30"E
L226	24.24	N19° 08' 38.73"E
L227	22.884	N64° 21' 51.27"E
L228	5.616	N49° 49' 58.27"E
L229	9.996	S40° 10' 01.73"E
L230	6.888	S49° 49' 58.27"W
L231	23.136	S64° 21' 51.27"W
L232	10.056	N31° 32' 25.52"W
L233	10.04	N51° 32' 00"E
L234	31.61	S43° 38' 25"E
L235	10.00	S46° 22' 10"W
L236	32.52	N43° 38' 25"W
L237	3.26	N52° 09' 04"E
L238	6.85	N36° 46' 47"E
L239	24.30	S43° 38' 20"E
L240	10.00	S46° 22' 10"W
L241	23.49	N43° 38' 20"W
L242	1.76	S12° 17' 18"W
L243	8.28	N01° 09' 30"E
L244	40.19	N89° 49' 41"E
L245	0.56	S43° 47' 24"E
L246	9.60	S01° 29' 07"W
L247	40.53	S89° 49' 41"W

Line Table

Line #	Length	Direction
L101	9.08	N87° 08' 05"W
L102	42.09	S01° 34' 09"W
L103	8.04	S11° 36' 53"W
L104	20.98	S90° 00' 00"E
L105	9.80	S32° 10' 06"E
L106	21.96	S51° 47' 15"E
L107	5.02	S53° 25' 07.65"E
L108	9.804	S88° 28' 25.56"E
L109	9.048	N79° 20' 23.90"E
L110	24.396	N61° 04' 58.56"E
L111	14.772	N66° 03' 27.09"E
L112	14.112	N61° 51' 36.03"E
L113	20.88	N56° 40' 08.08"E
L114	19.908	N55° 07' 22.68"E
L115	72.024	N50° 15' 05.10"E
L116	87.24	N49° 08' 27.79"E
L117	70.284	N51° 55' 27.33"E
L118	31.668	N35° 45' 00.01"E
L119	29.856	N25° 19' 18.70"E
L120	17.664	N15° 25' 25.52"E

Line Table

Line #	Length	Direction
L121	28.668	N03° 11' 43.82"W
L122	20.076	N20° 06' 45.71"W
L123	39.972	N46° 48' 01.99"W
L124	30.624	N51° 37' 52.19"W
L125	22.776	N58° 22' 46.14"W
L126	21.348	N48° 33' 51.84"W
L127	56.844	N31° 32' 25.52"W
L128	25.86	N30° 43' 48.81"W
L129	27.636	N33° 23' 04.52"W
L130	23.196	N42° 02' 06.08"W
L131	23.244	N38° 41' 10.49"W
L132	46.608	N30° 11' 21.05"W
L133	35.892	N23° 02' 48.11"W
L134	22.452	N32° 24' 18.95"W
L135	11.028	N59° 48' 43.50"W
L136	7.62	S80° 23' 20.80"W
L137	5.868	S32° 41' 26.57"W
L138	11.64	S17° 51' 58.00"W
L177	52.812	S43° 37' 24.49"E
L178	62.112	N46° 35' 25.27"E

Line Table

Line #	Length	Direction
L179	104.58	N43° 24' 34.73"W
L180	24.756	S57° 21' 19.61"W
L181	49.512	S06° 51' 57.56"W
L182	24.756	S43° 37' 24.49"E
L183	16.704	S13° 38' 08.59"E
L184	5.856	S12° 35' 24.22"E
L185	519.876	N46° 35' 16.68"E
L186	3.396	N41° 31' 32.93"E
L187	6.732	N48° 32' 36.77"W
L188	2.772	S46° 25' 32.83"W
L189	479.808	S46° 35' 16.68"W
L190	11.316	N88° 24' 43.32"W
L191	4.164	N45° 58' 26.31"W
L192	3.792	S49° 55' 49.19"W
L193	16.812	S47° 02' 41.76"W
L156	26.124	S43° 45' 44.75"W
L157	34.464	N47° 22' 48.31"W
L158	7.656	N46° 58' 48.93"E
L159	11.304	N57° 25' 41.48"E
L160	8.472	N67° 31' 17.55"E

Line Table

Line #	Length	Direction
L161	27.948	S47° 06' 29.45"E
L162	64.188	N46° 35' 52.17"E
L163	28.50	S43° 24' 30.04"E
L164	64.272	S46° 35' 52.17"W
L165	28.50	N43° 15' 17.35"W
L166	142.32	S59° 16' 59.75"E
L167	25.14	S28° 27' 08.14"W
L168	136.392	N60° 05' 18.35"W
L169	6.684	N26° 33' 54.00"E
L170	21.372	N13° 09' 26.06"E
L171	9.516	S35° 39' 39.26"E
L172	35.076	N62° 30' 49.88"E
L173	189.324	S28° 09' 11.53"W
L174	6.624	N51° 37' 52.19"W
L175	21.864	N58° 22' 46.14"W
L176	162.072	N28° 09' 11.53"E
L194	22.392	S16° 25' 49.91"W
L195	25.788	S07° 04' 48.29"W
L196	96.24	S01° 26' 28.02"W
L197	2.70	S14° 03' 04.57"W

Line Table

Line #	Length	Direction
L198	32.712	N86° 00' 57.86"W
L199	135.36	N06° 15' 54.00"W
L200	9.648	N10° 30' 35.00"E
L201	58.32	N89° 42' 15.55"E
L203	107.184	S41° 46' 59.18"E
L204	100.272	S74° 49' 51.31"E
L205	32.052	S46° 22' 35.51"W
L206	93.684	N76° 37' 37.60"W
L207	114.456	N43° 24' 34.73"W
L208	34.14	N46° 35' 25.27"E
L213	6.972	S61° 50' 48.47"E
L214	29.844	S41° 52' 30.24"E
L215	21.12	S50° 18' 47.18"E
L216	10.50	S57° 21' 19.61"W
L217	18.672	N50° 18' 47.18"W
L218	28.812	N41° 52' 30.24"W
L219	5.208	N61° 50' 48.47"W
L220	9.996	N28° 09' 11.53"E
L221	11.244	N43° 37' 24.49"W
L222	26.928	S19° 08' 38.73"W

PROJECT No.: 2017-24719-1
ISSUE DATE: 12/4/17
SCALE: 1"=80'
SHEET NUMBER 2 OF 4

PETITIONER:
CANTERA DEVELOPMENT HOLDINGS LLC
TWO NORTHFIELD PLAZA,
SUITE # 320
NORTHFIELD, IL 60093

PLAT PREPARED BY:
UNITED SURVEY SERVICE, LLC
CONSTRUCTION AND LAND SURVEYORS
7710 CENTRAL AVENUE, RIVER FOREST, IL 60305
TEL.: (847) 299 - 1010 FAX : (847) 299 - 5887
E-MAIL: USURVEY@USANDCS.COM

NO.	REVISIONS	DATE
1	REVISED PER COMMENTS	12/20/17
2	REVISED LOTS AND AREAS	01/05/18
3	REVISED PER COMMENTS	01/08/18
4	ADDED CERTIFICATES & NOTE	05/21/18
5	REVISED	06/22/18
6	REVISED PER COMMENTS	1/22/19
7	REVISED	02/12/19
8	REVISED PER COMMENTS	04/17/19

SEND TAX BILL TO:
CANTERA APARTMENTS, LLC
550 FRONTAGE ROAD, SUITE # 3700
NORTHFIELD, IL 60093

CANTERA OWNERS ASSOCIATION
4320 WINFIELD ROAD
WARRENVILLE, IL 60555

FINAL PLAT OF SUBDIVISION
CANTERA SUB-AREA "C", LOT 2
SUBDIVISION

OF PART OF THE NORTHEAST 1/4 OF SECTION 2, TOWNSHIP 38 NORTH, RANGE 9, EAST OF THE THIRD PRINCIPAL MERIDIAN, IN DUPAGE COUNTY, ILLINOIS

OWNER'S CERTIFICATE (LOT 1):

STATE OF ILLINOIS)
) SS
COUNTY OF DUPAGE)

THIS IS TO CERTIFY THAT **CYDELEX TRUST** IS THE RECORD OWNER OF THE PROPERTY DESCRIBED IN THE SURVEYOR'S CERTIFICATE AFFIXED HEREON, AND DOES HEREBY CONSENT TO THE SUBDIVISION OF SAID PROPERTY, AND THE VARIOUS DEDICATIONS, GRANTS AND RESERVATIONS OF EASEMENT AND RIGHT-OF-WAY DEPICTED HEREON.

DATED THIS _____ DAY OF _____, A.D., 20_____.

_____
SIGNATURE
PLEASE TYPE/PRINT THE AUTHORIZED INDIVIDUAL'S NAME, TITLE

CORPORATION/COMPANY NAME, AND ADDRESS:
CYDELEX TRUST
TWO NORTHFIELD PLAZA SUITE 320,
NORTHFIELD, IL 60093

AFFIX CORPORATE SEAL IF APPROPRIATE

NOTARY CERTIFICATE:

STATE OF ILLINOIS)
) SS
COUNTY OF _____)

I, THE UNDERSIGNED, A NOTARY PUBLIC IN AND FOR THE AFORESAID COUNTY AND STATE, DO HEREBY CERTIFY THAT THE FOREGOING SIGNATOR OF THE OWNER'S CERTIFICATE IS PERSONALLY KNOWN TO ME TO BE THE SAME PERSON WHOSE NAME IS SUBSCRIBED TO THE FOREGOING INSTRUMENT, AND THAT SAID INDIVIDUAL APPEARED AND DELIVERED SAID INSTRUMENT AS A FREE AND VOLUNTARY ACT OF THE CORPORATION AND THAT SAID INDIVIDUAL DID ALSO THEN AND THERE ACKNOWLEDGE THAT HE OR SHE IS A CUSTODIAN OF THE CORPORATE SEAL OF SAID CORPORATION AND DID AFFIX SAID SEAL OF SAID CORPORATION TO SAID INSTRUMENT AS HIS OR HER OWN FREE AND VOLUNTARY ACT AND AS THE FREE AND VOLUNTARY ACT OF SAID CORPORATION, AS OWNER, FOR THE USES AND PURPOSES THEREIN SET FORTH IN THE AFORESAID INSTRUMENT.

GIVEN UNDER MY HAND AND NOTARIAL SEAL THIS_____DAY OF _____, A.D. 20____.

BY:_____
NOTARY PUBLIC

COMMISSION EXPIRES_____

SCHOOL DISTRICT BOUNDARY STATEMENT

THE UNDERSIGNED, BEING DULY SWORN, UPON HIS/HER OATH DEPOSES AND STATES AS FOLLOWS:

THAT **CYDELEX TRUST** IS THE OWNER OF THE PROPERTY LEGALLY DESCRIBED ON A PROPOSED PLAT OF SUBDIVISION SUBMITTED TO THE CITY FOR APPROVAL, WHICH LEGAL DESCRIPTION IS ATTACHED HERETO AND INCORPORATED BY REFERENCE HEREIN;

AND TO THE BEST OF THE OF OWNER'S KNOWLEDGE AND BELIEF, SAID SUBDIVISION IS PARTIALLY LOCATED WITHIN THE BOUNDARIES OF THE WHEATON-WARRENVILLE COMMUNITY UNIT SCHOOL DISTRICT NO. 200, AND PARTIALLY LOCATED WITHIN THE NAPERVILLE COMMUNITY UNIT SCHOOL DISTRICT NO. 203.

DATED THIS _____ DAY OF _____, A.D., 20_____.

_____
OWNER

OWNER'S CERTIFICATE (OUTLOT "A"):

STATE OF ILLINOIS)
) SS
COUNTY OF DUPAGE)

THIS IS TO CERTIFY THAT **CANTERA OWNERS ASSOCIATION** IS THE RECORD OWNER OF THE PROPERTY DESCRIBED IN THE SURVEYOR'S CERTIFICATE AFFIXED HEREON, AND DOES HEREBY CONSENT TO THE SUBDIVISION OF SAID PROPERTY, AND THE VARIOUS DEDICATIONS, GRANTS AND RESERVATIONS OF EASEMENT AND RIGHT-OF-WAY DEPICTED HEREON.

DATED THIS _____ DAY OF _____, A.D., 20_____.

_____
SIGNATURE
PLEASE TYPE/PRINT THE AUTHORIZED INDIVIDUAL'S NAME, TITLE

CORPORATION/COMPANY NAME, AND ADDRESS:
CANTERA OWNERS ASSOCIATION
4320 WINFIELD ROAD
WARRENVILLE, IL 60555

AFFIX CORPORATE SEAL IF APPROPRIATE

NOTARY CERTIFICATE:

STATE OF ILLINOIS)
) SS
COUNTY OF _____)

I, THE UNDERSIGNED, A NOTARY PUBLIC IN AND FOR THE AFORESAID COUNTY AND STATE, DO HEREBY CERTIFY THAT THE FOREGOING SIGNATOR OF THE OWNER'S CERTIFICATE IS PERSONALLY KNOWN TO ME TO BE THE SAME PERSON WHOSE NAME IS SUBSCRIBED TO THE FOREGOING INSTRUMENT, AND THAT SAID INDIVIDUAL APPEARED AND DELIVERED SAID INSTRUMENT AS A FREE AND VOLUNTARY ACT OF THE CORPORATION AND THAT SAID INDIVIDUAL DID ALSO THEN AND THERE ACKNOWLEDGE THAT HE OR SHE IS A CUSTODIAN OF THE CORPORATE SEAL OF SAID CORPORATION AND DID AFFIX SAID SEAL OF SAID CORPORATION TO SAID INSTRUMENT AS HIS OR HER OWN FREE AND VOLUNTARY ACT AND AS THE FREE AND VOLUNTARY ACT OF SAID CORPORATION, AS OWNER, FOR THE USES AND PURPOSES THEREIN SET FORTH IN THE AFORESAID INSTRUMENT.

GIVEN UNDER MY HAND AND NOTARIAL SEAL THIS_____DAY OF _____, A.D. 20____.

BY:_____
NOTARY PUBLIC

COMMISSION EXPIRES_____

SCHOOL DISTRICT BOUNDARY STATEMENT

THE UNDERSIGNED, BEING DULY SWORN, UPON HIS/HER OATH DEPOSES AND STATES AS FOLLOWS: THAT **CANTERA OWNERS ASSOCIATION** IS THE OWNER OF THE PROPERTY LEGALLY DESCRIBED ON A PROPOSED PLAT OF SUBDIVISION SUBMITTED TO THE CITY FOR APPROVAL, WHICH LEGAL DESCRIPTION IS ATTACHED HERETO AND INCORPORATED BY REFERENCE HEREIN; AND TO THE BEST OF THE OF OWNER'S KNOWLEDGE AND BELIEF, SAID SUBDIVISION IS PARTIALLY LOCATED WITHIN THE BOUNDARIES OF THE WHEATON-WARRENVILLE COMMUNITY UNIT SCHOOL DISTRICT NO. 200, AND PARTIALLY LOCATED WITHIN THE NAPERVILLE COMMUNITY UNIT SCHOOL DISTRICT NO. 203.

DATED THIS _____ DAY OF _____, A.D., 20_____.

_____
OWNER

OWNER'S CERTIFICATE (LOT 2):

STATE OF ILLINOIS)
) SS
COUNTY OF DUPAGE)

THIS IS TO CERTIFY THAT **CANTERA DEVELOPMENT HOLDINGS LLC**, A_____ ILLINOIS CORPORATION, IS THE RECORD OWNER OF THE PROPERTY DESCRIBED IN THE SURVEYOR'S CERTIFICATE AFFIXED HEREON, AND DOES HEREBY CONSENT TO THE SUBDIVISION OF SAID PROPERTY, AND THE VARIOUS DEDICATIONS, GRANTS AND RESERVATIONS OF EASEMENT AND RIGHT-OF-WAY DEPICTED HEREON.

DATED THIS _____ DAY OF _____, A.D., 20_____.

_____
SIGNATURE
PLEASE TYPE/PRINT THE AUTHORIZED INDIVIDUAL'S NAME, TITLE

CORPORATION/COMPANY NAME, AND ADDRESS:
CANTERA DEVELOPMENT HOLDINGS LLC
TWO NORTHFIELD PLAZA, SUITE # 320
NORTHFIELD, IL 60093

AFFIX CORPORATE SEAL IF APPROPRIATE

NOTARY CERTIFICATE:

STATE OF ILLINOIS)
) SS
COUNTY OF _____)

I, THE UNDERSIGNED, A NOTARY PUBLIC IN AND FOR THE AFORESAID COUNTY AND STATE, DO HEREBY CERTIFY THAT THE FOREGOING SIGNATOR OF THE OWNER'S CERTIFICATE IS PERSONALLY KNOWN TO ME TO BE THE SAME PERSON WHOSE NAME IS SUBSCRIBED TO THE FOREGOING INSTRUMENT, AND THAT SAID INDIVIDUAL APPEARED AND DELIVERED SAID INSTRUMENT AS A FREE AND VOLUNTARY ACT OF THE CORPORATION AND THAT SAID INDIVIDUAL DID ALSO THEN AND THERE ACKNOWLEDGE THAT HE OR SHE IS A CUSTODIAN OF THE CORPORATE SEAL OF SAID CORPORATION AND DID AFFIX SAID SEAL OF SAID CORPORATION TO SAID INSTRUMENT AS HIS OR HER OWN FREE AND VOLUNTARY ACT AND AS THE FREE AND VOLUNTARY ACT OF SAID CORPORATION, AS OWNER, FOR THE USES AND PURPOSES THEREIN SET FORTH IN THE AFORESAID INSTRUMENT.

GIVEN UNDER MY HAND AND NOTARIAL SEAL THIS_____DAY OF _____, A.D. 20____.

BY:_____
NOTARY PUBLIC

COMMISSION EXPIRES_____

SCHOOL DISTRICT BOUNDARY STATEMENT

THE UNDERSIGNED, BEING DULY SWORN, UPON HIS/HER OATH DEPOSES AND STATES AS FOLLOWS: THAT **CANTERA DEVELOPMENT HOLDINGS LLC** IS THE OWNER OF THE PROPERTY LEGALLY DESCRIBED ON A PROPOSED PLAT OF SUBDIVISION SUBMITTED TO THE CITY FOR APPROVAL, WHICH LEGAL DESCRIPTION IS ATTACHED HERETO AND INCORPORATED BY REFERENCE HEREIN; AND TO THE BEST OF THE OF OWNER'S KNOWLEDGE AND BELIEF, SAID SUBDIVISION IS PARTIALLY LOCATED WITHIN THE BOUNDARIES OF THE WHEATON-WARRENVILLE COMMUNITY UNIT SCHOOL DISTRICT NO. 200, AND PARTIALLY LOCATED WITHIN THE NAPERVILLE COMMUNITY UNIT SCHOOL DISTRICT NO. 203.

DATED THIS _____ DAY OF _____, A.D., 20_____.

_____
OWNER

OWNER'S SURFACE WATER DRAINAGE CERTIFICATE

STATE OF ILLINOIS)
) SS
COUNTY OF DUPAGE)

THIS IS TO CERTIFY THAT OWNER(S) OF THE LAND HEREIN DESCRIBED OR DULY AUTHORIZED ATTORNEY CERTIFY THAT TO THE BEST OF MY KNOWLEDGE AND BELIEF THE DRAINAGE OF SURFACE WATERS WILL NOT BE CHANGED BY THE CONSTRUCTION OF SUCH SUBDIVISION OR ANY PART THEREOF, OR THAT, IF SUCH SURFACE WATER DRAINAGE WILL BE CHANGED, ADEQUATE PROVISION HAS BEEN MADE FOR COLLECTION AND DIVERSION OF SUCH SURFACE WATERS INTO PUBLIC AREAS, OR DRAINS WHICH THE SUBDIVIDER HAS A RIGHT TO USE, AND THAT SUCH SURFACE WATERS WILL NOT BE DEPOSITED ON THE PROPERTY OF ADJOINING LAND OWNERS IN SUCH CONCENTRATIONS AS MAY CAUSE DAMAGE TO THE ADJOINING PROPERTY BECAUSE OF THE CONSTRUCTION OF THE SUBDIVISION.

_____
NAME & TITLE (IF ANY)

_____
ADDRESS

DATED THIS _____ DAY OF _____, 20_____.

SURVEYOR'S AUTHORIZATION CERTIFICATION:

STATE OF ILLINOIS)
) S.S.
COUNTY OF COOK)

I, ROY G. LAWNICZAK, A REGISTERED PROFESSIONAL ILLINOIS LAND SURVEYOR NO. 35-2290, DO HEREBY AUTHORIZE THE CITY OF WARRENVILLE OR THEIR AGENT TO FILE WITH THE DU PAGE COUNTY RECORDER'S OFFICE THE PLAT KNOWN AS **CANTERA SUB-AREA "C" LOT 2 SUBDIVISION.**

BY:_____
ROY G. LAWNICZAK, REGISTERED ILLINOIS LAND SURVEYOR NO. 35-2290
LICENSE EXPIRES: NOVEMBER 30, 2020
PROFESSIONAL DESIGN FIRM LICENSE NO.: 184-004576
LICENSE EXPIRES: APRIL 30, 2019

OWNER'S CERTIFICATE (LOT 3):

STATE OF ILLINOIS)
) SS
COUNTY OF DUPAGE)

THIS IS TO CERTIFY THAT **CANTERA TOWNHOMES LLC** IS THE RECORD OWNER OF THE PROPERTY DESCRIBED IN THE SURVEYOR'S CERTIFICATE AFFIXED HEREON, AND DOES HEREBY CONSENT TO THE SUBDIVISION OF SAID PROPERTY, AND THE VARIOUS DEDICATIONS, GRANTS AND RESERVATIONS OF EASEMENT AND RIGHT-OF-WAY DEPICTED HEREON.

DATED THIS _____ DAY OF _____, A.D., 20_____.

_____
SIGNATURE
PLEASE TYPE/PRINT THE AUTHORIZED INDIVIDUAL'S NAME, TITLE

CORPORATION/COMPANY NAME, AND ADDRESS:
CANTERA TOWNHOMES LLC
550 FRONTAGE ROAD, SUITE # 3700
NORTHFIELD, IL 60093

AFFIX CORPORATE SEAL IF APPROPRIATE

NOTARY CERTIFICATE:

STATE OF ILLINOIS)
) SS
COUNTY OF _____)

I, THE UNDERSIGNED, A NOTARY PUBLIC IN AND FOR THE AFORESAID COUNTY AND STATE, DO HEREBY CERTIFY THAT THE FOREGOING SIGNATOR OF THE OWNER'S CERTIFICATE IS PERSONALLY KNOWN TO ME TO BE THE SAME PERSON WHOSE NAME IS SUBSCRIBED TO THE FOREGOING INSTRUMENT, AND THAT SAID INDIVIDUAL APPEARED AND DELIVERED SAID INSTRUMENT AS A FREE AND VOLUNTARY ACT OF THE CORPORATION AND THAT SAID INDIVIDUAL DID ALSO THEN AND THERE ACKNOWLEDGE THAT HE OR SHE IS A CUSTODIAN OF THE CORPORATE SEAL OF SAID CORPORATION AND DID AFFIX SAID SEAL OF SAID CORPORATION TO SAID INSTRUMENT AS HIS OR HER OWN FREE AND VOLUNTARY ACT AND AS THE FREE AND VOLUNTARY ACT OF SAID CORPORATION, AS OWNER, FOR THE USES AND PURPOSES THEREIN SET FORTH IN THE AFORESAID INSTRUMENT.

GIVEN UNDER MY HAND AND NOTARIAL SEAL THIS_____DAY OF _____, A.D. 20____.

BY:_____
NOTARY PUBLIC

COMMISSION EXPIRES_____

SCHOOL DISTRICT BOUNDARY STATEMENT

THE UNDERSIGNED, BEING DULY SWORN, UPON HIS/HER OATH DEPOSES AND STATES AS FOLLOWS:

THAT **CANTERA TOWNHOMES LLC** IS THE OWNER OF THE PROPERTY LEGALLY DESCRIBED ON A PROPOSED PLAT OF SUBDIVISION SUBMITTED TO THE CITY FOR APPROVAL, WHICH LEGAL DESCRIPTION IS ATTACHED HERETO AND INCORPORATED BY REFERENCE HEREIN;

AND TO THE BEST OF THE OF OWNER'S KNOWLEDGE AND BELIEF, SAID SUBDIVISION IS PARTIALLY LOCATED WITHIN THE BOUNDARIES OF THE WHEATON-WARRENVILLE COMMUNITY UNIT SCHOOL DISTRICT NO. 200, AND PARTIALLY LOCATED WITHIN THE NAPERVILLE COMMUNITY UNIT SCHOOL DISTRICT NO. 203.

DATED THIS _____ DAY OF _____, A.D., 20_____.

_____
OWNER

ENGINEER'S SURFACE WATER DRAINAGE CERTIFICATE:

STATE OF ILLINOIS)
) SS
COUNTY OF DUPAGE)

THIS IS TO CERTIFY THAT I, A REGISTERED PROFESSIONAL ENGINEER, CERTIFY THAT TO THE BEST OF MY KNOWLEDGE AND BELIEF THAT DRAINAGE OF SURFACE WATERS WILL NOT BE CHANGED BY CONSTRUCTION OF SUCH SUBDIVISION OR ANY PART THEREOF, OR THAT IF SUCH SURFACE WATER DRAINAGE WILL BE CHANGED, ADEQUATE PROVISIONS HAVE BEEN MADE FOR COLLECTION AND DIVERSION OF SUCH SURFACE WATERS INTO PUBLIC AREAS, OR DRAINS WHICH THE SUBDIVIDER HAS THE RIGHT TO USE, AND THAT SUCH SURFACE WATERS WILL NOT BE DEPOSITED ON THE PROPERTY OF ADJOINING LAND OWNERS IN SUCH CONCENTRATIONS AS MAY CAUSE DAMAGE TO THE ADJOINING PROPERTY BECAUSE OF THE CONSTRUCTION OF THE SUBDIVISION.

_____
NAME

_____
ADDRESS

_____
REGISTRATION NUMBER

DATED THIS _____ DAY OF _____, A.D. 20_____.

PROJECT No.:	2017-24719-1
ISSUE DATE:	12/4/17
SCALE:	1"=80'
SHEET NUMBER	3 OF 4

PETITIONER:
CANTERA DEVELOPMENT HOLDINGS LLC
TWO NORTHFIELD PLAZA, SUITE # 320
NORTHFIELD, IL 60093

PLAT PREPARED BY:
UNITED SURVEY SERVICE, LLC
CONSTRUCTION AND LAND SURVEYORS
7710 CENTRAL AVENUE, RIVER FOREST, IL 60305
TEL.: (847) 299 - 1010 FAX : (847) 299 - 5887
E-MAIL: USURVEY@USANDCS.COM

NO.	REVISIONS	DATE
1	REVISED PER COMMENTS	12/20/17
2	REVISED LOTS AND AREAS	01/05/18
3	REVISED PER COMMENTS	01/08/18
4	ADDED CERTIFICATES & NOTE	05/21/18
5	REVISED	06/22/18
6	REVISED PER COMMENTS	1/22/19
7	REVISED	02/12/19
8	REVISED PER COMMENTS	04/17/19

FINAL PLAT OF SUBDIVISION

CANTERA SUB-AREA "C", LOT 2 SUBDIVISION

OF PART OF THE NORTHEAST 1/4 OF SECTION 2, TOWNSHIP 38 NORTH, RANGE 9, EAST OF THE THIRD PRINCIPAL MERIDIAN, IN DUPAGE COUNTY, ILLINOIS

MAIL PLAT TO:

CITY OF WARRENVILLE
28W701 STAFFORD PLACE
WARRENVILLE, IL 60555

CITY COLLECTOR CERTIFICATE:

STATE OF ILLINOIS)
) SS
COUNTY OF DUPAGE)

I, _____ COLLECTOR OF THE CITY OF WARRENVILLE, DO HEREBY CERTIFY THAT THERE ARE NO DELINQUENT OR UNPAID CURRENT OR FORFEITED SPECIAL ASSESSMENTS OR ANY INSTALLMENTS THEREOF THAT HAVE BEEN APPORTIONED AGAINST THE TRACT OF LAND INCLUDED IN THE PLAT. DUE AGAINST THE LAND INCLUDED IN THE PLAN HEREON DRAWN.

DATED AT WARRENVILLE, DUPAGE COUNTY, ILLINOIS
THIS _____ DAY OF _____ , A.D., 20_____.

BY: _____
CITY COLLECTOR

CITY COUNCIL CERTIFICATE:

STATE OF ILLINOIS)
) SS
COUNTY OF DUPAGE)

THIS IS TO CERTIFY THAT THE CITY COUNCIL OFTHE CITY OF WARRENVILLE, ILLINOIS, HAS REVIEWED AND APPROVED THIS PLAT.

DATED AT WARRENVILLE, DUPAGE COUNTY, ILLINOIS
THIS _____ DAY OF _____ , A.D., 20_____.

BY: _____
MAYOR

ATTEST: _____
CITY CLERK

CITY ENGINEER'S CERTIFICATE:

STATE OF ILLINOIS)
) SS
COUNTY OF DUPAGE)

I, _____, CITY ENGINEER OF THE CITY OF WARRENVILLE, ILLINOIS, HEREBY CERTIFY THAT THE LAND IMPROVMENTS DESCRIBED IN THE PLAT, AND THE PLANS AND SPRCIFICATIONS THEREFORE, MEET THE MINIMUM REQUIREMENTS OF SAID CITY AND HAVE BEEN APPROVED BY ALL PUBLIC AUTHORITIES HAVING JURISDICTION THEREOF.

DATED AT WARRENVILLE, DUPAGE COUNTY, ILLINOIS
THIS _____ DAY OF _____ , A.D., 20_____.

BY: _____
CITY ENGINEER

CITY CLERK'S CERTIFICATE:

STATE OF ILLINOIS)
) SS
COUNTY OF DUPAGE)

I, _____, CITY CLERK OF THE CITY OF WARRENVILLE, ILLINOIS HEREBY CERTIFY THAT THE PLAT WAS PRESENTED TO AND BY ORDINANCE DULY APPROVED BY THE CITY COUNCIL OF SAID CITY AT ITS MEETING HELD ON _____, 20___, AND THAT THE REQUIRED BOND OR OTHER GUARANTEE HAS BEEN POSTED FOR THE COMPLETION OF THE IMPROVEMENTS REQUIRED BY THE REGULATIONS OF SAID CITY.

IN WITNESS WHEREOF, I HAVE HERETO SET MY HAND AND SEAL OF THE CITY OF WARRENVILLE, ILLINOIS, THIS ____ DAY OF _____, 20___.

BY: _____
CITY CLERK

PLAN COMMISSION CERTIFICATE:

STATE OF ILLINOIS)
) SS
COUNTY OF DUPAGE)

THIS IS TO CERTIFY THAT MEMBERS OF THE PLAN COMMISSION OF THE CITY OF WARRENVILLE, ILLINOIS HAVE REVIEWED AND APPROVED THIS PLAT.

DATED AT WARRENVILLE, DUPAGE COUNTY, ILLINOIS
THIS _____ DAY OF _____ , A.D., 20_____.

BY: _____
CHAIRMAN

ATTEST: _____
SECRETARY

COUNTY CLERK'S CERTIFICATE:

STATE OF ILLINOIS)
) SS
COUNTY OF DUPAGE)

I, THE UNDERSIGNED, AS COUNTY CLERK OF DUPAGE COUNTY, ILLINOIS, DO HEREBY CERTIFY THAT THERE ARE NO DELINQUENT GENERAL TAXES, NO UNPAID OR FORFEITED TAXES, AND NO REDEEMABLE TAX SALES AGAINST ANY OF THE LAND DEPICTED HEREON.

I FURTHER CERTIFY THAT I HAVE RECEIVED ALL STATUTORY FEES IN CONNECTION WITH THE PLAT DEPICTED HEREON.

GIVEN UNDER MY HAND AND SEAL OF THE COUNTY CLERK AT WHEATON, DUPAGE COUNTY, ILLINOIS, THIS _____ DAY OF _____ , A.D., 20_____.

BY: _____
COUNTY CLERK

COUNTY ENGINEER'S CERTIFICATE:

STATE OF ILLINOIS)
) SS
COUNTY OF DUPAGE)

I, _____, COUNTY ENGINEER OF SAID COUNTY, DO HEREBY CERTIFY THAT THE PLAT HAS BEEN EXAMINED BY ME AND FOUND TO COMPLY WITH THE HIGHWAY REQUIREMENTS AS SET FORTH IN A REGULATION GOVERNING PLATS OF SUBDIVISION LANDS ADOPTED BY THE COUNTY BOARD OF DUPAGE COUNTY, ILLINOIS.

DATED AT WARRENVILLE, DUPAGE COUNTY, ILLINOIS
THIS _____ DAY OF _____ , A.D., 20_____.

BY: _____
COUNTY ENGINEER

COUNTY RECORDER'S CERTIFICATE

STATE OF ILLINOIS)
) S S
COUNTY OF DUPAGE)

I, THE UNDERSIGNED, AS THE RECORDER OF DEEDS FOR DUPAGE COUNTY DO HEREBY CERTIFY THAT INSTRUMENT NUMBER_____ WAS FILED FOR RECORD IN THE RECORDER'S OFFICE OF _____ COUNTY, ILLINOIS, ON THE _____ DAY OF _____, A.D., 20_____ AT _____ O'CLOCK _____.M.

BY: _____
RECORDER OF DEEDS

CERTIFICATE OF DUPAGE COUNTY DIVISION TRANSPORTATION ENGINEER:

STATE OF ILLINOIS)
) SS
COUNTY OF DUPAGE)

THIS PLAT HAS BEEN APPROVED BY THE DUPAGE COUNTY DIVISION OF TRANSPORTATION WITH RESPECT TO ROADWAY ACCESS TO COUNTY HIGHWAY # 3 (FERRY ROAD) PURSUANT TO 765 ILCS 205/2; HOWEVER, A HIGHWAY PERMIT FOR ACCESS IS REQUIRED OF THE OWNER OF THE PROPERTY PRIOR TO CONSTRUCTION WITHIN THE COUNTY'S RIGHTS-OF-WAY.

DATED THIS _____ DAY OF _____, A.D. 20_____.

BY: _____
DUPAGE COUNTY DIVISION TRANSPORTATION ENGINEER

UTILITY AND DRAINAGE EASEMENT PROVISIONS

EASEMENTS ARE RESERVED FOR AND GRANTED TO THE CITY OF WARRENVILLE AND TO THOSE PUBLIC UTILITY COMPANIES OPERATING UNDER FRANCHISE FROM THE CITY, INCLUDING BUT NOT LIMITED TO, COMMONWEALTH EDISON COMPANY, NICOR GAS COMPANY, AT&T, COMCAST, AND THEIR SUCCESSORS AND ASSIGNS, OVER ALL THE AREAS MARKED "UTILITY & DRAINAGE EASEMENT ON THE PLAT FOR THE PERPETUAL RIGHT, PRIVILEGE AND AUTHORITY TO CONSTRUCT, RECONSTRUCT, REPAIR, INSPECT, MAINTAIN, AND OPERATE VARIOUS TRANSMISSION AND DISTRIBUTION SYSTEMS, AND INCLUDING STORM AND/OR SANITARY SEWERS, TOGETHER WITH ANY AND ALL NECESSARY MANHOLES, CATCH BASINS, CONNECTIONS, APPLIANCES, AND OTHER STRUCTURES AND APPURTENANCES AS MAY BE DEEMED NECESSARY BY SAID CITY, OVER, UPON, ALONG, UNDER AND THROUGH SAID INDICTED EASEMENT, TOGETHER WITH RIGHT OF ACCESS ACROSS THE PROPERTY FOR NECESSARY WORKERS AND EQUIPMENT TO DO ANY OF THE ABOVE WORK. THE RIGHT IS ALSO GRANTED TO CUT DOWN, TRIM OR REMOVE ANY TREES, SHRUBS OR OTHER PLANTS ON THE EASEMENT. EASEMENTS ARE HEREBY RESERVED AND GRANTED TO THE CITY AND OTHER GOVERNMENT AL AUTHORITIES HAVING JURISDICTION OF THE LAND SUBDIVIDED HEREBY, OVER THE ENTIRE EASEMENT AREA FOR INGRESS, EGRESS, AND THE PERFORMANCE OF MUNICIPAL AND OTHER GOVERNMENT AL SERVICES, INCLUDING WATER, STORM AND SANITARY SEWER SERVICE AND MAINTENANCE.

STORMWATER MANAGEMENT EASEMENT PROVISIONS

THE OWNERS, ON BEHALF OF ITSELF, ITS SUCCESSORS AND ASSIGNS, AND ALL FUTURE HOLDERS OF TITLE TO THE PROPERTY WHICH IS THE SUBJECT OF THIS PLAT (COLLECTIVELY, THE "OWNER"), HEREBY COVENANTS AND AGREES WITH THE CITY OF WARRENVILLE (THE "CITY") AS FOLLOWS:
THE OWNER SHALL MAINTAIN, OPERATE AND REPAIR THE PORTIONS OF THE PROPERTY IDENTIFIED ON THIS PLAT AS "STORMWATER MANAGEMENT EASEMENT ALL TIMES IN A MANNER CONSISTENT WITH THE PLANS AND SPECIFICATIONS APPROVED BY THE CITY (AND UPON REQUEST, FURNISH PROOF OF COMPLIANCE THEREWITH). NO PERMANENT BUILDING, OR UTILITY FACILITIES SHALL BE CONSTRUCTED ON THE STORMWATER MANAGEMENT EASEMENT AREAS BY THE OWNER, OR THE OWNER'S SUCCESSORS IN INTEREST, BUT SAID STORMWATER MANAGEMENT EASEMENT MAY BE USED FOR OTHER PURPOSES THAT DO NOT NOW OR LATER INTERFERE OR CONFLICT WITH THE AFORESAID USES OR RIGHTS OR IN ANYWAY AFFECT OR IMPEDE THE STORAGE OR FREE FLOW OF STORMWATER ON AND OVER SAID STORMWATER MANAGEMENT EASEMENT. THE OWNER GRANTS TO THE CITY AND ITS DESIGNEES THE RIGHT OF ACCESS UPON, OVER AND ACROSS THE PROPERTY TO INSPECT THE STORMWATER MANAGEMENT EASEMENT AREA AND TO PERFORM ANY MAINTENANCE OF SAID AREAS (AND TO STORE EQUIPMENT NECESSARY THEREFORE) WHICH THE OWNER HAS FAILED TO PERFORM, IF SUCH FAILURE CONTINUES FOR THIRTY (30) DAYS AFTER WRITTEN NOTICE FROM THE CITY OF SUCH FAILURE. THE CITY MAY ENTER UPON THE PROPERTY AND PERFORM SUCH WORK AS SHOULD HAVE BEEN UNDERTAKEN BY THE OWNER, WITHOUT NOTICE TO THE OWNER, IN AN EMERGENCY (E.G. WHERE PERSONAL INJURY OR MATERIAL DAMAGE TO PROPERTY MAY BE IMMINENT). THE OWNER SHALL BE LIABLE FOR THE COST OF ANY MAINTENANCE SO PERFORMED BY THE CITY AND SHALL PROMPTLY REIMBURSE THE CITY FOR SUCH COSTS, WITH INTEREST AT A STATUTORY PRE-JUDGMENT RATE CALCULATED FROM THE DATE OF EXPENDITURE. UPON RECORDATION BY THE CITY OF A CLAIM FOR REIMBURSEMENT, THE CITY SHALL HAVE A FORECLOSABLE LIEN UPON THE PROPERTY TO SECURE REIMBURSEMENT. IN ADDITION TO OTHER REMEDIES PROVIDED FOR ABOVE, UPON THE OWNER'S FAILURE TO MAINTAIN THE STORMWATER MANAGEMENT EASEMENT AREAS (AFTER NOTICE WHERE REQUIRED AS AFORESAID), THE CITY SHALL BE ENTITLED TO ALL REMEDIES AT LAW OR EQUITY TO ENFORCE THIS AGREEMENT, INCLUDING ALL REMEDIES FOR THE ABATEMENT OF A NUISANCE, WHICH REMEDIES SHALL BE CUMULATIVE AND NOT EXCLUSIVE. IF A JUDGMENT IS ENTERED AGAINST THE OWNER, THE OWNER SHALL PAY ALL REASONABLE ATTORNEYS FEES AND COSTS OF THE CITY. THE CITY SHALL NOT BE LIABLE TO THE OWNER OR ANY PARTY CLAIMING THROUGH THE OWNER FOR ANY DAMAGE CAUSED BY IT IN THE PERFORMANCE OF ANY MAINTENANCE UNDERTAKEN PURSUANT TO THIS AGREEMENT, UNLESS SUCH DAMAGE IS CAUSED BY WANTON OR WILLFUL CONDUCT. FAILURE TO ENFORCE A RIGHT GRANTED HEREUNDER SHALL NOT BE DEEMED A WAIVER OF SUCH RIGHT OR ANY OTHER RIGHTS HEREUNDER. NO PARTY SHALL BE LIABLE FOR FAILURE TO ENFORCE THE PROVISIONS HEREOF. THE OWNER RESERVES UNTO ITSELF ALL RIGHTS NOT MATERIALLY INCONSISTENT WITH THESE PROVISIONS, INCLUDING THE RIGHT TO IMPROVE THE PROPERTY AND TO GRANT EASEMENTS AND OTHER RIGHTS AND INTERESTS IN AND TO SAID PROPERTY. THE OWNER'S OBLIGATIONS UNDER THESE PROVISIONS MAY BE ASSUMED BY AN OWNER'S ASSOCIATION. UPON WRITTEN NOTICE OF SUCH ASSUMPTION, ANY NOTICE BY THE CITY OF NON-PERFORMANCE SHALL BE GIVEN TO SUCH OWNER'S ASSOCIATION. HOWEVER, EACH OWNER (IF THERE IS THEN MORE THAN ONE) IS AND SHALL REMAIN INDIVIDUALLY AND COLLECTIVELY LIABLE FOR ALL OF THE OBLIGATIONS OF THE OWNER HEREUNDER IF THE ASSOCIATION FAILS TO PERFORM SUCH OBLIGATIONS. IF TITLE TO ALL OR ANY PART OF THE PROPERTY IS VESTED IN A LAND TRUST, ANY BENEFICIARIES THEREOF SHALL BE PERSONALLY LIABLE FOR ALL OBLIGATIONS IMPOSED HEREBY ON THE OWNER OF SUCH PROPERTY OR PORTION THEREOF SO OWNED.

CITY EASEMENT PROVISIONS

A PERMANENT EXCLUSIVE EASEMENT IS HEREBY EXCLUSIVELY RESERVED FOR AND GRANTED TO THE CITY OF WARRENVILLE, ILLINOIS, AND ITS SUCCESSORS AND ASSIGNS (COLLECTIVELY "GRANTED") IN, UPON, ACROSS, UNDER AND THROUGH THE AREAS LABELED "CITY EASEMENT" ON THIS PLAT FOR THE PURPOSE OF INSTALLING, CONSTRUCTING, INSPECTING, OPERATING, REPLACING, RENEWING, ALTERING, ENLARGING, REMOVING, REPAIRING, CLEANING AND MAINTAINING THE STORM SEWER, SANITARY SEWER, WATER MAIN AND APPURTENANCES ("UTILITIES") TO EACH AND SUCH OTHER INSTALLATIONS AND SERVICE CONNECTIONS AS MAY BE REQUIRED TO FURNISH SERVICES TO SUCH PROPERTY AND ADJACENT AREAS, TOGETHER WITH THE RIGHT OF ACCESS ACROSS THE REAL ESTATE PLATTED HEREON FOR THE NECESSARY PERSONNEL AND EQUIPMENT TO DO ANY OR ALL OF THE ABOVE WORK. ALL SUCH UTILITY LINES SHALL BE UNDERGROUND ONLY. OTHER UTILITIES MAY INSTALL THEIR FACILITIES ACROSS THE CITY EASEMENT AREA, PERPENDICULAR, BUT NO PARALLEL TO THE CITY'S UNDERGROUND UTILITY LINES. NO PERMANENT BUILDINGS, ACCCESSORY STRUCTURES, FENCES OR ANY OTHER STRUCTURE THAT WOULD IMPEDE ACCESS TO THE UTILITIES OR FUNCTION OF THE SWALE SHALL BE PLACED ON THE EASEMENT, BUT THE PREMISES MAY BE USED FOR PAVED AREAS, DRIVEWAYS AND SIDEWALKS. TREES WITHIN THE EASEMENT SHALL BE PLANTED A MINIMUM OF FIVE FEET (5') FROM THE CENTERLINE OF THE TREE TO THE CENTERLINE OF THE CITY UTILITY PIPE. THE CITY OF WARRENVILLE RESTORATION OBLIGATIONS SHALL BE LIMITED TO TOPSOIL AND SEED FOR TURF GRASS. THE OWNER SHALL BE RESPONSIBLE FOR THE REPAIR OF ALL PAVEMENT, SIDEWALK, CURB, AND ANY OTHER HARD SURFACE. THE OWNER SHALL BE RESPONSIBLE FOR THE REPLACEMENT OBLIGATIONS WITH RESPECT TO TREES AND SHRUBS AND OTHER LANDSCAPING REFLECTING ON THE ORIGINAL LANDSCAPE PLAN APPROVED BY THE CITY OF WARRENVILLE FOR SUCH LOCATIONS.

SURVEYOR'S CERTIFICATE:

STATE OF ILLINOIS)
) S.S.
COUNTY OF COOK)

THIS IS TO CERTIFY THAT , I UNDERSIGNED, AN ILLINOIS PROFESSIONAL LAND SURVEYOR, HAVE SURVEYED AND SUBDIVIDED THE FOLLOWING DESCRIBED PROPERTY:

LOT 2 IN CANTERA SUB-AREA "C" LOTS C1 AND C2, BEING A RESUBDIVISION OF PART OF THE NORTHEAST 1/4 OF SECTION 2, TOWNSHIP 38 NORTH, RANGE 9, EAST OF THE THIRD PRINCIPAL MERIDIAN, ACCORDING TO THE PLAT OF SAID CANTERA SUB-AREA "C" LOTS C1 AND C2 RECORDED JANUARY 19, 2010 AS DOCUMENT R2010-007747, IN DUPAGE COUNTY, ILLINOIS.

AND

OUTLOT "A" IN AMOCO BUSINESS CENTER FINAL PLAT OF SUBDIVISION CANTERA SUBAREA "C", BEING A SUBDIVISION OF PART OF LOT 2 IN CANTERA SERVICE STATION NUMBER 1, TOGETHER WITH PART OF THE NORTHEAST 1/4 OF SECTION 2, TOWNSHIP 38 NORTH, RANGE 9, EAST OF THE THIRD PRINCIPAL MERIDIAN, ACCORDING TO THE PLAT RECORDED FEBRUARY 7, 1996 AS DOCUMENT R96-020336, IN DUPAGE COUNTY, ILLINOIS.

THE PLAT HEREON DRAWN IS A TRUE AND CORRECT REPRESENTATION OF SAID SURVEY AND ACCURATELY DEPICTS SAID PROPERTY. DIMENSIONS ARE SHOWN IN FEET AND DECIMAL PARTS THEREOF. I FURTHER CERTIFY THAT THE PROPERTY SHOWN ON THE PLAT HEREON DRAWN IS SITUATED WITHIN THE CORPORATE LIMITS OF A MUNICIPALITY WHICH HAS ADOPTED A COMPREHENSIVE PLAN AND WHICH IS EXERCISING THE SPECIAL POWERS AUTHORIZED BY DIVISION 12 OF ARTICLE 11 OF THE ILLINOIS MUNICIPAL CODE.

I FURTHER CERTIFY THAT THE SUBJECT PROPERTY IS LOCATED WITHIN AN AREA HAVING A ZONE DESIGNATION **"X" -** AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN AND ZONE DESIGNATION **"A" -** SPECIAL FLOOD HAZARD AREAS, NO BASE FLOOD ELEVATIONS DETERMINED BY THE SECRETARY OF HOUSING AND URBAN DEVELOPMENT, ON FLOOD INSURANCE RATE MAP **17043C0703H,** WITH A DATE OF IDENTIFICATION OF **DECEMBER 16, 2004**, FOR COMMUNITY NUMBER **170218 0703 H**, IN DUPAGE COUNTY, STATE OF ILLINOIS, WHICH IS THE CURRENT FLOOD INSURANCE RATE MAP FOR THE COMMUNITY IN WHICH SAID PROPERTY IS SITUATED.

GIVEN UNDER MY HAND AND SEAL THIS 22nd DAY OF JANUARY, 2019 AT RIVER FOREST, ILLINOIS.

BY:_____
ROY G. LAWNICZAK, REGISTERED ILLINOIS LAND SURVEYOR NO. 35-2290
LICENSE EXPIRES: NOVEMBER 30, 2020
PROFESSIONAL DESIGN FIRM LICENSE NO.: 184-004576
LICENSE EXPIRES: APRIL 30, 2021

ROY G. LAWNICZAK 35-002290 PROFESSIONAL LAND SURVEYOR STATE OF ILLINOIS CHICAGO, IL

PROJECT No.:	2017-24719-1
ISSUE DATE:	12/4/17
SCALE:	1"=80'
SHEET NUMBER	4 OF 4

PETITIONER:
CANTERA DEVELOPMENT HOLDINGS LLC
TWO NORTHFIELD PLAZA,
SUITE # 320
NORTHFIELD, IL 60093

PLAT PREPARED BY:
UNITED SURVEY SERVICE, LLC
CONSTRUCTION AND LAND SURVEYORS
7710 CENTRAL AVENUE, RIVER FOREST, IL 60305
TEL.: (847) 299 - 1010 FAX : (847) 299 - 5887
E-MAIL: USURVEY@USANDCS.COM

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6	REVISED PER COMMENTS	1/22/19
7	REVISED	02/12/19
8	REVISED PER COMMENTS	04/17/19

EXHIBIT E

City of Warrenville
3S258 Manning Avenue
Warrenville, IL 60555

(630) 836 3050 tel
(630) 393 1531 fax
www.warrenville.il.us

JAMES J. BENES AND ASSOCIATES, INC.
950 Warrenville Road ▪ Suite 101
Lisle, Illinois 60532
Tel. (630) 719-7570

MEMORANDUM

Date: May 1, 2019

To: Kristine Hocking, P.E., CFM
Senior Civil Engineer
City of Warrenville

From: Lynn Kroll, P.E., CFM
Project Engineer
James J. Benes

Dan Schoenberg, P.E
Project Engineer
James J. Benes

Valerie Jakobi, CPESC
Senior Ecologist
Bollinger Environmental

Re: Cantera Subarea C / Lot 2 / Riverview West Development
Final Engineering Plan Review
Project No. 632.752

The proposed improvement will be located on approximately 32+/- acres with Outlot A located at the northeast corner of Ferry Road and the West Branch of the DuPage River which is on Lot 2 of Subarea C of the Cantera development. Lot 2 of Subarea C was originally conceived as a westward expansion of the office development on Lot 1 to the east. It is now proposed to be re-subdivided into three lots; Lot 1 contains commercial buildings, Lot 2 contains an apartment building and Lot 3 contains townhouses and Torch Parkway. The development consists of 364 apartment residences, one parking garage and five parking lots. Townhomes along Torch Boulevard and commercial development along a commercial drive are shaded in the Site plans and the landscaping plans. There are three existing retention ponds including Outlot A. Only two of three ponds will be reconfigured.

At your request we have reviewed the following final documents:

1. Proposed Site Improvement Plans (sheets 1-71) prepared by Bollinger, Lach and Associates, Inc. (BLA) of Itasca, Illinois and dated April 19, 2019.
2. DuPage County Stormwater Management Permit Application Report for Riverview West prepared by BLA and dated April 19, 2019.
3. Architectural Drawings for River View West (sheets 1-29) prepared by Baranyk Associates, Ltd. of Park Ridge, Illinois and dated April 19, 2019.
4. Phase One Landscape Plans for River View West (sheets 1-13) prepared by Lannert Group of Geneva, Illinois and dated April 16, 2019.
5. Photometric plans dated January 22, 2019 and catalog cut sheets dated February 18, 2019 both prepared by CREE of Sturtevant, Wisconsin.

6. Site Distance Exhibit (2 sheets) dated November 5, 2018 and Turning Movement and Sight Distance Plan dated February 18, 2019 prepared by BLA.
7. Traffic Impact Study review memo by Gewalt Hamilton Associates, Inc. (GHA) of Vernon Hills, Illinois dated April 8, 2019 which addresses DuPage County DOT comments.
8. Traffic review memo prepared by Gewalt Hamilton Associates, Inc. (GHA) of Vernon Hills, Illinois and dated April 8, 2019.
9. Engineer's Opinion of Probable Cost for Riverview West prepared by Bolinger, Lach and Associates, Inc. and dated April 19, 2019.
10. Final Plat of Subdivision Cantera Sub-Area "C", Lot 2 Subdivision prepared by United Survey Service, LLC of River Forest, Illinois and dated April 17, 2019
11. Final Plat of Subdivision Cantera Sub-Area "C", Lot 2 Subdivision Easement Vacation and Dedication prepared by United Survey Service, LLC of River Forest, Illinois and dated April 17, 2019

ENGINEERING SUMMARY

PROPOSED LAND USES: The proposed development has not changed and consists of consists of the following land uses.

- 364 Apartment units (1BR – 201, 2BR – 153, 3BR – 10)
- Townhome units (previously 60 3BR)
- undesignated commercial space

ACCESS AND VEHICULAR CIRCULATION: Access has not changed from earlier submittals. Since Ferry Road is under the jurisdiction of DuPage County Department of Transportation (DuDOT), they will review construction affecting their road. We have seen the April 2, 2019 DuDOT review of the site improvement plans and note several sheets need revision.

Torch Parkway is proposed to be extended as a 27-foot wide (back to back of curb) public street within a 60 foot wide right-of-way southwesterly from its current terminus at Kline Circle to the internal intersection with the private drive that serves the commercial area, and then south to where it intersects with Ferry Road. The proposed extension is generally consistent with the Cantera General Site Plan Exhibits approved by the City on February 17, 1994. The typical section for Torch extended includes B6.12 curb and gutter along the future townhome side of the pavement. Since the final locations of the townhomes will be established in the Phase 2 submittals, confirm depressed sections of curb and gutter will be created during Phase 2.

A new private internal central road is proposed extending from Ferry Road opposite Cornerstone to Torch Parkway extended. It is called "Riverview Drive" on some sheets and

"Pollard Drive" on other sheets, from which extends private residential drive to a parking garage and a private commercial drive. There is a typical section for this private road. The pavement is 24' back to back and no on-street parking is proposed. A central island just north of the commercial drive has been extended from previous submittals. The extension is acceptable.

A proposed private commercial drive extends between Torch and Riverview. There is no typical section for this pavement. The lanes and north side parking are proposed to be constructed under Phase 1. South side parking is proposed to be built in Phase 3. The current concept includes many perpendicular commercial parking spaces along the south side of the drive. The typical section on Sheet 43 of the Site Plan suggests the south curb will be built undepressed and will be cut or replaced under Phase 3. Confirm

TRAFFIC STUDY IMPACT: The TIS comments to DuDOT appear reasonable, but DuDOT has the final word on construction within their right-of-way.

As previously noted, the projected site traffic generated by the proposed residential and commercial land uses will be half of that which would be generated by the previous PUD approval for this site consisting of up to 950,000 square feet of office space. Consequently the proposed development is expected to have less impact on the surrounding streets.

In our last review, we recommended measures designed to reduce risk at the Torch Parkway pedestrian crossing and to calm traffic. Curb bump-outs at pedestrian crossings of Torch Parkway have been added.

WARRENVILLE CITY ORDINANCE No. 1439: Ordinance No. 1439 requires the removal of the right-in portion of the right-in/right-out driveway to lot C1 (Cantera Meadows) about 300' west of the Winfield Road/Ferry Road intersection when "Access #4" is constructed. Access #4 is a driveway aligned with the unsignalized Cornerstone Development access to Ferry Road. The proposed development will construct such an access, but the proposed development plan does not specify closure of the right-in portion of the existing C1 entrance.

The Ordinance requirements were based upon the prior plan which consisted entirely of office space throughout all of Subarea C. The prior plan also included internal connectivity between lot C1 and the remainder of the of the Subarea C office development. The proposed lot C2 development plan replaces the previously proposed office use residential and commercial uses, and eliminates vehicular cross access to Cantera Meadows.

The April 8 memorandum from GHA says that the existing Lot C1 access and the proposed Lot C2 access operate reasonably. We agree with GHA's recommendation of continued monitoring.

Ordinance 1439 also requires:

1. Widening of Torch Parkway to accept dual left turns from northbound Winfield Road to westbound Torch Parkway.
2. Striping the Torch Parkway approaches to Kline Circle, and the southbound Kline Circle approach to Torch Parkway to provide left turn lanes and tapers.

The proposed residential and commercial development is projected to generate half of the new trips than the previously approved office space for the site. The need for dual lefts from northbound Winfield to westbound Torch will not exist due to the reduction in projected site traffic. The projected Level of Service (LOS) for this traffic movement is LOS A with left turn vehicle queues contained within the existing single turn lane storage. It is our professional opinion that the widening of westbound Torch Parkway is not necessary in conjunction with the current development proposal.

PEDESTRIAN CIRCULATION: Ordinance 1439 lists six requirements for sidewalks, most of which were previously constructed or would not apply under the proposed development plan. The requirement to provide a sidewalk connection to the River just north of the existing pond at the northwest corner of Ferry Road and Torch Parkway is now proposed**.**

In our last review we recommended two advance non-vehicular warning signs (W11-2) one for each approach of Torch Parkway as the midblock crossing at station 204+00 is unexpected. They have not been added. We do note the two new "stop for pedestrians within crosswalk" signs (R1-6a) on sheet 31.

PARKING: Off-street residential parking has not changed. In a previous review, we agreed with the required parking space tabulation on page 8 of the GHA traffic report.

Sheet A-12 of the Architectural Plans locate on-street Townhome Guest Parking along Torch Boulevard. We have no objection to the location of the spaces except for the two spaces within the designated overflow route of the detention pond system.

LOADING: Two loading spaces are required and have been provided for Commercial Buildings 2, 3 and 4. They have not changed and are acceptable. The approach to the trash pickup area has been reconfigured to include a smaller central island. The Autoturn confirms a garbage truck can swing around the cul-de-sac, but does not include backing maneuvers to the door.

VISION CLEARANCE: The vision clearance triangles shown on Sheet 49 of the Site Improvement Plan appear correct. They assume the posted speed of the future commercial drive will be 20 mph. The landscape plans still do not show the vision clearance triangles. *We are concerned about the sight lines for eastbound traffic on the commercial road looking north at Riverview Drive. The corner of the building is close to the triangle limits and the choice of five 10-15' arborvitae and three Black Hills Spruce which are not trimmed up are inappropriate.*

PERMITS: The proposed disturbed area will be approximately 32+/- acres, so a City of Warrenville Stormwater and Flood Plain Certification is required. City of Warrenville Building Permits will be required as each unit is constructed. Illinois Environmental

Protection Agency (IEPA) permits are required for the proposed sanitary sewer and water main improvements for this project. DuPage County Department of Transportation permits will be required for work within their right-of-way. DuPage County Forest Preserve District permits will be required to implement the proposed trail connections to the West Branch of the DuPage Regional Trail.

STORMWATER DETENTION: Since the proposed improvement will result in greater than 25,000 square feet, in accordance with Section 15-72.A of the DuPage Countywide Stormwater and Floodplain Ordinance (DCSFPO), site runoff Storage (stormwater detention) is required. The existing parcel contains three detention ponds which were sized for future development of Subarea C. The design of the proposed ponds account for all tributary area, including upstream detention ponds and also any proposed impervious area which was not accounted for in the existing detention pond design.

EROSION CONTROL: The project site is greater than one acre in size, so a National Pollutant Discharge Elimination System (NPDES) permit is required for the discharge of storm water during construction. The Owner will have to implement the Storm Water Pollution Prevention Plan (SWPPP) to effectively manage the discharge of pollutants from the site. The Owner received a permit approval in October 2018.

BEST MANAGEMENT PRACTICES: The proposed development will create more than 2,500 square feet of impervious area. In accordance with the City of Warrenville Stormwater and Floodplain Ordinance, PCBMPs for water quality are required. One 0.55 Acre-Foot PCBMP facility is proposed at the northeast corner of Ferry Road and the proposed Torch Parkway entrance. Bioswales are proposed within the east parking lot and also along the south side of the commercial properties (along the north side of Ferry Road). Per Section 15-64 of the DCSFPO, PCBMPs shall provide volume control calculated as the New Impervious Area multiplied by 1.25” rainfall event.

SPECIAL MANAGEMENT AREAS: The area of the proposed improvement is located in a shaded Zone A (100-year floodplain with no base elevations determined). The West Branch DuPage River is located approximately 50 feet west of the site at an elevation of 692.6 at Federal Emergency Management Agency (FEMA) section WBWB0024 which is just south of Torch Parkway. We understand a Conditional Letter of Map Revision (CLOMR) application was approved by FEMA on October 11, 2018 to revise the existing detention ponds Zone A flood mapping delineation. We understand the CLOMR is based upon the proposed engineering plan.

Prior to the issuance of a foundation permit for any portion of the apartment building that would be located on fill that has or will be placed in the FEMA Special Flood Hazard Area (SFHA), the applicant shall provide documentation acceptable to the City of Warrenville Community Development Department and certified by a qualified design professional that confirms all fill placed in the SFHA has been compacted per FEMA Technical Bulletin 10-01 and the land removed from the SFHA is reasonably safe from flooding. Vertical construction of the apartment building can commence once the LOMR is approved.

Wetlands within the Cantera Development are governed by an Army Corps of Engineers (ACOE) permit. All isolated wetlands within Cantera were mitigated by the construction of the Flowage Easement in the southwest corner of Subarea I, adjacent to the West Branch DuPage River. Therefore, any wetlands found in Subarea C have already been mitigated and may be filled. The ACOE permit does not cover wetlands contiguous to the West Branch DuPage River.

WATER DISTRIBUTION: The applicant is proposing to make one mainline connection to the City's existing 12 inch water main at Klein Circle and Torch Drive, one mainline connection to an existing 12 inch water main at the east side of Ferry Road approximately 850 feet west of Winfield Road and one connection to an existing water stub on the west side of Ferry Road approximately 1,800 feet northeast of River Road.

SANITARY SEWER: The applicant is proposing to connect the individual sanitary services of the proposed 60 townhouses to the existing 8 inch sanitary mainline which is northwest of the extended Torch Drive. Three additional sanitary mainline connections are proposed to the City's existing 15 inch sanitary sewer on the northwest side of Ferry Road approximately 1,800 feet, 2,000 feet and 2,800 feet northeast of River Road.

On August 20, 2018, the City Council approved an alternative tap-on surcharge for this project that would cover the costs associated with the City's purchase of the additional sanitary sewer capacity required for it from Naperville in lieu of the standard sanitary sewer service connection fees contained in the City Code Section 7-4B-6.D.

According to the August 24, 2018 letter from the City of Warrenville to Interforum Holdings, Inc., the developer will be required to pay for the City's purchase of the necessary sanitary sewer capacity from Naperville before the City of Warrenville and the City of Naperville will sign off on the IEPA sanitary sewer permit for the project. Population equivalent (PE) calculations have been submitted to the City for review and forwarded to Naperville. After the IEPA draft is reviewed by Naperville, the City of Warrenville will send a letter requesting the additional capacity and in return the City of Naperville will provide an invoice. The City of Warrenville will then invoice the developer. Once the developer submits the payment, then both cities can sign the IEPA permit.

REPORT OF SOILS EXPLORATION: The Report of Soils Exploration prepared by TSC and dated January 13, 2017 was reviewed previously and approved on October 4, 2017.

LIGHTING:
Parking Lot 1 (PL-1), the residential lot east of Riverside Drive which has more than 100 spaces, was considered a High Level Activity. The remaining parking lots were considered Medium Level Activity Lots. The illumination average to minimum uniformity ratio and minimum lighting for all parking lots are in accordance with the zoning ordinance.

The Sternberg photometric analysis reflects adjusted lighting. It now predicts illumination at the Torch-Pollard and Torch-commercial drive intersections in excess of 0.8 ft-c as suggested by Table 8 of the IES Roadway Lighting report RP-8-14 for pedestrian crossings. This level of illumination is exceeded at the pedestrian crossing of Torch Parkway north of Pond 4. The Chicago Lightworks projected illumination of the Torch Parkway pedestrian crossing at Ferry Road is about 0.5 ft-c, but this lighting must be reviewed by DuDOT. The pedestrian crossings of Pollard Drive are well lit.

A check of illumination levels for the on-street parking along Torch Parkway revealed minimums of 0.2 ft-c which exceed the 0.1 ft-c ITE recommended values for Low Pedestrian Conflict Areas.

REVIEW COMMENTS

Proposed Site Improvement Plans The Proposed Site Improvement Plans for Riverview West Development has been stamped **"APPROVED WITH CONDITIONS"**. The following comments should be addressed prior to Site Development permit issuance.

1. Include armoring at the pond overflow locations. **Partially addressed. Include a detail.**
2. Utility Sheets:
    a. Provide clean outs for sanitary sewer services at townhomes. **Partially Addressed. Add cleanout symbol as shown on the Utility Sheets to the Legend on Sheet 1.**
    b. **New Comment:** Adjust the sanitary sewer services so that each building's services connect to one manhole and a sanitary sewer from the manhole connects into the existing sanitary sewer.
    c. **New Comment:** Water and sanitary service should be 10' apart. Put water service for two units in same area.
    d. **New Comment:** All watermain services shall be PVC.
3. Analyze vision clearance triangles at all new intersections, including impact of proposed monument signage on vision triangles. **Partially Addressed**. **Demonstrate DuDOT approval on Ferry Road intersections. Change plantings north of eastbound commercial drive at Pollard Drive**
4. Although space for swing movements have been added to the commercial parking west of the north-south road, a parking space must be striped out to make a turn-around maneuver. **This can be addressed in Phase 3 buildout.**
5. Proposed landscape plantings should not be in the path of overland flow routes. **Partially Addressed**. **Remove River Birch shrubs (mature size 10' by 10') from overland flow path at detention ponds.**

6. The bioswales have inlets however the detail doesn't show the inlets. Update the detail to show the inlets and depth above the bottom of the swale. It appears the rims are at the bottom of the swale which would assume there isn't any storage provided which is in conflict to the 4-18-18 Final PUD SWM report. **Not Addressed**. **The bioswale detail specifies rim elevation 1 foot above the bottom of the swale but the bioswale along Ferry Road shows rim elevations at bottom of the swale. Ensure the called out rim elevations are 1 foot above the bottom of the swale.**
7. Rename Riverview Drive (Private Road) to "Pollard Road". The City already has a Riverview Drive. **Partially addressed. Some sheets still have Riverview Drive**.
8. There are crosswalks to allow pedestrians to cross Torch Parkway at the intersection with the commercial drive and the intersection with Riverview Drive. These are expected crossing points. The midblock crossing at station 204+00 is unexpected, so two advance non-vehicular warning signs (W11-2) one for each approach of Torch Parkway and two "stop for pedestrians within crosswalk" signs (R1-6a) are appropriate on sheet 31. **Partially addressed. Add advance warning signs**
9. Label the size and invert of the Outlot A existing pond outlet pipe and note that this pipe will be maintained. Label the existing 6" restrictor. Include a detail of the existing 6" restrictor. Note that a perforated riser is proposed on the existing outlet. **Partially addressed. Include a detail of the existing restrictor manhole complete with invert elevations of the 6 inch restrictor and 12 inch outlet pipe.**
10. On Plan sheet 44, on the overflow spillway cross-sections, please note and clarify on each cross-section if the noted grades are for the Quick Start work or the final finished grades for the improvement. It appears as if there were roadway design revisions since the last review. The overland flow calculations and corresponding cross-sections for the final plan set should be updated and submitted for review. **Partially Addressed. The Torch Parkway / Commercial Drive overflow calculations need to be revised and the corresponding cross-sections included in the plan set details.**
11. Submit an updated, complete Tabular Stormwater Management Report incorporating all calculation and design revisions to date. The narrative for all Tabs should be updated per all revisions to date. Mostly addressed. In the final submittal, in eth Tab 2 calculations include a narrative detailing how the site design accommodated the overland flow route of 1 cfs / acre in accordance with eth DCSFPO. **All final overland flow calculations, overland flow site exhibit (grading plan as base sheet), cross-sections and overland flow narrative should be included in the final Stormwater Management Report.**
12. Label Riverview Drive and Torch Parkway on the Landscape Plans. **Not addressed. Update Pollard Road.**

13. **New comment:** Add a permit table to the Front Sheet. Add a column for Agency, Permit # and Issue Date. Add agency permit like City of Warrenville – Construction, City of Warrenville – Site, IHPA, IDNR – Endangered Species, FEMA CLOMR, IEPA NPDES NOI, IEPA Public Water Supply, IEPA Water Pollution Control, DuDOT, FPDDC, etc. Leave the # and Issue Date blank if it hasn't been issued yet. If the permit # is known, add it.
14. **New comment:** Remove the existing FEMA floodplain limits (graphical and actual) on the Utility Plans.
15. **New comment:** Consider modifying the ADA parking spaces to share an access aisle per the new Illinois Accessibility Code.
16. **New comment:** Sheet 7,9,10: Show the revised wall elevations and contours per Quick Start revisions. Sheet 7: Remove the "Proposed Split Rail…" callout.
17. **New comment:** Sheet 11: The NE Corner of Pollard and Garage drive should be concrete in order to place the detectable warning. Similar to the area north of Torch Parkway north of Pollard Drive.
18. **New comment:** Sheet 16: Add the Ferry Road storm sewer revisions to this sheet. Note that the Ferry Road storm structures are numbered 152-157 and there already are 152,153, and 154 structures labeled on this sheet as well as noted on Sheet 13 (by the garbage access driveway). Renumber these structures and add the Ferry Road storm structure information to Sheet 16.
19. **New comment:** Sheet 17: Structure S2, invert 688.55 should be "E" not "N". Structure S4, the south invert is missing. Since the sanitary structures are labeled with a "S_", they should also be labeled as such on the utility sheets.
20. **New comment:** All erosion control sheets. Update the erosion control measures implemented during Mass Grading Quick Start construction.
21. **New comment:** Sheet 23: Fix the callout overwrite at the top of the sheet.
22. **New comment:** Sheet 21 and 23: Check the path along the eastern property line to ensure the proposed grades match into the existing grades.
23. **New comment:** Sheets 31 and 32. Adjust the pavement marking of Torch Parkway northbound per attached markup.
24. **New comment:** Sheet 41 Torch Parkway cross section: Label sidewalk as 7" per grading plan sheets.
25. **New comment:** Sheet 41 Bioretention, Bioswale and Permeable Paver details: Add the depth of layer in callout and not within the hatched area as it is too hard to see.
26. **New comment:** Sheet 42 Fence Detail: Fence should be black aluminum and not steel.
27. **New comment:** Sheets 47, 48, 51 and 52: ADA detectable warning should expand the width of the sidewalk similar to the details on Sheet 46.

28. **New comment:** Sheets 52: Adjust the eastern cross walk location to line up with the sidewalk along the east side of Pollard Road. Cross walk detail should look like IDOT Standard 424001-01 on Sheet 38.
29. **New comment:** Contour elevations are not legible on the Landscape Plan.
30. **New comment:** It is recommended that an anti-seep collar be provided at each pond outlet where the existing pipe is being replaced.
31. **New comment:** The plans show a delineated wetland and wetland buffer. A wetland delineation report should be provided to support these findings.
32. **New comment:** The cost estimate should include native planting costs.
33. **New comment:** Per the previous submittal, the IDNR EcoCat Termination letter recommended that "all dense vegetation around the waterbodies be removed before or after the wetland bird nesting season, April 1 through July 31st, to avoid potential impacts to listed wetland birds." Please provide information on any proposed clearing in order to avoid potential wetland bird impacts in response to this comment. This documentation should be provided in Tab 4.
34. **New comment:** The wetland buffer appears to be less than 50 feet in some areas. It is our understanding that this may be because the existing path is not considered buffer. Please confirm this.
35. **New comment:** The BFE is used as the riparian buffer for the River. Proposed riparian buffer impacts are 341 feet for the path connection. The vegetation impacted and lost functional values should be discussed in Tab 5. It is our understanding that native plantings throughout the site will exceed this impact, however these plantings are not located in eth same buffer as the impacts. The Forest Preserve District requested turf along the path connection, however please provide information on how the lost functional values will be replaced elsewhere within the riparian buffer of the West Branch DuPage River.
36. **New comment:** A Planting, Maintenance and Monitoring Plan should be provided for all of the native vegetation planted within the buffer areas.
37. **New comment:** The hatched native seeding along the existing path on the Landscape Plan appears to differ from the hatch areas on the Site Improvement Plan. Please coordinate the plans to show the same areas of plantings.

Architectural Drawings The Architectural Drawings, Apartments at Riverview West have been coordinated with the Site Improvement Plans. Any updates to the Site Improvement Plans should be updated on the Architectural Drawings to maintain consistency.

Lighting Layout Plan and Photometric Plan The Lighting Layout Plan and Photometric Plan has been stamped "**APPROVED WITH CONDITIONS".** The following comments should be addressed prior to Site Development permit issuance.

1. Show phased lighting plan or show how the lights will be built in the commercial areas and townhomes during Phase I. For the lights along Torch, how will the lights on the townhome side be placed so that they don't conflict with future driveways? **Not Addressed. Phasing plan shows no south side commercial drive lighting, but photometric plan assumes all lights are in place.**
2. Include Standard Street Lighting Details, controller, service connection, and underground conduits. Provide a detailed controller diagram specifying cabinet equipment and wiring schematic. Provide voltage drop calculations for wire sizing. Add the location of the light poles and this information to the engineering plans. Contact staff for a sample of these plans. **Not Addressed. This can be completed during the permitting process.**
3. Add the location of the controller and power source. Coordinate with Public Works regarding the lights along Torch Parkway and if they can be connected to the existing lights along Torch Parkway. **Not Addressed. This can be completed during the permitting process.**
4. Adjust the light temperature of the fixtures on the building and parking lot from 5700k to a lesser temperature of 4000k. **Not addressed. Applicant agrees with City's recommendation.**
5. **New comment:** Move the light poles on Torch Parkway, east and west of Pollard Drive closer to the intersection.

Overflow Spillway Calculations The overflow spillway calculations have been stamped **"APPROVED WITH CONDITIONS".** The following comments should be addressed on the plans and included in the final stormwater management report as part of the Site Development permit:

1. All weir calculations should have current date.
2. Include the 4/26/2019 revised weir calculations into the Stormwater Management Report.
3. Stormwater Management Report should be signed and sealed by an Illinois Registered Professional Engineer.

Final Plat of Subdivision Cantera Sub-Area "C", Lot 2 Subdivision The Final Plat of Subdivision has been stamped **"APPROVED WITH CONDITIONS"**. The following comments should be addressed prior to Final Plat recording.

1. Update the lot lines and show all existing property lines on Sheets 1 and 2. **See markup. On Sheet 2 show all existing sanitary, public utility and all easements granted under the Quick Start Plat of Easement (R2019-000492).**

2. The commercial drive in Lot 1 must cross Lots 2 and 3 to reach the dedicated Torch Parkway right-of-way. Provide a cross-access easement. **Not addressed. See markup.**
3. Proposed sanitary sewer and services for more than one service outside of ROW should be within an exclusive City Utility Easement (see attached for easement language). **See markup.**
4. Proposed water main outside of City ROW should be within an exclusive City Utility Easement. **Not addressed. See markup.**
5. Any storm sewer draining the Torch Parkway City ROW should be in an exclusive City Utility Easement unless it was already included in the Quick Start Plat of Easement. **Not addressed. See markup.**
6. Overland flow routes should be within the Stormwater Management Easement. **Not addressed. Torch Parkway at Commercial Drive overland flow route was revised and the corresponding flow path will need to be within a stormwater management easement.**
7. Add the following notes referencing the Covenants.
    i. **The maintenance and use of the property and improvements constructed as part of this subdivision are controlled by the "Master Declaration of Covenants, Restrictions and Easements for the Riverview West Subdivision" which will be recorded concurrently with this Final Plat of Subdivision.**
    ii. **The maintenance and use of Outlot A are controlled under the "Easement, Improvement and Maintenance Agreement" recorded on November 20, 2018 as R2018-108094.**
8. **New Comment:** Remove Normal Water Level lines from sheet 1. Remove the centerline from sheets 1 and 2 and the legend. See markup.
9. **New Comment:** Add a note that the existing property is Zoned S-D "Special Development District". See markup.
10. **New Comment:** Add a provision for the cross-access easement. "An easement is hereby granted to owners of Lots 1, Lot 2, and Lot 3 for perpetual pedestrian and vehicular access, ingress and egress over the land designated as "Cross-Access Easement".

Memorandum prepared by GHA The memorandum prepared by GHA regarding City Ordinance 1439 has been stamped **"APPROVED AS SUBMITTED"**.

Traffic Impact Study In our last review, the Traffic Impact Study for Cantera Sub-Area "C", Lot 2 Subdivision was stamped "**APPROVED WITH CONDITIONS**". The following comments still need to be addressed:

1. Eastbound peak hour queuing on the Torch Parkway approach to Winfield Road is projected to exceed the existing marked turn lane storage. In previous reviews, we suggested a re-stripe of the existing eastbound left turn lane on Torch to provide a total storage length of 153 feet, and reduce the back-to-back taper length to 96 feet. This will provide sufficient storage for the projected AM peak hour, and accommodate the majority of the left turn queue during the PM peak hour. An earlier response letter says this was corrected, but the documents confirming this change were not in our review package. **Not addressed.**

Engineer's Opinion of Probable Cost The Engineer's Opinion of Probable Cost has been stamped **"APPROVED WITH CONDITIONS".** We have the following comments:

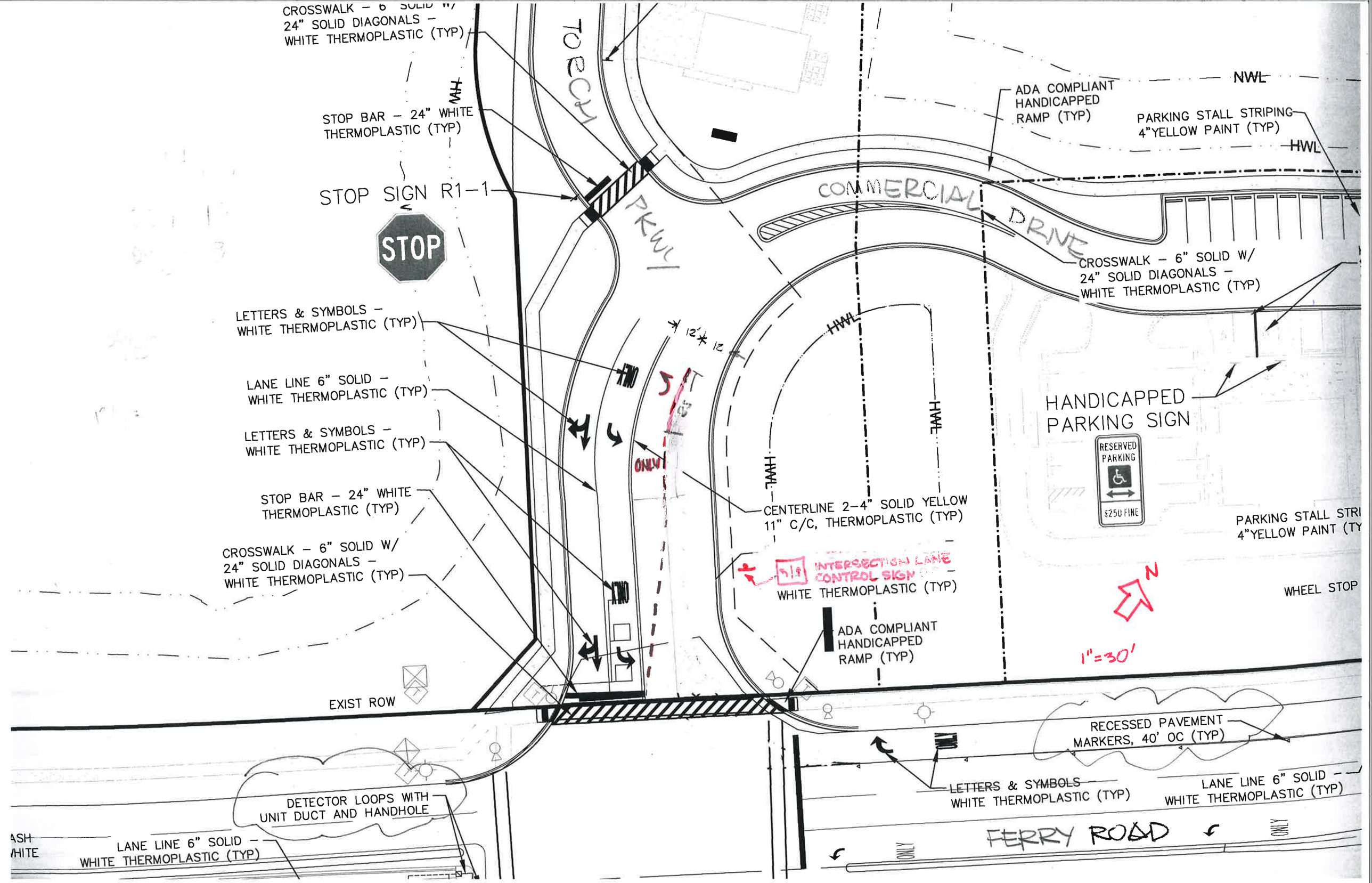
1. Reminder that the EOPCC is for Public Improvements as defined in Subdivision Control Ordinance definitions on page 6 and 7. Revise the following items in the cost estimate:
    a. Rip rap at pond overflow spillways. **Not addressed.**

Fees and Security: Must be paid before the Final Plat is to be recorded

1. Final Engineering Review and Inspection: 4.25% x EOPCC of Public Improvements
2. Stormwater Management Fee for Review and Issuance = $10,000 (PAID)
3. Stormwater Management Inspection Fee is $500 + 2.5% of the EOPCC (Stormwater , BMP, Erosion Control)
4. Development Security (A Letter of Credit, Bond, or Cash Deposit) is 110% of the total EOPCC of Public Improvements.
5. Sanitary Sewer Capacity Fee. Amount to be determined by City of Naperville.
6. Plat Recording Fees will be billed.

Attachments:
1. Torch Parkway pavement marking markup
2. Plat of Subdivision markup

- end -


CROSSWALK – 6" SOLID W/
24" SOLID DIAGONALS –
WHITE THERMOPLASTIC (TYP)
TECH
PKWY
STOP BAR – 24" WHITE
THERMOPLASTIC (TYP)
STOP SIGN R1-1
STOP
LETTERS & SYMBOLS –
WHITE THERMOPLASTIC (TYP)
LANE LINE 6" SOLID –
WHITE THERMOPLASTIC (TYP)
LETTERS & SYMBOLS –
WHITE THERMOPLASTIC (TYP)
STOP BAR – 24" WHITE
THERMOPLASTIC (TYP)
CROSSWALK – 6" SOLID W/
24" SOLID DIAGONALS –
WHITE THERMOPLASTIC (TYP)
EXIST ROW
DETECTOR LOOPS WITH
UNIT DUCT AND HANDHOLE
LANE LINE 6" SOLID –
WHITE THERMOPLASTIC (TYP)
ONLY
ONLY
CENTERLINE 2-4" SOLID YELLOW
11" C/C, THERMOPLASTIC (TYP)
INTERSECTION LANE
CONTROL SIGN
WHITE THERMOPLASTIC (TYP)
ADA COMPLIANT
HANDICAPPED
RAMP (TYP)
ADA COMPLIANT
HANDICAPPED
RAMP (TYP)
NWL
HWL
PARKING STALL STRIPING
4"YELLOW PAINT (TYP)
COMMERCIAL DRIVE
CROSSWALK – 6" SOLID W/
24" SOLID DIAGONALS –
WHITE THERMOPLASTIC (TYP)
HANDICAPPED
PARKING SIGN
RESERVED
PARKING
$250 FINE
PARKING STALL STRI
4"YELLOW PAINT (TY
WHEEL STOP
N
1"=30'
RECESSED PAVEMENT
MARKERS, 40' OC (TYP)
LETTERS & SYMBOLS
WHITE THERMOPLASTIC (TYP)
LANE LINE 6" SOLID –
WHITE THERMOPLASTIC (TYP)
FERRY ROAD
ONLY
ONLY

FINAL PLAT OF SUBDIVISION

CANTERA SUB-AREA "C", LOT 2 SUBDIVISION

OF PART OF THE NORTHEAST 1/4 OF SECTION 2, TOWNSHIP 38 NORTH, RANGE 9, EAST OF THE THIRD PRINCIPAL MERIDIAN, IN DUPAGE COUNTY, ILLINOIS.

0'10' 50' 100' 150' 200'

PERMANENT INDEX NUMBERS:
07 - 02 - 206 - 006 (AFFECTS LOT 2)
07 - 02 - 201 - 016 (AFFECTS OUTLOT "A")

BASIS OF BEARINGS:
ASSUMED THE NORTH LINE OF FERRY ROAD TO BE S46°22'27"W

CENTER

AREA SUMMARY:
COMMERICAL USE AREA
LOT 1 AREA = 191,688 SQ. FT. OR 4.401 ACRES

MULTIFAMILY - APARTMENTS
LOT 2 AREA = 771,258 SQ. FT. OR 17.706 ACRES

MULTIFAMILY - TOWNHOMES
OUTLOT "A" AREA = 172,254 SQ. FT. OR 3.954 ACRES
AREA IN TORCH PARKWAY R.O.W. = 132,897 SQ. FT. OR 3.051 ACRES
LOT 3 AREA = 146,718 SQ. FT. OR 3.368 ACRES

TOTAL SUBDIVISION AREA = 1,414,815 SQ. FT. OR 32.480 ACRES

"FOR APPROVAL OF THIS PLAT SEE ORDINANCE
_____

Notes:
1. **The maintenance and use of the property and improvements constructed as part of this subdivision are controlled by the "Master Declaration of Covenants, Restrictions and Easements for the Riverview West Subdivision" which will be recorded concurrently with this Final Plat of Subdivision.**
2.The maintenance and use of Outlot A are controlled under the "Easement, Improvement and Maintenance Agreement" recorded on November 20, 2018 as R2018-108094.
3. Subject property shown hereon is located within Warrenville Zone classification S-d "Special Development District".

WINFIELD TOWNSHIP

NAPERVILLE TOWNSHIP

CANTERA VILLAGE CONDO
PER DOCUMENT R99-028856

SOUTH LINE OF SECTION 35 - 39 - 9

NORTH LINE OF SECTION 2 - 38 - 9

N88°35'19"E 23.83'

ARC=217.83' RAD.=472.77' CH.=215.91' N60°33'16"E

ARC=126.48' RAD.=536.99' CH.=126.19' N80°33'39"E

ARC=245.48' RAD.=532.77' CH.=243.31' N60°33'16"E

ARC=109.89' RAD.=300.00' CH.=109.27' N84°14'51"E

S00°28'26"W 69.77'

80' R.O.W. ~~HERETOFORE DEDICATED AS FOR PUBLIC STREET PURPOSES~~
TORCH PARKWAY
RECORDED FEBRUARY 7, 1996
PER DOCUMENT R96-020336

22.32' S85°15'33"E
10.21' S00°28'26"W
68.22'

20' PUBLIC UTILITY EASEMENT PER DOCUMENT R96-020336

ARC=16.19' RAD.=453.00' CH.=16.19' S89°09'25"E

S84°15'32"W 22.44'
S88°07'05" W 103.54'

OUTLOT "A"

N89°51'35"E 119.66'

N23°09'01"E 95.65'

77.71' N47°21'46"E

60' R.O.W HEREBY DEDICATED TO THE CITY OF WARRENVILLE FOR PUBLIC ROADWAY AND UTILITY PURPOSES

N05°26'25"E 77.99'

N13°09'26"E 64.59'

N30°42'55"E 41.60'

N64°58'59"E 62.12'

S30°42'55"W 110.75' ARC=104.55' RAD.=360.00' CH.=104.18' S39°02'05"W

ARC=87.12' RAD.=300.00' CH.=86.82' N39°02'05"E

S49°04'44"W 116.75'

S56°43'47"W 26.74'

97.99' S65°47'16"W

63.62' S42°38'49"W

STORMWATER MANAGEMENT EASEMENT HEREBY GRANTED

Remove the text and outline of old SWM easement

142.21'

210.43' S04°47'16"W

S85°12'44"E 280.85'

128.27' S00°00'05"W

Remove the text and outline of old SWM easement

STORMWATER MANAGEMENT EASEMENT HEREBY GRANTED

STORMWATER MANAGEMENT EASEMENT PER DOCUMENT R2010-007747

S11°13'04"E 271.32'

LOT 1

PLAT OF RESUBDIVISION OF CANTERA SUB-AREA "C" LOTS C1 AMD C2
RECORDED JANUARY 19, 2010 AS DOCUMENT R2010-007747

S27°46'11"E 9.28'

S27°46'11"E 187.46'

194.07' S46°35'25"W

46.14' S72°11'35"W

WEST BRANCH OF DUPAGE RIVER

N27°10'52"E 326.54'

S30°42'55"W 271.24'

423.58' N30°42'55"E

S30°42'55"W 386.67'

LOT 3

TORCH PARKWAY

~~60' R.O.W. HEREBY DEDICATED AS FOR PUBLIC STREET PURPOSES~~

N30°42'14"E

S30°26'52"W 29.38'

N15°09'01"E 148.07'

60.00'

S24°23'15"W 26.91'

77.99' S28°45'13"W

99.99' S18°54'54"W

S13°24'33"W 26.55'

99.99' S7°54'11"W

N05°09'01"E 158.64'

ARC=903.60' RAD.=795.12' CH.=855.76' N01°51'00"W

ARC=835.25' RAD.=735.12' CH.=791.04' N01°50'37"W

S2°24'33"W 26.20'

S04°02'18"E 121.99'

S10°28'33"E 25.90'

S18°54'54"E 121.99'

S23°20'49"E 25.86'

S29°55'05"E 84.38'

LOT 2

CROSS ACCESS EASEMENT HEREBY GRANTED

N00°20'59"W 229.78'

N10°30'35"E 74.87'

59.40' S12°45'22"E

ARC=164.97' RAD.=484.76' CH.=164.18' N01°00'07"W

ARC=0.33' RAD.=34.46' CH.=0.33' S34°35'45"E

ARC=47.30' RAD.=808.60' CH.=47.30' S36°27'15"E

ARC=59.36' RAD.=108.26' CH.=58.62' S55°09'58"E

50.42' S09°10'36"W

N09°36'58"E 61.96'

OUTLOT "A"

N01°34'09"E 131.14'

AMOCO BUSINESS CENTER
FINAL PLAT OF SUBDIVISION
CANTERA SUBAREA "C"
RECORDED FEBRUARY 7, 1996
PER DOCUMENT R96-020336

STORMWATER MANAGEMENT EASEMENT

N13°11'18"E 194.73'

N11°36'53"E 82.27'

ARC=300.27' RAD.=1085.92' CH.=2299.31' S53°40'51"W

Show cross access easement

Remove the text and outline of old SWM easement

STORMWATER MANAGEMENT EASEMENT HEREBY GRANTED

850.94' S46°35'25"W

S46°22'27"W 852.50'

10.00' 176.07' 70.00'

ROAD

10' SIDEWALK EASEMENT
RECORDED JANUARY 19, 2010
PER DOCUMENT R2010-007747

WHEATON-WARRENVILLE COMMUNITY UNIT SCHOOL DISTRICT 200

APPROXIMATE LOCATION OF SCHOOL DISTRICT BOUNDARY LINE

NAPERVILLE COMMUNITY UNIT SCHOOL DISTRICT 203

ARC=34.47' RAD.=48.48' CH.=33.75' N60°47'07"W

S43°24'35"E 184.56'

S46°22'27"W 1288.98'

FERRY

ARC=43.25' N38°24'58"W RAD.=54.66' CH.=43.24' S38°55'18"E 135.18'

76.78' N80°29'14"W

ARC=66.19' RAD.=808.60' CH.=66.17' N43°33'29"W

S43°35'26"E 164.11'

46.96

N43°13'38"W 162.24'

N43°37'24"W 60.10'

129.62'

22.01'

42.42' N88°37'34"W

N01°23'54"E 35.37'

60.00' 60.00'

R.O.W. ~~VARIED HERETOFORE DEDICATED AS FOR PUBLIC STREET PURPOSES~~
RECORDED MARCH 21, 1995
PER DOCUMENT R95-032985

S46°22'27"W 237.89'

Remove this line and text

ARC=300.27' RAD.=1085.92' CH.=2299.31' S53°40'51"W

This sheet should just have the Lot subdivision and cross access easements. Show the utility easements (existing and proposed) on the next page.

NOTE: MONUMENTS HAVE BEEN PLACED AT ALL CORNERS, AT EACH END OF ALL CURVES, AT THE POINT WHERE A CURVE CHANGES ITS RADIUS, AT ALL ANGLE POINTS IN ANY LINE AND AT ALL ANGLE POINTS ALONG A MEANDER LINE.

PROJECT No.:	2017-24719-1
ISSUE DATE:	12/4/17
SCALE:	1"=80'
SHEET NUMBER	1 OF 4

PETITIONER:
CANTERA DEVELOPMENT HOLDINGS LLC
TWO NORTHFIELD PLAZA,
SUITE # 320
NORTHFIELD, IL 60093

PLAT PREPARED BY:
UNITED SURVEY SERVICE, LLC
CONSTRUCTION AND LAND SURVEYORS
7710 CENTRAL AVENUE, RIVER FOREST, IL 60305
TEL.: (847) 299 - 1010 FAX : (847) 299 - 5887
E-MAIL: USURVEY@USANDCS.COM

NO.	REVISIONS	DATE
1	REVISED PER COMMENTS	12/20/17
2	REVISED LOTS AND AREAS	01/05/18
3	REVISED PER COMMENTS	01/08/18
4	ADDED CERTIFICATES & NOTE	05/21/18
5	REVISED	06/22/18
6	REVISED PER COMMENTS	1/22/19
7	REVISED	02/12/19
8	REVISED PER COMMENTS	04/17/19

FINAL PLAT OF SUBDIVISION
CANTERA SUB-AREA "C", LOT 2 SUBDIVISION

OF PART OF THE NORTHEAST 1/4 OF SECTION 2, TOWNSHIP 38 NORTH, RANGE 9, EAST OF THE THIRD PRINCIPAL MERIDIAN, IN DUPAGE COUNTY, ILLINOIS

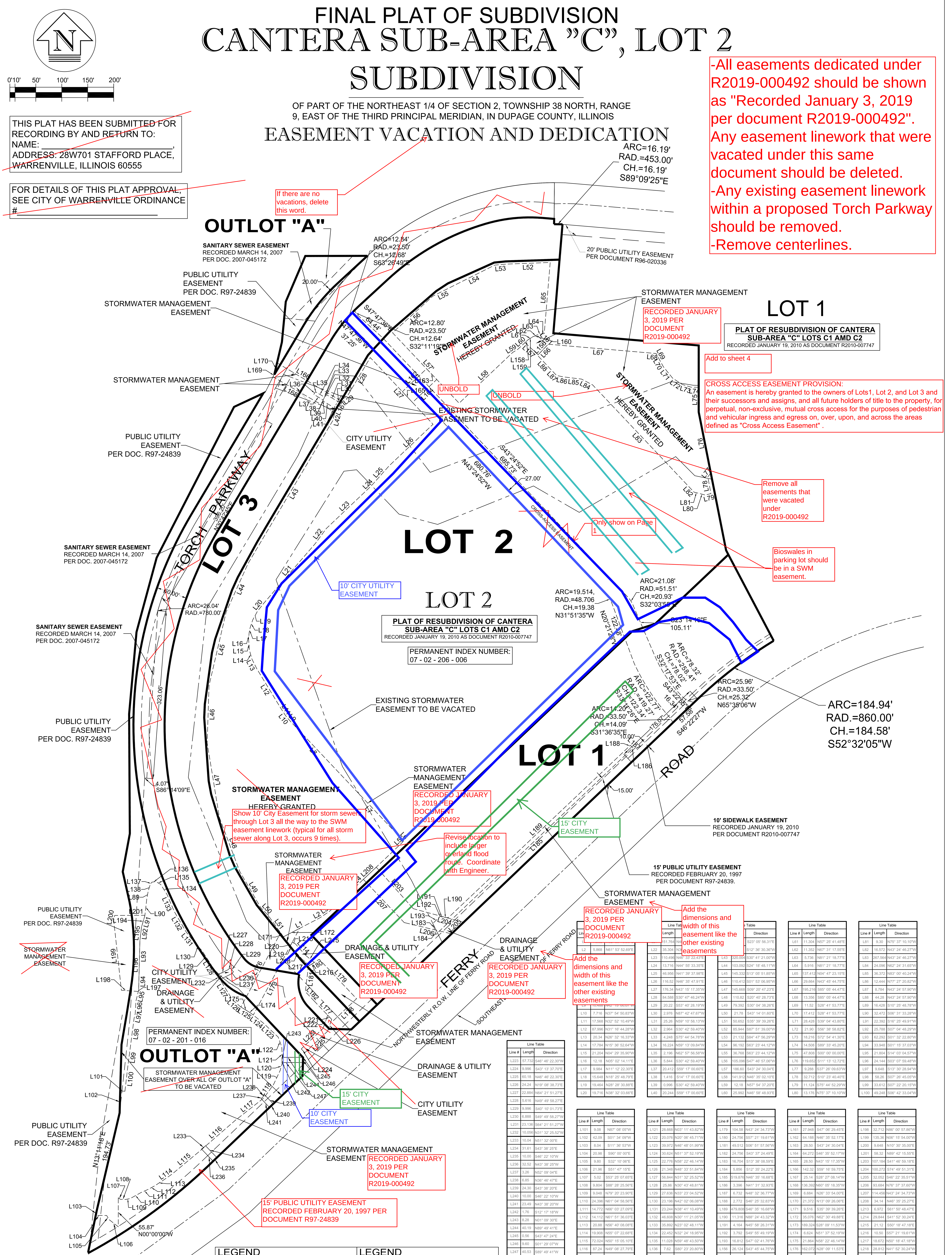
EASEMENT VACATION AND DEDICATION

THIS PLAT HAS BEEN SUBMITTED FOR RECORDING BY AND RETURN TO:
NAME: ______________________________,
ADDRESS: 28W701 STAFFORD PLACE,
WARRENVILLE, ILLINOIS 60555

FOR DETAILS OF THIS PLAT APPROVAL, SEE CITY OF WARRENVILLE ORDINANCE
#_______________________________

-All easements dedicated under R2019-000492 should be shown as "Recorded January 3, 2019 per document R2019-000492". Any easement linework that were vacated under this same document should be deleted.
-Any existing easement linework within a proposed Torch Parkway should be removed.
-Remove centerlines.

CROSS ACCESS EASEMENT PROVISION:
An easement is hereby granted to the owners of Lots1, Lot 2, and Lot 3 and their successors and assigns, and all future holders of title to the property, for perpetual, non-exclusive, mutual cross access for the purposes of pedestrian and vehicular ingress and egress on, over, upon, and across the areas defined as "Cross Access Easement" .



Line #	Length	Direction
L1	[illegible]	[illegible]
L2	5.868	N61° 53' 52.69"E
L3–L8	[illegible]	[illegible]
L9	[illegible]	[illegible]
L10	7.716	N37° 54' 50.83"W
L11	17.568	N32° 52' 10.49"W
L12	87.996	N31° 16' 44.28"W
L13	20.34	N26° 32' 16.33"W
L14	17.784	N15° 36' 52.64"W
L15	21.204	N04° 29' 35.90"W
L16	12.18	N05° 02' 14.11"E
L17	9.984	N11° 12' 22.30"E
L18	15.648	N18° 25' 48.79"E
L19	19.464	N28° 28' 30.88"E
L20	19.716	N38° 32' 03.66"E

Line #	Length	Direction
L21	151.764	N4[illegible]
L22	35.304	N3[illegible]
L23	110.496	N46° 33' 22.43"E
L24	13.716	N44° 55' 33.35"E
L25	46.956	N41° 39' 37.98"E
L26	116.52	N46° 35' 47.91"E
L27	176.34	N43° 15' 17.35"W
L28	84.588	S30° 47' 46.24"W
L29	20.22	S53° 40' 28.19"W
L30	2.976	N87° 42' 47.67"W
L31	25.26	N59° 10' 58.13"W
L32	2.964	S30° 42' 59.40"W
L33	4.248	S75° 44' 54.78"W
L34	16.224	N59° 13' 09.84"W
L35	2.196	N62° 57' 56.58"W
L36	5.844	S30° 42' 59.40"W
L37	20.412	S59° 17' 00.60"E
L38	1.416	S14° 17' 00.60"E
L39	0.996	S30° 42' 59.40"W
L40	20.244	S59° 17' 00.60"E

Line #	Length	Direction
L41	[illegible]	S23° 05' 56.31"E
L42	[illegible]	S12° 36' 30.36"W
L43	320.004	S30° 41' 21.00"W
L44	103.092	S24° 18' 48.11"W
L45	145.332	S13° 05' 51.85"W
L46	110.412	S01° 53' 06.95"W
L47	145.668	S09° 20' 47.23"E
L48	110.82	S20° 40' 28.73"E
L49	79.392	S30° 04' 38.26"E
L50	21.78	S43° 14' 01.60"E
L51	50.652	S35° 39' 39.26"E
L52	85.944	S87° 51' 39.00"W
L53	21.132	S84° 47' 56.29"W
L54	96.192	S63° 23' 44.12"W
L55	36.768	S63° 23' 44.12"W
L56	105.096	S47° 46' 57.06"W
L57	186.60	S43° 24' 30.04"E
L58	141.912	N46° 35' 02.10"E
L59	12.18	N57° 54' 37.20"E
L60	25.992	N46° 58' 48.93"E

Line #	Length	Direction
L61	11.304	N57° 25' 41.48"E
L62	11.352	N67° 31' 17.55"E
L63	5.736	N81° 21' 18.77"E
L64	5.916	N81° 21' 18.77"E
L65	137.412	N04° 47' 23.15"E
L66	29.664	N43° 45' 44.75"E
L67	195.216	S85° 05' 44.47"E
L68	13.356	S85° 05' 44.47"E
L69	11.52	S28° 41' 53.77"E
L70	17.412	S28° 41' 53.77"E
L71	28.428	S39° 04' 43.80"E
L72	21.90	S56° 38' 58.82"E
L73	18.216	S72° 54' 41.30"E
L74	14.508	S89° 33' 45.20"E
L75	47.808	S00° 00' 00.00"E
L76	119.652	S11° 13' 12.72"E
L77	9.288	S37° 26' 09.63"W
L78	32.712	S10° 23' 40.40"E
L79	11.124	S75° 44' 52.29"W
L80	13.176	N75° 37' 10.10"W

Line #	Length	Direction
L81	9.30	N75° 37' 10.10"W
L82	16.572	N43° 24' 46.27"W
L83	267.564	N43° 24' 46.27"W
L84	24.096	N62° 24' 31.65"W
L85	36.372	N83° 00' 40.24"W
L86	12.444	N77° 27' 20.82"W
L87	8.784	N43° 24' 57.90"W
L88	44.28	N43° 24' 57.90"W
L89	16.428	S10° 25' 48.78"W
L90	32.472	S06° 31' 33.28"W
L91	22.392	S16° 25' 49.91"W
L92	25.788	S07° 04' 48.29"W
L93	62.292	S01° 32' 22.80"W
L94	33.948	S01° 15' 37.03"W
L95	21.804	S14° 03' 04.57"W
L96	24.144	S03° 07' 59.48"W
L97	9.648	S13° 30' 28.94"W
L98	58.26	S07° 26' 45.05"W
L99	33.612	S07° 22' 20.15"W
L100	49.248	S06° 42' 33.04"W

Line #	Length	Direction
L223	57.732	S46° 46' 22.30"W
L224	9.996	S43° 13' 37.70"E
L225	60.18	N46° 46' 22.30"E
L226	24.24	N19° 08' 38.73"E
L227	22.884	N64° 21' 51.27"E
L228	5.616	N49° 49' 58.27"E
L229	9.996	S40° 10' 01.73"E
L230	6.888	S49° 49' 58.27"W
L231	23.136	S64° 21' 51.27"W
L232	10.056	N31° 32' 25.52"W
L233	10.04	N51° 32' 00"E
L234	31.61	S43° 38' 25"E
L235	10.00	S46° 22' 10"W
L236	32.52	N43° 38' 25"W
L237	3.26	N52° 09' 04"E
L238	6.85	N36° 46' 47"E
L239	24.30	S43° 38' 20"E
L240	10.00	S46° 22' 10"W
L241	23.49	N43° 38' 20"W
L242	1.76	S12° 17' 18"W
L243	8.28	N01° 09' 30"E
L244	40.19	N89° 49' 41"E
L245	0.56	S43° 47' 24"E
L246	9.60	S01° 29' 07"W
L247	40.53	S89° 49' 41"W

Line #	Length	Direction
L101	9.08	N87° 08' 05"W
L102	42.09	S01° 34' 09"W
L103	8.04	S11° 36' 53"W
L104	20.98	S90° 00' 00"E
L105	9.80	S32° 10' 06"E
L106	21.96	S51° 47' 15"E
L107	5.02	S53° 25' 07.65"E
L108	9.804	S88° 28' 25.56"E
L109	9.048	N79° 20' 23.90"E
L110	24.396	N61° 04' 58.56"E
L111	14.772	N66° 03' 27.09"E
L112	14.112	N61° 51' 36.03"E
L113	20.88	N56° 40' 08.08"E
L114	19.908	N55° 07' 22.68"E
L115	72.024	N50° 15' 05.10"E
L116	87.24	N49° 08' 27.79"E
L117	70.284	N51° 55' 27.33"E
L118	31.668	N35° 45' 00.01"E
L119	29.856	N25° 19' 18.70"E
L120	17.664	N15° 25' 25.52"E

Line #	Length	Direction
L121	28.668	N03° 11' 43.82"W
L122	20.076	N20° 06' 45.71"W
L123	39.972	N46° 48' 01.99"W
L124	30.624	N51° 37' 52.19"W
L125	22.776	N58° 22' 46.14"W
L126	21.348	N48° 33' 51.84"W
L127	56.844	N31° 32' 25.52"W
L128	25.86	N30° 43' 48.81"W
L129	27.636	N33° 23' 04.52"W
L130	23.196	N42° 02' 06.08"W
L131	23.244	N38° 41' 10.49"W
L132	46.608	N30° 11' 21.05"W
L133	35.892	N23° 02' 48.11"W
L134	22.452	N32° 24' 18.95"W
L135	11.028	N59° 48' 43.50"W
L136	7.62	S80° 23' 20.80"W
L137	5.868	S32° 41' 26.57"W
L138	11.64	S17° 51' 58.00"W
L177	52.812	S43° 37' 24.49"E
L178	62.112	N46° 35' 25.27"E

Line #	Length	Direction
L179	104.58	N43° 24' 34.73"W
L180	24.756	S57° 21' 19.61"W
L181	49.512	S06° 51' 57.56"W
L182	24.756	S43° 37' 24.49"E
L183	16.704	S13° 38' 08.59"E
L184	5.856	S12° 35' 24.22"E
L185	519.876	N46° 35' 16.68"E
L186	3.396	N41° 31' 32.93"E
L187	6.732	N48° 32' 36.77"W
L188	2.772	S46° 25' 32.83"W
L189	479.808	S46° 35' 16.68"W
L190	11.316	N88° 24' 43.32"W
L191	4.164	N45° 58' 26.31"W
L192	3.792	S49° 55' 49.19"W
L193	16.812	S47° 02' 41.76"W
L156	26.124	S43° 45' 44.75"W
L157	34.464	N47° 22' 48.31"W
L158	7.656	N46° 58' 48.93"E
L159	11.304	N57° 25' 41.48"E
L160	8.472	N67° 31' 17.55"E

Line #	Length	Direction
L161	27.948	S47° 06' 29.45"E
L162	64.188	N46° 35' 52.17"E
L163	28.50	S43° 24' 30.04"E
L164	64.272	S46° 35' 52.17"W
L165	28.50	N43° 15' 17.35"W
L166	142.32	S59° 16' 59.75"E
L167	25.14	S28° 27' 08.14"W
L168	136.392	N60° 05' 18.35"W
L169	6.684	N26° 33' 54.00"E
L170	21.372	N13° 09' 26.06"E
L171	9.516	S35° 39' 39.26"E
L172	35.076	N62° 30' 49.88"E
L173	189.324	S28° 09' 11.53"W
L174	6.624	N51° 37' 52.19"W
L175	21.864	N58° 22' 46.14"W
L176	162.072	N28° 09' 11.53"E
L194	22.392	S16° 25' 49.91"W
L195	25.788	S07° 04' 48.29"W
L196	96.24	S01° 26' 28.02"W
L197	2.70	S14° 03' 04.57"W

Line #	Length	Direction
L198	32.712	N86° 00' 57.86"W
L199	135.36	N06° 15' 54.00"W
L200	9.648	N10° 30' 35.00"E
L201	58.32	N89° 42' 15.55"E
L203	107.184	S41° 46' 59.18"E
L204	100.272	S74° 49' 51.31"E
L205	32.052	S46° 22' 35.51"W
L206	93.684	N76° 37' 37.60"W
L207	114.456	N43° 24' 34.73"W
L208	34.14	N46° 35' 25.27"E
L213	6.972	S61° 50' 48.47"E
L214	29.844	S41° 52' 30.24"E
L215	21.12	S50° 18' 47.18"E
L216	10.50	S57° 21' 19.61"W
L217	18.672	N50° 18' 47.18"W
L218	28.812	N41° 52' 30.24"W
L219	5.208	N61° 50' 48.47"W
L220	9.996	N28° 09' 11.53"E
L221	11.244	N43° 37' 24.49"W
L222	26.928	S19° 08' 38.73"W

LEGEND
- LOT BOUNDARY LINE
- EASEMENT LINE
- CENTER LINE
- EASEMENT TO BE VACATED

LEGEND
- LOT # — EXISTING LOT NUMBER
- **LOT #** — PROPOSED LOT NUMBER

BASIS OF BEARINGS:
ASSUMED THE NORTH LINE OF FERRY ROAD TO BE S46°22'27"W

PROJECT No.: 2017-24719-1
ISSUE DATE: 12/4/17
SCALE: 1"=80'
SHEET NUMBER 2 OF 4

PETITIONER:
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EXHIBIT F

COMMERCIAL AREA DESIGN GUIDELINES

Riverview West Commercial Area Design Guidelines

Prepared by City of Warrenville Community Development Department

April 24, 2019

Purpose and Use

The criteria contained in this document is intended as a guideline for the design of commercial, retail, and restaurant buildings and their supporting parking, pedestrian, service area, and signage improvements in and adjacent to the Riverview West Commercial Area located along the north side of Ferry Road between the West Branch of the DuPage River on the west and Winfield Road on the east.

These design guidelines have been approved by the City of Warrenville and will be applied by the City in its preliminary/final plan reviews of individual commercial, retail and restaurant buildings in the Riverview West Commercial Area. Failure to comply with these guidelines shall be a basis for the City to withhold preliminary or final plan approval. It is recognized that certain commercial users, such as restaurants, may have a specific architectural identity that is part of their "theme" or "brand" which may not be fully consistent with these guidelines. Users with prototype designs are encouraged to adapt their prototype to these guidelines as much as possible. However, the City will consider exceptions to these guidelines on a case by case basis giving due consideration to other alternative approaches which still represent the level of quality and achieve the following overall goals:

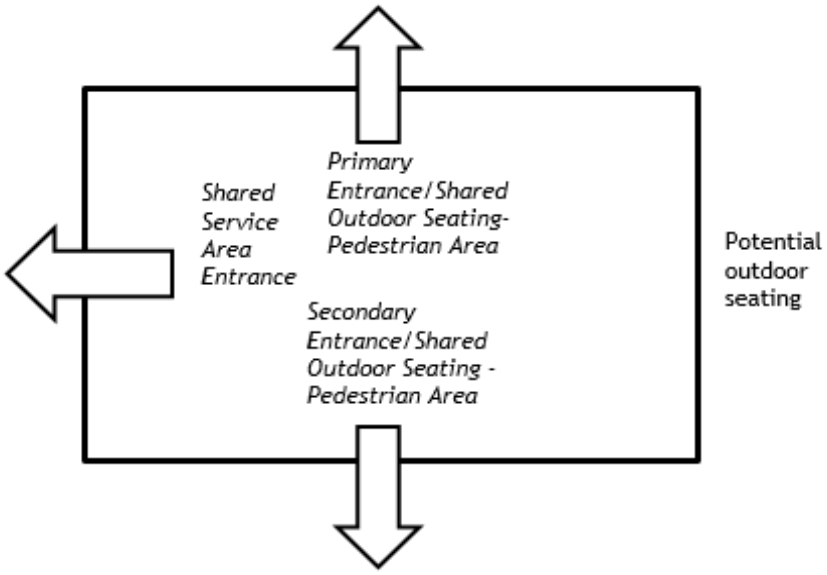
The overall goals of these guidelines include:

- Support the creation of a high quality, interconnected commercial development that would be an attractive amenity for both the residential components of the Riverview West Project and the overall Cantera Development.
- Provide inviting, safe, and efficient pedestrian and bicycle access into and throughout the Riverview West Commercial Area.
- Present an aesthetically attractive and inviting pedestrian oriented streetscape along the Ferry Road frontage of the Commercial Area.
- Accommodate the construction of buildings with individual identity while supporting architectural design that coordinates with and is in harmony with the other commercial buildings in the Cantera Development and the in the Riverview West apartment building.
- Minimize the negative aesthetic and character impacts commonly associated with drive-thru facilities and generic prototypical designs of larger national retail goods and service and restaurant users.

Building Placement

- **Patron Building and Site Access Improvements:** Buildings should be oriented in a manner that creates comfortable, safe, inviting, and when associated with outdoor seating improvements, useable exterior space for people, free of parking and service/delivery access. This can be accomplished by providing wider sidewalks, outdoor seating areas, patio areas, seat walls, landscape planting beds, and/or raised planters in front of or adjacent to the commercial buildings.
- **Building Service Access Improvements:** Careful consideration and thought should be given to the design and location of building service access improvements and they should not be placed near main entrances and pedestrian friendly environments such as seating areas.
- **Building Location/Setbacks:** While building setbacks will remain fluid and will depend on the building design, bulk characteristics, parking layout, and pedestrian nature of the end users, it is an underlying goal of the commercial area to locate buildings as close to the minimum building setback along Ferry Road as reasonably practical to create an attractive commercial "street wall" aesthetic and reinforce the pedestrian orientation of the Ferry Road streetscape.

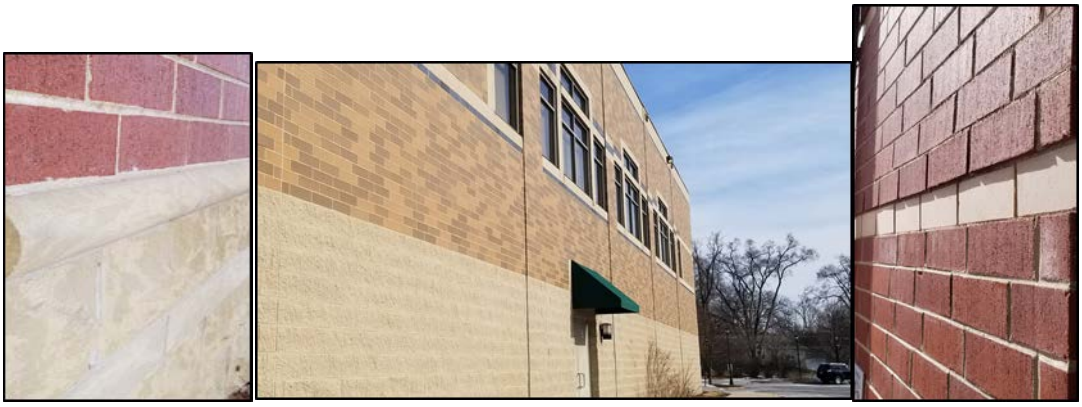
Riverview West Apartment Project



Ferry Road Corridor

Building Character and Design Details

- **Building Height:** Commercial retail and restaurant buildings shall not be less than 16ft in height and shall possesses an architectural design and character that is either consistent with or complementary to the design of the Riverview West apartment building.
- **Four-Sided Building Design:** Buildings must be designed with similar materials and design details on all sides. The "service" side of the building must be of a quality level compatible with the primary elevation.
- **Ferry Road Façade Design:** The Ferry Road frontage of retail, commercial, and restaurant buildings shall include sufficient window/door glazing to produce an attractive and inviting appearance from the Ferry Road corridor.
- **Façade Articulation:** In general, building facades in excess of 100 feet shall incorporate a major architectural feature to create architectural interest in the building. Flat walls and flat roof/eave lines shall be prohibited. Buildings shall include some relief from plain facades by incorporating architectural elements such as punched windows, storefront glazing, alcoves, masonry details and projections. Masonry details shall create three-dimensional relief from the plane of the wall. Examples of such details may include, but is not limited to engaged piers or columns, arches, rowlock, soldier courses, and cast stone sills and headers.



- **Building Entrances:** Customer entrances shall be identified by prominent architectural elements and/or features. Examples include entrance towers, special roof features, and metal or fabric canopies and awnings.
- **Roof Line Articulation:** In general, building facades and roof lines in excess of 100 feet shall incorporate a major architectural feature to create architectural interest in the building. Building roof/eave lines shall include some kind of roof feature such as broken or interrupted coping and eave lines, towers, dormer windows, significant variations in parapet heights, et cetera.

- **Building Materials:** Building materials should complement the architectural design of the Riverview West apartment building. Primary exterior building materials shall include brick and stone. Other materials, such as but not limited to cementious paneling/siding, may be used as accent or secondary materials on a limited basis but the amount of such materials shall be subject to the City's approval during the final PUD process. Residential-style shingles are not permitted.
- **Exterior Building Color Palette:** Exterior building material colors shall coordinate with those reflected in the Riverview West apartment building.
- **Building Canopies and Awnings:** Unless otherwise approved by the City during the final PUD process, canopies and awnings on a multi-tenant building shall be of a consistent design and color. Metal roofed awnings with exposed metal structural supports are encouraged.
- **Roof Top Equipment:** All roof top equipment must be fully screened by parapet walls at least as high as the tallest piece of roof top equipment (including HVAC units, antennas, satellite dishes, and roof exhausts) and/or independent roof screens that coordinate with the design with the architecture of the building.

Property Character/Site Improvements

- **Hardscape Treatment:** Trees/landscape planters and/or special pavement and/or other special treatment shall be required to breakup large expanses of concrete between the façade of a multi-tenant building and adjacent parking areas.
- **Pedestrian Interconnections:** Inviting pedestrian interconnections between the existing pedestrian path system along the north side of Ferry Road and entrance/exit doors on the south façade of restaurant uses and multi-tenant buildings is required.
- **Outdoor Seating:** Outdoor seating is strongly encouraged for restaurants and other similar uses. Decorative concrete or brick pavers shall be incorporated into the design of these areas. No outdoor sound systems shall be permitted unless approved by the City at Final PUD or a subsequent PUD minor amendment.
- **Parking Lot Lighting:** A consistent, architectural grade, LED parking lot light fixture shall be utilized throughout the Commercial Area. The color of parking lot lighting shall be equal to or less than 4,000 kelvin and shall be consistent throughout the Commercial Area.

- **Refuse and Recycle Areas:** Sufficient accommodations for effective collection and storage of recycled materials should be provided. Refuse and recycle collection areas must be fully screened by a solid wall composed of the same materials as the building. These walls must be a minimum of six feet in height. A solid gate shall be provided to secure the entrance of the enclosure and fully screen the interior.
- **Bike Racks:** High-quality bike racks for each separate commercial building shall be provided in convenient and easily accessible locations.
- **Drive-Thru Improvements:** Automobile drive-thru improvements should be designed and located to minimize their impact on the aesthetic character of the Ferry Road Corridor. Drive-thru pavement improvements shall not extend into the required front yard building setback along Ferry Road. Special landscape treatment should be provided to ensure effective visual buffering of drive-thru lane improvements from Ferry Road, Torch Parkway, and the main Riverview West private access driveway onto Ferry Road.
- Parking Lot Buffering: Special attention shall be given to the design of parking lot perimeter landscaping to ensure effective visual buffering is provided along Ferry Road, Torch Parkway, and the main Riverview West private access driveway onto Ferry Road.
- **Inappropriate Land Uses:** Car washes, gas stations, and drive-thru bank facilities shall be prohibited in the commercial area.

Signage Improvements

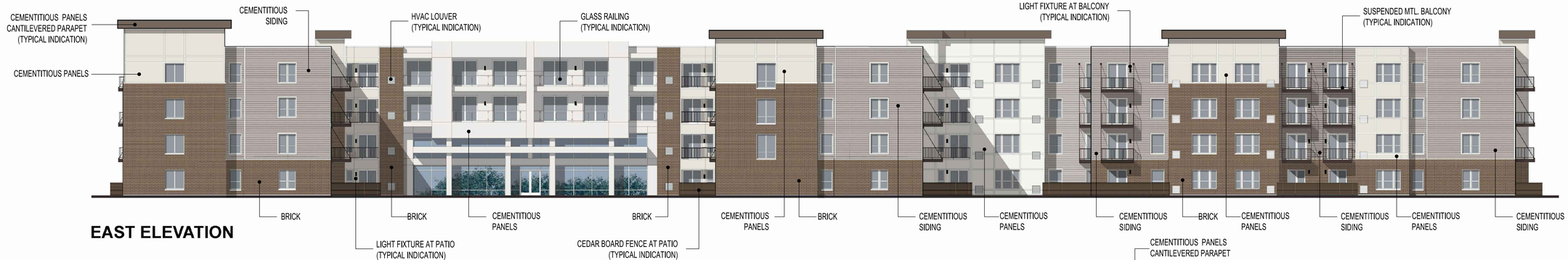
- **Lot/Development Entry Monument Signage Requirements:** The design (materials, type of illumination, and aesthetic character) of all monument sign structures in the Commercial Area shall be (i) substantially consistent and (ii) coordinated with the design of the monumentation signage for the residential components of the project. Sign structures shall have a stone and/or brick clad base constructed with materials that coordinate with the materials used in the Riverview West apartment building. The background material on which actual signs will be affixed shall be constructed of stone, masonry, brick, or high quality metal panels. Split face block and EIFIS type materials shall not be permitted materials on the monument signs. Individual business identification signs shall consist of individual letters and logos, letters cut into metal panels, or a combination of the two. Unless specifically approved during the final PUD process or a follow up PUD amendment process, lot/development entry monument signage shall comply with the provisions of Section VI.D.3 of the

Cantera Development Control Regulations. Box signs and exposed neon shall not be permitted.

- **General Wall Signage Requirements:** All signage shall be of the highest quality construction and shall be composed of individually illuminated letters and logos attached to a prefinished raceway system that matches the field material on which the sign will be mounted. Unless specifically approved during the final PUD process or a follow up PUD amendment process, wall signage shall comply with the provisions of Section VI.D.4.c) of the Cantera Development Control Regulations. Box signs and exposed neon shall not be permitted. Logo signage shall follow the outline of the tenant/corporate logo.

EXHIBIT G

ELEVATIONS SHEET



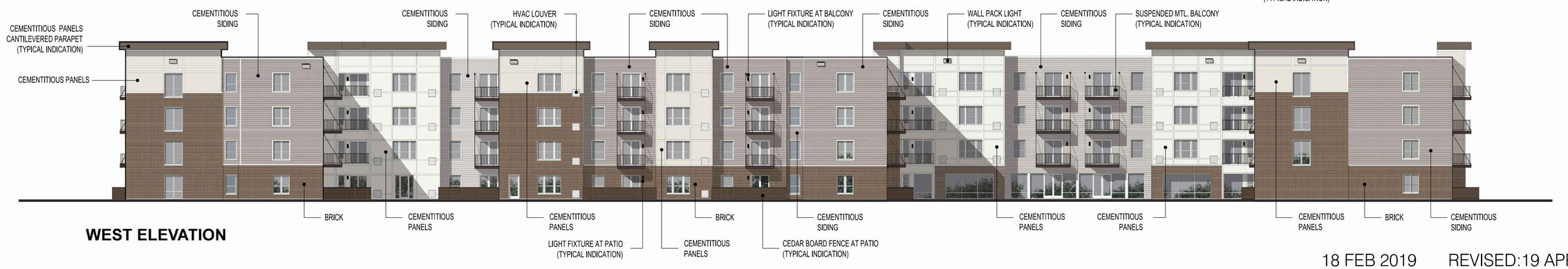
EAST ELEVATION



NORTH ELEVATION



SOUTH ELEVATION



WEST ELEVATION

18 FEB 2019 REVISED:19 APR 2019

CANTERA DEVELOPMENT HOLDINGS, LLC
DEVELOPER
TWO NORTHFIELD PLAZA, SUITE #320 NORTHFIELD, IL 60093

364 D. U.
RIVER VIEW WEST
WARRENVILLE, ILLINOIS

BARANYK ASSOCIATES, LTD.
ARCHITECTS • ENGINEERS • PLANNERS
710 HIGGINS RD. PARK RIDGE, IL. 60068
FAX 847/825-8617 PHONE 847/292-5757

ELEVATIONS

SHEET:
A-9

EXHIBIT H

COLORS SHEET

EXHIBIT H
CS-11
04/19/19

COLOR CHART

HARDIE CEMENTITIOUS PANELS & SIDING

HARDIE PANELS

COLOR: ARCTIC WHITE
OR SIMILAR

HARDIE SIDING

COLOR: PEARL GRAY
OR SIMILAR

HARDIE PANELS
CANTILEVERED PARAPET

COLOR: TIMBER BARK
ZOR SIMILAR

BRICK



SIOUX CITY BRICK - SANDALWOOD
OR SIMILAR

PATIO SCREEN WALLS

STAIN COLOR - SW 3001
SHAGBARK
OR SIMILAR

BALCONY

COLOR SIMILAR TO - SW 3001

OVERHEAD DOORS

COLOR SIMILAR TO - SW 3001

EXHIBIT I

UNCONDITIONAL AGREEMENT AND CONSENT

TO: The City of Warrenville, Illinois ("***City***"):

WHEREAS, Cantera Apartments, LLC, an Illinois limited liability company, was the owner of that certain real property consisting of approximately 32.48 acres on lot C-2 in Cantera Subarea C ("***Lot C-2"***), commonly known as 28301 Ferry Road, Warrenville, Illinois, and legally described in ***Exhibit A*** ("***Owner's Property***"); and

WHEREAS, Cantera Owners Association ("***Association***"), an Illinois not-for-profit corporation, is the owner of that certain real property consisting of 3.95 acres known as Outlot A in Cantera Subarea C, and legally described in ***Exhibit B*** ("***Outlot A***") (collectively, the Owner's Property and Outlot A are referred to as the "***Property***"); and

WHEREAS, in 2017, Cantera Apartments, LLC filed an application with the City to develop the Property as a mixed-use planned development consisting of five commercial buildings containing a total of approximately 35,550 square feet of floor area ("***Commercial Buildings"***), a 364-unit apartment building with interior parking garage ("***Apartment Building***"), and 60 three-story townhomes with 240 garage and driveway parking spaces ("***Townhomes***") (collectively, the Commercial Buildings, the Apartment Building, and the Townhomes are the "***Proposed Development***"); and

WHEREAS, on January 15, 2018, the City Council adopted Ordinance No. O2018-01 ("***Preliminary PUD Ordinance***"), approving a preliminary plat of subdivision ("***Preliminary Plat of Subdivision***") which contemplated the subdivision of Property as follows (i) the Owner's Property into three lots of record: an approximately 4.4-acre commercial area ("***Lot 1***"), an approximately 17.7-acre Apartment Building lot ("***Lot 2***"), and an approximately 3.36-acre Townhomes lot ("***Lot 3***"); (ii) the approximately 3.95-acre stormwater management area ("***Outlot A***"); and (iii) the dedication of a 60-foot-wide public right-of-way connecting the existing Torch Parkway to Ferry Road ("***Torch Parkway Dedication***"); and

WHEREAS, the Preliminary PUD Ordinance also approved: (i) a revised preliminary planned unit development plan for the Proposed Development on the Property; (ii) certain text amendments to the Development Control Regulations and the General Site Plan Documents; (iii) land use redesignations pursuant to Section IV.C of the Development Control Regulations; (iv) major amendments to the Approved PUD to include the Revised Preliminary PUD Plan and associated documents; (v) the use of a private street to provide access to the Apartment Building; (vi) a variation from the Subdivision Control Ordinance; and (vii) various site specific amendments from the Development Control Regulations; and

WHEREAS, Cantera Development Holdings, LLC, an Illinois limited liability company and successor to Cantera Apartments, LLC, ("***Apartment Owner***") is the owner of Lot 2; and

WHEREAS, Kevin Wille, as Trustee of Cydelex Trust under a trust agreement dated August 28, 2009, is the owner of Lot 2 and Lot 3 ("***Townhomes and Commercial Owner***") (collectively the Apartment Owner and the Townhomes and Commercial Owner are the "***Owners***"); and

WHEREAS, the Owners propose that the Proposed Development be constructed in three phases as follows: (i) the construction of the proposed public and private roadways, internal drives and pedestrian connections, stormwater management ponds, the Apartment Building, parking lots, and landscaping ("***Phase I***"); (ii) the construction of the Townhomes ("***Phase II***"); and (iii) the construction of the Commercial Area ("***Phase III***"), all in accordance with the Construction Phasing Plan Sheet A-2 of the Architectural Plan Sheets A1-A29, listed on Exhibit C to this Ordinance; and

WHEREAS, the Apartment Owner desires to construct Phase I; and

WHEREAS, Phase II and Phase III may be constructed by a different applicant at a later date; and

WHEREAS, in order to construct Phase I of the Proposed Development on the Property, pursuant to the applicable sections of the Warrenville Zoning Ordinance ("***Zoning Ordinance***"), the Development Control Regulations, and the Subdivision Control Ordinance for the City of Warrenville ("***Subdivision Control Ordinance***"), the Apartment Owner, with consent of the Association and the Townhomes and Commercial Owner, filed an application with the City for approval of: (i) a final planned unit development plan for the entire 32.48-acre Property ("***Final Riverview West PUD Plan***"); (ii) a special use permit for a planned unit development plan for the entire 32.48-acre Property ("***Riverview West Special Use Permit"***); (iii) a final planned unit development plan for Phase I ("***Final Phase I PUD Plan***"); (iv) a special use permit for a planned unit development for Phase I (***"Phase I Special Use Permit***"); and (v) a final plat of subdivision for the Property ("***Final Plat of Subdivision"***) (collectively, (i) through (v) are the "***Requested Approvals***"); and

WHEREAS, Ordinance No. O2019-___, adopted by the City Council on _____, 2019 ("***Ordinance***"), approved the Requested Approvals; and

WHEREAS, Section 11 of the Ordinance provides, among other things, that the Ordinance will be of no force or effect unless and until the Owners have filed, within 90 days following the passage of the Ordinance, their unconditional agreement and consent to accept and abide by each and all of the terms, conditions, and limitations set forth in the Ordinance;

NOW, THEREFORE, the Owners do hereby agree and covenant as follows:

1. The Owners hereby unconditionally agree to, accept, and consent to, and will abide by, each and all of the terms, conditions, limitations, restrictions, and provisions of the Ordinance.

2. The Owners agree that public notices and hearings have been properly given and held with respect to the adoption of the Ordinance, have considered the possibility of the revocation provided for in the Ordinance, and agree not to challenge any such revocation on the grounds of any procedural infirmity or a denial of any procedural right, provided that the notice to the Owners required by Section 9 of the Ordinance is given.

3. The Apartment Owner hereby unconditionally agrees, as required by Section 6.08 of the Subdivision Control Ordinance, that:

a. The land improvements, required by this Ordinance, shall be completed by the Apartment Owner in accordance with the plans and specifications approved by the City Engineer.

b. Four sets plus one reproducible set on Mylar of as-built plans, as required by Section 6.09 of the Subdivision Control Ordinance, shall be submitted by the Apartment Owner;

c. If payment in-lieu-of funds are to be made on an installment basis, the Apartment Owner shall inform the Building Department in writing within five days after any such initial occupancy of the a family unit and also submit any such payment concurrent therewith to the City Collector for ultimate payment to the appropriate school district;

d. All improvements contemplated and approved by the Ordinance shall be completed within two years after approval of the Final Plat of Subdivision by the City Council.

e. No home in any block shall be occupied for longer than six months without all sidewalks, curb and gutter, and roadway base and resurfacing being completed of the entire block by the Apartment Owner, or, whenever at least seventy-five percent of a designed block has completed homes on it, then the Apartment Owner shall have completed constructing all of the sidewalks, curb, gutter, and street payment in that block;

f. For a period of two years following final acceptance and approval by the City Council of the City of Warrenville, the Apartment Owner shall be responsible for and shall correct any deficiency or defect in any public improvement, or which occurs within any dedicated public right-of-way, ordinary wear and tear excluded. The Apartment Owner's obligation shall not extend to items of routine maintenance, such as lawn mowing, snow plowing, tree trimming, but shall include but not be limited to replacement of any indigenous or planted tree within the maintenance period determined to be diseased or dying; or any other condition found not to be in accordance with the final plans and specifications approved for the subdivision or project, ordinary wear and tear excluded; and

g. Apartment Owner warranties and guarantees to the City of Warrenville that all public improvements and all improvements and vegetation with the public right-of-way are and shall remain free from any and all defects of any kind, shall be in accordance with the approved plans and specifications, and shall function as intended and designed, as of the date of acceptance and for a period of two years thereafter. Only ordinary wear and tear is excluded from the scope of this warranty and guarantee.

4. The Owners acknowledge and agree that the City is not and will not be, in any way, liable for any damages or injuries that may be sustained as a result of the City's granting of the Requested Approvals or its adoption of the Ordinance, and that the City's approvals do not, and will not, in any way, be deemed to insure, the Owners against damage or injury of any kind and at any time.

5. The Owners hereby agree to hold harmless and indemnify the City, the City's corporate authorities, and all City elected and appointed officials, officers, employees, agents, representatives, and attorneys, from any and all claims that may, at any time, be asserted against any of such parties in connection with (a) the City's review and approval of any plans and issuance of any permits, (b) the City's adoption of the Ordinance granting the Requested Approvals, (c) the development, maintenance and use of its obligations under this Unconditional Consent and Agreement, and (d) the performance by the Owners of their obligations under this Unconditional Consent and Agreement.

CANTERA DEVELOPMENT HOLDINGS, LLC

By: _____
Printed Name: _____
Its: _____

SUBSCRIBED and **SWORN** to
before me this _____ day of
_____, 20__.

_____
Notary Public

KEVIN WILLE, AS TRUSTEE OF CYDELEX TRUST UNDER A TRUST AGREEMENT DATED AUGUST 28, 2009

By: _____
Printed Name: _____
Its: _____

SUBSCRIBED and **SWORN** to
before me this _____ day of
_____, 20__.

_____
Notary Public

PLAN COMMISSION

COMMUNITY DEVELOPMENT STAFF REPORT

CANTERA SUBAREA C, LOT C-2 - RIVERVIEW WEST

May 3, 2019

Project Number

2017-0502

Applicant

John C. Schiess

Property Owner

Cantera Apartments, LLC

Location

28301 Ferry Road

Zoning

S-D Special Development District

Existing Land Use Designation

PUD, Multi-Family (22.39 acres Apartment and Townhome components), Commercial Center Use (10.05 acres commercial component)

Existing Improvements

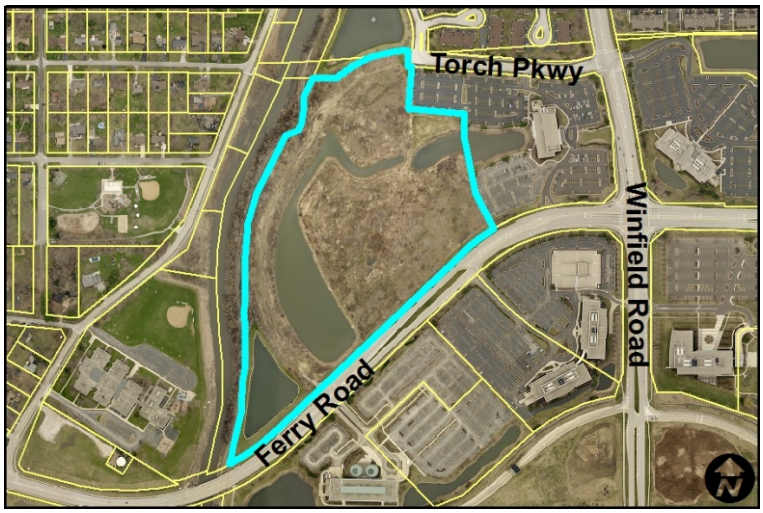
Partially improved with stormwater management detention facility serving Subarea C

Comprehensive Plan

Office/Commercial

Approvals Sought

- Final Plat of Subdivision
- Final PUD for overall site
- Final PUD for Phase I (Apartment component)



LOCATION MAP

PROJECT DESCRIPTION AND APPLICANT REQUEST

The current requests for approval include the following components:

(i) Final Plat of Subdivision for the Riverview West project, which would subdivide an approximately 32.48-acre vacant property (Lot C-2 and Outlot A) located along the north side of Ferry Road, immediately east of the West Branch of the DuPage River (the Subject Property), dedicate public right-of-way for the proposed extension of Torch Parkway as a public street, and grant various easements, and

(ii) Final Planned Unit Development (PUD) special use permit for the overall Riverview West project, which would allow mass grading, underground/utility installation, and construction of public and private roadways, sidewalks, bike path, street lighting, street trees, and stormwater management improvements on the Subject Property, and

(iii) Final PUD special use permit for Phase I of Riverview West project which would allow construction of a single 364-unit, four-story, apartment building with an internal parking garage component.

PROJECT INFO

Subject Property

Lot C-2: 28 acres
Outlot A: 4.63 acres

Proposed Improvements

- 60, three-story townhomes
- Single 364-unit, four-story, apartment building with internal parking garage
- 35,550 square feet of commercial space

Submittals

See Attachment A

BACKGROUND

The Preliminary Plat of Subdivision, land use re-designation, and Preliminary PUD for this project were approved by the City on January 15, 2018, by Ordinance #2018-01. The Preliminary Plat/PUD Ordinance included a series of conditions the Applicant is required to address at the time of Final Plat/PUD approval process and/or during construction.

In December 2018, a Quick Start Permit was issued allowing installation of erosion control measures, site mass grading and storm sewer installation in accordance with the engineering plans approved by City staff.

In April 2019, the Applicant requested approval of a Quick Start permit to allow construction of the apartment building foundation. This permit request requires City Council approval and is scheduled for consideration at the May 6, 2019, City Council meeting.

A formal public hearing for the current Final PUD and Plat of Subdivision requests is not required under the provisions of the City of Warrenville Zoning Ordinance. The Plan Commission is responsible for making recommendations to the City Council on Final Plat/PUD approval requests.

Ordinance #2018-01, minutes, and agenda back up information from all past Plan Commission and City Council meetings regarding this project are available on the City website at www.warrenville.il.us and upon request from the Community Development Department.

ANALYSIS

The most current set of revised application documents are listed on the attached Exhibit A. Key components of the revised documents have been distributed to the Plan Commission with the May 9, 2019, Plan Commission agenda packets. All submitted revised documents are posted on the City website under Business/Private Development Projects/Cantera Riverview West Lot C2 at http://warrenville.il.us/index.aspx?nid=651.

The Warrenville Fire Protection District has reviewed the proposal and provided its review comments in the May 2, 2019, memo, attached as Exhibit B.

Overview of the Riverview West Project Components: The proposed development consists of the following components:

1. Apartments: 364-unit apartment building, including 189 one-bedroom, 150 two-bedroom, and 16 three-bedroom units. Key apartment amenities and features include garage parking for each unit, outdoor pool, picnic area, outdoor social area, fire pit, BBQ/grill area, balconies and concrete patios at ground level.

2. Townhomes: 60 townhouse units. The final details of the townhouse project will be defined at a future date when the Applicant submits a formal final PUD application for that phase of the project.
3. Commercial: Approximately 33,950 square feet of commercial space is illustrated on Lot 1 of the proposed Riverview West subdivision. The exact square footage of future commercial space would be defined when the Applicant submits a formal final PUD application for that phase of the project and based on the specific uses proposed and City parking requirements in effect at that time.

Phasing: The proposed development would be constructed in three phases as follows:

- Phase I: Construction of Torch Parkway public ROW, Pollard Road private north-south road, internal drives and pedestrian connections, stormwater management ponds, apartment building, parking lots, and landscaping.
- Phase II: Construction of townhomes.
- Phase III: Construction of commercial.

A detailed phasing plan is illustrated on the Construction Phasing Plan (Sheet A-2) prepared by Baranyk Associates, LTD, dated April 19, 2019.

Utilities: The proposed development would be connected to City sanitary sewer and water mains.

Stormwater Management: The required stormwater management detention facilities for the Riverview West project would be provided in the shared interconnected system of detention ponds on the Subject Property.

Site Access: The Subject Property would have access off Torch Parkway and Ferry Road. Two access points are proposed off Ferry Road: a full access at the existing signalized intersection, and a full unsignalized access to the east. The Applicant plans to construct various improvements on Ferry Road to accommodate both access points.

Sidewalk/Trail Improvements: The comprehensive and interconnected system of walking paths illustrated on the Walking Path Sheet A-13, prepared by Baranuk Associates, LTD dated April 19, 2019, is proposed throughout the subdivision for safe and convenient pedestrian circulation to, from, and within the project. Three paved connections to the DuPage County Forest Preserve River Trail along the West Branch DuPage River are proposed. Paved connections are provided to the existing sidewalk along Ferry Road and to the existing trails along the detention pond on the property adjacent to the east.

Building Design and Materials: The exterior materials and design are consistent with those approved with the preliminary PUD submittal and include brick and Hardie panels and siding, as illustrated on Color Elevations Sheet A-9, prepared by Baranyk Associates, LTD., dated April 19, 2019, and attached on Exhibit C, and Color Chart sheet CS-11 prepared by unknown, dated April 19, 2019, and attached on Exhibit D. As illustrated on the Architectural drawing Sheet A-29 prepared by Baranyk Associates, LTD, dated February 18, 2019, attached on Exhibit E, 36 % of the exterior building facades illustrated on attached Exhibit E would be brick.

Building Setbacks: The proposed apartment building setbacks illustrated on the Final PUD plans are in compliance with the minimum building setback requirements established under Preliminary PUD Ordinance #2018-01.

Torch Parkway Design: The final design for Torch Parkway satisfies the design and configuration requirements contained in the Preliminary PUD approval ordinance for this project. Parallel public parking would be allowed along the north and northwest side of Torch Parkway (approximately 60 spaces). This parking can serve the needs of townhouse or apartment guests, as well as River Trail users.

Parking for Apartment: The Applicant is proposing to construct 701 parking spaces on Lot 2 to serve the apartment building needs and 66 spaces on Lot 1 to serve future needs of the commercial component of the Riverview West project.

The 701 parking spaces are provided as follows:

- 408 spaces in the garage building, including seven handicapped spaces
- 18 surface parking spaces near the main entrance to the apartment building, including eight handicapped spaces, and
- 275 surface spaces in the parking lot, on the east side of the proposed private Pollard Road.

The minimum required parking approved by the Preliminary PUD Ordinance #2018-01 for the apartment component on Lot 2 is 684 spaces (1.88 per unit ratio). Thus, the provided 701 parking spaces exceed the total number of parking spaces previously approved for this project.

Bike Racks: Bike racks are provided on the west side, near the main entrance to the apartment building.

Generator: An emergency backup generator is proposed on the roof of the garage to serve the apartment building.

Exterior Apartment Building Lighting: Each balcony and outdoor patio is equipped with a unified exterior light fixture illustrated on Access Lighting Cut Sheet LD-4, dated February 18, 2019. The proposed lighting fixtures are in compliance with the Zoning Ordinance requirements.

Ground and Directional Signs: Three ground signs and two directional signs are proposed for the Subject Property. The signs are in compliance with the size and setback parameters established in the Cantera Development Control Regulations. The proposed directional signs are in compliance with the requirements of the Warrenville Sign Ordinance.

Fire Sprinklers: All residential buildings, including apartments and townhomes, will be equipped with an automatic fire sprinkler system.

Approved PUD Variations/Exceptions: A number of PUD variation and exceptions from the Zoning Ordinance were approved with the Preliminary PUD plans and documents for the Riverview West project by Ordinance #2018-01. The proposed Final PUD plans are consistent with the previously approved Preliminary PUD plans and related special approvals.

I. FINAL PLAT OF SUBDIVISION

The Final Plat of Subdivision for Riverview West prepared by United Survey Service, LLC, dated April 14, 2019, is generally consistent with the Preliminary Plat of Subdivision and associated Subdivision Ordinance relief approved by the City by Ordinance #2018-01. The Final Plat of Subdivision reflects revisions made by the Applicant to address Ordinance #2018-01 approval conditions and illustrates the creation of the following lots and road right-of-way (ROW) dedication:

- Townhomes: Lot 3 (3.368 acres)
- Apartments: Lot 2 (17.706 acres)
- Commercial: Lot 1 (4.401 acres)
- Stormwater management: Outlot A (3.954 acres)
- Dedication of a 60-foot wide public right-of-way for Torch Parkway – connecting of existing Torch Parkway to Ferry Road

Staff Review and Recommendations:

Staff's detailed review comments and recommended Final Plat/Final PUD approval conditions for Phase I of the Riverview West Project are outlined in Section III of the ANALYSIS component of this Staff Report.

Based on staff's detailed review of the various application documents listed on attached Exhibit A, staff recommends the Plan Commission recommend City Council approval of the Final Plat of Subdivision prepared by United Survey Service, LLC, dated April 14, 2019, subject to the Applicant revising the Plat to address all conditions outlined in Section III of the Analysis component of this Staff Report prior to City execution and recording.

II. CITY OF WARRENVILLE APPROVAL CRITERIA

In recommending approval or conditional approval of a General Site Plan for an SD District Development or a Preliminary or Final Plan for a Planned Unit Development the Plan Commission to transmit to the City Council written findings of fact that the application meets all of the criteria below or will meet them when the Plan Commission's conditions are complied with. The City Council shall, in granting approval or conditional approval, find that all of the following criteria are met, or will be met, when the conditions to which the approval is made subject are complied with (staff response is in Italics):

1. SUPERIOR DESIGN

The PUD represents a more creative approach to the unified planning of development and incorporates a higher standard of integrated design and amenity than could be achieved under otherwise applicable zoning district and subdivision regulations, and solely on this basis modifications to the use and design standards established by such regulations are warranted.

Staff finds the proposed final PUD plans for the Riverview West project and is apartment component represents a creative, attractive, functional, high quality, and integrated design that effectively addresses the site's unique physical characteristics including, but not limited to, the existing established public road access points that serve the property, the challenging structural

conditions of the underlying soils, the existing retention ponds, and established surrounding land uses, in a manner that could not be achieved under otherwise applicable zoning and subdivision control regulations.
Staff believes the proposed apartments would provide a desirable housing type not currently available in the City of Warrenville and would complement the existing high-quality development in Cantera. The proposed apartment building design reflects the use of high-quality building materials and possesses a character that is appropriate given the location and context of the Subject Property. Overall, the development represents a higher level of design and amenity than would be achieved under standard City regulations.

2. MEETS PUD REQUIREMENTS

The PUD meets the requirements for Planned Unit Developments set forth in this Ordinance, and no modifications to the use and design standards otherwise applicable are allowed other than those permitted herein.

Provided the various proposed PUD plans and documents listed on Exhibit A are revised and implemented in accordance with the staff-recommended approval conditions, the proposed project will satisfy the Planned Unit Development requirements set forth in the Warrenville Zoning Ordinance and would result in a high-quality, creative, and coordinated mixed-use project.

3. CONSISTENT WITH CITY PLAN

The PUD is generally consistent with the objectives of the City Comprehensive Plan as viewed in light of any changed conditions since its adoption.

The City's Comprehensive Plan shows Cantera Subarea C being developed with a mix of commercial, office, and higher density multifamily uses. Staff finds the proposed Riverview West Project is consistent with the land use objectives contained in the Comprehensive Plan and advances OBJECTIVE #4 (Plan for and Encourage High Quality, Appropriately Scaled and Located, New Higher Density Residential Development Including Multiple-Family Housing) and OBJECTIVE #5 (Facilitate Additional Complementary Development in the Cantera Development) of the City's 2015 Economic Development Plan. The Final PUD documents are consistent with the Preliminary PUD documents approved by City Ordinance 2018-01.

4. PUBLIC WELFARE

The PUD will not be detrimental to the public health, safety, morals, or general welfare.

Based on City staff and engineering consultant's review of the Final PUD documents, which are consistent with the previously approved Preliminary PUD documents, staff finds no evidence that the proposed PUD will be detrimental to the health, safety and welfare of the general public. If the project is approved and implemented in conformance with the staff-recommended approval conditions, staff fully expects the project to have a positive impact on the community's long-term health and welfare.

5. COMPATIBLE WITH ENVIRONS

Neither the PUD nor any portion thereof will be injurious to the use and enjoyment of other properties in its vicinity, seriously impair property values or environmental quality in the neighborhood, nor impede the orderly development of surrounding property.

If the project is implemented in conformance with the staff-recommended approval conditions, staff finds that the project will not impair local property values or the environmental quality in adjacent areas of Cantera, or be injurious to the use and enjoyment of other properties in its vicinity.

6. NATURAL FEATURES

The design of the PUD is as consistent as practical with the preservation of natural features of the site such as flood plains, wooded areas, steep slopes, natural drainage ways, or other areas of sensitive or valuable environmental character.

Staff finds the proposed project (i) preserves floodplains as required by City, County and State regulations, (ii) protects and enhances the riparian areas in the adjacent McDowell Grove Forest Preserve and DuPage River corridor, and (iii) respects the existing environmental character of the area.

7. CIRCULATION

Streets, sidewalks, pedestrian ways, bicycle paths, off-street parking, and off-street loading as appropriate to the planned land uses are provided. They are adequate in location, size, capacity, and design to ensure safe, efficient circulation of automobiles, trucks, bicycles, pedestrians, fire trucks, garbage trucks, and snow plows as appropriate without blocking traffic, creating unnecessary pedestrian-vehicular conflict, creating unnecessary through traffic within the PUD, or unduly interfering with the safety or capacity of adjacent streets.

Staff finds that the proposed network and configuration of private and public street improvements and new sidewalk and trail improvements would ensure safe and efficient circulation of automobiles, trucks, bicycles, pedestrians, fire trucks, and snow plows.

8. OPEN SPACES AND LANDSCAPING

The quality and quantity of public and common open spaces and landscaping provided are consistent with the higher standards of design and amenity required of a PUD. The size, shape, and location of a substantial portion of the total public and common open space provided in residential areas render it useable for recreation purposes.

Open space between all buildings is adequate to allow for light and air, access by firefighting equipment, and for privacy where walls have windows, terraces, or adjacent patios. Open space along the perimeter of the development is sufficient to protect existing and permitted future uses of adjacent property from adverse effects of the development.

The proposed open space improvements in the project include recreation amenities, extensive best management and naturalized landscaping improvements, and more than 20 acres of landscape coverage. Together, these open space improvements promote stormwater infiltration and cleansing, reduce runoff, support pedestrian activity, and allow for both active and passive recreation. Naturalized components of the open space design provide both aesthetic and functional value. The amount of landscape coverage illustrated on the proposed Final PUD Landscape Plan exceeds the minimum requirements of the Cantera Development Control Regulations, that which had been previously approved for this site, and that which is currently provided in the existing Cantera Village townhome subdivision located immediately northeast of the site. Staff finds the open space and landscape amenities proposed in this project are consistent with the higher standards of design and amenity required of a PUD.

9. COVENANTS

Where individual parcels are to be later sold, adequate provision has been made in the form of deed restrictions, homeowners or condominium association, or the like for:

a. The preservation and maintenance of any open spaces, thoroughfares, utilities, water retention or detention areas, and other common elements not to be dedicated to the City or another public body.

b. Such control of the use and exterior design of individual structures, if any, as is necessary for continuing conformance to the PUD Plan, such provision to be binding on all future ownership.

The Applicant has submitted a Master Declaration of Covenants, Conditions, Restrictions and easements for the Riverview West Subdivision, which establishes the governing rules, ownership and maintenance obligations for the project, its common space, and the private infrastructure improvements contained in it. The Declaration, once reviewed and approved by the City Attorney, will be refined and then recorded with the DuPage County Recorder's Office concurrently with the Final Plat of Subdivision.

10. PUBLIC SERVICES

The land uses, intensities, and phasing of the PUD are consistent with the anticipated ability of the City, the school districts and other public bodies to provide and economically support police and fire protection, water supply, sewage disposal, schools, and other public facilities and services without placing undue burden on existing residents and businesses.

The proposed final PUD plans illustrate a mix of residential and commercial development, which is consistent with the anticipated land uses reflected in the City's comprehensive plan. Staff finds:

- *The number of projected new students is relatively low due to the type of housing being proposed.*
- *The School District has the capacity to effectively handle these new students.*
- *The City has sufficient sanitary sewer and water capacity to serve the proposed project.*

- *The proposed development will not have an undue effect or inordinately high demand on City, Fire Protection, Police, or Public Works services.*

11. PHASING

Each development phase of the PUD can, together with any phases that precede it, exist as an independent unit that meets all of the foregoing criteria and all other applicable regulations herein, even if no subsequent phase should ever be completed. The provision and improvement of public or common area improvements, open spaces, and amenities--or the provision of financial sureties guaranteeing their improvement--is phased generally proportionate to the phasing of the number of dwelling units or amount of non-residential floor area.

The Applicant proposes to construct the proposed development in three phases. All public infrastructure, stormwater, and perimeter landscape improvements are scheduled to be installed as part of the first phase. This ensures that each phase of the project can exist as an independent unit that satisfies applicable PUD approval criteria and City development requirements even if subsequent phases are not completed.

It is important to note that the Plan Commission makes recommendations to the City Council on PUD approval requests.

Based on the above-noted findings, staff recommends the Plan Commission recommends City Council approval of the requested Final PUD plans for Phase I of the Riverview West project, subject to the conditions outlined in Section III of the "ANALYSIS" component of this Staff Report.

III. STAFF RECOMMENDED APPROVAL CONDITIONS

Staff recommends the following conditions be attached to any positive Plan Commission recommendation on the requested approvals for Phase I of the Riverview West Project:

1. **Documents:** The development on the Subject Property shall be consistent with the plans and documents listed on the attached Exhibit A as may be revised to address the approval conditions outlined in this Staff Report.
2. **Engineering Review:** The Applicant shall comply with the review comments and recommendations outlined in the review memo from the City Consulting and City Senior Civil Engineer, dated May 1, 2019, attached as Exhibit F.
3. **School District Boundary:** Six of the townhouse units are located within School District 203. The remaining residential units in the proposed Riverview Development are located in School District 200. Prior to the Final Plat of Subdivision recording by the City, the Applicant shall submit a formal application to School District officials requesting a reconfiguration of the school district boundary so that all residential units are in School District 200.cation.
4. **Commercial Lot Design Requirements:** Future development of the Commercial component of the Riverview West project shall be in accordance with the Riverview West Commercial Area Design Guidelines dated April 24, 2019, attached on Exhibit G.

5. **EV Charging Stations:** The Applicant plans to construct five quick EV charging stations on the first floor of the parking garage and 41 regular EV charging stations throughout the parking garage. Such EV charging stations shall be installed at the time of building construction. Locations for these charging stations shall be indicated on the Building Permit plans.
6. **Exterior Building Lights:** All exterior building lights shall have full horizontal cutoff optics with flat lenses, with no portion of the lens protruding below the housing. All lights not meeting this requirement must be approved by the Plan Commission, as required by the Zoning Ordinance. Detailed cut sheets illustrating exterior building lights and confirming compliance with this requirement shall be submitted for staff review prior to Building Permit issuance for the apartment building.
7. **Ground Sign Lighting:** An OSQ LED Area/Flood Luminaire light is proposed to illuminate the proposed ground signs for the apartment project. The Correlated Color Temperature (CCT) of such light shall not exceed 4000K and they shall comply with the illumination requirements and restrictions contained in the Warrenville Sign Ordinance.
8. **Building Wall Signage:** Wall signs are not permitted in the Cantera Special Development Multi-Family Use area. Any future wall signage will require a separate special approval from the provisions of the Cantera Development Control Regulations.
9. **Roof Top Equipment:** All roof top equipment, including generator, must be fully screened. The top of parapet walls or roof screens shall be at least as high as all roof top equipment in order to satisfy this requirement. Screens must be consistent with the architecture and color scheme of the building. Details illustrating the location of roof top equipment, the equipment height, and screening design shall be provided for staff review and approval prior to the issuance of a building permit.
10. **Building Materials**: The exterior building materials shall be consistent with those illustrated on Elevations Sheet A-9, prepared by Baranyk Associates, LTD., dated April 19, 2019, attached as Exhibit C, and the Color Chart sheet CS-11, prepared by unknown, dated April 19, 2019, attached as Exhibit D, and shall include full-thickness standard brick, Hardie panels and siding. A minimum of 36% of the exterior building elevations illustrated on Architectural drawing Sheet A-29, prepared by Baranyk Associates, LTD, dated February 18, 2019, and attached as Exhibit E, shall be finished with brick.
11. **Ferry Road Street Trees:** Landscaping along Ferry Road should be consistent with the Cantera parkway landscaping design, which includes a double row of a consistent species of shade trees along the entire frontage of the Subject Property, including Outlot A. The proposed Landscape Plan illustrates the required double row of parkway trees. The proposed tree species selection for planning along the Ferry Road parkway shall be reviewed and approved by the City Arborist.
12. **Irrigation:** A detailed irrigation plan for the Subject Property shall be provided by the Applicant prior to installation, for review and approval by City staff. Such permit shall note the proposed irrigation water source.
13. **Preliminary PUD Ordinance Conditions:** Future development of the Townhouse and Commercial components of the Riverview Project shall be in accordance with the conditions documented in the Ordinance #2018-01 approving the Preliminary PUD/Plat for the Riverview West project.

14. **Warrenville Fire Protection District Review**: The Applicant shall address and comply with City code-supported comments outlined in the Warrenville Fire Protection District's review memo dated May 2, 2019, attached as Exhibit B.
15. **Path Connections:** The Applicant shall coordinate with and secure necessary permits from the DuPage Forest Preserve and DuPage Division of Transportation to construct path connections to the existing River Trail along the West Branch DuPage River and to the existing sidewalk along Ferry Road, as illustrated on the Final PUD plans.
16. **Master Declaration:** The Applicant shall revise the Master Declaration of Covenants, Conditions, Restrictions and Easements for the Riverview West Subdivision to incorporate and/or update provisions to address the following comments to the satisfaction of City staff and the City Attorney prior to the City recording of the document and the Final Plat of Subdivision for the project:
    a. The Declarant's name listed in the Declaration shall be consistent with the legal name of the property owner.
    b. Include the date of the Declaration.
    c. All referenced exhibits must be attached.
    d. Item D in the Recital section of the Declaration shall be revised to eliminate reference to dwelling units on the Commercial Parcel.
    e. The final copy of the document shall be proof-read and corrected by a professional editor to correct the orthographic and punctuation errors and typos currently found throughout the document.
    f. Update the amount of commercial space noted in Section 4.6 from 40,000 square feet to 33,950 square feet, as documented in the Final PUD plans.
    g. All blank spaces in the document shall be filled in.
    h. Expand definition of "Maintenance" to include landscaping on the Subject property (define specific areas as necessary), irrigation, fencing, private drives and parking lot, parking lot signage, pedestrian walkways and trail connections, emergency access, open space, private utilities, lighting, snowplowing of parking lots and private drives.
    i. Provide an exhibit illustrating storm sewer maintenance responsibility (City versus private parties) and make it an attachment to the Declarations. Identify parties responsible for maintenance of sections of storm not owned and maintained by the City of Warrenville.
    j. Document the Association's responsibility to maintain turf in the Torch Parkway and Ferry Road areas, including mowing, fertilizing, and irrigation.
    k. Incorporate by reference the Landscape Covenant Agreement and Landscape Maintenance Plan.
    l. Incorporate an exhibit clearly illustrating the maintenance responsibility for all private common area improvements in the project.
    m. Incorporate provisions prohibiting amendments to the document that would (i) be inconsistent with the approved PUD and/or applicable City Ordinances or (ii) materially alter maintenance responsibilities of private parties without approval by the City.

17. **Landscape Covenant Agreement:** A Landscape Covenant Agreement satisfying the requirements of Section 11.B. 4 of the Zoning Ordinance shall be prepared, executed and recorded with the DuPage County Recorder's Office prior to the first Certificate of Occupancy issuance for this project. Both, the approval Final PUD Landscape Plan and Long-Term Maintenance Plan shall be referenced in and become a part of the Landscape Covenant Agreement.
18. **Sanitary Sewer:** The Applicant shall pay the Naperville required sanitary sewer capacity purchase fee (the amount to be finalized by the City of Naperville) prior to final Plat and final PUD ordinance recording with the DuPage County.
19. **Apartment Ownership/Management:** The apartments and related improvements on Lot 2, as illustrated on Riverview West Final Plat of Subdivision, shall remain under a single ownership or under such unified ownership or control as to ensure that the apartment building and other structures are developed, operated, and maintained as a unified whole, and managed/operated by a single, experienced multi-family management company. Individual apartment units shall not be under different ownership from each other.
20. **Maintenance of Future Phases Development Areas:** All future development areas (not developed together with the apartment component and not improved with pavement) shall be sodded/seeded and maintained by the Applicant/owner until future development occurs.
21. **School, Park and Library Contributions**: Unless otherwise approved by the City Council, the Applicant shall pay all required school, park and library contributions for the subdivision at the time of building permit issuance for each building.
22. **Fees and Security Guaranteeing Completion of Public Improvements**: The Applicant shall pay/submit all applicable final review and inspection fees and the required security guaranteeing completion of public improvements prior to the recording of the Final Plat of Subdivision and Ordinance approving the Final PUD for this project.
23. **Traffic Enforcement Agreement**: A Private Property Traffic Enforcement request for the apartment component of the Riverview West project (in a form acceptable to the City) shall be submitted by the Property Owner for future City Council consideration.
24. **DuPage County Traffic Impact Fee**: Required DuPage County Traffic Impact Fees must be paid prior to the City's issuance of individual building permits for this project.
25. **DuPage DOT Permit**: A permit to perform work within Ferry Road is required from DuDOT. A copy of the DuDOT-issued permit shall be provided to City staff prior to commencement of such work.

CONCLUSION

Based on the information and findings outlined in this Staff Report, staff recommends the Plan Commission pass the following motions:

1. ***The Plan Commission recommends City Council approval of the Cantera Subarea C, Lot C-2, Final Plat of Subdivision prepared by United Survey Service, LLC, dated April 14, 2019, subject to the Applicant revising the Plat and addressing all conditions outlined in***

Section III of the ANALYSIS component of the May 3, 2019, Staff Report prior to City execution and recording;

2. ***Based on the findings and conclusions outlined in the May 3, 2019, Staff Report, the Plan Commission recommends City Council special use permit approval of the Final PUD plans for Phase I of the Riverview West project, as listed on Exhibit A of the same Staff Report and subject to the conditions contained in Section III of the ANALYSIS component of the same Staff Report.***

ATTACHMENTS

EXHIBIT A: List of submitted documents
EXHIBIT B: Warrenville Fire Protection District review Memo, dated May 2, 2019
EXHIBIT C: Color Elevations Sheet A-9 prepared by Baranyk Associates, LTD., dated April 19, 2019
EXHIBIT D: Color Chart sheet CS-11 prepared by unknown, dated April 19, 2019
EXHIBIT E: Architectural drawing Sheet A-29 prepared by Baranyk Associates, LTD, dated February 18, 2019
EXHIBIT F: Review memo from the City Consulting Engineer and City Senior Civil Engineer, dated May 1, 2019
EXHIBIT G: Riverview West Commercial Area Design Guidelines dated April 24, 2019

EXHIBIT A

FINAL PUD/PLAT DOCUMENTS RIVERVIEW WEST PROJECT

1. General Application, 4 pages, prepared by John Schiess, dated 5-18-18 and Application Form D, 5 pages, prepared by John Schiess, dated 5-18-18
2. Architectural Plan Sheets A1-A29, prepared by Baranyk Associates, Ltd., dated 4-19-19
3. 3D Rendering, 1 page, prepared by unknown, undated, submitted 4-24-19
4. Architect Response to Comments, 5 pages, prepared by Baranyk Associates, Ltd., dated 4-19-19
5. Architectural Plan Sheets CS-1 – CS-11, submitted 4-24-19
6. Lighting Plan Sheets LD-1 - LD 6, 29 pages, submitted 4-24-19
7. Photometric Plan Sheets PH-1 - PH-4, submitted 4-24-19
8. Details sheet 41, 1 sheet, prepared by BLA, Inc., dated 4-19-19
9. Details sheet 43, 1 sheet, prepared by BLA, Inc., dated 4-19-19
10. Engineer Opinion of Probable Cost, 2 pages, dated 4-19-18
11. Proposed Site Improvement Plans, 71 sheets, prepared by Bollinger, Lach & Associates, Inc., dated 4-19-19
12. Response to City Comments, 30 pages, prepared by BLA, Inc., dated 4-19-19
13. Stormwater Report, 557 pages, prepared by Bollinger, Lach & Associates, Inc., dated 4-19-19
14. Landscape Plan Phase I, 13 sheets, prepared by Lannert Group, dated 4-16-19
15. Response to 4-11-19 Staff Comments, 1 page, prepared by The Lannert Group, dated 4-16-19
16. Final Plat of Subdivision, 4 sheets, prepared by United Survey Service, dated 4-17-19
17. Response to City Staff Comments, 1 page, prepared by United Survey Service, dated 4-22-19
18. Submittal Letter, 1 page, prepared by United Survey Service, LLC, dated 4-22-19
19. Shopping Center Vehicle Trips, 3 pages, prepared by Institute of Transportation Engineers, submitted 4-24-19
20. Sight Distance Exhibit Layout, 1 sheet, prepared by BLA, Inc., dated 11-5-18
21. Sight Distance Exhibit, 1 sheet, prepared by BLA, Inc. dated 11-5-18
22. Traffic Impact Study, 241 pages, prepared by Gewalt Hamilton Associates, Inc., dated 12-4-17
23. Traffic Comment Response, 1 page, prepared by GHA, dated 4-8-19
24. Traffic Impact Responses to DuDOT, 2 pages, prepared by GHA, dated 3-15-19
25. Turning, Sight Plan Sheet Layout, 1 sheet, prepared by BLA, Inc., dated 2-18-19
26. Declaration of Covenants, 16 pages, prepared by Nazar Kashuba LLC, submitted 4-24-19
27. Attachment A Listing of 4-24-19 Submittal, 3 pages, dated 4-22-19
28. School District Status Report, 2 pages, prepared by JCS Architect, Ltd., dated 4-2-19
29. Response to City Staff 2nd Review Comments, 8 pages, prepared by JCS Architect, dated 4-24-19

WARRENVILLE FIRE PROTECTION DISTRICT
FIRE PREVENTION BUREAU

3S472 Batavia Rd ❖ Warrenville, IL 60555 ❖ 630.393.2175 ❖630.393.4608 (fax)

FIRE MARSHAL:
Lee Westrom

Asst. FIRE MARSHAL
Carl Voda

FIRE CHIEF:
Dennis L. Rogers Jr.

DATE: May 2, 2019

TO: Cantera Apartments Inc/ Interforum RE Dev
ATTN: Igor
TEL 847-562-2001 Email igor@interforumholdings.com

AND:
McShane Construction
ATTN: Lucas Ruff
TEL: 815-793-5344 Email lruff@mcshane.com

And:
BLA, Inc
ATTN: Kevin Kenniff, PE CFM
TEL 630-438-6400 Email kkenniff@bla-inc.com

CITY OF WARRENVILLE: TEL: 630-393-9050
ATTN: Debra, City of Warrenville E-mail dswinden@warrenville.il.us
TO: Ron Mentzer, Dir of Comm Development E-mail rmentzer@warrenville.il.us
CC: Natalia Domovessova – City Planner E-mail Nataliad@warrenville.il.us
CC Dale Engebretson E-mail dengebretson@warrenville.il.us

Please make sure Contractors' and Sub-Contractors' names are current and on file at the WFPD

FROM: Warrenville Fire Protection District
TEL: 630-393-2175 FAX: 630-393-4608
Fire Marshal Lee Westrom EMAIL westroml@warrenvillefire.com
Asst. Fire Marshal Carl Voda EMAIL vodac@warrenvillefire.com

SUBJECT & LOCATION: Riverview West Development
Cantera Subarea C, Riverview Drive
Warrenville, IL 60555

RE: City Permit #n/a
Final Plat and PUD and Plat responses
Invoice #FP19-40 (Interforum) ***payment of invoice due upon receipt***

(X) Approved after all parties are in agreement to comply with items listed in this review. (sign below and return)
( ) Not Approved (see below)

This review is based upon and limited to the information presented on the drawings and/or material submitted. Matters not presented within the construction documents submitted nor items not requested

for review, which are required for the granting of permits, are assumed to be reviewed and inspected by others and not to be considered as part of this review unless otherwise herein specifically requested. No responsibility is accepted, implied, or extended to, for and/or resulting from construction in any phase, form, or matter.

Fire Inspector's Review:

1. Underground Fire Service Mains must follow NFPA 24, section 10.10, and WFPD shall receive a copy of the AHJ signed "contractors Material and Test Certificate for Underground Piping" prior to Sprinkler system review and acceptance, to assure the flushing of all contaminates. (Agreed by Kevin Kenniff, PE of Bla, Inc. page 29 letter dated April 19,2019 to Kristine Hocking).
2. IFC 2015, section 308, open flame cooking devices within 10' of any combustible construction materials (Decks, siding, windows, doors, eaves, and roofs) shall provide sprinkler protection to decks or state in the HOA/Lease agreements that only 2.5 lbs capacity gas grills are approved and accepted. WFPD will inforce this fire code section. (Agreed by Kevin Kenniff, PE, of Bla Inc. page 29 of letter dated April 19, 2019 to Kristine Hocking)
3. No parking enforcement agreement to be established with the city of Warrenville Police Department, WFPD code amendment 18-04. This was agreed to by Kevin Kenniff, PE, Bla Inc., letter dated April 19, 2019 to Kristine Hocking.
4. No emergency boat launch will be considered, not possible as part of the development, per Kevin Kenniff, PE, Bla Inc., as seen in letter dated April 19, 2019 to Kristine Hocking.

Any questions - please contact Fire Marshal Lee Westrom or Assistant Fire Marshal Carl Voda – 630-393-2175

Call Fire Inspectors (630-393-2175) for assistance on items not made clear. It shall be the responsibility of the Build-out Contractor to notify all sub-contractors of the requirements in this REVIEW. Other fees may be assessed for noncompliance.
New Codes: International Building Code – 2015 ED.
International Fire Code – 2015 ED
Life Safety Code – 2015 ED

WHEN IN RECEIPT OF THIS REVIEW ALL PARTIES PLEASE SIGN AND RETURN:

[ ] in agreement with the information presented in this REVIEW
[ ] have discrepancies with the information in this REVIEW

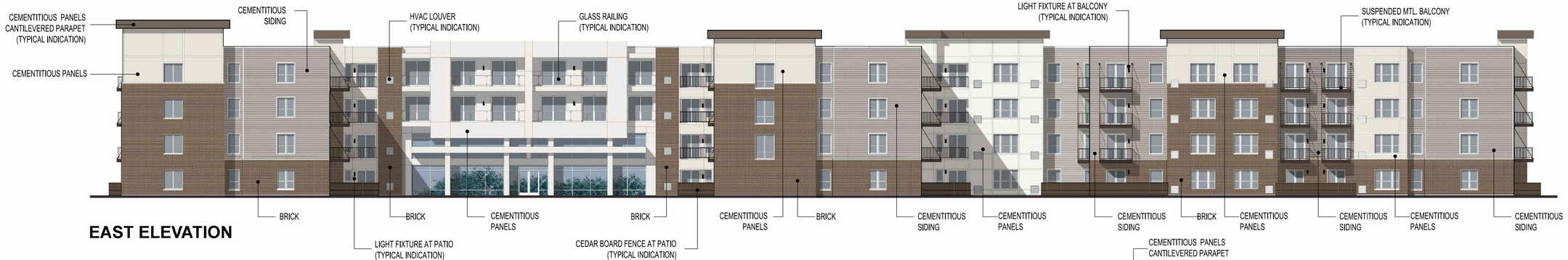
SIGNATURE :_____DATE: _____

NAME OF COMPANY: _____

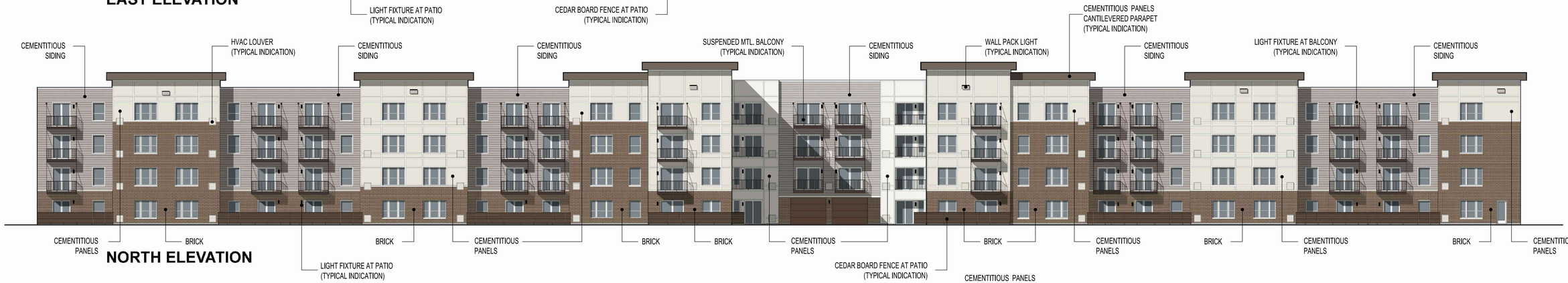
PRINT NAME OF PERSON SIGNING AGREEMENT _____

& RETURN TO WFPD FIRE PREVENTION OFFICE F 630-393-4608, Email Fairbanksb@warrenvillefire.com

Please contact this office if you do not receive all copies or if any of these transmissions are not clear. 630-393-2175



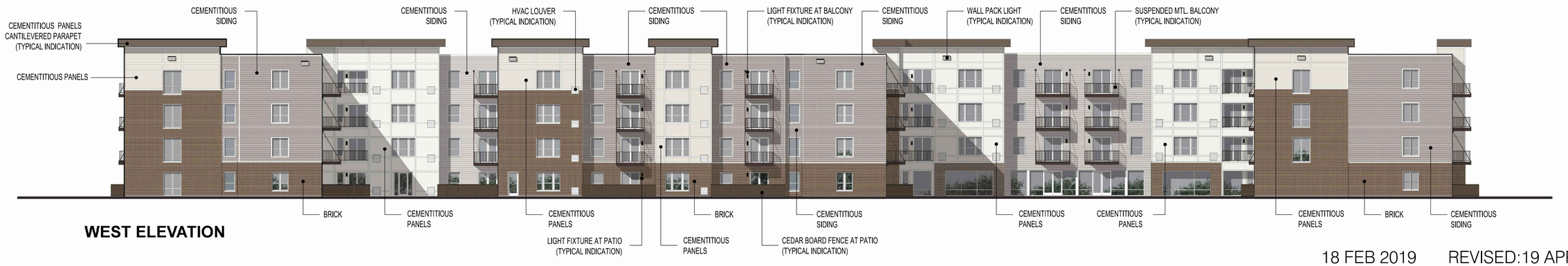
EAST ELEVATION



NORTH ELEVATION



SOUTH ELEVATION



WEST ELEVATION

18 FEB 2019 REVISED:19 APR 2019

CANTERA DEVELOPMENT HOLDINGS, LLC
DEVELOPER
TWO NORTHFIELD PLAZA, SUITE #320 NORTHFIELD, IL 60093

364 D. U.
RIVER VIEW WEST
WARRENVILLE, ILLINOIS

BARANYK ASSOCIATES, LTD.
ARCHITECTS • ENGINEERS • PLANNERS
710 HIGGINS RD. PARK RIDGE, IL. 60068
FAX 847/825-8617 PHONE 847/292-5757

ELEVATIONS

SHEET: A-9

EXHIBIT C

EXHIBIT D
CS-11
04/19/19

COLOR CHART

HARDIE CEMENTITIOUS PANELS & SIDING

HARDIE PANELS

COLOR: ARCTIC WHITE
OR SIMILAR

HARDIE SIDING

COLOR: PEARL GRAY
OR SIMILAR

HARDIE PANELS
CANTILEVERED PARAPET

COLOR: TIMBER BARK
ZOR SIMILAR

BRICK



SIOUX CITY BRICK - SANDALWOOD
OR SIMILAR

PATIO SCREEN WALLS

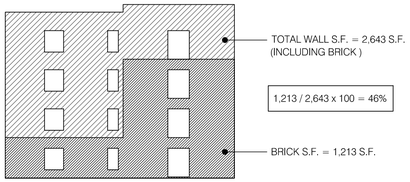
STAIN COLOR - SW 3001
SHAGBARK
OR SIMILAR

BALCONY

COLOR SIMILAR TO - SW 3001

OVERHEAD DOORS

COLOR SIMILAR TO - SW 3001



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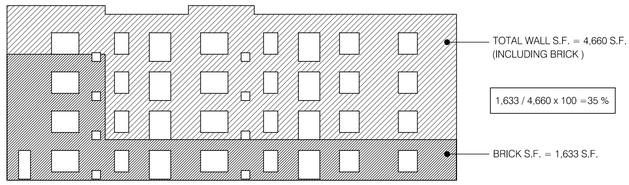

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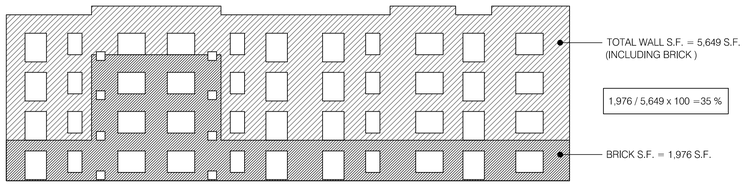

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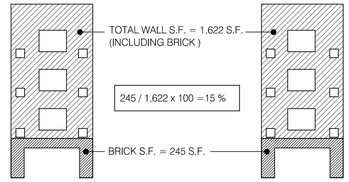

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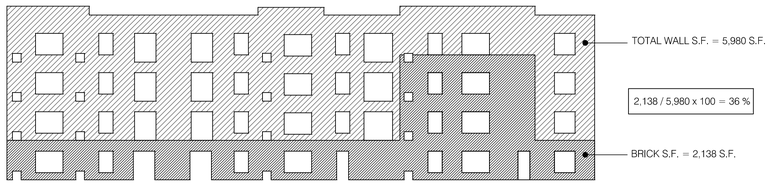

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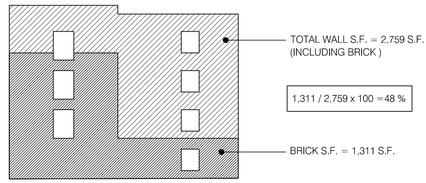

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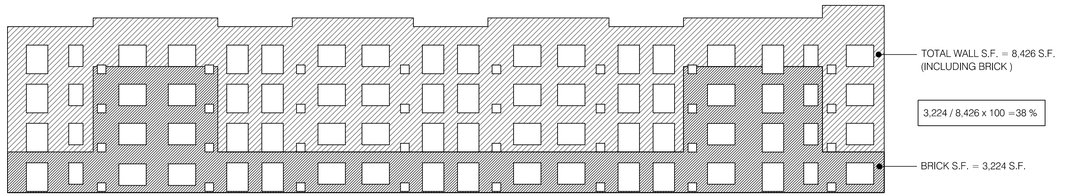

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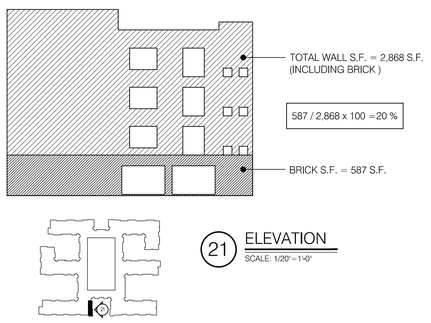

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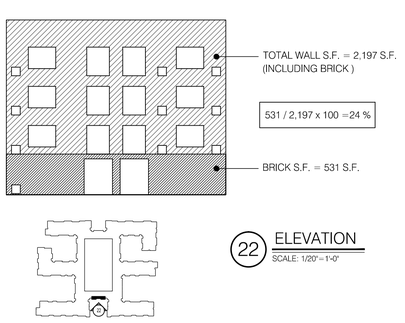

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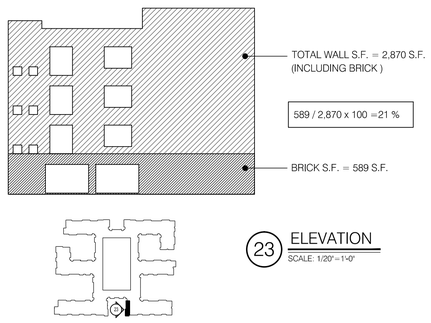

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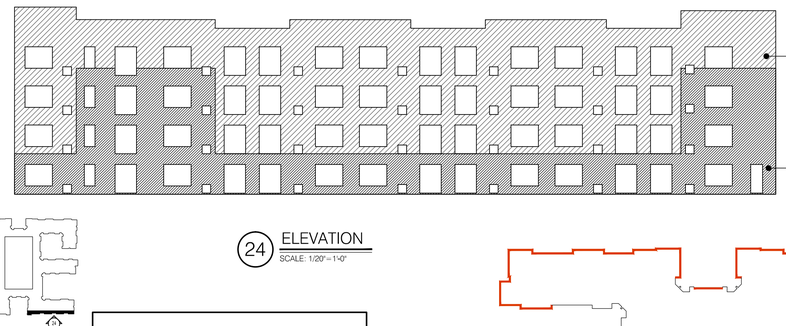

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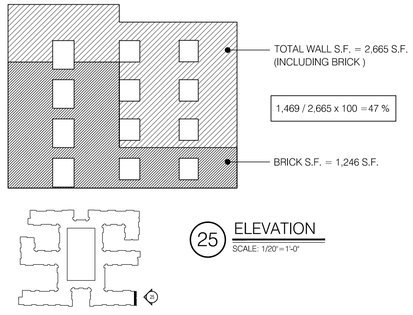

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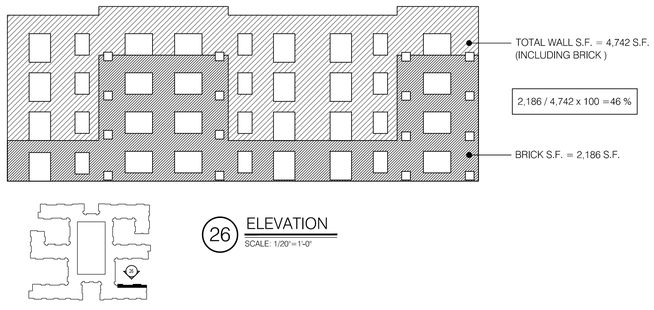


26 ELEVATION
SCALE: 1/20"=1'-0"

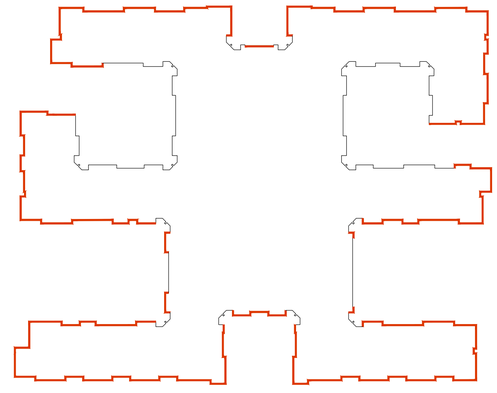
TOTAL WALL S.F. (SHEET A-29) = 54,549 S.F.

19,763 / 54,549 x 100 =36 %

BRICK S.F. (SHEET A-29) = 19,763 S.F.

Cantera Residences Material Summary

#	Material Square Footage	Total	Precentage
1	Fiber Cement Panels & Siding Area	33,696	34%
2	Brick Area	35,127	36%
3	Garage Door Area	373	0.4%
4	Storefront Area	1,771	1.8%
5	Window/ Door Area	26,253	27%
6	Magic Pak Louvers	1,419	1.4%
	Total Facade Area	98,638	100%



BUILDING FOOTPRINT

18 FEB 2019

CANTERA DEVELOPMENT HOLDINGS, LLC
DEVELOPER

TWO NORTHFIELD PLAZA, SUITE #320 NORTHFIELD, IL 60093

364 D. U.
RIVER VIEW WEST
WARRENVILLE, ILLINOIS

BARANYK ASSOCIATES, LTD.
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15,364 / 44,089 x 100 = 35% (SHEET A-28)
19,763 / 54,549 x 100 = 36 % (SHEET A-29)
35,127 / 98,638 x 100 = 36 % TOTAL

SHEET:
A-29

EXHIBIT E

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MEMORANDUM

Date: May 1, 2019

To: Kristine Hocking, P.E., CFM
Senior Civil Engineer
City of Warrenville

From: Lynn Kroll, P.E., CFM
Project Engineer
James J. Benes

Dan Schoenberg, P.E
Project Engineer
James J. Benes

Valerie Jakobi, CPESC
Senior Ecologist
Bollinger Environmental

Re: Cantera Subarea C / Lot 2 / Riverview West Development
Final Engineering Plan Review
Project No. 632.752

The proposed improvement will be located on approximately 32+/- acres with Outlot A located at the northeast corner of Ferry Road and the West Branch of the DuPage River which is on Lot 2 of Subarea C of the Cantera development. Lot 2 of Subarea C was originally conceived as a westward expansion of the office development on Lot 1 to the east. It is now proposed to be re-subdivided into three lots; Lot 1 contains commercial buildings, Lot 2 contains an apartment building and Lot 3 contains townhouses and Torch Parkway. The development consists of 364 apartment residences, one parking garage and five parking lots. Townhomes along Torch Boulevard and commercial development along a commercial drive are shaded in the Site plans and the landscaping plans. There are three existing retention ponds including Outlot A. Only two of three ponds will be reconfigured.

At your request we have reviewed the following final documents:

1. Proposed Site Improvement Plans (sheets 1-71) prepared by Bollinger, Lach and Associates, Inc. (BLA) of Itasca, Illinois and dated April 19, 2019.
2. DuPage County Stormwater Management Permit Application Report for Riverview West prepared by BLA and dated April 19, 2019.
3. Architectural Drawings for River View West (sheets 1-29) prepared by Baranyk Associates, Ltd. of Park Ridge, Illinois and dated April 19, 2019.
4. Phase One Landscape Plans for River View West (sheets 1-13) prepared by Lannert Group of Geneva, Illinois and dated April 16, 2019.
5. Photometric plans dated January 22, 2019 and catalog cut sheets dated February 18, 2019 both prepared by CREE of Sturtevant, Wisconsin.

6. Site Distance Exhibit (2 sheets) dated November 5, 2018 and Turning Movement and Sight Distance Plan dated February 18, 2019 prepared by BLA.
7. Traffic Impact Study review memo by Gewalt Hamilton Associates, Inc. (GHA) of Vernon Hills, Illinois dated April 8, 2019 which addresses DuPage County DOT comments.
8. Traffic review memo prepared by Gewalt Hamilton Associates, Inc. (GHA) of Vernon Hills, Illinois and dated April 8, 2019.
9. Engineer's Opinion of Probable Cost for Riverview West prepared by Bolinger, Lach and Associates, Inc. and dated April 19, 2019.
10. Final Plat of Subdivision Cantera Sub-Area "C", Lot 2 Subdivision prepared by United Survey Service, LLC of River Forest, Illinois and dated April 17, 2019
11. Final Plat of Subdivision Cantera Sub-Area "C", Lot 2 Subdivision Easement Vacation and Dedication prepared by United Survey Service, LLC of River Forest, Illinois and dated April 17, 2019

ENGINEERING SUMMARY

PROPOSED LAND USES: The proposed development has not changed and consists of consists of the following land uses.

- 364 Apartment units (1BR – 201, 2BR – 153, 3BR – 10)
- Townhome units (previously 60 3BR)
- undesignated commercial space

ACCESS AND VEHICULAR CIRCULATION: Access has not changed from earlier submittals. Since Ferry Road is under the jurisdiction of DuPage County Department of Transportation (DuDOT), they will review construction affecting their road. We have seen the April 2, 2019 DuDOT review of the site improvement plans and note several sheets need revision.

Torch Parkway is proposed to be extended as a 27-foot wide (back to back of curb) public street within a 60 foot wide right-of-way southwesterly from its current terminus at Kline Circle to the internal intersection with the private drive that serves the commercial area, and then south to where it intersects with Ferry Road. The proposed extension is generally consistent with the Cantera General Site Plan Exhibits approved by the City on February 17, 1994. The typical section for Torch extended includes B6.12 curb and gutter along the future townhome side of the pavement. Since the final locations of the townhomes will be established in the Phase 2 submittals, confirm depressed sections of curb and gutter will be created during Phase 2.

A new private internal central road is proposed extending from Ferry Road opposite Cornerstone to Torch Parkway extended. It is called "Riverview Drive" on some sheets and

"Pollard Drive" on other sheets, from which extends private residential drive to a parking garage and a private commercial drive. There is a typical section for this private road. The pavement is 24' back to back and no on-street parking is proposed. A central island just north of the commercial drive has been extended from previous submittals. The extension is acceptable.

A proposed private commercial drive extends between Torch and Riverview. There is no typical section for this pavement. The lanes and north side parking are proposed to be constructed under Phase 1. South side parking is proposed to be built in Phase 3. The current concept includes many perpendicular commercial parking spaces along the south side of the drive. The typical section on Sheet 43 of the Site Plan suggests the south curb will be built undepressed and will be cut or replaced under Phase 3. Confirm

TRAFFIC STUDY IMPACT: The TIS comments to DuDOT appear reasonable, but DuDOT has the final word on construction within their right-of-way.

As previously noted, the projected site traffic generated by the proposed residential and commercial land uses will be half of that which would be generated by the previous PUD approval for this site consisting of up to 950,000 square feet of office space. Consequently the proposed development is expected to have less impact on the surrounding streets.

In our last review, we recommended measures designed to reduce risk at the Torch Parkway pedestrian crossing and to calm traffic. Curb bump-outs at pedestrian crossings of Torch Parkway have been added.

WARRENVILLE CITY ORDINANCE No. 1439: Ordinance No. 1439 requires the removal of the right-in portion of the right-in/right-out driveway to lot C1 (Cantera Meadows) about 300' west of the Winfield Road/Ferry Road intersection when "Access #4" is constructed. Access #4 is a driveway aligned with the unsignalized Cornerstone Development access to Ferry Road. The proposed development will construct such an access, but the proposed development plan does not specify closure of the right-in portion of the existing C1 entrance.

The Ordinance requirements were based upon the prior plan which consisted entirely of office space throughout all of Subarea C. The prior plan also included internal connectivity between lot C1 and the remainder of the of the Subarea C office development. The proposed lot C2 development plan replaces the previously proposed office use residential and commercial uses, and eliminates vehicular cross access to Cantera Meadows.

The April 8 memorandum from GHA says that the existing Lot C1 access and the proposed Lot C2 access operate reasonably. We agree with GHA's recommendation of continued monitoring.

Ordinance 1439 also requires:

1. Widening of Torch Parkway to accept dual left turns from northbound Winfield Road to westbound Torch Parkway.
2. Striping the Torch Parkway approaches to Kline Circle, and the southbound Kline Circle approach to Torch Parkway to provide left turn lanes and tapers.

The proposed residential and commercial development is projected to generate half of the new trips than the previously approved office space for the site. The need for dual lefts from northbound Winfield to westbound Torch will not exist due to the reduction in projected site traffic. The projected Level of Service (LOS) for this traffic movement is LOS A with left turn vehicle queues contained within the existing single turn lane storage. It is our professional opinion that the widening of westbound Torch Parkway is not necessary in conjunction with the current development proposal.

PEDESTRIAN CIRCULATION: Ordinance 1439 lists six requirements for sidewalks, most of which were previously constructed or would not apply under the proposed development plan. The requirement to provide a sidewalk connection to the River just north of the existing pond at the northwest corner of Ferry Road and Torch Parkway is now proposed**.**

In our last review we recommended two advance non-vehicular warning signs (W11-2) one for each approach of Torch Parkway as the midblock crossing at station 204+00 is unexpected. They have not been added. We do note the two new "stop for pedestrians within crosswalk" signs (R1-6a) on sheet 31.

PARKING: Off-street residential parking has not changed. In a previous review, we agreed with the required parking space tabulation on page 8 of the GHA traffic report.

Sheet A-12 of the Architectural Plans locate on-street Townhome Guest Parking along Torch Boulevard. We have no objection to the location of the spaces except for the two spaces within the designated overflow route of the detention pond system.

LOADING: Two loading spaces are required and have been provided for Commercial Buildings 2, 3 and 4. They have not changed and are acceptable. The approach to the trash pickup area has been reconfigured to include a smaller central island. The Autoturn confirms a garbage truck can swing around the cul-de-sac, but does not include backing maneuvers to the door.

VISION CLEARANCE: The vision clearance triangles shown on Sheet 49 of the Site Improvement Plan appear correct. They assume the posted speed of the future commercial drive will be 20 mph. The landscape plans still do not show the vision clearance triangles. *We are concerned about the sight lines for eastbound traffic on the commercial road looking north at Riverview Drive. The corner of the building is close to the triangle limits and the choice of five 10-15' arborvitae and three Black Hills Spruce which are not trimmed up are inappropriate.*

PERMITS: The proposed disturbed area will be approximately 32+/- acres, so a City of Warrenville Stormwater and Flood Plain Certification is required. City of Warrenville Building Permits will be required as each unit is constructed. Illinois Environmental

Protection Agency (IEPA) permits are required for the proposed sanitary sewer and water main improvements for this project. DuPage County Department of Transportation permits will be required for work within their right-of-way. DuPage County Forest Preserve District permits will be required to implement the proposed trail connections to the West Branch of the DuPage Regional Trail.

STORMWATER DETENTION: Since the proposed improvement will result in greater than 25,000 square feet, in accordance with Section 15-72.A of the DuPage Countywide Stormwater and Floodplain Ordinance (DCSFPO), site runoff Storage (stormwater detention) is required. The existing parcel contains three detention ponds which were sized for future development of Subarea C. The design of the proposed ponds account for all tributary area, including upstream detention ponds and also any proposed impervious area which was not accounted for in the existing detention pond design.

EROSION CONTROL: The project site is greater than one acre in size, so a National Pollutant Discharge Elimination System (NPDES) permit is required for the discharge of storm water during construction. The Owner will have to implement the Storm Water Pollution Prevention Plan (SWPPP) to effectively manage the discharge of pollutants from the site. The Owner received a permit approval in October 2018.

BEST MANAGEMENT PRACTICES: The proposed development will create more than 2,500 square feet of impervious area. In accordance with the City of Warrenville Stormwater and Floodplain Ordinance, PCBMPs for water quality are required. One 0.55 Acre-Foot PCBMP facility is proposed at the northeast corner of Ferry Road and the proposed Torch Parkway entrance. Bioswales are proposed within the east parking lot and also along the south side of the commercial properties (along the north side of Ferry Road). Per Section 15-64 of the DCSFPO, PCBMPs shall provide volume control calculated as the New Impervious Area multiplied by 1.25” rainfall event.

SPECIAL MANAGEMENT AREAS: The area of the proposed improvement is located in a shaded Zone A (100-year floodplain with no base elevations determined). The West Branch DuPage River is located approximately 50 feet west of the site at an elevation of 692.6 at Federal Emergency Management Agency (FEMA) section WBWB0024 which is just south of Torch Parkway. We understand a Conditional Letter of Map Revision (CLOMR) application was approved by FEMA on October 11, 2018 to revise the existing detention ponds Zone A flood mapping delineation. We understand the CLOMR is based upon the proposed engineering plan.

Prior to the issuance of a foundation permit for any portion of the apartment building that would be located on fill that has or will be placed in the FEMA Special Flood Hazard Area (SFHA), the applicant shall provide documentation acceptable to the City of Warrenville Community Development Department and certified by a qualified design professional that confirms all fill placed in the SFHA has been compacted per FEMA Technical Bulletin 10-01 and the land removed from the SFHA is reasonably safe from flooding. Vertical construction of the apartment building can commence once the LOMR is approved.

Wetlands within the Cantera Development are governed by an Army Corps of Engineers (ACOE) permit. All isolated wetlands within Cantera were mitigated by the construction of the Flowage Easement in the southwest corner of Subarea I, adjacent to the West Branch DuPage River. Therefore, any wetlands found in Subarea C have already been mitigated and may be filled. The ACOE permit does not cover wetlands contiguous to the West Branch DuPage River.

WATER DISTRIBUTION: The applicant is proposing to make one mainline connection to the City's existing 12 inch water main at Klein Circle and Torch Drive, one mainline connection to an existing 12 inch water main at the east side of Ferry Road approximately 850 feet west of Winfield Road and one connection to an existing water stub on the west side of Ferry Road approximately 1,800 feet northeast of River Road.

SANITARY SEWER: The applicant is proposing to connect the individual sanitary services of the proposed 60 townhouses to the existing 8 inch sanitary mainline which is northwest of the extended Torch Drive. Three additional sanitary mainline connections are proposed to the City's existing 15 inch sanitary sewer on the northwest side of Ferry Road approximately 1,800 feet, 2,000 feet and 2,800 feet northeast of River Road.

On August 20, 2018, the City Council approved an alternative tap-on surcharge for this project that would cover the costs associated with the City's purchase of the additional sanitary sewer capacity required for it from Naperville in lieu of the standard sanitary sewer service connection fees contained in the City Code Section 7-4B-6.D.

According to the August 24, 2018 letter from the City of Warrenville to Interforum Holdings, Inc., the developer will be required to pay for the City's purchase of the necessary sanitary sewer capacity from Naperville before the City of Warrenville and the City of Naperville will sign off on the IEPA sanitary sewer permit for the project. Population equivalent (PE) calculations have been submitted to the City for review and forwarded to Naperville. After the IEPA draft is reviewed by Naperville, the City of Warrenville will send a letter requesting the additional capacity and in return the City of Naperville will provide an invoice. The City of Warrenville will then invoice the developer. Once the developer submits the payment, then both cities can sign the IEPA permit.

REPORT OF SOILS EXPLORATION: The Report of Soils Exploration prepared by TSC and dated January 13, 2017 was reviewed previously and approved on October 4, 2017.

LIGHTING:
Parking Lot 1 (PL-1), the residential lot east of Riverside Drive which has more than 100 spaces, was considered a High Level Activity. The remaining parking lots were considered Medium Level Activity Lots. The illumination average to minimum uniformity ratio and minimum lighting for all parking lots are in accordance with the zoning ordinance.

The Sternberg photometric analysis reflects adjusted lighting. It now predicts illumination at the Torch-Pollard and Torch-commercial drive intersections in excess of 0.8 ft-c as suggested by Table 8 of the IES Roadway Lighting report RP-8-14 for pedestrian crossings. This level of illumination is exceeded at the pedestrian crossing of Torch Parkway north of Pond 4. The Chicago Lightworks projected illumination of the Torch Parkway pedestrian crossing at Ferry Road is about 0.5 ft-c, but this lighting must be reviewed by DuDOT. The pedestrian crossings of Pollard Drive are well lit.

A check of illumination levels for the on-street parking along Torch Parkway revealed minimums of 0.2 ft-c which exceed the 0.1 ft-c ITE recommended values for Low Pedestrian Conflict Areas.

REVIEW COMMENTS

Proposed Site Improvement Plans The Proposed Site Improvement Plans for Riverview West Development has been stamped **"APPROVED WITH CONDITIONS"**. The following comments should be addressed prior to Site Development permit issuance.

1. Include armoring at the pond overflow locations. **Partially addressed. Include a detail.**
2. Utility Sheets:
    a. Provide clean outs for sanitary sewer services at townhomes. **Partially Addressed. Add cleanout symbol as shown on the Utility Sheets to the Legend on Sheet 1.**
    b. **New Comment:** Adjust the sanitary sewer services so that each building's services connect to one manhole and a sanitary sewer from the manhole connects into the existing sanitary sewer.
    c. **New Comment:** Water and sanitary service should be 10' apart. Put water service for two units in same area.
    d. **New Comment:** All watermain services shall be PVC.
3. Analyze vision clearance triangles at all new intersections, including impact of proposed monument signage on vision triangles. **Partially Addressed**. **Demonstrate DuDOT approval on Ferry Road intersections. Change plantings north of eastbound commercial drive at Pollard Drive**
4. Although space for swing movements have been added to the commercial parking west of the north-south road, a parking space must be striped out to make a turn-around maneuver. **This can be addressed in Phase 3 buildout.**
5. Proposed landscape plantings should not be in the path of overland flow routes. **Partially Addressed**. **Remove River Birch shrubs (mature size 10' by 10') from overland flow path at detention ponds.**

6. The bioswales have inlets however the detail doesn't show the inlets. Update the detail to show the inlets and depth above the bottom of the swale. It appears the rims are at the bottom of the swale which would assume there isn't any storage provided which is in conflict to the 4-18-18 Final PUD SWM report. **Not Addressed**. **The bioswale detail specifies rim elevation 1 foot above the bottom of the swale but the bioswale along Ferry Road shows rim elevations at bottom of the swale. Ensure the called out rim elevations are 1 foot above the bottom of the swale.**
7. Rename Riverview Drive (Private Road) to "Pollard Road". The City already has a Riverview Drive. **Partially addressed. Some sheets still have Riverview Drive**.
8. There are crosswalks to allow pedestrians to cross Torch Parkway at the intersection with the commercial drive and the intersection with Riverview Drive. These are expected crossing points. The midblock crossing at station 204+00 is unexpected, so two advance non-vehicular warning signs (W11-2) one for each approach of Torch Parkway and two "stop for pedestrians within crosswalk" signs (R1-6a) are appropriate on sheet 31. **Partially addressed. Add advance warning signs**
9. Label the size and invert of the Outlot A existing pond outlet pipe and note that this pipe will be maintained. Label the existing 6" restrictor. Include a detail of the existing 6" restrictor. Note that a perforated riser is proposed on the existing outlet. **Partially addressed. Include a detail of the existing restrictor manhole complete with invert elevations of the 6 inch restrictor and 12 inch outlet pipe.**
10. On Plan sheet 44, on the overflow spillway cross-sections, please note and clarify on each cross-section if the noted grades are for the Quick Start work or the final finished grades for the improvement. It appears as if there were roadway design revisions since the last review. The overland flow calculations and corresponding cross-sections for the final plan set should be updated and submitted for review. **Partially Addressed. The Torch Parkway / Commercial Drive overflow calculations need to be revised and the corresponding cross-sections included in the plan set details.**
11. Submit an updated, complete Tabular Stormwater Management Report incorporating all calculation and design revisions to date. The narrative for all Tabs should be updated per all revisions to date. Mostly addressed. In the final submittal, in eth Tab 2 calculations include a narrative detailing how the site design accommodated the overland flow route of 1 cfs / acre in accordance with eth DCSFPO. **All final overland flow calculations, overland flow site exhibit (grading plan as base sheet), cross-sections and overland flow narrative should be included in the final Stormwater Management Report.**
12. Label Riverview Drive and Torch Parkway on the Landscape Plans. **Not addressed. Update Pollard Road.**

13. **New comment:** Add a permit table to the Front Sheet. Add a column for Agency, Permit # and Issue Date. Add agency permit like City of Warrenville – Construction, City of Warrenville – Site, IHPA, IDNR – Endangered Species, FEMA CLOMR, IEPA NPDES NOI, IEPA Public Water Supply, IEPA Water Pollution Control, DuDOT, FPDDC, etc. Leave the # and Issue Date blank if it hasn't been issued yet. If the permit # is known, add it.
14. **New comment:** Remove the existing FEMA floodplain limits (graphical and actual) on the Utility Plans.
15. **New comment:** Consider modifying the ADA parking spaces to share an access aisle per the new Illinois Accessibility Code.
16. **New comment:** Sheet 7,9,10: Show the revised wall elevations and contours per Quick Start revisions. Sheet 7: Remove the "Proposed Split Rail…" callout.
17. **New comment:** Sheet 11: The NE Corner of Pollard and Garage drive should be concrete in order to place the detectable warning. Similar to the area north of Torch Parkway north of Pollard Drive.
18. **New comment:** Sheet 16: Add the Ferry Road storm sewer revisions to this sheet. Note that the Ferry Road storm structures are numbered 152-157 and there already are 152,153, and 154 structures labeled on this sheet as well as noted on Sheet 13 (by the garbage access driveway). Renumber these structures and add the Ferry Road storm structure information to Sheet 16.
19. **New comment:** Sheet 17: Structure S2, invert 688.55 should be "E" not "N". Structure S4, the south invert is missing. Since the sanitary structures are labeled with a "S_", they should also be labeled as such on the utility sheets.
20. **New comment:** All erosion control sheets. Update the erosion control measures implemented during Mass Grading Quick Start construction.
21. **New comment:** Sheet 23: Fix the callout overwrite at the top of the sheet.
22. **New comment:** Sheet 21 and 23: Check the path along the eastern property line to ensure the proposed grades match into the existing grades.
23. **New comment:** Sheets 31 and 32. Adjust the pavement marking of Torch Parkway northbound per attached markup.
24. **New comment:** Sheet 41 Torch Parkway cross section: Label sidewalk as 7" per grading plan sheets.
25. **New comment:** Sheet 41 Bioretention, Bioswale and Permeable Paver details: Add the depth of layer in callout and not within the hatched area as it is too hard to see.
26. **New comment:** Sheet 42 Fence Detail: Fence should be black aluminum and not steel.
27. **New comment:** Sheets 47, 48, 51 and 52: ADA detectable warning should expand the width of the sidewalk similar to the details on Sheet 46.

28. **New comment:** Sheets 52: Adjust the eastern cross walk location to line up with the sidewalk along the east side of Pollard Road. Cross walk detail should look like IDOT Standard 424001-01 on Sheet 38.
29. **New comment:** Contour elevations are not legible on the Landscape Plan.
30. **New comment:** It is recommended that an anti-seep collar be provided at each pond outlet where the existing pipe is being replaced.
31. **New comment:** The plans show a delineated wetland and wetland buffer. A wetland delineation report should be provided to support these findings.
32. **New comment:** The cost estimate should include native planting costs.
33. **New comment:** Per the previous submittal, the IDNR EcoCat Termination letter recommended that "all dense vegetation around the waterbodies be removed before or after the wetland bird nesting season, April 1 through July 31st, to avoid potential impacts to listed wetland birds." Please provide information on any proposed clearing in order to avoid potential wetland bird impacts in response to this comment. This documentation should be provided in Tab 4.
34. **New comment:** The wetland buffer appears to be less than 50 feet in some areas. It is our understanding that this may be because the existing path is not considered buffer. Please confirm this.
35. **New comment:** The BFE is used as the riparian buffer for the River. Proposed riparian buffer impacts are 341 feet for the path connection. The vegetation impacted and lost functional values should be discussed in Tab 5. It is our understanding that native plantings throughout the site will exceed this impact, however these plantings are not located in eth same buffer as the impacts. The Forest Preserve District requested turf along the path connection, however please provide information on how the lost functional values will be replaced elsewhere within the riparian buffer of the West Branch DuPage River.
36. **New comment:** A Planting, Maintenance and Monitoring Plan should be provided for all of the native vegetation planted within the buffer areas.
37. **New comment:** The hatched native seeding along the existing path on the Landscape Plan appears to differ from the hatch areas on the Site Improvement Plan. Please coordinate the plans to show the same areas of plantings.

Architectural Drawings The Architectural Drawings, Apartments at Riverview West have been coordinated with the Site Improvement Plans. Any updates to the Site Improvement Plans should be updated on the Architectural Drawings to maintain consistency.

Lighting Layout Plan and Photometric Plan The Lighting Layout Plan and Photometric Plan has been stamped "**APPROVED WITH CONDITIONS".** The following comments should be addressed prior to Site Development permit issuance.

1. Show phased lighting plan or show how the lights will be built in the commercial areas and townhomes during Phase I. For the lights along Torch, how will the lights on the townhome side be placed so that they don't conflict with future driveways? **Not Addressed. Phasing plan shows no south side commercial drive lighting, but photometric plan assumes all lights are in place.**
2. Include Standard Street Lighting Details, controller, service connection, and underground conduits. Provide a detailed controller diagram specifying cabinet equipment and wiring schematic. Provide voltage drop calculations for wire sizing. Add the location of the light poles and this information to the engineering plans. Contact staff for a sample of these plans. **Not Addressed. This can be completed during the permitting process.**
3. Add the location of the controller and power source. Coordinate with Public Works regarding the lights along Torch Parkway and if they can be connected to the existing lights along Torch Parkway. **Not Addressed. This can be completed during the permitting process.**
4. Adjust the light temperature of the fixtures on the building and parking lot from 5700k to a lesser temperature of 4000k. **Not addressed. Applicant agrees with City's recommendation.**
5. **New comment:** Move the light poles on Torch Parkway, east and west of Pollard Drive closer to the intersection.

Overflow Spillway Calculations The overflow spillway calculations have been stamped **"APPROVED WITH CONDITIONS".** The following comments should be addressed on the plans and included in the final stormwater management report as part of the Site Development permit:

1. All weir calculations should have current date.
2. Include the 4/26/2019 revised weir calculations into the Stormwater Management Report.
3. Stormwater Management Report should be signed and sealed by an Illinois Registered Professional Engineer.

Final Plat of Subdivision Cantera Sub-Area "C", Lot 2 Subdivision The Final Plat of Subdivision has been stamped **"APPROVED WITH CONDITIONS"**. The following comments should be addressed prior to Final Plat recording.

1. Update the lot lines and show all existing property lines on Sheets 1 and 2. **See markup. On Sheet 2 show all existing sanitary, public utility and all easements granted under the Quick Start Plat of Easement (R2019-000492).**

2. The commercial drive in Lot 1 must cross Lots 2 and 3 to reach the dedicated Torch Parkway right-of-way. Provide a cross-access easement. **Not addressed. See markup.**
3. Proposed sanitary sewer and services for more than one service outside of ROW should be within an exclusive City Utility Easement (see attached for easement language). **See markup.**
4. Proposed water main outside of City ROW should be within an exclusive City Utility Easement. **Not addressed. See markup.**
5. Any storm sewer draining the Torch Parkway City ROW should be in an exclusive City Utility Easement unless it was already included in the Quick Start Plat of Easement. **Not addressed. See markup.**
6. Overland flow routes should be within the Stormwater Management Easement. **Not addressed. Torch Parkway at Commercial Drive overland flow route was revised and the corresponding flow path will need to be within a stormwater management easement.**
7. Add the following notes referencing the Covenants.
    i. **The maintenance and use of the property and improvements constructed as part of this subdivision are controlled by the "Master Declaration of Covenants, Restrictions and Easements for the Riverview West Subdivision" which will be recorded concurrently with this Final Plat of Subdivision.**
    ii. **The maintenance and use of Outlot A are controlled under the "Easement, Improvement and Maintenance Agreement" recorded on November 20, 2018 as R2018-108094.**
8. **New Comment:** Remove Normal Water Level lines from sheet 1. Remove the centerline from sheets 1 and 2 and the legend. See markup.
9. **New Comment:** Add a note that the existing property is Zoned S-D "Special Development District". See markup.
10. **New Comment:** Add a provision for the cross-access easement. "An easement is hereby granted to owners of Lots 1, Lot 2, and Lot 3 for perpetual pedestrian and vehicular access, ingress and egress over the land designated as "Cross-Access Easement".

Memorandum prepared by GHA The memorandum prepared by GHA regarding City Ordinance 1439 has been stamped **"APPROVED AS SUBMITTED"**.

Traffic Impact Study In our last review, the Traffic Impact Study for Cantera Sub-Area "C", Lot 2 Subdivision was stamped "**APPROVED WITH CONDITIONS**". The following comments still need to be addressed:

1. Eastbound peak hour queuing on the Torch Parkway approach to Winfield Road is projected to exceed the existing marked turn lane storage. In previous reviews, we suggested a re-stripe of the existing eastbound left turn lane on Torch to provide a total storage length of 153 feet, and reduce the back-to-back taper length to 96 feet. This will provide sufficient storage for the projected AM peak hour, and accommodate the majority of the left turn queue during the PM peak hour. An earlier response letter says this was corrected, but the documents confirming this change were not in our review package. **Not addressed.**

Engineer's Opinion of Probable Cost The Engineer's Opinion of Probable Cost has been stamped **"APPROVED WITH CONDITIONS".** We have the following comments:

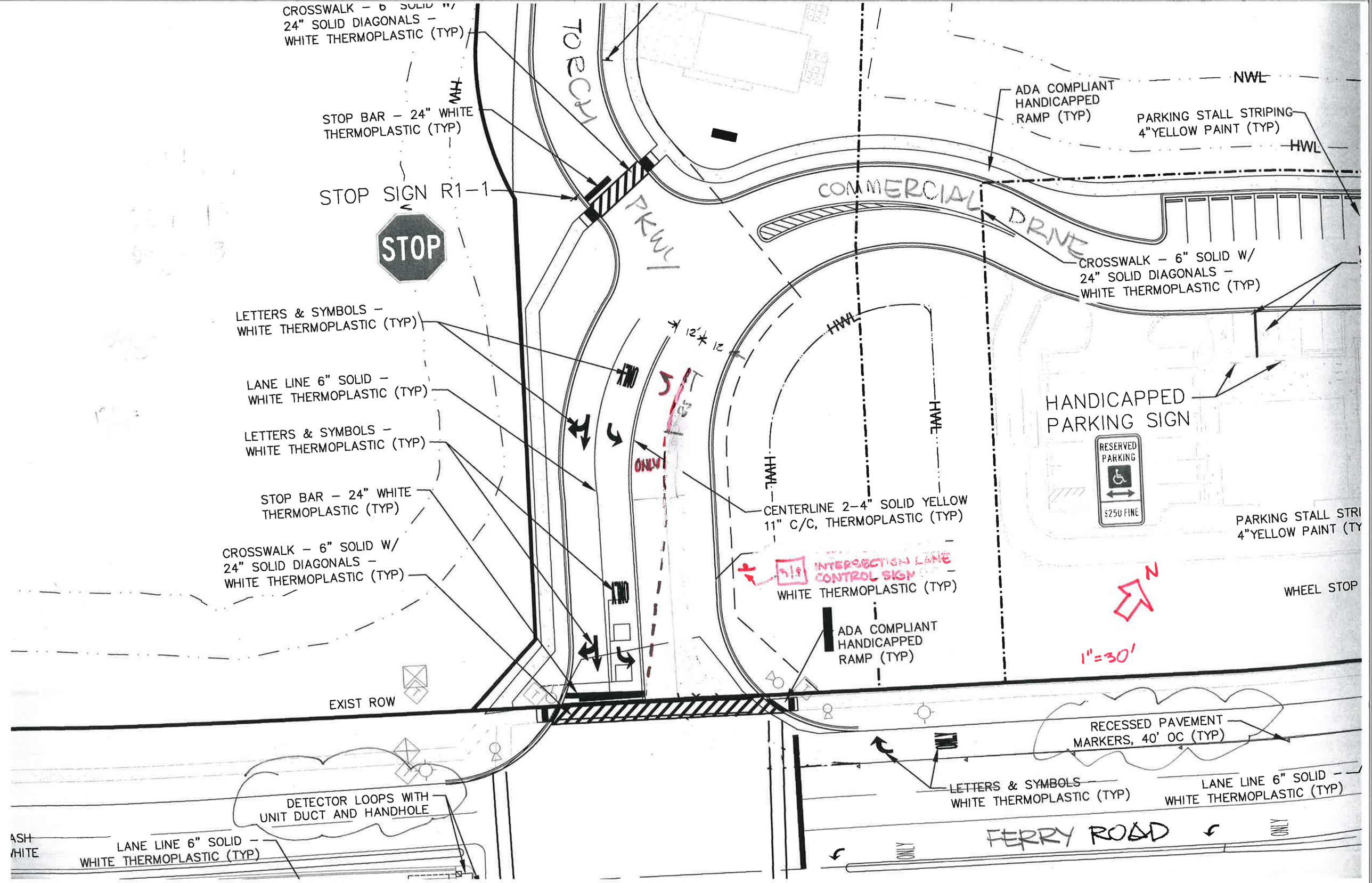
1. Reminder that the EOPCC is for Public Improvements as defined in Subdivision Control Ordinance definitions on page 6 and 7. Revise the following items in the cost estimate:
    a. Rip rap at pond overflow spillways. **Not addressed.**

Fees and Security: Must be paid before the Final Plat is to be recorded

1. Final Engineering Review and Inspection: 4.25% x EOPCC of Public Improvements
2. Stormwater Management Fee for Review and Issuance = $10,000 (PAID)
3. Stormwater Management Inspection Fee is $500 + 2.5% of the EOPCC (Stormwater , BMP, Erosion Control)
4. Development Security (A Letter of Credit, Bond, or Cash Deposit) is 110% of the total EOPCC of Public Improvements.
5. Sanitary Sewer Capacity Fee. Amount to be determined by City of Naperville.
6. Plat Recording Fees will be billed.

Attachments:
1. Torch Parkway pavement marking markup
2. Plat of Subdivision markup

- end -


CROSSWALK – 6" SOLID W/
24" SOLID DIAGONALS –
WHITE THERMOPLASTIC (TYP)
TECH
PKWY
STOP BAR – 24" WHITE
THERMOPLASTIC (TYP)
STOP SIGN R1-1
STOP
LETTERS & SYMBOLS –
WHITE THERMOPLASTIC (TYP)
LANE LINE 6" SOLID –
WHITE THERMOPLASTIC (TYP)
LETTERS & SYMBOLS –
WHITE THERMOPLASTIC (TYP)
STOP BAR – 24" WHITE
THERMOPLASTIC (TYP)
CROSSWALK – 6" SOLID W/
24" SOLID DIAGONALS –
WHITE THERMOPLASTIC (TYP)
EXIST ROW
DETECTOR LOOPS WITH
UNIT DUCT AND HANDHOLE
LANE LINE 6" SOLID –
WHITE THERMOPLASTIC (TYP)
ONLY
ONLY
CENTERLINE 2-4" SOLID YELLOW
11" C/C, THERMOPLASTIC (TYP)
INTERSECTION LANE
CONTROL SIGN
WHITE THERMOPLASTIC (TYP)
ADA COMPLIANT
HANDICAPPED
RAMP (TYP)
ADA COMPLIANT
HANDICAPPED
RAMP (TYP)
NWL
HWL
PARKING STALL STRIPING
4"YELLOW PAINT (TYP)
COMMERCIAL DRIVE
CROSSWALK – 6" SOLID W/
24" SOLID DIAGONALS –
WHITE THERMOPLASTIC (TYP)
HANDICAPPED
PARKING SIGN
RESERVED
PARKING
$250 FINE
PARKING STALL STRI
4"YELLOW PAINT (TY
WHEEL STOP
N
1"=30'
RECESSED PAVEMENT
MARKERS, 40' OC (TYP)
LETTERS & SYMBOLS
WHITE THERMOPLASTIC (TYP)
LANE LINE 6" SOLID –
WHITE THERMOPLASTIC (TYP)
FERRY ROAD
ONLY
ONLY

FINAL PLAT OF SUBDIVISION

CANTERA SUB-AREA "C", LOT 2 SUBDIVISION

OF PART OF THE NORTHEAST 1/4 OF SECTION 2, TOWNSHIP 38 NORTH, RANGE 9, EAST OF THE THIRD PRINCIPAL MERIDIAN, IN DUPAGE COUNTY, ILLINOIS.

0'10' 50' 100' 150' 200'

PERMANENT INDEX NUMBERS:
07 - 02 - 206 - 006 (AFFECTS LOT 2)
07 - 02 - 201 - 016 (AFFECTS OUTLOT "A")

BASIS OF BEARINGS:
ASSUMED THE NORTH LINE OF FERRY ROAD TO BE S46°22'27"W

CENTER

AREA SUMMARY:
COMMERICAL USE AREA
LOT 1 AREA = 191,688 SQ. FT. OR 4.401 ACRES

MULTIFAMILY - APARTMENTS
LOT 2 AREA = 771,258 SQ. FT. OR 17.706 ACRES

MULTIFAMILY - TOWNHOMES
OUTLOT "A" AREA = 172,254 SQ. FT. OR 3.954 ACRES
AREA IN TORCH PARKWAY R.O.W. = 132,897 SQ. FT. OR 3.051 ACRES
LOT 3 AREA = 146,718 SQ. FT. OR 3.368 ACRES

TOTAL SUBDIVISION AREA = 1,414,815 SQ. FT. OR 32.480 ACRES

"FOR APPROVAL OF THIS PLAT SEE ORDINANCE
_____

Notes:
1. **The maintenance and use of the property and improvements constructed as part of this subdivision are controlled by the "Master Declaration of Covenants, Restrictions and Easements for the Riverview West Subdivision" which will be recorded concurrently with this Final Plat of Subdivision.**
2.The maintenance and use of Outlot A are controlled under the "Easement, Improvement and Maintenance Agreement" recorded on November 20, 2018 as R2018-108094.
3. Subject property shown hereon is located within Warrenville Zone classification S-d "Special Development District".

WINFIELD TOWNSHIP

NAPERVILLE TOWNSHIP

CANTERA VILLAGE CONDO
PER DOCUMENT R99-028856

SOUTH LINE OF SECTION 35 - 39 - 9

NORTH LINE OF SECTION 2 - 38 - 9

N88°35'19"E 23.83'

ARC=217.83' RAD.=472.77' CH.=215.91' N60°33'16"E

ARC=126.48' RAD.=536.99' CH.=126.19' N80°33'39"E

ARC=245.48' RAD.=532.77' CH.=243.31' N60°33'16"E

ARC=109.89' RAD.=300.00' CH.=109.27' N84°14'51"E

S00°28'26"W 69.77'

80' R.O.W. ~~HERETOFORE DEDICATED AS FOR PUBLIC STREET PURPOSES~~
TORCH PARKWAY
RECORDED FEBRUARY 7, 1996
PER DOCUMENT R96-020336

22.32' S85°15'33"E
10.21' S00°28'26"W
68.22'

20' PUBLIC UTILITY EASEMENT PER DOCUMENT R96-020336

ARC=16.19' RAD.=453.00' CH.=16.19' S89°09'25"E

S84°15'32"W 22.44'
S88°07'05" W 103.54'

OUTLOT "A"

N89°51'35"E 119.66'

N23°09'01"E 95.65'

77.71' N47°21'46"E

60' R.O.W HEREBY DEDICATED TO THE CITY OF WARRENVILLE FOR PUBLIC ROADWAY AND UTILITY PURPOSES

N05°26'25"E 77.99'

N13°09'26"E 64.59'

N30°42'55"E 41.60'

N64°58'59"E 62.12'

S30°42'55"W 110.75' ARC=104.55' RAD.=360.00' CH.=104.18' S39°02'05"W

ARC=87.12' RAD.=300.00' CH.=86.82' N39°02'05"E

S49°04'44"W 116.75'

S56°43'47"W 26.74'

97.99' S65°47'16"W

63.62' S42°38'49"W

STORMWATER MANAGEMENT EASEMENT HEREBY GRANTED

Remove the text and outline of old SWM easement

142.21'

210.43' S04°47'16"W

S85°12'44"E 280.85'

128.27' S00°00'05"W

Remove the text and outline of old SWM easement

STORMWATER MANAGEMENT EASEMENT HEREBY GRANTED

STORMWATER MANAGEMENT EASEMENT PER DOCUMENT R2010-007747

S11°13'04"E 271.32'

LOT 1

PLAT OF RESUBDIVISION OF CANTERA SUB-AREA "C" LOTS C1 AMD C2
RECORDED JANUARY 19, 2010 AS DOCUMENT R2010-007747

S27°46'11"E 9.28'

S27°46'11"E 187.46'

194.07' S46°35'25"W

46.14' S72°11'35"W

WEST BRANCH OF DUPAGE RIVER

N27°10'52"E 326.54'

S30°42'55"W 271.24'

423.58' N30°42'55"E

S30°42'55"W 386.67'

LOT 3

TORCH PARKWAY

~~60' R.O.W. HEREBY DEDICATED AS FOR PUBLIC STREET PURPOSES~~

N30°42'14"E

S30°26'52"W 29.38'

N15°09'01"E 148.07'

60.00'

S24°23'15"W 26.91'

77.99' S28°45'13"W

99.99' S18°54'54"W

S13°24'33"W 26.55'

99.99' S7°54'11"W

N05°09'01"E 158.64'

ARC=903.60' RAD.=795.12' CH.=855.76' N01°51'00"W

ARC=835.25' RAD.=735.12' CH.=791.04' N01°50'37"W

S2°24'33"W 26.20'

S04°02'18"E 121.99'

S10°28'33"E 25.90'

S18°54'54"E 121.99'

S23°20'49"E 25.86'

S29°55'05"E 84.38'

LOT 2

CROSS ACCESS EASEMENT HEREBY GRANTED

N00°20'59"W 229.78'

N10°30'35"E 74.87'

59.40' S12°45'22"E

ARC=164.97' RAD.=484.76' CH.=164.18' N01°00'07"W

ARC=0.33' RAD.=34.46' CH.=0.33' S34°35'45"E

ARC=47.30' RAD.=808.60' CH.=47.30' S36°27'15"E

ARC=59.36' RAD.=108.26' CH.=58.62' S55°09'58"E

50.42' S09°10'36"W

N09°36'58"E 61.96'

OUTLOT "A"

N01°34'09"E 131.14'

AMOCO BUSINESS CENTER
FINAL PLAT OF SUBDIVISION
CANTERA SUBAREA "C"
RECORDED FEBRUARY 7, 1996
PER DOCUMENT R96-020336

STORMWATER MANAGEMENT EASEMENT

N13°11'18"E 194.73'

N11°36'53"E 82.27'

ARC=300.27' RAD.=1085.92' CH.=2299.31' S53°40'51"W

Show cross access easement

Remove the text and outline of old SWM easement

STORMWATER MANAGEMENT EASEMENT HEREBY GRANTED

850.94' S46°35'25"W

S46°22'27"W 852.50'

10.00' 176.07' 70.00'

ROAD

10' SIDEWALK EASEMENT
RECORDED JANUARY 19, 2010
PER DOCUMENT R2010-007747

WHEATON-WARRENVILLE COMMUNITY UNIT SCHOOL DISTRICT 200

APPROXIMATE LOCATION OF SCHOOL DISTRICT BOUNDARY LINE

NAPERVILLE COMMUNITY UNIT SCHOOL DISTRICT 203

ARC=34.47' RAD.=48.48' CH.=33.75' N60°47'07"W

S43°24'35"E 184.56'

S46°22'27"W 1288.98'

FERRY

ARC=43.25' N38°24'58"W RAD.=54.66' CH.=43.24' S38°55'18"E 135.18'

76.78' N80°29'14"W

ARC=66.19' RAD.=808.60' CH.=66.17' N43°33'29"W

S43°35'26"E 164.11'

46.96

N43°13'38"W 162.24'

N43°37'24"W 60.10'

129.62'

22.01'

42.42' N88°37'34"W

N01°23'54"E 35.37'

60.00' 60.00'

R.O.W. ~~VARIED HERETOFORE DEDICATED AS FOR PUBLIC STREET PURPOSES~~
RECORDED MARCH 21, 1995
PER DOCUMENT R95-032985

S46°22'27"W 237.89'

Remove this line and text

ARC=300.27' RAD.=1085.92' CH.=2299.31' S53°40'51"W

This sheet should just have the Lot subdivision and cross access easements. Show the utility easements (existing and proposed) on the next page.

NOTE: MONUMENTS HAVE BEEN PLACED AT ALL CORNERS, AT EACH END OF ALL CURVES, AT THE POINT WHERE A CURVE CHANGES ITS RADIUS, AT ALL ANGLE POINTS IN ANY LINE AND AT ALL ANGLE POINTS ALONG A MEANDER LINE.

PROJECT No.:	2017-24719-1
ISSUE DATE:	12/4/17
SCALE:	1"=80'
SHEET NUMBER	1 OF 4

PETITIONER:
CANTERA DEVELOPMENT HOLDINGS LLC
TWO NORTHFIELD PLAZA,
SUITE # 320
NORTHFIELD, IL 60093

PLAT PREPARED BY:
UNITED SURVEY SERVICE, LLC
CONSTRUCTION AND LAND SURVEYORS
7710 CENTRAL AVENUE, RIVER FOREST, IL 60305
TEL.: (847) 299 - 1010 FAX : (847) 299 - 5887
E-MAIL: USURVEY@USANDCS.COM

NO.	REVISIONS	DATE
1	REVISED PER COMMENTS	12/20/17
2	REVISED LOTS AND AREAS	01/05/18
3	REVISED PER COMMENTS	01/08/18
4	ADDED CERTIFICATES & NOTE	05/21/18
5	REVISED	06/22/18
6	REVISED PER COMMENTS	1/22/19
7	REVISED	02/12/19
8	REVISED PER COMMENTS	04/17/19

FINAL PLAT OF SUBDIVISION
CANTERA SUB-AREA "C", LOT 2 SUBDIVISION

OF PART OF THE NORTHEAST 1/4 OF SECTION 2, TOWNSHIP 38 NORTH, RANGE 9, EAST OF THE THIRD PRINCIPAL MERIDIAN, IN DUPAGE COUNTY, ILLINOIS

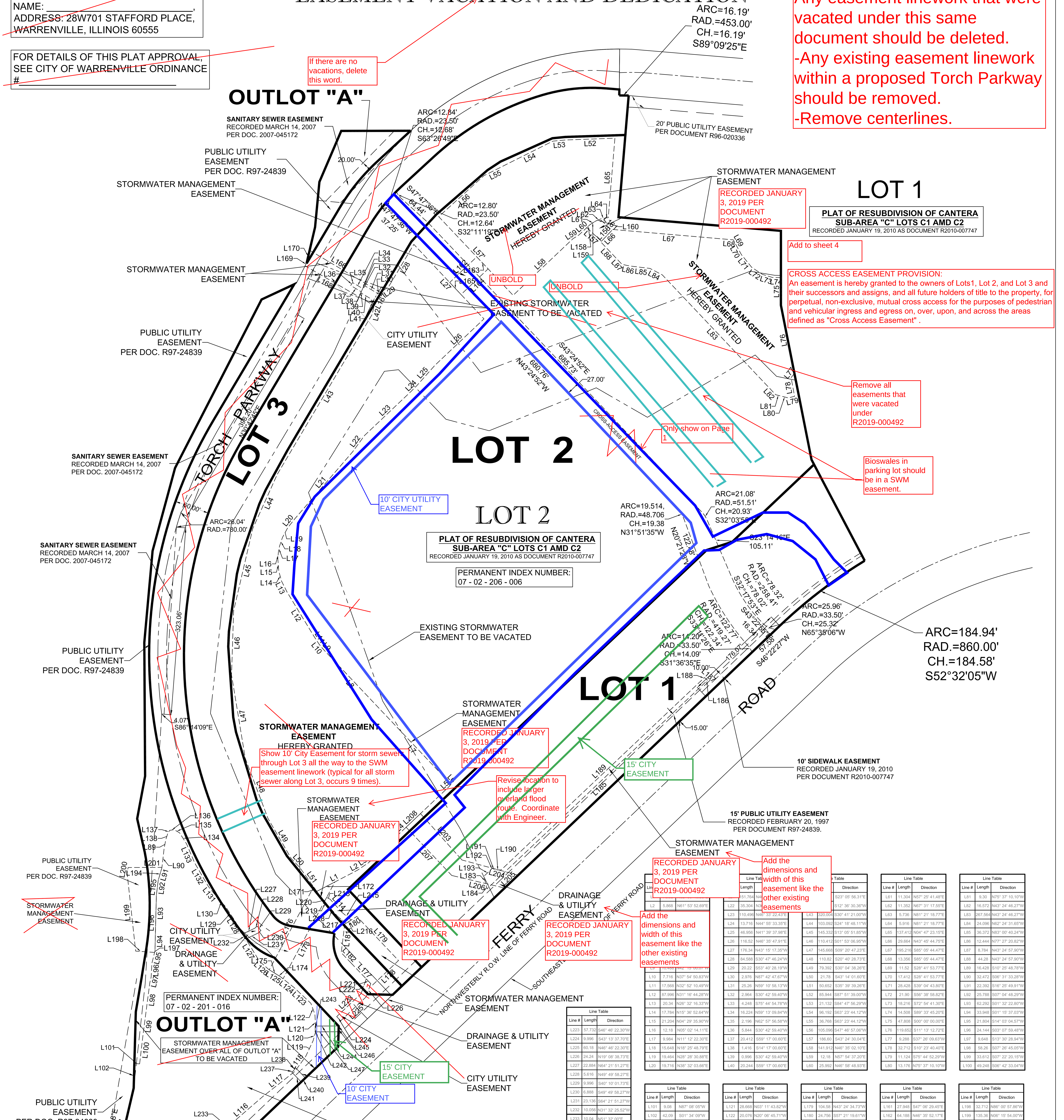
EASEMENT VACATION AND DEDICATION

0'10' 50' 100' 150' 200'

THIS PLAT HAS BEEN SUBMITTED FOR RECORDING BY AND RETURN TO:
NAME: ______________________________,
ADDRESS: 28W701 STAFFORD PLACE,
WARRENVILLE, ILLINOIS 60555

FOR DETAILS OF THIS PLAT APPROVAL, SEE CITY OF WARRENVILLE ORDINANCE
#_______________________________

-All easements dedicated under R2019-000492 should be shown as "Recorded January 3, 2019 per document R2019-000492". Any easement linework that were vacated under this same document should be deleted.
-Any existing easement linework within a proposed Torch Parkway should be removed.
-Remove centerlines.



LEGEND	
(solid heavy line)	LOT BOUNDARY LINE
(dashed line)	EASEMENT LINE
(dash-dot line)	CENTER LINE
(dashed line)	EASEMENT TO BE VACATED

LEGEND	
LOT #	EXISTING LOT NUMBER
LOT #	PROPOSED LOT NUMBER

BASIS OF BEARINGS:
ASSUMED THE NORTH LINE OF FERRY ROAD TO BE S46°22'27"W

Line Table

Line #	Length	Direction
L223	57.732	S46° 46' 22.30"W
L224	9.996	S43° 13' 37.70"E
L225	60.18	N46° 46' 22.30"E
L226	24.24	N19° 08' 38.73"E
L227	22.884	N64° 21' 51.27"E
L228	5.616	N49° 49' 58.27"E
L229	9.996	S40° 10' 01.73"E
L230	6.888	S49° 49' 58.27"W
L231	23.136	S64° 21' 51.27"W
L232	10.056	N31° 32' 25.52"W
L233	10.04	N51° 32' 00"E
L234	31.61	S43° 38' 25"E
L235	10.00	S46° 22' 10"W
L236	32.52	N43° 38' 25"W
L237	3.26	N52° 09' 04"E
L238	6.85	N36° 46' 47"E
L239	24.30	S43° 38' 20"E
L240	10.00	S46° 22' 10"W
L241	23.49	N43° 38' 20"W
L242	1.76	S12° 17' 18"W
L243	8.28	N01° 09' 30"E
L244	40.19	N89° 49' 41"E
L245	0.56	S43° 47' 24"E
L246	9.60	S01° 29' 07"W
L247	40.53	S89° 49' 41"W

RECORDED JANUARY 3, 2019 PER DOCUMENT R2019-000492

Add the dimensions and width of this easement like the other existing easements

Line Table

Line #	Length	Direction
L1	[illegible]	[illegible]
L2	5.868	N61° 53' 52.69"E
[illegible]	[illegible]	[illegible]
L9	10.488	[illegible]
L10	7.716	N37° 54' 50.83"W
L11	17.568	N32° 52' 10.49"W
L12	87.996	N31° 16' 44.28"W
L13	20.34	N26° 32' 16.33"W
L14	17.784	N15° 36' 52.64"W
L15	21.204	N04° 29' 35.90"W
L16	12.18	N05° 02' 14.11"E
L17	9.984	N11° 12' 22.30"E
L18	15.648	N18° 25' 48.79"E
L19	19.464	N28° 28' 30.88"E
L20	19.716	N38° 32' 03.66"E

Line Table

Line #	Length	Direction
[illegible]	151.764	[illegible]
L22	35.304	[illegible]
L23	110.496	N46° 33' 22.43"E
L24	13.716	N44° 55' 33.35"E
L25	46.956	N41° 39' 37.98"E
L26	116.52	N46° 35' 47.91"E
L27	176.34	N43° 15' 17.35"W
L28	84.588	S30° 47' 46.24"W
L29	20.22	S53° 40' 28.19"W
L30	2.976	N87° 42' 47.67"W
L31	25.26	N59° 10' 58.13"W
L32	2.964	S30° 42' 59.40"W
L33	4.248	S75° 44' 54.78"W
L34	16.224	N59° 13' 09.84"W
L35	2.196	N62° 57' 56.58"W
L36	5.844	S30° 42' 59.40"W
L37	20.412	S59° 17' 00.60"E
L38	1.416	S14° 17' 00.60"E
L39	0.996	S30° 42' 59.40"W
L40	20.244	S59° 17' 00.60"E

Line Table

Line #	Length	Direction
[illegible]	[illegible]	S23° 05' 56.31"E
[illegible]	[illegible]	S12° 36' 30.36"W
L43	320.004	S30° 41' 21.00"W
L44	103.092	S24° 18' 48.11"W
L45	145.332	S13° 05' 51.85"W
L46	110.412	S01° 53' 06.95"W
L47	145.668	S09° 20' 47.23"E
L48	110.82	S20° 40' 28.73"E
L49	79.392	S30° 04' 38.26"E
L50	21.78	S43° 14' 01.60"E
L51	50.652	S35° 39' 39.26"E
L52	85.944	S87° 51' 39.00"W
L53	21.132	S84° 47' 56.29"W
L54	96.192	S63° 23' 44.12"W
L55	36.768	S63° 23' 44.12"W
L56	105.096	S47° 46' 57.06"W
L57	186.60	S43° 24' 30.04"E
L58	141.912	N46° 35' 02.10"E
L59	12.18	N57° 54' 37.20"E
L60	25.992	N46° 58' 48.93"E

Line Table

Line #	Length	Direction
L61	11.304	N57° 25' 41.48"E
L62	11.352	N67° 31' 17.55"E
L63	5.736	N81° 21' 18.77"E
L64	5.916	N81° 21' 18.77"E
L65	137.412	N04° 47' 23.15"E
L66	29.664	N43° 45' 44.75"E
L67	195.216	S85° 05' 44.47"E
L68	13.356	S85° 05' 44.47"E
L69	11.52	S28° 41' 53.77"E
L70	17.412	S28° 41' 53.77"E
L71	28.428	S39° 04' 43.80"E
L72	21.90	S56° 38' 58.82"E
L73	18.216	S72° 54' 41.30"E
L74	14.508	S89° 33' 45.20"E
L75	47.808	S00° 00' 00.00"E
L76	119.652	S11° 13' 12.72"E
L77	9.288	S37° 26' 09.63"W
L78	32.712	S10° 23' 40.40"E
L79	11.124	S75° 44' 52.29"W
L80	13.176	N75° 37' 10.10"W

Line Table

Line #	Length	Direction
L81	9.30	N75° 37' 10.10"W
L82	16.572	N43° 24' 46.27"W
L83	267.564	N43° 24' 46.27"W
L84	24.096	N62° 24' 31.65"W
L85	36.372	N83° 00' 40.24"W
L86	12.444	N77° 27' 20.82"W
L87	8.784	N43° 24' 57.90"W
L88	44.28	N43° 24' 57.90"W
L89	16.428	S10° 25' 48.78"W
L90	32.472	S06° 31' 33.28"W
L91	22.392	S16° 25' 49.91"W
L92	25.788	S07° 04' 48.29"W
L93	62.292	S01° 32' 22.80"W
L94	33.948	S01° 15' 37.03"W
L95	21.804	S14° 03' 04.57"W
L96	24.144	S03° 07' 59.48"W
L97	9.648	S13° 30' 28.94"W
L98	58.26	S07° 26' 45.05"W
L99	33.612	S07° 22' 20.15"W
L100	49.248	S06° 42' 33.04"W

Line Table

Line #	Length	Direction
L101	9.08	N87° 08' 05"W
L102	42.09	S01° 34' 09"W
L103	8.04	S11° 36' 53"W
L104	20.98	S90° 00' 00"E
L105	9.80	S32° 10' 06"E
L106	21.96	S51° 47' 15"E
L107	5.02	S53° 25' 07.65"E
L108	9.804	S88° 28' 25.56"E
L109	9.048	N79° 20' 23.90"E
L110	24.396	N61° 04' 58.56"E
L111	14.772	N66° 03' 27.09"E
L112	14.112	N61° 51' 36.03"E
L113	20.88	N56° 40' 08.08"E
L114	19.908	N55° 07' 22.68"E
L115	72.024	N50° 15' 05.10"E
L116	87.24	N49° 08' 27.79"E
L117	70.284	N51° 55' 27.33"E
L118	31.668	N35° 45' 00.01"E
L119	29.856	N25° 19' 18.70"E
L120	17.664	N15° 25' 25.52"E

Line Table

Line #	Length	Direction
L121	28.668	N03° 11' 43.82"W
L122	20.076	N20° 06' 45.71"W
L123	39.972	N46° 48' 01.99"W
L124	30.624	N51° 37' 52.19"W
L125	22.776	N58° 22' 46.14"W
L126	21.348	N48° 33' 51.84"W
L127	56.844	N31° 32' 25.52"W
L128	25.86	N30° 43' 48.81"W
L129	27.636	N33° 23' 04.52"W
L130	23.196	N42° 02' 06.08"W
L131	23.244	N38° 41' 10.49"W
L132	46.608	N30° 11' 21.05"W
L133	35.892	N23° 02' 48.11"W
L134	22.452	N32° 24' 18.95"W
L135	11.028	N59° 48' 43.50"W
L136	7.62	S80° 23' 20.80"W
L137	5.868	S32° 41' 26.57"W
L138	11.64	S17° 51' 58.00"W
L177	52.812	S43° 37' 24.49"E
L178	62.112	N46° 35' 25.27"E

Line Table

Line #	Length	Direction
L179	104.58	N43° 24' 34.73"W
L180	24.756	S57° 21' 19.61"W
L181	49.512	S06° 51' 57.56"W
L182	24.756	S43° 37' 24.49"E
L183	16.704	S13° 38' 08.59"E
L184	5.856	S12° 35' 24.22"E
L185	519.876	N46° 35' 16.68"E
L186	3.396	N41° 31' 32.93"E
L187	6.732	N48° 32' 36.77"W
L188	2.772	S46° 25' 32.83"W
L189	479.808	S46° 35' 16.68"W
L190	11.316	N88° 24' 43.32"W
L191	4.164	N45° 58' 26.31"W
L192	3.792	S49° 55' 49.19"W
L193	16.812	S47° 02' 41.76"W
L156	26.124	S43° 45' 44.75"W
L157	34.464	N47° 22' 48.31"W
L158	7.656	N46° 58' 48.93"E
L159	11.304	N57° 25' 41.48"E
L160	8.472	N67° 31' 17.55"E

Line Table

Line #	Length	Direction
L161	27.948	S47° 06' 29.45"E
L162	64.188	N46° 35' 52.17"E
L163	28.50	S43° 24' 30.04"E
L164	64.272	S46° 35' 52.17"W
L165	28.50	N43° 15' 17.35"W
L166	142.32	S59° 16' 59.75"E
L167	25.14	S28° 27' 08.14"W
L168	136.392	N60° 05' 18.35"W
L169	6.684	N26° 33' 54.00"E
L170	21.372	N13° 09' 26.06"E
L171	9.516	S35° 39' 39.26"E
L172	35.076	N62° 30' 49.88"E
L173	189.324	S28° 09' 11.53"W
L174	6.624	N51° 37' 52.19"W
L175	21.864	N58° 22' 46.14"W
L176	162.072	N28° 09' 11.53"E
L194	22.392	S16° 25' 49.91"W
L195	25.788	S07° 04' 48.29"W
L196	96.24	S01° 26' 28.02"W
L197	2.70	S14° 03' 04.57"W

Line Table

Line #	Length	Direction
L198	32.712	N86° 00' 57.86"W
L199	135.36	N06° 15' 54.00"W
L200	9.648	N10° 30' 35.00"E
L201	58.32	N89° 42' 15.55"E
L203	107.184	S41° 46' 59.18"E
L204	100.272	S74° 49' 51.31"E
L205	32.052	S46° 22' 35.51"W
L206	93.684	N76° 37' 37.60"W
L207	114.456	N43° 24' 34.73"W
L208	34.14	N46° 35' 25.27"E
L213	6.972	S61° 50' 48.47"E
L214	29.844	S41° 52' 30.24"E
L215	21.12	S50° 18' 47.18"E
L216	10.50	S57° 21' 19.61"W
L217	18.672	N50° 18' 47.18"W
L218	28.812	N41° 52' 30.24"W
L219	5.208	N61° 50' 48.47"W
L220	9.996	N28° 09' 11.53"E
L221	11.244	N43° 37' 24.49"W
L222	26.928	S19° 08' 38.73"W

PROJECT No.: 2017-24719-1	PETITIONER: CANTERA DEVELOPMENT HOLDINGS LLC TWO NORTHFIELD PLAZA, SUITE # 320 NORTHFIELD, IL 60093	PLAT PREPARED BY: UNITED SURVEY SERVICE, LLC CONSTRUCTION AND LAND SURVEYORS 7710 CENTRAL AVENUE, RIVER FOREST, IL 60305 TEL.: (847) 299 - 1010 FAX : (847) 299 - 5887 E-MAIL: USURVEY@USANDCS.COM
ISSUE DATE: 12/4/17		
SCALE: 1"=80'		
SHEET NUMBER 2 OF 4		

NO.	REVISIONS	DATE
1	REVISED PER COMMENTS	12/20/17
2	REVISED LOTS AND AREAS	01/05/18
3	REVISED PER COMMENTS	01/08/18
4	ADDED CERTIFICATES & NOTE	05/21/18
5	REVISED	06/22/18
6	REVISED PER COMMENTS	1/22/19
7	REVISED	02/12/19
8	REVISED PER COMMENTS	04/17/19

Riverview West Commercial Area Design Guidelines

Prepared by City of Warrenville Community Development Department

April 24, 2019

Purpose and Use

The criteria contained in this document is intended as a guideline for the design of commercial, retail, and restaurant buildings and their supporting parking, pedestrian, service area, and signage improvements in and adjacent to the Riverview West Commercial Area located along the north side of Ferry Road between the West Branch of the DuPage River on the west and Winfield Road on the east.

These design guidelines have been approved by the City of Warrenville and will be applied by the City in its preliminary/final plan reviews of individual commercial, retail and restaurant buildings in the Riverview West Commercial Area. Failure to comply with these guidelines shall be a basis for the City to withhold preliminary or final plan approval. It is recognized that certain commercial users, such as restaurants, may have a specific architectural identity that is part of their "theme" or "brand" which may not be fully consistent with these guidelines. Users with prototype designs are encouraged to adapt their prototype to these guidelines as much as possible. However, the City will consider exceptions to these guidelines on a case by case basis giving due consideration to other alternative approaches which still represent the level of quality and achieve the following overall goals:

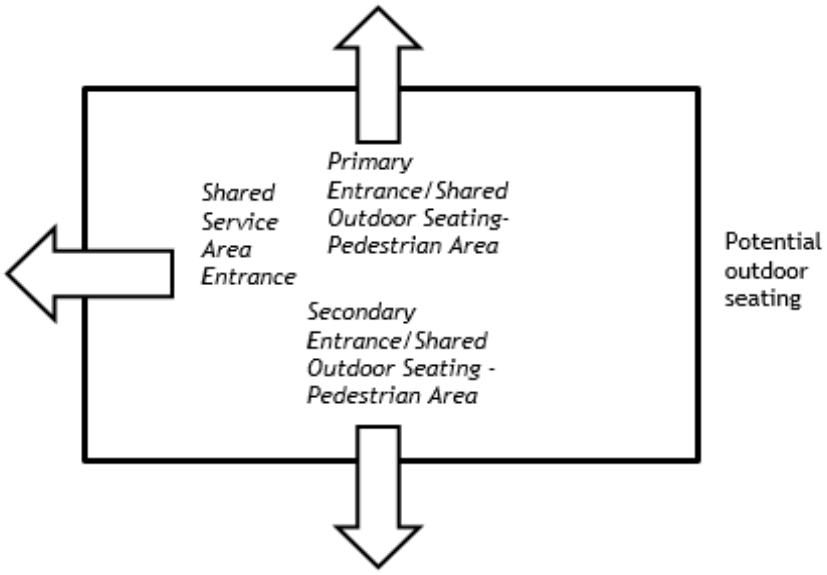
The overall goals of these guidelines include:

- Support the creation of a high quality, interconnected commercial development that would be an attractive amenity for both the residential components of the Riverview West Project and the overall Cantera Development.
- Provide inviting, safe, and efficient pedestrian and bicycle access into and throughout the Riverview West Commercial Area.
- Present an aesthetically attractive and inviting pedestrian oriented streetscape along the Ferry Road frontage of the Commercial Area.
- Accommodate the construction of buildings with individual identity while supporting architectural design that coordinates with and is in harmony with the other commercial buildings in the Cantera Development and the in the Riverview West apartment building.
- Minimize the negative aesthetic and character impacts commonly associated with drive-thru facilities and generic prototypical designs of larger national retail goods and service and restaurant users.

Building Placement

- **Patron Building and Site Access Improvements:** Buildings should be oriented in a manner that creates comfortable, safe, inviting, and when associated with outdoor seating improvements, useable exterior space for people, free of parking and service/delivery access. This can be accomplished by providing wider sidewalks, outdoor seating areas, patio areas, seat walls, landscape planting beds, and/or raised planters in front of or adjacent to the commercial buildings.
- **Building Service Access Improvements:** Careful consideration and thought should be given to the design and location of building service access improvements and they should not be placed near main entrances and pedestrian friendly environments such as seating areas.
- **Building Location/Setbacks:** While building setbacks will remain fluid and will depend on the building design, bulk characteristics, parking layout, and pedestrian nature of the end users, it is an underlying goal of the commercial area to locate buildings as close to the minimum building setback along Ferry Road as reasonably practical to create an attractive commercial "street wall" aesthetic and reinforce the pedestrian orientation of the Ferry Road streetscape.

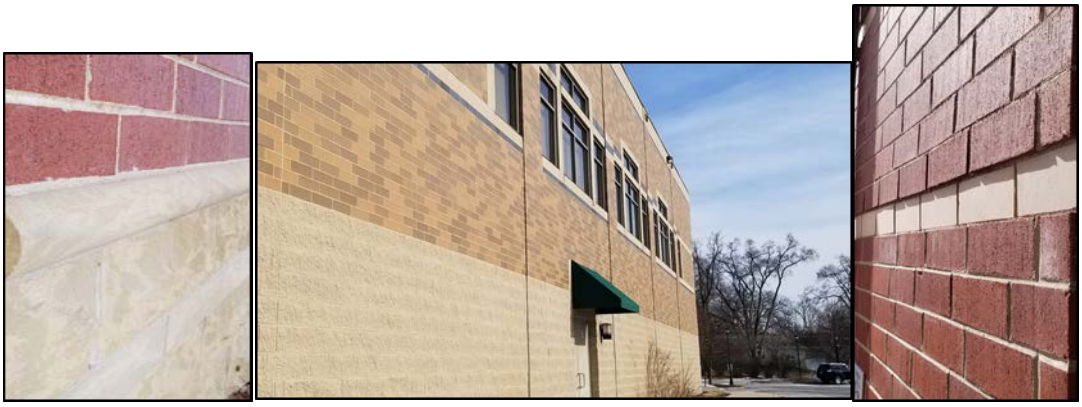
Riverview West Apartment Project



Ferry Road Corridor

Building Character and Design Details

- **Building Height:** Commercial retail and restaurant buildings shall not be less than 16ft in height and shall possesses an architectural design and character that is either consistent with or complementary to the design of the Riverview West apartment building.
- **Four-Sided Building Design:** Buildings must be designed with similar materials and design details on all sides. The "service" side of the building must be of a quality level compatible with the primary elevation.
- **Ferry Road Façade Design:** The Ferry Road frontage of retail, commercial, and restaurant buildings shall include sufficient window/door glazing to produce an attractive and inviting appearance from the Ferry Road corridor.
- **Façade Articulation:** In general, building facades in excess of 100 feet shall incorporate a major architectural feature to create architectural interest in the building. Flat walls and flat roof/eave lines shall be prohibited. Buildings shall include some relief from plain facades by incorporating architectural elements such as punched windows, storefront glazing, alcoves, masonry details and projections. Masonry details shall create three-dimensional relief from the plane of the wall. Examples of such details may include, but is not limited to engaged piers or columns, arches, rowlock, soldier courses, and cast stone sills and headers.



- **Building Entrances:** Customer entrances shall be identified by prominent architectural elements and/or features. Examples include entrance towers, special roof features, and metal or fabric canopies and awnings.
- **Roof Line Articulation:** In general, building facades and roof lines in excess of 100 feet shall incorporate a major architectural feature to create architectural interest in the building. Building roof/eave lines shall include some kind of roof feature such as broken or interrupted coping and eave lines, towers, dormer windows, significant variations in parapet heights, et cetera.

- **Building Materials:** Building materials should complement the architectural design of the Riverview West apartment building. Primary exterior building materials shall include brick and stone. Other materials, such as but not limited to cementious paneling/siding, may be used as accent or secondary materials on a limited basis but the amount of such materials shall be subject to the City's approval during the final PUD process. Residential-style shingles are not permitted.
- **Exterior Building Color Palette:** Exterior building material colors shall coordinate with those reflected in the Riverview West apartment building.
- **Building Canopies and Awnings:** Unless otherwise approved by the City during the final PUD process, canopies and awnings on a multi-tenant building shall be of a consistent design and color. Metal roofed awnings with exposed metal structural supports are encouraged.
- **Roof Top Equipment:** All roof top equipment must be fully screened by parapet walls at least as high as the tallest piece of roof top equipment (including HVAC units, antennas, satellite dishes, and roof exhausts) and/or independent roof screens that coordinate with the design with the architecture of the building.

Property Character/Site Improvements

- **Hardscape Treatment:** Trees/landscape planters and/or special pavement and/or other special treatment shall be required to breakup large expanses of concrete between the façade of a multi-tenant building and adjacent parking areas.
- **Pedestrian Interconnections:** Inviting pedestrian interconnections between the existing pedestrian path system along the north side of Ferry Road and entrance/exit doors on the south façade of restaurant uses and multi-tenant buildings is required.
- **Outdoor Seating:** Outdoor seating is strongly encouraged for restaurants and other similar uses. Decorative concrete or brick pavers shall be incorporated into the design of these areas. No outdoor sound systems shall be permitted unless approved by the City at Final PUD or a subsequent PUD minor amendment.
- **Parking Lot Lighting:** A consistent, architectural grade, LED parking lot light fixture shall be utilized throughout the Commercial Area. The color of parking lot lighting shall be equal to or less than 4,000 kelvin and shall be consistent throughout the Commercial Area.

- **Refuse and Recycle Areas:** Sufficient accommodations for effective collection and storage of recycled materials should be provided. Refuse and recycle collection areas must be fully screened by a solid wall composed of the same materials as the building. These walls must be a minimum of six feet in height. A solid gate shall be provided to secure the entrance of the enclosure and fully screen the interior.
- **Bike Racks:** High-quality bike racks for each separate commercial building shall be provided in convenient and easily accessible locations.
- **Drive-Thru Improvements:** Automobile drive-thru improvements should be designed and located to minimize their impact on the aesthetic character of the Ferry Road Corridor. Drive-thru pavement improvements shall not extend into the required front yard building setback along Ferry Road. Special landscape treatment should be provided to ensure effective visual buffering of drive-thru lane improvements from Ferry Road, Torch Parkway, and the main Riverview West private access driveway onto Ferry Road.
- Parking Lot Buffering: Special attention shall be given to the design of parking lot perimeter landscaping to ensure effective visual buffering is provided along Ferry Road, Torch Parkway, and the main Riverview West private access driveway onto Ferry Road.
- **Inappropriate Land Uses:** Car washes, gas stations, and drive-thru bank facilities shall be prohibited in the commercial area.

Signage Improvements

- **Lot/Development Entry Monument Signage Requirements:** The design (materials, type of illumination, and aesthetic character) of all monument sign structures in the Commercial Area shall be (i) substantially consistent and (ii) coordinated with the design of the monumentation signage for the residential components of the project. Sign structures shall have a stone and/or brick clad base constructed with materials that coordinate with the materials used in the Riverview West apartment building. The background material on which actual signs will be affixed shall be constructed of stone, masonry, brick, or high quality metal panels. Split face block and EIFIS type materials shall not be permitted materials on the monument signs. Individual business identification signs shall consist of individual letters and logos, letters cut into metal panels, or a combination of the two. Unless specifically approved during the final PUD process or a follow up PUD amendment process, lot/development entry monument signage shall comply with the provisions of Section VI.D.3 of the

Cantera Development Control Regulations. Box signs and exposed neon shall not be permitted.

- **General Wall Signage Requirements:** All signage shall be of the highest quality construction and shall be composed of individually illuminated letters and logos attached to a prefinished raceway system that matches the field material on which the sign will be mounted. Unless specifically approved during the final PUD process or a follow up PUD amendment process, wall signage shall comply with the provisions of Section VI.D.4.c) of the Cantera Development Control Regulations. Box signs and exposed neon shall not be permitted. Logo signage shall follow the outline of the tenant/corporate logo.