

# Memorandum

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**Date:** November 1, 2019  
**To:** Philip Kuchler, City of Warrenville  
**From:** Tim Gustafson, Epstein  
**RE:** **Warrenville Complete Streets Policy  
Cost Estimate Scenario Planning**  
**CC:** Ron Mentzer, Kristine Hocking

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## Introduction and Purpose

The purpose of this memorandum is to provide cost estimates for bicycle and pedestrian transportation improvements in the City of Warrenville. A key outcome of this exercise is to consider the financial implications of investments in walking and bicycling within the context of City resources, and use this information to more strategically plan, design, and implement Complete Streets.

## Context

In 2010, the City adopted the Bikeway Implementation Plan – Phase II which identified bikeway improvement projects and cost estimates for eight project areas, with one to nine improvements recommended in each project area. This included installation of on-street bike lanes, shared lanes, sidepaths, bridge improvements, directional signs, and intersection improvements.

As part of the Complete Streets Policy development process, the City requested information and an order of magnitude estimate of costs to compare potential transportation infrastructure scenarios. This cost exercise takes into consideration recommended sidewalk and sidepath improvements that have been completed since the 2010 plan.

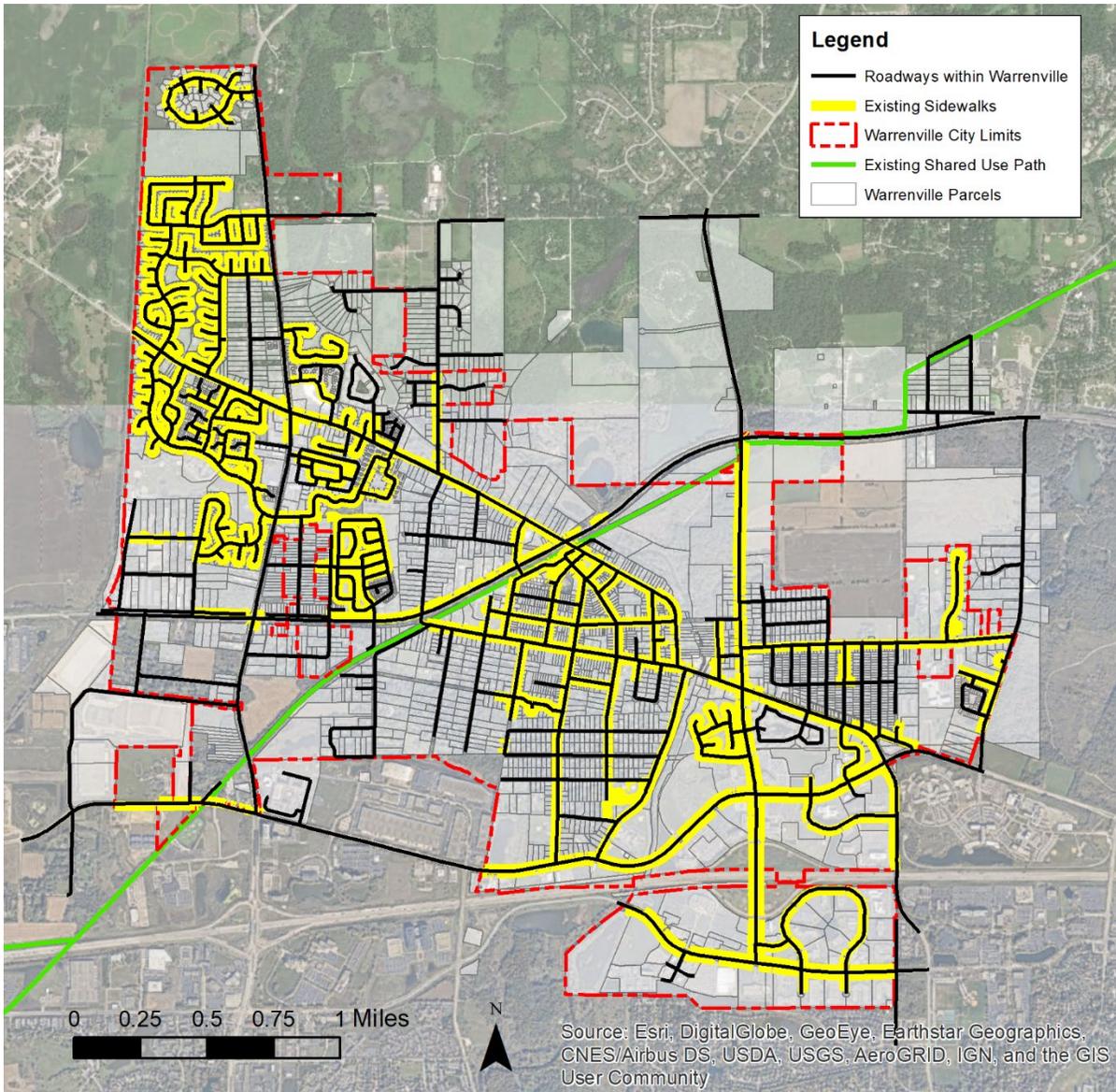
## Gap Analysis

Utilizing GIS data obtained from the City, Epstein reviewed roadway centerline data, sidewalk data, and aerial imagery to estimate total sidewalk and sidepath coverage of the transportation network. Total roadway, sidewalk, and sidepath lengths were calculated, and these values were used to estimate total network coverage. A roadway was considered to have complete coverage if there was a sidepath on at least one side of the road, or if sidewalks were present on both sides of the road. Roadways within Warrenville's city limits were included in this total.

An additional 3.75 miles of roadway outside the corporate limits were included, as these provide the only means of access to unincorporated parcels with a Warrenville address. GIS data and aerial imagery show that there are approximately 74.70 centerline miles of roadways within the City's corporate limit, which includes 7 miles of roadway under State jurisdiction and 16 miles of roadway

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under DuPage County jurisdiction. The Reagan Memorial Tollway (I-88) was not included in roadway totals. **Map 1** shows roadways, sidewalks, and Warrenville City limits.



Map 1: Warrenville roadways and sidewalks.

A review of existing sidewalk coverage in Warrenville shows approximately 58.00 miles of sidewalk, which results in sidewalk coverage of about 38.82% of the roadway network. When including sidepaths, total coverage is 44.58%. Data are summarized in **Table 1**.

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TABLE 1: TRANSPORTATION INFRASTRUCTURE SUMMARY			
Current Roadway Length:	74.70 miles		
Current Sidewalk Length:	58.00 miles	Current Sidewalk Coverage <sup>1</sup> :	38.82%
Current Sidepath Length:	4.30 miles	Current Sidewalk + Sidepath Coverage <sup>2</sup> :	44.58%
NOTES			
1. Sidewalk coverage assumes 58 miles / (74.70 centerline miles x 2 sides of the street).			
2. Sidewalk coverage plus sidepath coverage is approximately 45% coverage. A sidepath on one side of the street is considered 100% coverage (4.30 / 74.70). Calculations include sidepaths along roadways (e.g. River, portions of Illinois Prairie Path along Butterfield Road).			

## Unit Costs

Planning level cost estimates were developed based on the following unit costs:

- **Sidewalks** consist of a 5-foot wide surface constructed of 5-inch Portland concrete cement on a 4-inch base. Installed costs include excavation and installation, seeding, and topsoil for parkway restoration. A 35% cost is applied to cover landscaping, maintenance of traffic and utility adjustments, and a 30% contingency is applied to the subtotal. 20% is applied to cover the cost of engineering design and construction. Installed costs are \$129.60 per linear foot or \$684,000 per mile. The derived cost table is shown in Table 2 below.

TABLE 2: SIDEWALK COST TABLE				
ITEM	PRICE	UNIT	COST	SUBTOTAL
5' WIDE SIDEWALK	\$ 9.00	SQ. FT.	\$ 45.00	
4" BASE	\$ 12.00	SQ. YD.	\$ 7.00	
7' WIDE X .75' DEEP EXCAVATION	\$ 45.00	CU. YD.	\$ 10.00	
2' WIDE SEEDING AND TOPSOIL	\$ 2.00	LIN. FT.	\$ 2.00	
			<b>UNIT SUB-TOTAL</b>	\$ 64.00
35% FOR LANDSCAPING, DRAINAGE, MOT AND UTILITY ADJUSTMENTS			\$ 22.40	
			<b>SUB-TOTAL</b>	\$ 86.40
30% CONTINGENCY			\$ 25.90	
DESIGN & CONSTR. ENG. (20% OF TOTAL COST)			\$ 17.30	
			<b>LINEAR FOOT COST</b>	\$ 129.60
			<b>TOTAL PER MILE COST (ROUNDED TO NEAREST \$1,000)</b>	\$ 684,000.00

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- **Sideways** consist of a 10-foot wide surface constructed of 4-inch surface course of hot mix asphalt (HMA) pavement on a 12-inch base course. Installed costs include excavation and installation, seeding, and topsoil for parkway restoration. A 35% cost is applied to cover landscaping, maintenance of traffic and utility adjustments, and a 30% contingency is applied to the subtotal. 20% is applied to cover the cost of engineering design and construction. Installed costs are \$200.48 per linear foot or \$1,059,000 per mile. The derived cost table is shown below.

TABLES 3: SIDEWALK COST TABLE				
ITEM	PRICE	UNIT	COST	SUBTOTAL
4" HMA	\$ 150.00	TON	\$ 38.00	
12" BASE	\$ 24.00	SQ. YD.	\$ 32.00	
12' WIDE BY 1.33 DEEP EXCAVATION	\$ 45.00	CU. YD.	\$ 27.00	
2' WIDE SEEDING AND TOPSOIL	\$ 2.00	LIN. FT.	\$ 2.00	
			<b>UNIT SUB-TOTAL</b>	\$ 99.00
35% FOR LANDSCAPING, DRAINAGE, MOT AND UTILITY ADJUSTMENTS			\$ 34.70	
			<b>SUB-TOTAL</b>	\$ 133.70
30% CONTINGENCY			\$ 40.10	
DESIGN & CONSTR. ENG. (20% OF TOTAL COST)			\$ 26.70	
			<b>LINEAR FOOT COST</b>	\$ 200.50
			<b>TOTAL PER MILE COST (ROUNDED TO NEAREST \$1,000)</b>	\$ 1,059,000.00

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## Cost Estimate

Cost estimates were developed based on four infrastructure scenarios of the City’s sidewalk and bicycling network, and are shown in Table 4:

1. **Fill sidewalk gaps, one side:** Sidewalk gaps are filled such that all roadways within the corporate limits of Warrenville have sidewalks on at least one side of the road;
2. **Fill sidewalk gaps, both sides:** Sidewalk gaps are filled such that all roadways within the corporate limits of Warrenville have sidewalks on both sides of the road;
3. **Fill sidewalk gaps one side, sidepath the other side:** Sidewalk gaps are filled such that all roadways within the corporate limits of Warrenville have sidewalks on at least one side of the road; and sidepaths are installed on one side of every collector, arterial, County and State highway within the corporate limits of Warrenville (excluding I-88);
4. **Sidepath, one side:** A sidepath is installed on one side of every, arterial, County, and State highway within the corporate limits of Warrenville (excluding I-88).

TABLE 4: COMPLETE STREETS INFRASTRUCTURE PLANNING SCENARIOS				
Current Roadway Length:	74.70 miles			
Current Sidewalk Length:	58.00 miles	Current Sidewalk Coverage <sup>1</sup> : 38.82%		
Current Sidepath Length:	4.30 miles	Current Sidewalk + Sidepath Coverage <sup>2</sup> : 44.58%		
SCENARIOS	LENGTH	ITEM	UNIT COST	COST
Scenario 1	12.40 miles	Sidewalk	\$ 684,000 / mile	<b>\$ 8,481,600</b>
Scenario 2	87.10 miles	Sidewalk	\$ 684,000 / mile	<b>\$ 59,576,400</b>
Scenario 3	12.40 miles	Sidewalk	\$ 684,000 / mile	\$ 8,481,600
	21.00 miles	Sidepath	\$ 1,059,000 / mile	\$ 22,239,000
				<b>\$ 30,720,600</b>
Scenario 4	21.00 miles	Sidepath	\$ 1,059,000 / mile	<b>\$ 22,239,000</b>
NOTES				
1. Sidewalk coverage assumes 58 miles / (74.70 centerline miles x 2 sides of the street).				
2. Sidewalk coverage plus sidepath coverage is approximately 45% coverage. A sidepath on one side of the street is considered 100% coverage (4.30 / 74.70). Calculations include sidepaths along roadways (e.g. River, Butterfield) but does not include the Illinois Prairie Path.				

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## Findings

Estimates show that **Scenario 1** is the lowest cost scenario, which involves installation of sidewalks on one side of each roadway in Warrenville, regardless of land use or agency of jurisdiction. This would provide for the minimum accommodation for pedestrians and assumes that all other bikeway improvements would be implemented in accordance with the 2010 Bikeway Implementation Plan.

**Scenario 2** is the most expensive as it entails filling in sidewalk gaps on every street in the City, regardless of land use or agency of jurisdiction. While cost estimates take variation on drainage and grading into consideration, this does not include costs for additional right-of-way or easements required for sidewalk construction in constrained areas. The objective of this scenario is to illustrate a high-end cost estimate.

The most comprehensive option is **Scenario 3** because it optimizes walking and bicycling solutions city-wide. By completing sidewalks on one side of all local roadway and strategically investing in sidepath construction along collectors, arterials, and those under the jurisdiction of the DuPage County or State of Illinois, this scenario maximizes network coverage at less cost than Scenario 2. Based on approximate sidewalk coverage on existing arterial and collector roadways, this scenario assumes that approximately 9 miles of existing sidewalk would be replaced with sidepath over time. It is recommended that sidepath replace sidewalk at the end of its useful life, only when reconstruction is needed.

**Scenario 4** provides a compromise by providing better overall infrastructure coverage for complete streets by accommodating walking and bicycling in the same facility than Scenario 1, and does so at lower cost than Scenario 3. However, by placing sidepaths on one side of arterials, County, and State highways, this scenario does not eliminate existing gaps on local roadways within the City.

Due to cost-share policies implemented by IDOT and DuPage County for new facility construction, the share of cost participation by the City of Warrenville may be lower than estimated.