



**Feasibility Report** 

### 17<sup>th</sup> Avenue Bicycle Facilities

City of Hopkins BMI Project No. T19.115682

#### Submitted by:

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### Certification

#### **Feasibility Report**

For

17<sup>th</sup> Avenue Bicycle Facility Alternatives

City of Hopkins Hopkins, MN T19.115682

July 2, 2018

I hereby certify that this plan, specification or report was prepared by me or under my direct supervision, and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

By:

Michael J. Waltman, P.E. License No. 48696

Date: <u>07/02/2018</u>

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#### **Background & Existing Conditions**

The development of the Shady Oak Station as part of the Green Line Extension will bring change to the area south of Excelsior Blvd in southwest Hopkins, including the extension of 17th Avenue to the south of Excelsior. 17th Avenue S is planned to be extended with a two-way cycle track along the west side, and sidewalks along both sides of the roadway. This will create a suitable connection for both pedestrians and cyclists between Excelsior Blvd and the Shady Oak Station, as well as make connection to the Minnesota River Bluffs Regional Trail. Immediately north of Excelsior Blvd however, sidewalk exists along only the east side and no bicycle facilities are in place.



Figure 1: Planned Layout to 17th Ave S / Excelsior Blvd Intersection with SWLRT

Further north, the Lake Minnetonka Regional Trail intersects with 17th Avenue between 3rd Street N and 4th Street N. Bicycle facilities do not exist along 17th Avenue between Excelsior Blvd and the Lake Minnetonka Regional Trail, which is managed by the Three Rivers Park District. Continuous sidewalk is in place along the east side of 17th Avenue, however between Excelsior Blvd and Mainstreet no sidewalk is in place along the west side of the corridor. This sidewalk gap requires pedestrians generated from the residential area to the west or traveling south along 17th Avenue from Mainstreet to either walk along the shoulder of 17th Avenue (an arterial roadway) or cross 17th Avenue to the east side where a sidewalk is in place.

In 2017 the City of Hopkins received a \$40,000 grant from Hennepin County Community Works for study of a bicycle facility connection along 17th Avenue between Excelsior Blvd and the Lake Minnetonka Regional Trail. This study is intended to identify the appropriate improvements to make the desired connections, the estimated cost of those improvements, and consider potential funding sources for implementation of the improvements. The timing of any improvements is also unknown. By identifying costs and then funding

sources, this study will also begin to identify potential timing of implementation of improvements based on available and potential funding sources.

#### Relation to the 2040 Comprehensive Plan

From a comprehensive planning perspective, 17<sup>th</sup> Avenue is an arterial roadway in the City of Hopkins transportation network connecting two facilities on the Regional Bicycle and Trail Network (RBTN). The City of Hopkins formed an advisory committee as part of its 'Cultivate Hopkins' 2040 comprehensive planning process. The advisory committee reviewed and considered needs for bicycle and pedestrian connections throughout the community in consideration of neighborhood needs, roadway functional classifications, existing unsafe crossings coupled with consideration of origins and destinations, and connectivity to existing facilities. A list of priority improvements were developed, including three related to 17<sup>th</sup> Avenue:

- 1. Development of a bicycle facility between Excelsior Blvd and the Lake Minnetonka Regional Trail
- 2. Focusing installation of sidewalk along both sides of arterial and collector roadways where they do not exist today, specifically including filling of a sidewalk gap between Excelsior Blvd and Mainstreet along the west side of 17<sup>th</sup> Avenue
- 3. Planning for and connection to a future multi-modal trail along Hopkins Crossroad (continuation of 17<sup>th</sup> Avenue) north of Highway 7

#### **Scope of Improvements**

The project's primary goal is to consider installation of a bicycle connection between Excelsior Blvd and the Lake Minnetonka Regional Trail. After evaluation of alternatives, recognizing such improvements do not appear workable without adjusting roadway geometry, and considering the conditions of the pavement and underlying utilities, full reconstruction of 17<sup>th</sup> Avenue is planned. Intermediate measures that are not comprehensive of the roadway pavement, bicycle and pedestrian facilities, and utilities would not be cost effective.

17<sup>th</sup> Avenue is an existing concrete roadway containing a sanitary sewer main, water main, sewer and water services, and storm sewer. These underground utilities were built in or around 1950. Due to poor condition, approximately 5 out of 7 blocks of sanitary sewer main had a liner installed in 2017 to prevent potentially imminent collapse. Sanitary sewer services, water services, and the water main remain original from 1950. The overlying concrete pavement is in poor condition. Repairs or replacements to concrete panels are relatively expensive. 17<sup>th</sup> Avenue is the only concrete roadway in the City and therefore economies of scale cannot be achieved. Any repairs made are contracted in small quantities, driving costs higher than typical pavement repairs.

Reconstruction of  $17^{\rm th}$  Avenue is being planned as a new bituminous roadway in replacement of the concrete section. While a grant received by the City decades ago reportedly dictated the installation of a concrete section when the  $17^{\rm th}$  Avenue pavement was first installed, no such funding sources are available today. Given the challenges/costs repairing concrete street pavement panels, it is proposed to reinstall  $17^{\rm th}$  Avenue as a bituminous roadway. Underlying utilities, with exception to the sanitary sewer mains

recently lined, are proposed to be reconstructed. In conjunction with the reconstruction, the roadway corridor is proposed to be reconfigured to best facilitate a bicycle and pedestrian connection between Excelsior Boulevard and the Lake Minnetonka Regional Trail.

#### **Project Development Process**

The project development process is underway and is summarized as:

- 1. Notification of neighboring properties of improvements in consideration
- 2. Collection of field survey data
- 3. Development of corridor alternatives, including:
  - a. Two-way cycle track, with two sidewalks (two layout options were considered)
  - b. Bike lanes, with two sidewalks
  - c. Multi-use trail, with one sidewalk
- 4. Cost estimating and identification of potential funding sources
- 5. Public engagement regarding corridor alternatives
- 6. Completion of this preliminary study
- 7. Securing project funding applying for grants (multi-year process)
- 8. Preliminary and final design
- 9. Construction

Steps one through four above have largely been completed, though some refinements to corridor alternatives and associated estimated costs will occur based on public feedback as more is learned through that part of the process.

#### **Corridor Alternatives**

Four alternatives were developed for consideration to fill the bicycle facility gap that exists along 17th Avenue.

#### Routing / Layout Considerations

The first step in developing corridor layouts was a consideration of the routing of a bicycle facility through the corridor. These considerations can be summarized as:

- 1. The SWLRT project plans a cycle track along the west side of 17th Avenue, to the south of Excelsior Blvd. Ideally, a trail or cycle track would align with this layout without need to cross 17th Avenue.
- 2. The Lake Minnetonka Regional Trail heads NW to SE, and is located at the north end of the study corridor. Based on the regional trail's alignment and location along the corridor, it is assumed users of the regional trail utilizing the 17th Avenue corridor would have destinations of either the Shady Oak Station, Minnesota River Bluffs Regional Trail, or others to the south/southwest. Therefore, to reduce bicycle crossings of 17th Avenue it would be desirable to have the bicycle facility along the

- west side of 17th Avenue. Users of the Lake Minnetonka Regional Trail with destinations to the east/southeast assumedly would not use the 17th Avenue corridor, as they could continue onto the Regional Trail for a more direct route.
- 3. There is a free-right turn from westbound Excelsior Blvd to northbound 17th Avenue that is planned to remain after the SWLRT project. Ideally, crossings of this free right are minimized as motorists are less likely to anticipate a pedestrian or cyclist. Therefore, it is ideal to have a cycle facility along the west side of 17th Avenue to avoid this free right turn.

#### Layout Alternative A: Two Way Cycle Track Connected to Sidewalk

Figure 2 illustrates this proposed layout. The proposed improvements depicted include the addition of an off-street, two way cycle track along the west side of the roadway, retaining sidewalks on both sides of the roadway, inclusion of a boulevard along both sides of the roadway north of Mainstreet, and retention of parking along the west side of the roadway. 11-foot-wide drive lanes with either an adjacent parking lane or 2-foot-wide reaction distance to the curb is proposed to meet State Aid standards.

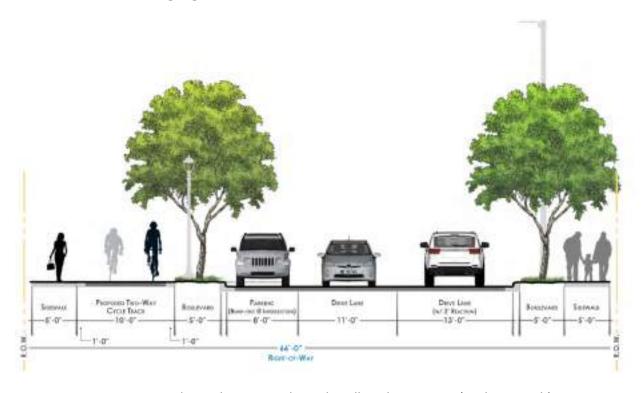


Figure 2: Cycle Track Connected to Sidewalk – Alternative A (Looking North)

The cycle track is proposed to be constructed as a 10-foot-wide bituminous pavement with 5-foot-wide bicycle lanes in each direction. A one-foot-wide concrete edging would be installed along each side of the bituminous pavement as a buffer from the sidewalk but also to provide a fixed edge for proper bituminous installation. The 5-foot-wide boulevard would allow adequate space for new trees and lighting, and some space for snow storage.

Snow clearing operations for this alternative may require a change from current practice. Typically the City would clear snow from the cycle track and property owners would clear snow from the sidewalk. Property owners could still be required to clear snow from the

sidewalk but it would be necessary for them to only pile it on their property, as no boulevard is provided next to the walk. City snow clearing operations may require hard paving in some of the illustrated turf boulevard areas, as snow clearing equipment may need to cross the intended boulevard space in some areas.

The intersections with Mainstreet and Excelsior Blvd would be equipped with bicycle signals and a lead phase for bicyclists get a 'head start' on motorists. This arrangement will be consistent with 8th Avenue at both Mainstreet and Excelsior Blvd. These improvements are already proposed for the Excelsior Blvd signal in conjunction with the Green Line extension. A new signal system will be needed at Mainstreet and 17th Avenue.

#### Layout Alternative B: Two Way Cycle Track Buffered from Sidewalk

This alternative is consistent with Cycle Track - Layout A, except the boulevard between the curb/cycle track has been relocated to be between the sidewalk/cycle track.

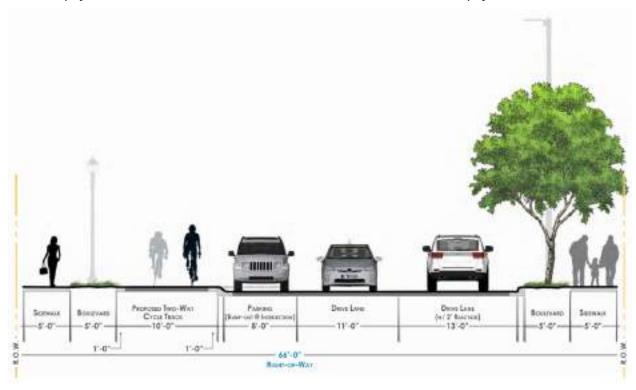


Figure 3: Cycle Track Buffered from Sidewalk – Alternative B (Looking North)

In terms of benefits, this configuration separates and better delineates space between pedestrians and cyclists. In addition to safety benefits of separating these users, it also delineates snow removal responsibilities and retains a boulevard for homeowners to push snow from their sidewalk to. The City would remove snow from the cycle track and bank snow in the boulevard, or during heavy years remove the snow from the corridor by pushing it to the directly connected parking lane.

Conversely, this alternative can make driveway connections and cycle track topography less desirable. The cycle track is intended to be above/behind the curbing along the corridor. The top of the curb is 6 inches higher than the roadway, except at driveways where it is about 2 inches higher than the roadway. Therefore at each driveway because the cycle track is directly at back of curb without boulevard, the cycle track would need to

slope 4 inches up/down on each side of every driveway. This height could be reduced by changing to a 4-inch-tall curb rather than a 6-inch-tall curb, but still may be negatively noticeable to cycle track users. A reduced curb height may also benefit snow removal. Finally, should bus stops be necessary, the location of the cycle track at back of curb may conflict with transit users waiting at the stops for buses.

#### Alternative C - Bike Lanes

On-street bike lanes were considered for installation along each side of the roadway. This alternative was evaluated however, and found to have several detriments with limited benefit over other alternatives.

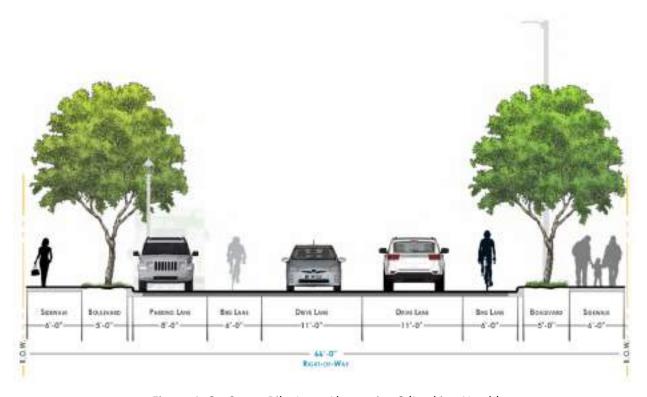


Figure 4: On-Street Bike Lane Alternative C (Looking North)

The alternative considered proposed installation of a 6-foot-wide bike lane in each direction. Along the east side, the bike lane would be installed directly adjacent to the curb line. Along the west side it would be positioned between a parking lane and drive lane. The positioning of the facility on-street adjacent to the parking lane introduces the chance of dooring incidents, where a parked motorist opens a door in conflict with an unseen bicyclist from behind. The on-street facility would also be less desirable to less capable users, such as children and casual cyclists. Perhaps most critical to this alternative, it is inconsistent with the 17th Ave S planned improvements to be completed with the Green Line extension. For motorists leaving the Shady Oak Station, a crossing of 17th Avenue would be required at Excelsior Boulevard to reach the northbound bike lane. Crossing of 17th Avenue would then be required again at the Lake Minnetonka Regional Trail to head northwest. The goal of evaluating this alternative was to attempt to find a layout which minimized tree and parking loss, however the negative impacts were found to be the same if not slightly greater.

This alternative does have some relatively minor benefits compared to other alternatives. Snow clearing operations would be more consistent with current operations, though boulevard space would still be reduced compared to existing conditions. The on-street placement eliminates the need for additional buffer space behind the curb, enabling sidewalks to be 6-feet-wide rather than 5-feet-wide, which is desirable in an arterial corridor.

#### Alternative D - Multi-Use Trail

A multi-use trail alternative was developed as a space saving measure, as it intends to combine the bicycle and pedestrian traffic along a single facility on the west side of the roadway. A 12-foot-wide bituminous facility is proposed with 1-foot-wide concrete edging. Ultimately the layout does not save substantial space compared to other options, though the multi-use trail facility could be narrowed to 10-feet if desired.

This alternative aligns the bicycle facility with the cycle track south of Excelsior Blvd. It does not provide a dedicated bicycle facility for more advanced users and commuters wishing to travel at higher speeds. The mixture of pedestrians and cyclists using the facility could cause some safety concern.

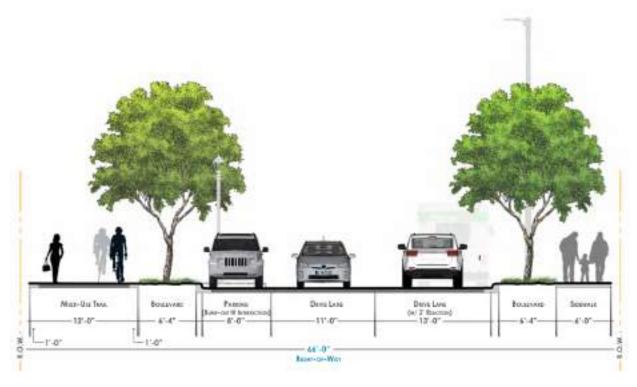


Figure 5: Multi-Use Trail Alternative D (Looking North)

#### **Impacts on Parking**

Parking exists along 17th Avenue primarily along the east side of the roadway. Recognizing the public would prefer to retain parking along the corridor and the transportation benefits of this space, the alternatives were all developed to generally retain this parking. The addition of a bicycle facility and sidewalk will cause the loss of some parking, however. The reduction in parking is not anticipated to be significant, but will amount to approximately 20% loss of park, as tabulated below:

Table	1: Parkina	Impacts h	y Alternative
IUDIC	T. I UINIIU	IIIIpacis b	y millinulive

Layout Alternative	Number of 22' Long Parking Stalls
Existing Conditions	131
Cycle Track - Layout A	108
Cycle Track - Layout B	108
Bike Lanes	104
Multi-Use Trail	108

#### Private Property Impacts

17th Avenue has a 60-foot-wide right-of-way (ROW) from Excelsior Blvd to Mainstreet. The ROW widens to 66-foot-wide north of Mainstreet. The layout alternatives were sized to fit within this space, however private property impacts are consistently present across all alternatives which can be summarized as:

- 1. There are some conflicts between the planned bicycle facilities and existing driveway locations within close proximity to intersections. These impacts are most notable at the NW and SW corners of Mainstreet/17th Avenue.
- 2. In some areas the topography is such that retaining walls will be necessary to separate the 17th Avenue facilities and private property. These impacts are most notable along the planned sidewalk along the west side of 17th Avenue between Excelsior Blvd and Mainstreet, as well as at the SE corner of Mainstreet/17th Avenue.
- 3. There is insufficient space at the Mainstreet / 17th Avenue to provide desired maneuverability for signal poles, Americans with Disabilities Act (ADA) compliant facilities, and signage. Permanent easement is proposed at all four corners of this intersection.

#### **Other Layout Considerations**

#### **Boulevard Trees**

An inventory of existing trees was taken to identify trees in poor condition and ash trees which are susceptible to the emerald ash borer. As standard practice for City of Hopkins projects, ash and poor condition trees are removed and replaced with a new, more biologically diverse, set of boulevard trees. Of the 59 trees along the project corridor, 17 were identified to be replaced as a result of this consideration.

In development of the corridor alternatives, attempts were made to position curb lines to avoid remaining trees. The anticipated desire for a parking lane and fundamental project goal of introducing a bicycle facility are at conflict with trees, however. To create adequate

boulevard space and the other desired facilities, curbing on both sides of the roadway must be relocated for all options considered. This impacts 27 other trees which would need to be removed and replaced with new trees as part of the project. In total the upfront tree loss would be significant and therefore it is important that the project layout include adequate boulevard space to provide an improved environment for long term tree growth.

#### Lighting

The project team considered lighting improvements along 17<sup>th</sup> Avenue given the anticipated increase in bicycle and pedestrian travel resulting from these improvements as well as the nearby addition of the Green Line extension. Standard scale, 20-foot-tall roadway lighting is proposed along the east side of the roadway and one corner of each intersection. Pedestrian scale lighting, approximately 12-foot-tall acorn style similar to those along Shady Oak Road, are planned along the west side of the corridor adjacent to the bicycle facility.

#### Lake Minnetonka Regional Trail / 17th Ave N Crossing

The project provides an opportunity for improvement of the Lake Minnetonka Regional Trail the crossing of 17<sup>th</sup> Avenue. All alternatives proposed the installation of a rectangular rapid flashing beacon (RRFB) system to improve the crossing of this minor arterial roadway by cyclists and pedestrians using this RBTN facility. The RRFB would be actuated via push button by pedestrians and cyclists. A beacon is proposed along each side of the roadway as well as one overhead beacon to increase visibility by motorists. This configuration should be reviewed further during final design and with the Three Rivers Park District, who will be asked to fund a portion of the improvements.

#### **Estimated Costs & Project Funding**

The total estimated project cost is approximately \$6.1M to \$6.4M in 2018 dollars, inclusive of surface construction, utility construction, and project development soft costs. Detailed preliminary estimates of cost are attached.

	CYCLE TRACK ALTERNATIVES	MULTI-USE TRAIL ALTERNATIVE	ON-STREET BIKE LANE ALTERNATIVE
Street & Bicycle Facility	\$3,000,000	\$2,930,000	\$3,210,000
Signals & Lighting	\$540,000	\$220,000	\$220,000
Utilities	\$1,340,000	\$1,660,000	\$1,660,000
Soft Costs	\$1,220,000	\$1,210,000	\$1,280,000
TOTAL	\$6,100,000	\$6,020,000	\$6,370,000

Table 2: Summary Estimated Project Costs

Project costs are anticipated to climb over time as industry construction costs have historically risen by 3%-5% annually. Ultimately, project implementation timing will be determined by the year funding becomes available. The current target year for implementation is 2023. Based on an assumed 3% annual cost increase, an estimated \$7.3M would be needed for 2023 project implementation. The proposed improvements, corridor's identification as an arterial roadway of regional significance, and connections to both the Shady Oak Station and two RBTN corridors is anticipated to make the project an attractive candidate for a handful of external funding opportunities.

#### **Project Funding**

A potential project funding plan is attached. Grant programs change frequently, particularly within the last 5 years as political polarization has heightened and legislative controlling parties have changed. In some cases, grant programs may be entirely scrapped and for others the scoring criteria may change by the time application is to be made. To be successful as with any competition, the project must better match the scoring criteria than the competing projects.

The attached funding plan is a working document to:

- 1. Identify grant programs as they develop,
- 2. Identify the available funding associated with each potential opportunity
- 3. Quantify the likelihood of getting funded based on the current program scoring criteria and past observations competing projects
- 4. Identify the funding source type of each program which will determine project compliance check requirements
- 5. Identify anticipated application deadlines and funding years for each program

Applying for funding requires effort, and therefore associated cost of either City Staff or consultant time. The project funding plan content is intended to enable a 'go' or 'no-go' discussion as to whether to submit an application and help identify the project implementation year.

The highest priority external programs identified at this time are:

- Partnership with Three Rivers Park District
- 2020 application for federal funding from the Met Council through the bi-annual regional solicitation
- 2021 application for Local Road Improvement Program (LRIP) funding from the State of MN

Appendix A: Estimated Costs

### **PLANNING LEVEL COST ESTIMATE**

17th Ave Bicycle Facilities CITY OF HOPKINS, MN BMI PROJECT NO. T16.107809

	CYCLE TRACK ALTERNATIVES	MULTI-USE TRAIL ALTERNATIVE	ON-STREET BIKE LANE ALTERNATIVE
Street & Bicycle Facility	\$3,000,000	\$2,930,000	\$3,210,000
Signals & Lighting	\$540,000	\$220,000	\$220,000
Utilities	\$1,340,000	\$1,660,000	\$1,660,000
Soft Costs	\$1,220,000	\$1,210,000	\$1,280,000
TOTAL	\$6,100,000	\$6,020,000	\$6,370,000

### PRELIMINARY COST ESTIMATE

### **ON-STREET BIKE LANE ALTERNATIVE**

17TH AVENUE BICYCLE FACILITY STUDY CITY OF HOPKINS, MN BMI PROJECT NO. T16.107809

ITEM NO.	ITEM	UNIT	ESTIMATED UNIT PRICE	TOTAL ESTIMATED QUANTITY		TOTAL ESTIMATED COST
1	MOBILIZATION	LUMP SUM	'	1.00	\$	300,000
2	TRAFFIC CONTROL	LUMP SUM	. ,	1.00	\$	50,000
3 4	CLEAR & GRUB REMOVE CONCRETE CURB AND GUTTER	EA LIN FT	\$ 400.00 \$ 10.00	46 9000	\$	18,400 90,000
5	REMOVE CONCRETE PAVEMENT (DRIVEWAY)	SQ YD	\$ 8.00	5700	\$	45,600
6	REMOVE CONCRETE PAVEMENT (STREET)	SQ YD	\$ 10.00	21000	\$	210,000
7 8	SAWCUT BITUMINOUS PAVEMENT 2" BITUMINOUS WEAR COURSE	LIN FT TON	\$ 3.00 \$ 70.00	1000 2,300	\$	3,000 161,000
9	4" BITUMINOUS NON WEAR COURSE	TON	\$ 68.00	4,600	\$	312,800
10	3" BITUMINOUS MULTI-USE TRAIL/CYCLE TRACK	TON	\$ 110.00	200	\$	22,000
11 12	BITUMINOUS MATERIAL FOR TACK COAT  12" CL. 5 AGGREGATE BASE	GAL TON	\$ 4.00 \$ 18.00	2,800	\$	11,200
13	BACKFILL FOR SUBGRADE EXCAVATION	CU YD	\$ 18.00	9,000 6,500	\$	162,000 130,000
14	SUBGRADE EXCAVATION	CU YD	\$ 20.00	1,300	\$	26,000
15	COMMON EXCAVATION	CU YD	\$ 17.00	12,700	\$	215,900
16 17	SURMOUNTABLE CURB (WEST SIDE) B618 CURB & GUTTER (WEST SIDE)	LF LF	\$ 20.00 \$ 17.00	0 1150	\$	19,600
18	B618 CURB & GUTTER (WEST SIDE)	LIN FT	\$ 17.00	4,750	\$	80,800
19	B672 CURB & GUTTER (BIKE LANE)	LF	\$ 60.00	3350	\$	201,000
20	RIBBON CURB (CYCLE TRACK/TRAIL)	LF	\$ 17.00	1100	\$	18,700
21 22	8" CONCRETE DRIVEWAY PAVEMENT (COMMERCIAL/INDUSTRIAL) 6" CONCRETE SIDEWALK (RESIDENTIAL DRIVEWAY)	SY SF	\$ 85.00 \$ 10.00	350 4,200	\$	29,800 42,000
23	CONCRETE SIDEWALK (RESIDENTIAL DRIVEWAT)	SF	\$ 6.00	22,500	\$	135,000
24	CONCRETE SIDEWALK (WEST SIDE)	SF	\$ 6.00	19500	\$	117,000
25 26	TRUNCATED DOMES PAVERS	SF SF	\$ 55.00 \$ 18.00	560	\$	30,800 90,000
26	TURF RESTORATION	SY	\$ 18.00 \$ 5.50	5000 3,000	\$	90,000 16,500
28	4" EPOXY STRIPE YELLOW	LF	\$ 1.00	11,500	\$	11,500
29	EPOXY SYMBOL - THRU ARROW	EA	\$ 500.00	5	\$	2,500
30	EPOXY SYMBOL - LEFT ARROW	EA	\$ 500.00	6	\$	3,000
31 32	EPOXY SYMBOL - RIGHT ARROW  EPOXY SYMBOL - THRU & RIGHT ARROW	EA EA	\$ 500.00 \$ 500.00	<u>8</u> 2	\$	4,000 1,000
33	MODULAR BLOCK RETAINING WALL	SF	\$ 65.00	500	\$	32,500
34	MODULAR BLOCK RETAINING WALL	LF	\$ 65.00	900	\$	58,500
35 36	DECORATIVE FENCE	LF LF	\$ 100.00 \$ 16.00	550	\$	55,000
37	24" STRIPE (WARNING BARS)  4" BROKEN STRIPE YELLOW	LF	\$ 16.00 \$ 3.00	0 850	\$	2,600
38	4" WHITE EPOXY	LF	\$ 3.00	9500	\$	28,500
39	CROSSWALK (WHITE)	SF	\$ 15.00	2136	\$	32,000
40 41	BICYCLE CROSS WALK (GREEN) BICYCLE PAINTED SYMBOL	SF EA	\$ 18.00 \$ 500.00	0 37	\$	18,500
42	ARM LIGHTING	EA	\$ 4,500.00	17	\$	76,500
42	REMOVE SANITARY SEWER PIPE	LIN FT	\$ 10.00	1250	\$	12,500
43	ACORN LIGHTING	EA	\$ 3,000.00	19	\$	57,000
43 44	REMOVE SANITARY SEWER MANHOLE  LIGHTING FOUNDATION	EACH EA	\$ 400.00 \$ 1,000.00	4 36	\$	1,600 36,000
44	SANITARY SEWER MH CASTING ASSEMBLY	EACH	\$ 1,000.00	4	\$	4,000
45	CONDUIT & WIRE	LF	\$ 10.00	10000	\$	100,000
45 46	6" SDR-26 PVC SAN SWR SERVICE SIGNAL MODIFICATION AT EXCELSIOR	LIN FT	\$ 38.00 \$ 150,000.00	4480 1	\$	170,200 150,000
46	8"x6" PVC WYE	EACH	\$ 450.00	16	\$	7,200
47	RAPID RECTANGULAR FLASING BEACON	LUMP SUM		1	\$	50,000
47	8" SDR-35 PVC SAN SWR	LIN FT	\$ 50.00	1250	\$	62,500
48 49	SANITARY MANHOLE CONNECT TO EXISTING SANITARY SEWER SERVICE	EACH EACH	\$ 350.00 \$ 1,000.00	4 16	\$	1,400 16,000
50	CONNECT TO EXISTING SANITARY SEWER SERVICE	EACH	\$ 1,000.00	2	\$	2,000
51	REMOVE WATERMAIN	LIN FT	\$ 4.50	4300	\$	19,400
52 53	REMOVE HYDRANT CONNECT TO EXISTING WATERMAIN	EACH EACH	\$ 500.00 \$ 1,500.00	7 10	\$	3,500 15,000
53	CONNECT TO EXISTING WATERMAIN  CONNECT TO EXISTING WATER SERVICE	EACH	\$ 1,500.00 \$ 300.00	16	\$	4,800
55	1" TYPE K COPPER WATER SERVICE	LIN FT	\$ 33.00	640	\$	21,100
56	1" CORPORATION STOP	EACH	\$ 350.00	16	\$	5,600
57 58	1" CURB STOP HYDRANT	EACH EACH	\$ 450.00 \$ 5,500.00	16 7	\$	7,200 38,500
59	6" GV & BOX	EACH	\$ 1,500.00	11	\$	16,500
60	8" GV & BOX	EACH	\$ 2,000.00	18	\$	36,000
61 62	6" DI WATERMAIN 8" DI WATERMAIN	LIN FT	\$ 46.00	399 4300	\$	18,400
62	DUCTILE IRON FITTINGS	POUND	\$ 50.00 \$ 8.00	4300 8000	\$	215,000 64,000
64	REMOVE STORM SEWER PIPE	LIN FT	\$ 9.00	2900	\$	26,100
65	REMOVE DRAINAGE STRUCTURE	EACH	\$ 350.00	30	\$	10,500
66 67	STORM SEWER CASTING 2'X3' CATCH BASIN	EACH EACH	\$ 500.00 \$ 1,500.00	50 28	\$	25,000 42,000
68	STORM MANHOLE	EACH	\$ 2,000.00	20	\$	40,000
69	15" STORM SEWER MAIN	LIN FT	\$ 45.00	2600	\$	117,000
70 71	27" STORM SEWER MAIN CONNECT TO EXISTING STORM SEWER	LIN FT LIN FT	\$ 75.00	2000	\$	150,000
SUBTO		LINFI	\$ 1,000.00	8	\$ <b>\$</b>	8,000 <b>4 420 000</b>
15% CONT					<b>\$</b>	<b>4,420,000</b> 670,000
	TED CONSTRUCTION COST				\$	5,090,000
	MATED CONSTRUCTION COST				<u>Ψ</u> \$	1,280,000
	ESTIMATED PROJECT COST				\$	6,370,000
					Ψ	2,3. 3,300

#### PRELIMINARY COST ESTIMATE

#### **CYCLE TRACK ALTERNATIVE**

17TH AVENUE BICYCLE FACILITY STUDY CITY OF HOPKINS, MN BMI PROJECT NO. T16.107809

ITEM **TOTAL ESTIMATED TOTAL ITEM ESTIMATED** NO. UNIT UNIT **ESTIMATED PRICE QUANTITY** COST MOBILIZATION LUMP SUM \$ 300,000.00 1.00 \$ 300.000 1 TRAFFIC CONTROL LUMP SUM 50,000.00 1.00 50.000 \$ 3 CLEAR & GRUB 18,000 EΑ 400.00 \$ 45 REMOVE CONCRETE CURB AND GUTTER LIN FT 4 9,000 \$ 90,000 \$ 10.00 5 REMOVE CONCRETE PAVEMENT (DRIVEWAY) SQ YD \$ 5,700 \$ 45,600 8.00 REMOVE CONCRETE PAVEMENT (STREET 6 SQ YD 10.00 21,000 \$ 210,000 SAWCUT BITUMINOUS PAVEMENT LIN FT 3,000 7 3.00 1,000 \$ 2" BITUMINOUS WEAR COURSE 8 TON 70.00 2,000 \$ 140,000 4" BITUMINOUS NON WEAR COURSE 9 TON \$ 272,000 \$ 68.00 4,000 10 3" BITUMINOUS MULTI-USE TRAIL/CYCLE TRACK TON 110.00 \$ 71,500 \$ 650 BITUMINOUS MATERIAL FOR TACK COAT 11 GAL \$ 4.00 2,500 \$ 10,000 12 12" CL. 5 AGGREGATE BASE TON 18.00 11,500 207,000 \$ BACKFILL FOR SUBGRADE EXCAVATION CU YD 13 20.00 1,200 \$ 24,000 SUBGRADE EXCAVATION CU YD 14 \$ 24,000 \$ 20.00 1,200 15 COMMON EXCAVATION CU YD \$ 190,400 \$ 17.00 11,200 SURMOUNTABLE CURB (WEST SIDE) 16 LF 20.00 5200 \$ 104,000 17 B618 CURB & GUTTER (WEST SIDE) LF 17.00 11,900 700 \$ B618 CURB & GUTTER (EAST SIDE) LIN FT 18 \$ 17.00 6,700 \$ 113,900 19 B672 CURB & GUTTER (BIKE LANE) LF \$ 60.00 0 \$ 20 RIBBON CURB (CYCLE TRACK/TRAIL) LF 7100 120,700 \$ 17.00 \$ 8" CONCRETE DRIVEWAY PAVEMENT (COMMERCIAL/INDUSTRIAL) 21 SY \$ 85.00 450 \$ 38,300 22 6" CONCRETE SIDEWALK (RESIDENTIAL DRIVEWAY) SF 10.00 750 \$ 7,500 23 CONCRETE SIDEWALK (EAST SIDE) SF \$ 20,000 \$ 120,000 6.00 CONCRETE SIDEWALK (WEST SIDE) 24 SF \$ 105,000 \$ 6.00 17500 25 TRUNCATED DOMES SF \$ 750 \$ 41,300 55.00 26 **PAVERS** SF 18.00 1200 \$ 21,600 27 TURF RESTORATION SY 22,000 5.50 4,000 \$ 4" EPOXY STRIPE YELLOW 28 LF 1.00 11,500 \$ 11,500 \$ EPOXY SYMBOL - THRU ARROW 29 EΑ \$ 500.00 \$ 1,500 3 30 **EPOXY SYMBOL - LEFT ARROW** EΑ \$ 500.00 3 \$ 1,500 **EPOXY SYMBOL - RIGHT ARROW** 500.00 31 EΑ \$ \$ 3,000 6 **EPOXY SYMBOL - THRU & RIGHT ARROW** 1,000 32 EΑ 500.00 \$ MODULAR BLOCK RETAINING WALL 33 SF 32,500 \$ 65.00 500 \$ MODULAR BLOCK RETAINING WALL 58,500 34 LF \$ \$ 65.00 900 100.00 35 DECORATIVE FENCE LF \$ 55,000 \$ 550 24" STRIPE (WARNING BARS) 36 LF 16.00 1350 \$ 21,600 \$ 37 4" BROKEN STRIPE YELLOW LF 10,700 3.00 3550 \$ 4" WHITE EPOXY 38 LF \$ 3.00 \$ 0 CROSSWALK (WHITE) SF 39 \$ 27,800 \$ 15.00 1850 40 **BICYCLE CROSS WALK (GREEN)** SF 18.00 \$ 900 \$ 16,200 **BICYCLE PAINTED SYMBOL** 41 EΑ \$ 500.00 19 \$ 9,500 42 ARM LIGHTING EΑ 4,500.00 76,500 17 \$ ACORN LIGHTING 43 EΑ \$ 3,000.00 19 \$ 57,000 44 LIGHTING FOUNDATION EΑ \$ 1,000.00 36 \$ 36,000 **CONDUIT & WIRE** LF 10000 100,000 45 \$ 10.00 \$ SIGNAL MODIFICATION AT EXCELSIOR LUMP SUM 150,000.00 46 \$ 150,000 47 RAPID RECTANGULAR FLASING BEACON LUMP SUM 50,000.00 \$ 50,000 REMOVE SANITARY SEWER PIPE 42 LIN FT 10.00 1250 \$ 12,500 43 REMOVE SANITARY SEWER MANHOLE EACH 1,600 \$ 400.00 \$ 4 44 SANITARY SEWER MH CASTING ASSEMBLY **EACH** 1,000.00 4 \$ 4,000 \$ 45 6" SDR-26 PVC SAN SWR SERVICE LIN FT \$ 38.00 4480 \$ 170,200 46 8"x6" PVC WYE EACH 450.00 7,200 16 \$ 8" SDR-35 PVC SAN SWR LIN FT 47 50.00 1250 \$ 62,500 SANITARY MANHOLE EACH 48 \$ 1,400 \$ 350.00 4 CONNECT TO EXISTING SANITARY SEWER SERVICE EACH \$ 16,000 49 \$ 1,000.00 16 CONNECT TO EXISTING SANITARY SEWER 50 **EACH** 1,000.00 \$ 2,000 51 REMOVE WATERMAIN LIN FT 4300 19,400 4.50 \$ REMOVE HYDRANT 52 EACH 500.00 \$ 3,500 7 CONNECT TO EXISTING WATERMAIN 15,000 53 EACH \$ 1,500.00 10 \$ 4,800 CONNECT TO EXISTING WATER SERVICE EACH 54 16 \$ 300.00 \$ 1" TYPE K COPPER WATER SERVICE 55 LIN FT \$ 33.00 640 \$ 21,100 1" CORPORATION STOP 56 EACH 350.00 \$ 16 \$ 5.600 57 1" CURB STOP **EACH** 7,200 450.00 16 HYDRANT \$ 58 EACH 5,500.00 38,500 \$ 7 6" GV & BOX EACH \$ 16,500 59 \$ 1,500.00 11 60 8" GV & BOX **EACH** 2,000.00 \$ 36,000 18 61 6" DI WATERMAIN LIN FT 18,400 46.00 399 8" DI WATERMAIN 62 LIN FT 50.00 4300 \$ 215,000 **DUCTILE IRON FITTINGS POUND** 63 \$ 8.00 8000 \$ 64,000 REMOVE STORM SEWER PIPE LIN FT 26,100 64 \$ 9.00 2900 \$ REMOVE DRAINAGE STRUCTURE 65 **EACH** \$ 350.00 30 \$ 10,500 66 STORM SEWER CASTING EACH \$ 500.00 50 \$ 25,000 2'X3' CATCH BASIN 67 EACH 1,500.00 \$ 42,000 \$ 28 STORM MANHOLE EACH \$ 40,000 68 \$ 2,000.00 20 15" STORM SEWER MAIN 69 LIN FT \$ 2600 \$ 117,000 45.00 70 27" STORM SEWER MAIN LIN FT \$ 2000 \$ 150,000 75.00 71 CONNECT TO EXISTING STORM SEWER LIN FT \$ 8,000 1,000.00 8 SUBTOTAL \$ 4,240,000 15% CONTINGENCY \$ 640,000 **ESTIMATED CONSTRUCTION COST** \$ 4,880,000 25% ESTIMATED SOFT COSTS 1,220,000 \$ TOTAL ESTIMATED PROJECT COST \$ 6,100,000

## PRELIMINARY COST ESTIMATE MULTI-USE TRAIL ALTERNATIVE

17TH AVENUE BICYCLE FACILITY STUDY CITY OF HOPKINS, MN BMI PROJECT NO. T16.107809

**ITEM TOTAL ESTIMATED TOTAL ITEM ESTIMATED** UNIT NO. UNIT **ESTIMATED PRICE QUANTITY** COST MOBILIZATION LUMP SUM \$ 300,000.00 1.00 \$ 300.000 1 TRAFFIC CONTROL LUMP SUM \$ 50.000.00 1.00 \$ 50.000 3 CLEAR & GRUB EΑ 400.00 \$ 10,800 REMOVE CONCRETE CURB AND GUTTER LIN FT \$ 4 10.00 \$ 90,000 9000 5 REMOVE CONCRETE PAVEMENT (DRIVEWAY) SQ YD 8.00 5700 45,600 \$ \$ REMOVE CONCRETE PAVEMENT (STREET) 6 SQ YD 10.00 21000 \$ 210,000 SAWCUT BITUMINOUS PAVEMENT LIN FT 3.00 1000 \$ 3,000 7 2" BITUMINOUS WEAR COURSE 147,000 8 TON \$ 70.00 2,100 \$ 9 4" BITUMINOUS NON WEAR COURSE TON \$ 68.00 \$ 285,600 4,200 10 3" BITUMINOUS MULTI-USE TRAIL/CYCLE TRACK TON \$ 110.00 \$ 99,000 900 11 BITUMINOUS MATERIAL FOR TACK COAT GAL \$ 4.00 2,500 \$ 10,000 12 12" CL. 5 AGGREGATE BASE TON 18.00 \$ 140,400 7,800 CU YD 13 BACKFILL FOR SUBGRADE EXCAVATION \$ 20.00 5,600 \$ 112,000 CU YD 14 \$ 20.00 \$ 24,000 SUBGRADE EXCAVATION 1,200 15 COMMON EXCAVATION CU YD 17.00 \$ 190,400 \$ 11,200 SURMOUNTABLE CURB (WEST SIDE) 16 LF 20.00 \$ 0 17 B618 CURB & GUTTER (WEST SIDE) LF 17.00 4500 \$ 76,500 LIN FT 18 B618 CURB & GUTTER (EAST SIDE) \$ 17.00 5,100 \$ 86,700 19 B672 CURB & GUTTER (BIKE LANE) LF \$ 60.00 0 \$ RIBBON CURB (CYCLE TRACK/TRAIL) 20 LF \$ 17.00 7600 \$ 129,200 8" CONCRETE DRIVEWAY PAVEMENT (COMMERCIAL/INDUSTRIAL) 34.000 21 SY \$ 85.00 400 \$ 22 6" CONCRETE SIDEWALK (RESIDENTIAL DRIVEWAY) SF \$ 10.00 4,100 \$ 41,000 23 CONCRETE SIDEWALK (EAST SIDE) SF \$ 6.00 23,000 \$ 138,000 CONCRETE SIDEWALK (WEST SIDE) 24 SF \$ \$ 15,000 6.00 2500 TRUNCATED DOMES 25 SF \$ 55.00 \$ 35,800 650 **PAVERS** 18.00 26 SF \$ \$ 36.000 2000 TURF RESTORATION 27 SY 5.50 19,300 3.500 4" EPOXY STRIPE YELLOW 28 LF 1.00 \$ 13,500 13,500 29 **EPOXY SYMBOL - THRU ARROW** EΑ \$ 500.00 \$ 2.000 4 30 EΑ 500.00 EPOXY SYMBOL - LEFT ARROW \$ 6 \$ 3.000 \$ 31 EΑ 500.00 \$ 4.000 EPOXY SYMBOL - RIGHT ARROW 8 EPOXY SYMBOL - THRU & RIGHT ARROW EΑ 32 \$ 500.00 2 \$ 1,000 65.00 33 MODULAR BLOCK RETAINING WALL SF \$ 500 \$ 32.500 MODULAR BLOCK RETAINING WALL 34 LF \$ 65.00 900 \$ 58,500 35 DECORATIVE FENCE LF \$ 100.00 550 \$ 55,000 24" STRIPE (WARNING BARS) 36 LF \$ 16.00 \$ 37 4" BROKEN STRIPE YELLOW LF \$ \$ 11,400 3.00 3800 38 4" WHITE EPOXY LF \$ 3.00 \$ 0 39 CROSSWALK (WHITE) SF \$ 15.00 2200 \$ 33,000 40 BICYCLE CROSS WALK (GREEN) SF 18.00 \$ \$ 0 BICYCLE PAINTED SYMBOL EΑ 41 \$ 500.00 17 \$ 8,500 ARM LIGHTING EΑ 42 \$ 4,500.00 \$ 76,500 17 42 REMOVE SANITARY SEWER PIPE LIN FT 10.00 1250 \$ \$ 12,500 ACORN LIGHTING 43 EΑ \$ 3,000.00 \$ 57,000 19 400.00 43 REMOVE SANITARY SEWER MANHOLE **EACH** 4 \$ 1,600 LIGHTING FOUNDATION 44 EΑ 1,000.00 36 \$ 36,000 SANITARY SEWER MH CASTING ASSEMBLY 44 EACH 1,000.00 \$ 4.000 **CONDUIT & WIRE** 45 10000 100,000 LF 10.00 \$ \$ 6" SDR-26 PVC SAN SWR SERVICE LIN FT 4480 170,200 45 \$ 38.00 \$ SIGNAL MODIFICATION AT EXCELSIOR LUMP SUM 46 150,000.00 \$ 150,000 8"x6" PVC WYE EACH 450.00 16 \$ 7,200 46 RAPID RECTANGULAR FLASING BEACON LUMP SUM 50,000.00 47 \$ \$ 50,000 8" SDR-35 PVC SAN SWR 1250 47 LIN FT \$ 50.00 \$ 62,500 48 SANITARY MANHOLE **EACH** 350.00 1,400 \$ \$ 4 CONNECT TO EXISTING SANITARY SEWER SERVICE 49 **EACH** \$ 1,000.00 16 \$ 16,000 50 CONNECT TO EXISTING SANITARY SEWER **EACH** 1,000.00 \$ 2,000 51 REMOVE WATERMAIN LIN FT \$ 4.50 4300 \$ 19,400 52 REMOVE HYDRANT **EACH** \$ 500.00 \$ 3,500 53 CONNECT TO EXISTING WATERMAIN EACH \$ 1,500.00 10 \$ 15,000 54 CONNECT TO EXISTING WATER SERVICE **EACH** 300.00 16 \$ 4,800 55 1" TYPE K COPPER WATER SERVICE LIN FT 33.00 640 \$ 21,100 1" CORPORATION STOP 56 EACH 350.00 16 \$ 5,600 7,200 1" CURB STOP EACH 450.00 57 \$ 16 \$ **HYDRANT EACH** 5,500.00 \$ 38,500 58 \$ 7 16.500 59 6" GV & BOX **EACH** \$ 1,500.00 11 \$ 60 8" GV & BOX **EACH** 2,000.00 18 36,000 \$ 6" DI WATERMAIN 61 LIN FT \$ 46.00 399 \$ 18,400 8" DI WATERMAIN 62 LIN FT \$ 50.00 4300 \$ 215,000 **DUCTILE IRON FITTINGS POUND** 8000 \$ 64,000 63 \$ 8.00 64 REMOVE STORM SEWER PIPE LIN FT 9.00 2900 \$ 26,100 10.500 65 REMOVE DRAINAGE STRUCTURE **EACH** 350.00 30 \$ STORM SEWER CASTING 500.00 66 EACH \$ 50 \$ 25,000 2'X3' CATCH BASIN 67 EACH \$ 1,500.00 \$ 42,000 28 STORM MANHOLE **EACH** 2,000.00 20 \$ 40,000 68 \$ 15" STORM SEWER MAIN 69 LIN FT \$ 45.00 2600 \$ 117,000 70 27" STORM SEWER MAIN LIN FT 75.00 2000 \$ 150,000 \$ CONNECT TO EXISTING STORM SEWER LIN FT 71 \$ 1,000.00 8 \$ 8,000 SUBTOTAL \$ 4,180,000 15% CONTINGENCY \$ 630,000 **ESTIMATED CONSTRUCTION COST** \$ 4,810,000 25% ESTIMATED SOFT COSTS \$ 1,210,000 \$ TOTAL ESTIMATED PROJECT COST 6,020,000

Appendix B: Funding Plan



### **Preliminary Funding Plan**

### 17th Avenue Bicycle Facility

City of Hopkins June, 2018

	2018	2019	2020	2021	2022	2023
Street & Sidewalk Costs	\$4,185,000	\$4,311,000	\$4,440,000	\$4,573,000	\$4,710,000	\$4,851,000
Bicycle Facility Costs	\$426,000	\$439,000	\$452,000	\$466,000	\$480,000	\$494,000
Utility Costs	\$1,669,000	\$1,719,000	\$1,771,000	\$1,824,000	\$1,879,000	\$1,935,000
Total Project Cost	\$6,280,000	\$6,470,000	\$6,660,000	\$6,860,000	\$7,070,000	\$7,280,000



Sources	Potential Funds	Est. Submittal Deadline	Funding Year	Commitment Status	Funding Standards	Other Notes
Met Council - 2020 Regional Solicitation, Multiuse Trails and Bicycle Facilities	\$ 1,500,000	July, 2020	2022 / 2023	Possible	Federal	
City of Hopkins - General Levy	\$ 4,010,000		2023	Probable		It is desirable to minimize this funding source
City of Hopkins - Utility Funds	\$ 1,880,000		2023	Probable		
City of Hopkins - Special Assessments	\$ 700,000		2023	Firm	429	
Hennepin County Community Works	?			Possible		Research / discussion needed
Hennepin County (Other)	?			Possible		Research / discussion needed
Three Rivers Park District	\$ 600,000		2023	Probable		Discussion with Three Rivers needed
MnDNR - Local Trail Connections	\$ 150,000	Spring, 2019	2020	Possible	MnDNR	Annual Program, Revolving
MnDOT - Local Road Improvement Program (LRIP)	\$ 1,000,000	Fall, 2019	2021	Possible	State	Project would be a good candidate
MnDOT - Local Road Improvement Program (LRIP)	\$ 1,000,000	Fall, 2021	2023	Possible	State	Project would be a good candidate
MnDOT - Safe Routes to School (SRTS)				Unlikely	Federal	Viability of MnDOT program in question, available funding low
State of MN - 2020 Bonding Bill	\$ 1,000,000	1/1/2020	2021	Possible	State	Lobbying efforts would be required
State of MN - 2022 Bonding Bill	\$ 1,000,000	1/1/2020	2023	Possible	State	Lobbying efforts would be required
Total Potential Identified Funding Sources	\$ 12,840,000					

Appendix C: Project Location Map





#### Legend

- City Limits
- Parcels (8-1-2017)
- Lot Lines

# 17 Ave Bike Facility Study-Project



Disclaimer:

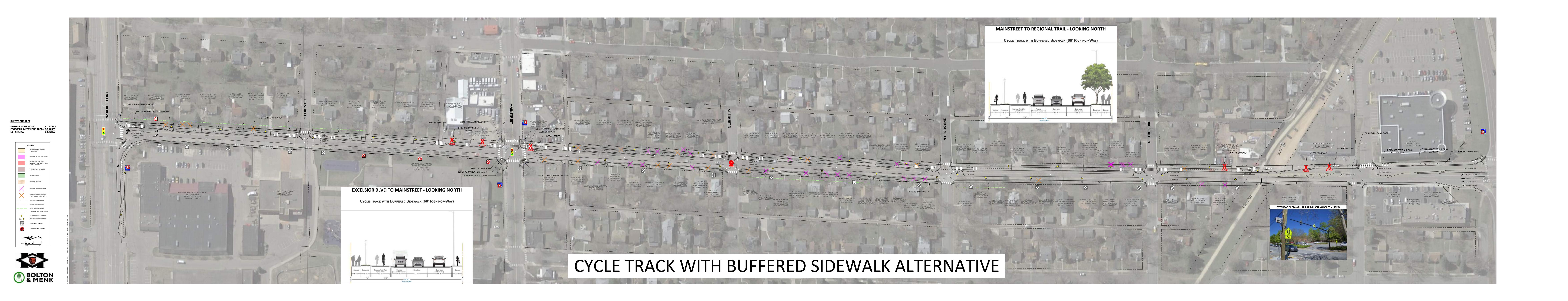
This drawing is neither a legally recorded map nor a survey and is not intended to be used as one. This drawing is a compilation of records, information, and data located in various city, county, and state offices, and other sources affecting the area shown, and is to be used for reference purposes only. The City of Hopkins is not resonnshibe for any inaccuracies herein contained.

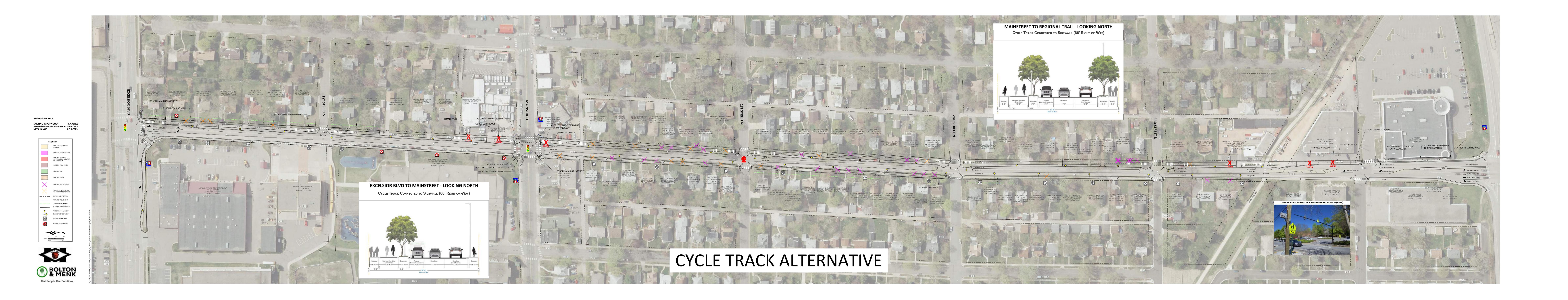


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Appendix D: Corridor Layouts







EXISTING IMPERVIOUS = 4.7 ACRES
PROPOSED IMPERVIOUS AREA = 4.8 ACRES
NET CHANGE 0.1 ACRES

PROPOSED BITUMINOUS
PAVEMENT

PROPOSED CONCRETE
DRIVEWAY, CURB & GUTTER,
MISC. CONCRETE
DRIVEWAY, CURB & GUTTER,
MISC. CONCRETE

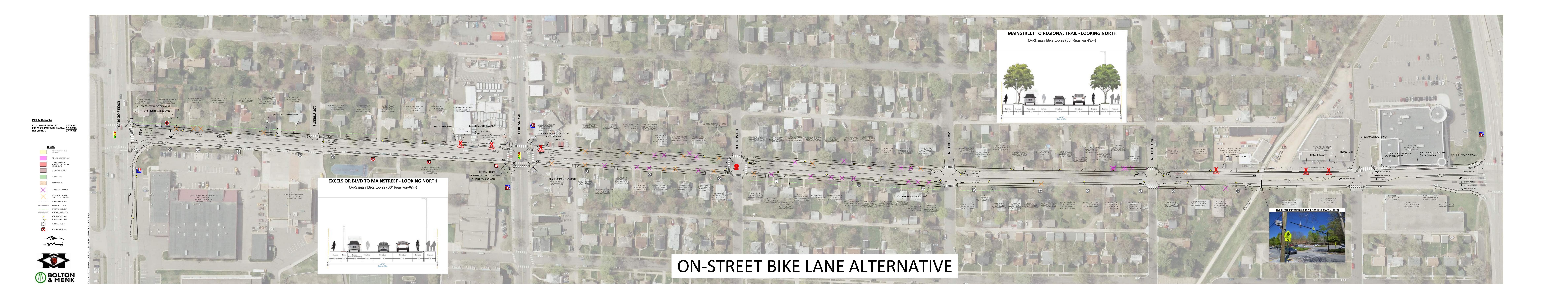
PROPOSED CYCLE TRACK

PROPOSED TURF

PROPOSED TURF

PROPOSED TREE REMOVAL
FOR CONDITION OR SPECIES
EXISTING RIGHT OF WAY
PERMANENT EASEMENT
TEMPORARY EASEMENT
PROPOSED RETAINING WALL
PEDESTRIAN SCALE LIGHT
OVERHEAD STREET LIGHT
EXISTING NO PARKING
PROPOSED NO PARKING





#### **Services Provided:**

Civil and Municipal Engineering
Water and Wastewater Engineering
Traffic and Transportation Engineering
Aviation Planning and Engineering
Water Resources Engineering
Coatings Inspection Services
Landscape Architecture Services
Surveying and Mapping
Geographic Information System Services

**Funding Assistance** 

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