

Agenda
Transportation Commission
City Of Edina, Minnesota
Community Room

Thursday, June 16, 2016
6:00 PM

- I. Call To Order
- II. Roll Call
- III. Approval Of Meeting Agenda
- IV. Approval Of Meeting Minutes
 - A. Approval of Minutes - Regular Meeting of May 19, 2016

V. Community Comment

During "Community Comment," the Board/Commission will invite residents to share relevant issues or concerns. Individuals must limit their comments to three minutes. The Chair may limit the number of speakers on the same issue in the interest of time and topic. Generally speaking, items that are elsewhere on tonight's agenda may not be addressed during Community Comment. Individuals should not expect the Chair or Board/Commission Members to respond to their comments tonight. Instead, the Board/Commission might refer the matter to staff for consideration at a future meeting.

VI. Reports/Recommendations

- A. 2016 Work Plan Updates
- B. Edina To Go App Transportation Recommendations
- C. Passenger Rail Recommendations
- D. Rosland Park Pedestrian Bridge Study
- E. Draft 2017-2021 Capital Improvement Plan Transportation Projects
- F. Traffic Safety Report of June 1, 2016

VII. Correspondence And Petitions

VIII. Chair And Member Comments

- A. June 21 Joint Work Session with City Council

IX. Staff Comments

- A. Staff Comments for June 2016

X. Calendar Of Events

A. Schedule of Meeting and Event Dates as of June 16, 2016

XI. Adjournment

The City of Edina wants all residents to be comfortable being part of the public process. If you need assistance in the way of hearing amplification, an interpreter, large-print documents or something else, please call 952-927-8861 72 hours in advance of the meeting.



CITY OF EDINA

4801 West 50th Street

Edina, MN 55424

www.edinamn.gov

Date: June 16, 2016

Agenda Item #: IV.A.

To: Transportation Commission

Item Type:

Minutes

From: Sharon Allison - Engineering Specialist

Item Activity:

Subject: Approval of Minutes - Regular Meeting of May 19, 2016

Action

ACTION REQUESTED:

Approve the meeting minutes of the regular Edina Transportation Commission meeting of May 19, 2016.

INTRODUCTION:

ATTACHMENTS:

Minutes, ETC, May 19, 2016



Minutes
City of Edina, Minnesota
Transportation Commission
Community Room
May 19, 6:00 p.m.

I. Call To Order

Chair LaForce called the meeting to order.

II. Roll Call

Answering roll call were members Boettge, Brown, Iyer, Janovy, LaForce, Miranda, Olson and Ruehl. Absent at roll call were members Bass, Ding and Loeffelholz.

III. Approval Of Meeting Agenda

Motion was made by member Olson and seconded by member Boettge approving the meeting agenda. All voted aye. Motion carried.

IV. Approval Of Meeting Minutes

Motion was made by member Brown and seconded by member Olson approving the edited Apr. 21, 2016, minutes. All voted aye. Motion carried.

V. Special Recognitions And Presentations

A. Grandview District Transportation Study Presentation

Ms. Lydia Major, Ms. Zabe Bent, and Mr. Michael Fisher presented an update on the Grandview District Transportation Study which just completed the final phase of the study, recommend week. Ms. Major gave an overview of past phases which included convene week and imagine week.

Ms. Bent presented their proposed recommendations and solutions. Ms. Bent said improvements that could be accomplished within five years include pedestrian crossings; new traffic signal on Vernon Avenue by Jerry's; restrict left turn movement at Interlachen Boulevard and Vernon Avenue; remove the free right turn at the top of the W. 50th/Vernon Avenue ramp, from southbound TH-100 ramp so that traffic comes to a complete stop and then makes the right turn; remove redundant ramp to northbound TH-100; add bike lanes on Arcadia Avenue; and add a new connection from Eden Avenue to Jerry's.

With implementations of the short term solutions and Vernon Avenue and Eden Avenue beginning to take shape, Ms. Bent said mid-term (5-15 years) improvements could be making Vernon Avenue a 3-lane road including a dedicated turning lane with sidewalks and bike lanes; a multi-use path on Eden Avenue; open W. 53rd Street to add another entrance into the neighborhood; eliminate one of the southbound TH-100 exit ramps; and connecting Vernon Avenue and Eden Avenue to create a transit connection.

Ms. Bent said long-term (15-30 years) solutions could be a shared street at Arcadia Avenue to north of the old public works site which would extend to the new pedestrians bridge over TH-100; using Willson Road as a new exit ramp from TH-100 was eliminated because of feedback; adding a new road to Jerry's parking ramp which will serve as another entrance to the ramp.

Ms. Bent said they evaluated current Level of Service (LOS) at intersections and compared them to with a future time with developments. She said there was slight degradation in LOS in the short-term, especially at Interlachen Boulevard which is one reason they are recommending having another entrance into the neighborhood.

Ms. Bent said the final study will be presented in June/July 2016.

Discussion

Member Olson asked if light rail was considered and Ms. Bent said this would be looked at as density increased (the “long term”) and this would also be the time to consider the Lid.

Member Brown asked about density and transparency and Ms. Bent said the final report will cover density in detail.

Member Janovy asked what should be included in the Capital Improvement Planning (CIP) and Ms. Bent said the short term improvements. Planner Nolan said staff is already working on the CIP and have included the short term improvements.

VI. Community Comment

Mr. David Davison, 6716 Galway Drive, addressed the ETC in response to an article in the Edina Sun Current regarding the Dan Patch rail line whether the City Council should support further study, dedicate staff time or request the gag rule be overturned. Mr. Davison said the City Council should consider light rail and not support overturning the gag rule on the Dan Patch rail line because in doing so they would be accepting that nothing can be done.

VII. Reports/Recommendations

A. 2016 Work Plan Updates

B. Community Circulator Study (Brown and Loeffelholz)

Member Brown presented the following options:

- i. Create their bus system
- ii. Utilize SW Transit
 - a. Create Southdale Circulator
 - b. Use Southwest Prime (similar to Uber)
- iii. Pool resources from major apartments, condos and senior buildings.
- iv. Metro Transit extension

Discussion

Member Olson asked what happened to the B-Line that used to run in Edina/Richfield/Bloomington? He said the map outlined by member Loeffelholz looks a like the B-Line route. Chair LaForce asked if there was a need for this service and what was the City Council's vision of the circulator? Planner Nolan said it is left over from the transportation options working group that was working on transportation for the elderly and disabled, and member Iyer added there is a need for youth transportation services after school. Member Janovy suggested looking at Southwest Prime as an option. Members Brown and Loeffelholz will pursue this option.

C. Edina To Go App Transportation Recommendations (Iyer)

Member Iyer said he will present his recommendations next month and requested of staff to invite Mr. Gilgenbach to the next ETC meeting.

D. 2015 Street Smarts Campaign Evaluation (Janovy)

Member Janovy said she sent some questions to planner Nolan he met with Mr. Gilgenbach. She said she is not sure that this is the best use of their time. She said if the communications department is interested in input, they should be willing to work directly with the ETC but they are always told to work thru staff (planner Nolan).

Discussion

Chair LaForce said he has no way of telling if what they did worked or not. Member Iyer suggested a single message for the summer instead of many phrases. Planner Nolan was asked where communications get their guidance and he said staff the police and engineering department review their work. Planner Nolan was asked who was determining goals and he said last year the ETC had ideas regarding a campaign while the police and communications had their own and all three joined together. Chair LaForce said the communications department have already started their campaign and is moving forward with it. Member Janovy said they've offered feedback and nothing has changed so it is not worth their time.

E. Traffic Safety Report of May 4, 2016

A.I. Member Janovy said she was concerned with installing a sign in such a narrow boulevard. She suggested using a stop bar but planner Nolan said stop bars are inconclusive at this time as they are still being studied.

D.I. Member Janovy said better communication is needed with the public. Planner Nolan said a staff is dedicated to Centerpoint Energy and the City does press releases. Member Iyer said Street Closures could be added to Edina To Go. Planner Nolan said staff is working on mapping Street Closures. Member Janovy suggested communications department doing a press release that lists how to sign up for Street Closure information and where to find information on the City's website.

Motion was made by member Boettge and seconded by member Miranda to forward the May 4, 2016, Traffic Safety Report to City Council.

Boettge, Brown, Iyer, LaForce, Miranda, and Olson voted aye.

Janovy voted nay.

Motion carried.

F. 2015 Pedestrian and Cyclist Safety (PACS) Fund Summary Report

Member Olson asked if there was any concern that the PACS fund could be depleted given the approval of the two sidewalks that were petitioned. Yes, said planner Nolan. Member Janovy suggested an article in About Town about the two sidewalks.

VIII. Correspondence And Petitions - None

IX. Chair and Member Comments

Member Ruehl said she agreed with adding Street Closures to Edina To Go App because she researched street closures on the City's website and could not find anything.

Member Janovy asked if the ETC will see the CIP and planner Nolan said yes. She asked if the ETC would get a chance to give feedback on the Grandview District Transportation Study and planner Nolan said yes.

Member Brown said a resident mentioned to him that shrubs on Eden Avenue near Our Lady of Grace were obstructing view. He asked if pedestrian connection between city hall and Perkins Restaurant was part of the Grandview District Transportation Study and planner Nolan said yes. He said he is concerned with density in the Grandview area.

Member Iyer said he's heard from residents about speeding on Normandale Road and that they may bring their concerns to the ETC or City Council. He said W. 77th Street at Minnesota Drive should go straight thru to France Avenue and planner Nolan said the Comprehensive Plan is scheduled to be updated soon so this could be suggested for inclusion.

Member Miranda suggested naming the new street in the Grandview area Yancy. He said he attended the curbside chat by StrongTowns.org that member Bass suggested.

Member Olson said it was National Walk and Bike to School Day recently and it must have been heavily promoted because he could not find a space to park his bike at his child's school.

Chair LaForce noted the difference between the transportation study presentation last month and this one tonight. He said he is much happier with tonight's transportation study presentation. Chair LaForce said the City Council has asked the ETC to study passenger light rail. He said the ETC is not taking a position, just studying it and manager Neal was going to City Council for their timeline. Chair LaForce said member Brown summarized information on the Dan Patch rail line that was emailed everyone and their task is to answer the three questions they received from the City Council. Planner Nolan will email the three questions to everyone.

X. Staff Comments

- A joint work session with City Council is scheduled for Jun. 21, 6:30 p.m. The ETC was asked to send ideas for discussion at the work session to Chair LaForce and planner Nolan.
- A petition was received for a sidewalk on Woodland Road W. (Golf Terrace B) and it was approved by Council.
- For 2016, all the money budgeted for the PACS fund will likely be spent.
- The 2016 projects are progressing on schedule.
- Bid opening for several sidewalk projects are scheduled for May 26. Xerxes Avenue sidewalk is still in design and bid opening is scheduled for Jun. 9.
- Capital Improvement Planning started and is due to Finance by the end of June and due to City Council by Sept. for adoption in Nov. or Dec.
- They are four Centerpoint Energy crews working throughout the city.

XI. Calendar of Events

A. Schedule of Meeting and Events as of May 19, 2016

XII. Adjournment at 8:25 p.m.

TRANSPORTATION COMMISSION ATTENDANCE																	
		J	F	M	A	M	J	J	A	S	O	N	D	SM	WS	# of Mtgs	Attendance %
Meetings/Work Sessions		1	1	1	1	1										5	
NAME	TERM													(Date)	6/21		
Bass, Katherine	3/1/2017	1	1	1	1											4	80%
Boettge, Emily	3/1/2017		1	1	1	1										4	80%
Brown, Andy	3/1/2019			1	1	1										3	100%
Iyer, Surya	3/1/2018	1	1	1	1	1										5	100%
LaForce, Tom	3/1/2018	1	1	1	1	1										5	100%
Loeffelholz, Ralf	3/1/2018	1	1	1	1											4	80%
Janovy, Jennifer	3/1/2017	1	1	1	1	1										5	100%
Miranda, Lou	3/1/2019			1	1	1										3	100%
Olson, Larry	3/1/2017	1	1	1	1	1										5	100%
Ding, Emily (student)	9/1/2016			1	1											2	40%
Ruehl, Lindsey (student)	9/1/2016	1		1		1										3	60%



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Date: June 16, 2016

Agenda Item #: VI.A.

To: Transportation Commission

Item Type:

Other

From: Mark K. Nolan, AICP, Transportation Planner

Item Activity:

Subject: 2016 Work Plan Updates

Discussion

ACTION REQUESTED:

No action required.

INTRODUCTION:

ETC members will give brief updates to the Commission regarding the following initiatives on the ETC's 2016 work plan (unless an item is elsewhere on the current meeting agenda):

1. Study and report Community Circulator.
2. Organize and host a transportation-themed event with speaker(s).
3. Prepare and comment on Comprehensive Pedestrian and Bicycle Plan for inclusion in 2018 Comprehensive Plan.
4. Review Edina To Go app and provide recommendations to staff regarding organization/categories for reporting concerns related to streets/transportation.
5. Review data from City's Quality of Life Survey (2011, 2013, 2015) and conduct 2 public meetings to identify gaps around the City's transportation systems.
6. Make recommendations to staff for evaluation of the Living Streets and Streets Smarts outreach campaigns.
7. Provide input to staff on the creation of a walking map of the City indicating routes and areas of interest.
8. Review and Recommend whether the City of Edina should assume a position in favor of the addition of passenger rail to the community.



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Date: June 16, 2016

Agenda Item #: VI.B.

To: Transportation Commission

Item Type:

Other

From: Mark K. Nolan, AICP, Transportation Planner

Item Activity:

Subject: Edina To Go App Transportation Recommendations

Discussion

ACTION REQUESTED:

No action is required.

INTRODUCTION:

The 2016 ETC work plan has the following initiative: "Review Edina To Go app and provide recommendations to staff regarding organization/categories for reporting concerns related to streets/transportation." Commissioner Iyer will lead a discussion regarding this item.



CITY OF EDINA

4801 West 50th Street

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Date: June 16, 2016

Agenda Item #: VI.C.

To: Transportation Commission

Item Type:

Report and Recommendation

From: Mark K. Nolan, AICP, Transportation Planner

Item Activity:

Subject: Passenger Rail Recommendations

Discussion

ACTION REQUESTED:

- No action is required.

INTRODUCTION:

The 2016 ETC work plan has the following initiative: "Review and Recommend: Passenger Rail Service. ETC will provide report answering the following questions:

- Should the City of Edina support further study of the possibility of passenger rail service in Edina?
- Should the City of Edina formally request the elimination of the so called "gag rule" concerning the Dan Patch line?
- Should the City of Edina dedicate staff and fiscal resources to developing a plan to encourage the development of a passenger rail service in Edina?"

Commissioner Brown will lead a discussion regarding this item, and has provided the attached information. Please recall that "Review and Recommend" is Council Charge 3, which states:

- Board/Commission is asked to review a specific policy issue and to issue a recommendation on the issue to the City Council.
- Member comments will be included in the Staff Report (optional, Board/Commission can include an Advisory Communication with the staff report).
- A majority vote is necessary for a recommendation to be formally submitted to City Council.

ATTACHMENTS:

Dan Patch Fact Sheet

Dan Patch Fact Sheet: History

- September 3rd 1906 Dan Patch Rail Line Plans announced by Minneapolis, Rochester, & Dubuque Traction Company for the purpose of carrying passengers & freight
- November 2nd 1913 Construction Begins in Brookside Neighborhood
- June 21st 1918 Minneapolis Northfield & Southern Takeover line
- Last passenger service April 30th 1942
- January 1st 1986 Minneapolis Northfield & Southern merges with Soo Line. 1990 CP Rail Purchases Soo Line.
- Single Track line runs from Minneapolis to Northfield, with connections to Chicago & Kansas City
- In Edina, the line runs from 494 E/W North to the 44th & Brookside Neighborhood.
- <http://slphistory.org/danpatch/>

Dan Patch Fact Sheet: Railroad Law

- In the United States, Railroads have unique powers through the Federal Commerce Clause not available to most companies foreign or domestic operating within the United States.
- Two of those powers are Eminent Domain & the ability to operate under Federal Law with little regard to state & local laws.
- This manifests itself in a few key forms recently, such as the ability to take land/property along a train line for rail operations, not having to publish an operating schedule, not having to disclose the type of cargo's being carried & intersection upgrades being the responsibility of local authorities, not the railroad.
- <http://www.legis.nd.gov/files/resource/committee-memorandum/59283.pdf?20160422063233>
- <http://www.law360.com/articles/462492/nj-high-court-backs-railroad-s-eminent-domain-power>

Dan Patch Fact Sheet: Property Tax

Edina Dan Patch Rail Property Tax Analysis				
	PID	Acreage	Value	Taxes
1	811621110007	7.82	\$1,207,500.00	\$45,248.88
2	511621440003	1.99	\$301,300.00	\$11,290.54
3	511621410002	2.01	\$302,500.00	\$11,335.62
4	511621140001	2.53	\$382,200.00	\$14,322.14
5	511621110001	3.04	\$449,000.00	\$16,825.40
6	3211721440001	3.00	\$446,800.00	\$16,742.98
7	3211721410001	0.53	\$79,500.00	\$2,979.10
8	3211721410065	1.45	\$219,600.00	\$8,229.00
9	3211721140051	1.47	\$221,600.00	\$8,304.02
10	3311721230004	0.76	\$114,300.00	\$4,283.04
11	3311721110003	0.74	\$111,500.00	\$4,178.40
12	3311721220004	0.79	\$119,300.00	\$4,470.42
13	3311721210003	1.39	\$210,300.00	\$7,894.70
14	2811721340013	1.78	\$268,500.00	\$10,061.62
15	2811721340014	0.20	\$30,600.00	\$1,146.80
16	2811721310018	1.01	\$154,400.00	\$5,785.96
17	2811721310001	3.03	\$444,300.00	\$16,649.28
18	2811721240001	0.76	\$113,500.00	\$4,260.68
19	2811721210061	1.46	\$216,900.00	\$8,142.40
20	2811721210001	0.19	\$28,400.00	\$1,065.96
21	2811721210111	1.27	\$188,500.00	\$7,076.42
	Total	37.22	\$5,610,500.00	\$210,293.36

<https://gis.hennepin.us/Property/Map/Default.aspx>

Dan Patch Fact Sheet: GAG Rule

Sec. 85. [DAN PATCH COMMUTER RAIL LINE; PROHIBITIONS.] Subdivision 1. [DEFINITION.] For purposes of this section, "Dan Patch commuter rail line" means the commuter rail line between Northfield and Minneapolis identified in the metropolitan council's transit 2020 master plan as the Dan Patch line. Subd. 2. [METROPOLITAN COUNCIL; PROHIBITIONS.] The metropolitan council must not take any action or spend any money for study, planning, preliminary engineering, final design, or construction for the Dan Patch commuter rail line. The council must remove all references, other than references for historical purposes, to the Dan Patch commuter rail line from any future revisions to the council's transportation development guide and the council's regional transit master plan. Subd. 3. [COMMISSIONER OF TRANSPORTATION.] The commissioner of transportation must not expend any money for study, planning, preliminary engineering, final design, or construction for the Dan Patch commuter rail line. The commissioner must remove all references, other than references for historical purposes, to the Dan Patch commuter rail line from any future revisions to the state transportation plan and the commissioner's commuter rail system plan. Subd. 4. [REGIONAL RAIL AUTHORITIES.] No regional rail authority may expend any money for study, planning, preliminary engineering, final design, or construction for the Dan Patch commuter rail line.

<https://www.revisor.leg.state.mn.us/laws/?id=393&doctype=Chapter&year=2002&type=0>

Dan Patch Fact Sheet: Current Situation & Ownership

- CP Rail is the current owner of the track through Edina with operating rights given to TC&W. CP Rail has a \$22B market cap with thousands of employees, while TC&W is a privately held firm with only 70 employees
- TC&W has repaired the Port of Cargill Swing Bridge with the intent of increasing total train traffic from 2 to 4 trains per day.
- The City of Edina currently has 7 at grade rail crossings with only 1 being at full safety level of arm bars, lights, and signs. The rest are uncontrolled. Improvements are not the responsibility of the railroad.
- TC&W working with Continental Grain & Barge to supply Zen Noh with grain for transport through the Panama Canal to supply Japan with grain.
- <http://data.cnbc.com/quotes/CP>
- <http://www.cpr.ca/en>
- <http://tcwr.net/>
- <http://www.startribune.com/dan-patch-bridge-over-minnesota-river-will-be-swinging-again-this-spring/370445981/>
- <https://www.cgb.com/newscenter/artmid/1048/articleid/29/cgb-announces-partnership-with-riverland-ag.aspx>
- <https://www.cgb.com/aboutus/headquarters.aspx>
- <http://zhiusa.com/home/about/>

Request from City Council to ETC

- ❑ Review and Recommend: Passenger Rail Service. ETC will provide report answering the following questions:
 - Should the City of Edina support further study of the possibility of passenger rail service in Edina?
 - Should the City of Edina formally request the elimination of the so called "gag rule" concerning the Dan Patch line?
 - Should the City of Edina dedicate staff and fiscal resources to developing a plan to
- ❑ Recall that "review and recommend," according to the new Council Charge policy, means the following:
 - Board/Commission is asked to review a specific policy issue and to issue a recommendation on the issue to the City Council.
 - Member comments will be included in the Staff Report (optional, Board/Commission can include an Advisory Communication with the staff report).
 - A majority vote is necessary for a recommendation to be formally submitted to City Council.

2002-2016 What has Changed since the start of the GAG Rule?

- **Density:**

- 2008 Comprehensive Plan 2030 population forecast 50,000 v Current Population 2016: 50,000
http://edinamn.gov/edinafiles/files/City_Offices/Community_Development/Planning/Comprehensive_Plan/ComprehensivePlanCh3.pdf
- Housing Projects in Pipeline or Discussion: 4 buildings 66th & York, Southdale Library, 2 buildings Grandview site, Wickes site, Cahill Industrial Park, 7200 France, Pentagon Park, Opus Development at old UHC HQ, Assisted living at Southdale Hospital, Assisted Living near Wendy's & Additional corners of Southdale on France side at 66th & 69th

- **Employment:**

- Methodist & Southdale Medical Complexes have doubled in size

- **Technology:**

- Hwy 62 & 169 have remained at 2 lanes, 494 & 100 have added 1 lane each
- Wifi, Smart Phones & I pads are all the standard increasing distracted driving
- Diesel Electric trains have become quieter & safer
<http://www.nipponsharyousa.com/tp101216.htm>

Benefits of Changing the GAG Rule:

- Increased Safety at all 7 reworked at grade railroad intersections in Edina
- Attach Brookside Terrace to Wood Lane in order to allow for Police & Fire Service w/o crossing Rail Line
- Reworked Rail Intersections for safety allows for whisper quiet intersections, no train horns
- Implementation of passenger service creates partnership with CP Rail
 - Edina's lead will allow us to set a schedule along the line
 - This schedule can then be published allowing for greater safety in the neighborhoods
- Rail line will help offset lost parking from increased density throughout Edina
- Provides Substantial commuter financial benefit in reduced car expense & lost productivity.
- Will support increased density which in turn supports Edina's overall property tax base

Cost of Car Ownership Per Year

<u>Cost Category</u>	<u>Cost Per Month</u>	<u>Cost Per Year</u>
Car Loan Used 2008 VW Passat	\$250	\$3,000
Car Insurance (USAA)	\$80	\$960
Gas	\$80	\$960
Tabs	\$4	\$48
Maintenance (Grandview Tire & Auto) 2 Oil Changes, 1 Transmission Flush, Tire Rotation	\$20	\$240
Lost Productivity Time Driving 1 Hour per working day Roundtrip Accountant making \$78,000 per year	\$750	\$9,000
Total	\$1,184	\$14,208
Note: Does not include Monthly Parking if working downtown		
Lost Economic Benefit to 5,000 Edina Residents who commute each day		\$71,040,000

Recommendations ??

- Should the City of Edina support further study of the possibility of passenger rail service in Edina?
 - Yes- The line should be studied from the Southern Edina border of 494 thru St.Louis Park and on to Target Field with stations at Cahill, Grandview & Excelsior Ave in St.Louis Park. With the assumption that Diesel Electric or DMU units are utilized on the track. Emphasis on sound noise and rattle reduction technology should be placed. A commuter type schedule with sports & entertainment flexibility should be part of any study.
- Should the City of Edina formally request the elimination of the so called "gag rule" concerning the Dan Patch line?
 - Yes & No- Subdivision 2 & 4 should be removed so Met Council & HCRA can help Edina study the line. Subdivision 1 & 3 should remain in order to keep it a local transportation line.
- Should the City of Edina dedicate staff and fiscal resources to developing a plan to
 - Yes- This will provide focus on the seven intersections along with noise reduction resources to the neighborhoods & prioritization of scheduling for Edina to be a major focus of the study. The rail line also has the opportunity to support increased density throughout the City, thereby supporting the overall property tax base.



CITY OF EDINA

4801 West 50th Street

Edina, MN 55424

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Date: June 16, 2016

Agenda Item #: VI.D.

To: Transportation Commission

Item Type:

Report and Recommendation

From: Mark K. Nolan, AICP, Transportation Planner

Item Activity:

Subject: Rosland Park Pedestrian Bridge Study

Information

ACTION REQUESTED:

No action is required.

INTRODUCTION:

Please recall that the engineering department submitted a project to the University of Minnesota's Civil Engineering Department for a "capstone design project." This project - a study regarding the feasibility of improving or replacing the pedestrian bridge over Highway 62 at Rosland Park - was chosen by a group of four students. That study has been completed and is attached.

In short, the capstone team recommends to replace the existing bridge with a slab/girder bridge with tight switchbacks on both sides of Highway 62, at an estimated cost of \$2.3 million. The proposed bridge will increase accessibility for bicycles and meets ADA standards.

Staff will give a brief presentation that summarizes the capstone team's recommendations regarding the pedestrian bridge.

ATTACHMENTS:

U of M Capstone Design Report: Rosland Park Pedestrian Bridge

DLN Consulting
1423 5th St SE
Apt. #3C
Minneapolis, MN 55414

May 5, 2016

Mr. Chad Millner
Mr. Carter Schulze
City of Edina Engineering Department
7450 Metro Boulevard
Edina, MN 55439

Re: 01F-T:Edina: Impacts Associated with a Pedestrian Bridge over Highway 62

Dear Mr. Millner and Mr Schulze:

Please find attached a report in response to your request for design options intended to make the current pedestrian bridge, crossing Highway 62 west of Valley View Road in Edina, Minnesota, ADA accessible. Included in this report are options to increase the bridge accessibility, with options for a new bridge. Additionally, an analysis for each one of the primary detailed designs is included, based on MnDOT bridge specifications and ADA standards for bridge accessibility.

The primary goal of this project was to increase accessibility and adhere to ADA standards for ramps. Secondary goals associated with this project include connecting two disconnected bike paths on either side of Highway 62, as well as to aide in snow removal from the bridge by the City of Edina. After these goals were satisfied, a cost benefit analysis was performed to determine the most viable and workable options for improving the bridge.

The designs took under consideration soil conditions, utility information, and groundwater drainage reviewed by outside consultants and DLN Consulting and produced diagrams illustrating the design options. The recommended replacement option is a new bridge in the existing location, that utilizes a two symmetrical “switchbacks” connecting to the existing paths. The estimated cost for the demolition of the old bridge and construction of a new bridge is approximately \$2.3 million, comparable to the cost to retrofit/ rehabilitate the existing bridge.

It has been our pleasure working with you on this project and we thank you for this opportunity to work with the City of Edina. We look forward to working with you on future projects.

Sincerely,
Daniel S. Van Horn

Daniel S. Van Horn
University of Minnesota Civil Engineering Student
vanho161@umn.edu
(712) 830-7530

Enclosures: DLN Consulting Report titled: Impacts Associated with a Pedestrian Bridge over Highway 62
CC: Dr. Catherine French; Mr. Dennis Martenson, Dr. Merry Rendahl ; Mr. Nick Menzel; Mr. Logan Vlasaty

UNIVERSITY OF MINNESOTA - TWIN CITIES
CEGE 4102W: CAPSTONE DESIGN PROJECT

Impacts Associated with a Pedestrian Bridge over Highway 62

Prepared for: City of Edina Engineering Department

Authors: Nick Menzel, Daniel Van Horn, Logan Vlasaty

Final Report Submitted on: May 5, 2016

CERTIFICATION

By signing below, the team members submit that this report was prepared by them and is their original work to the best of their ability.

Daniel Van Horn

Daniel Van Horn
Project Coordinator

Nick Menzel

Nick Menzel
Project Manager

Logan Vlasaty

Logan Vlasaty
Project Engineer

Executive Summary

The City of Edina requested DLN Consulting to analyze improvement options for pedestrian bridge No. 27520, that crosses Trunk Highway 62 (TH 62), west of Valley View Road in Edina, Minnesota. It currently does not meet the Americans with Disabilities Act standards of 5% maximum allowable running slope (Administration 1999), nor does it provide an easy connection for bicyclists, snow plowing during the winter months or other general maintenance. There are stairs that lead up towards the bridge and a small bike track for bicyclists to push their bikes up or down alongside the stairs. Finally, the bridge does not meet current MnDOT bridge clearance requirements, as it is a pedestrian bridge with 15'2" of clearance, versus the MnDOT requirement of 17'4" (MnDOT Bridge M. B. Office 2015).

Several options were investigated to address ADA and Bike connect the bridge with an existing bike trail to the north and Rosland Park to the south. Only a few options were explored in more detail, as some were not deemed viable. Options that were ruled out and their reasons include: designing a helix on the north end due to lack of space, building a bridge to go over Rose Court Avenue and connect to the bike path approximately 300 feet north along the bike path due to land acquisition concerns, building a bike elevator on the north side due to maintenance concerns, and building a tunnel under Highway 62 due to construction and feasibility concerns. The five designs analyzed in more detail include adding new ramps on both ends of the bridge, adding a helix-ramp on the south end, building a new bridge 350 feet west of the current location with ADA approaches, and building a new bridge in the current location with "switchbacks" on both ends of the bridge. These analyses include the structural design, soil assessment, and a hydrologic study regarding the impact of new construction in the area.

Mechanically Stabilized Earth (MSE) walls were considered as an option for supporting the path, if a straight path were to be used. These walls were considered as they generally reduce the costs associated with the structures. This cost reduction comes by the reduction in overall structural supports needed, as the MSE walls distribute the load over a much wider area than columns by using the soil as the means to provide structural integrity. However, MSE walls would not work at larger heights, as they would become unstable due to the narrowness of a bike path. The MSE walls would also not work in any situation involving a curve, as the walls have internal structural supports that prevent curvature.

Even though the current structure was designed to last until 2033, it is recommended by DLN Consulting to replace or update the structure. A new bridge would increase the mobility for persons with disabilities and integrate a smooth connection for bicyclists. Additionally, the safer ramp access will benefit families with small children as it will provide safety and ease to and from the park on the south end of the bridge. This is notable because includes the Edina Aquatic Center as well as a tennis court, a disc golf area, and plans for a pickle ball court. Of the two new bridge options, it is recommended to use the two "switchbacks" option, as park users will perceive this bridge as being shorter than a bridge that is further away from the path site.

The total cost associated with a new bridge design is estimated to be \$2.3 million. This includes the bridge materials, structural materials, new vegetation/ditch reconstruction, labor, and engineering fees. DLN Consulting believes the benefits of this design outweighs the cost and would be a great addition for the City of Edina. A replacement bridge option is comparable to retrofitting and rehabilitation costs, which range from \$1.9 million to \$2.2 million. These high retrofitting costs are directly tied to the increase in structural capacity needed to support the City of Edina snow removal machines.

For these reasons, DLN Consulting recommends that the City of Edina incorporate the recommended bridge design into their upcoming capital improvement plan. The recommended plans would bridge a gap in the City of Edina's bike network and will provide safe access to persons with disabilities to travel between the residential neighborhood to the north and Rosland Park to the south. By constructing a new bridge 350 feet to the west of the current location, the existing structure can remain open during construction. The primary financier of this updated bridge would be the City of Edina, with grants from outside sources, including MnDOT for a new bridge, being pursued to supplement the high costs associated with bridge changes.

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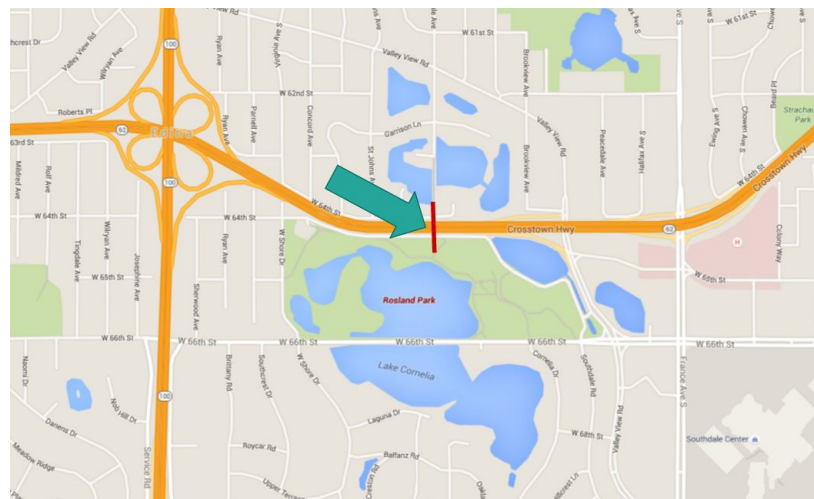
Introduction

Currently, pedestrian bridge no. 27520 crossing Trunk Highway 62 (TH-62) in the City of Edina fails to adequately serve the needs of Edina residents. Particular concerns with the existing bridge include that it is not bicycle friendly, the bridge does not meet Americans with Disabilities Act (ADA) access requirements for sidewalks and trails, and the City of Edina can not provide adequate winter maintenance using city snow removal equipment. These requirements state that the maximum allowable running slope for a trail is 5%, unless a landing is provided (Federal Highway Administration 1999). These standards are not met due to the presence of stairs on both ends. Additionally, the current bridge lacks connectivity between the Edina bike network and the nearby Rosland Park. This project seeks to address these challenges by developing a number of alternate bridge modifications to improve the accessibility of the bridge, including the potential for a new bridge.

When evaluating design options, attention was given to area soil borings and the impact these have on structures within the area, utility information and the alterations to these utilities that would need to be made to facilitate any improvements, MnDOT regulations governing right of way and structures over trunk highways, and the groundwater elevations in order to ensure the long term quality of nearby wetlands. Further considerations were given to the permitting process for new structures and the agencies responsible for approving these permits, including MnDOT, the City of Edina, and the Nine Mile Creek Watershed District. Construction limits, the properties impacted by this construction, and cost analyses of the various design options were also considered in addition to the identification of funding sources to pay for the project.

Background and Site Information

The location of the pedestrian bridge (NBI # 27520) is over Minnesota Highway 62, west of Valley View Road in Edina, Minnesota (near mile marker #109). At this location, there is a residential area to the north and a park to the south. The bridge was built in 1963 with a designed 70 year lifespan and will be in need of replacement as it approaches the end of its design lifespan of 2033. In addition, the bridge does not meet the Americans with Disabilities Act (ADA) standards, as it has staircases on both ends of the span. This location is shown in Figure 1.



Highway Administration 2015). An aerial view of the bridge being redesigned is shown in Figure 2.



Figure 2: Aerial View of Current Bridge and Surrounding Area

The bridge location is in an area with wetlands on both sides of Highway 62. There are multiple ponds just north of the residences that drain to the soil near the northern bridge pier. Rosland Park, at the south end of the bridge, contains a Frisbee golf area, tennis courts, planned pickle ball courts, and two lakes. Near the bridge pier in Rosland Park, there is a cause for concern due to a low lying ditch along W. 64th Street. This area has a history of minor flooding during major rain events and snow melts. If construction impacted the drainage ditch to the west of the existing bridge, that impact would need to be addressed. However, our recommended design option would not have any impact on said drainage ditch.

Utilities present in the area include water main lines running underneath Highway 62, storm water, and private utilities, including cable and internet services. Additionally, sanitary sewer lines run under Rose Court Avenue; however, these sewer lines should not be impacted by the project, as they are deep enough below the surface to not interfere with the construction design options detailed with this project; if a structure is built on top of the sanitary sewer lines, however, this would be a major concern. Figure 3 shows the location of the existing sanitary sewer and water main lines near the bridge location. The regulations governing this project include the City of Edina public utilities and permits, and Minnesota Department of Transportation Bridge standards, and Nine Mile Creek Watershed water resource management plans.

Based on the as-built drawing information for the existing bridge, we know the existing subbase can support a span type bridge with wooden piles. We also have soil boring data from a nearby site, however we can only assume the soil at the project site is similar to the site that we have data for. This assumption can be a risky one, and it is suggested that sufficient soil data is acquired before the start of design of the new structure footings. With the data we have available to us, it is likely that semi-submerged concrete footings would suffice as supports for the ramps. Piles would like need to be used for the support abutments for the truss bridge superstructure which will be discussed more in the proceeding sections.

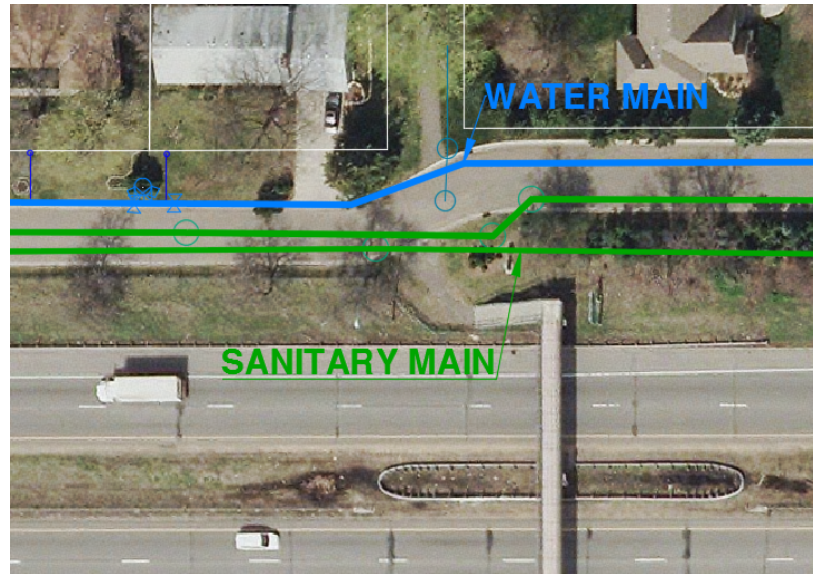


Figure 3: Public Utilities near Bridge Location

Design Considerations and Process

Early Design Process

The initial design process involved looking at overhead views of the project location via google maps, as well as physically visiting the site. This allowed the design team to rule out some options because of the obvious conflicts they would present; physical space to fit the north side approach ramp was the first large conflict. AutoCAD was then used to do initial horizontal design in plan view, however there were issues with this method because no elevation data was available and the elevations are extremely important for design. The design team was then provided with a basemap and Lidar elevation data from the City of Edina. The Lidar data could be used by Civil3D, a similar program to AutoCAD, and this elevation data was overlaid onto the basemap so that almost any spot in the project had existing elevation information available. The elevation data is only accurate to the nearest tenth of a foot, however this is accurate enough for design because the existing ground can easily be regraded a tenth of a foot to match what was designed.

The ultimate design challenge was how to get bridge users from the existing ground on either side of the highway onto the bridge deck. It seems simple at first, the existing bridge does it to a degree but it obviously does not allow disabled users or bikers to access the bridge. To get bikers and wheelchair users to the top of the bridge there are a couple options that were considered, both being a form of a ramp. These options come from the 2010 ADA Standards for Accessible Design which say that ramps must be at a certain grade for handicapped users. Fortunately these standards also make for a ramp that is easy to use for bikers too, unfortunately they add large design constraints to the project. The ADA Standards state that if one has a ramp that is greater than 5% running slope, there must be landings every 100 lineal feet for users to rest or safely turn around. A landing is a minimum 8' x 8' area that is at less than 2% slope in all directions, so they add lineal length to the ramp without gaining distance in the vertical direction to assist users getting from the ground to the bridge deck. Another drawback of these landings is that they are uncomfortable for bikers, as one could imagine a biker riding over these landings would be similar to a car going over a speed bump. The ADA Standards also state that under no circumstances can there be a ramp with greater than 8.3% running slope, so the best design option for this project would be to use ramps that are a consistent 5% running slope or less (ADA 2016).

Drainage/ Wetland Considerations

The location of the pedestrian bridge is not ideal, as it is located in an area with many wetlands. There are two ponds in close proximity to the north end of the bridge, coupled with low lying ground elevation, presents a concern about

flooding and drainage in the area. As there are residences in the area, DLN Consulting does not want to increase the risk of flooding on the northern end of the bridge. A ditch approaching the south end of bridge from the west poses a risk of flooding during relatively normal rain events in the area. However, with a reconstructed ditch and added vegetation buffer, this area could be well suited to accommodate any bridge drainage. For this reason, DLN Consulting determined that the new bridge design should have a 1% slope decreasing from the north to the south. The north end provides access to the City of Edina's storm water system that can be connected by a drain at the end of the north span. In the design of the span, there will be a raised 2 inch square on either side of the bridge deck to catch and funnel precipitation using scuppers into the north drain. As this may not solve all of the drainage issues related to this pedestrian bridge, new vegetation and drainage buffers will be added to either side of the bridge to help mitigate any drainage issues from excess rainfall.

Issues with Retrofitting Existing Bridge

Retrofitting the existing bridge to meet ADA slope requirements was a primary design option in order to reduce the overall cost associated with the project. To do this, approach structures would be constructed to allow pedestrians and bikers to navigate to the bridge starting at the existing trail. There is approximately a 17' difference in elevation between the existing bridge deck and the existing ground on either side of the bridge. This means that about 340 lineal feet of ramp at 5% slope would be needed to allow users access to the bridge. These approach structures, or ramps, would be constructed at 12' wide and they would narrow at the tie point to match the existing bridge deck. However, retrofitting the bridge had high costs associated with the bridge. This is because the ADA accessible ramps would be too heavy to attach to the existing bridge support structures, so all new abutments with their own footings would need to be constructed. If this route was taken, the City of Edina would not be able to bring their plow vehicles onto the span bridge either, which conflicts with one of the project goals.

Retrofitting the bridge could still yield lower capital costs than a new bridge replacement; however there were issues that were considered to outweigh the benefits of having a slightly less expensive design. One of these issues includes the vertical clearance of the existing bridge, which also conflicts with the project goals. Currently, the bridge has a 15 feet-2.4 inch clearance above the centerline of westbound Highway 62, and the current MnDOT requirement for a pedestrian bridge over a highway is 17 feet-4 inches. This clearance was grandfathered in after the standards were updated in 1967 (Federal Highway Administration 2015), but is still a potential concern to MnDOT as the Minneapolis-St. Paul Metropolitan area continues to expand and discussions about expanding Highway 62 to accommodate an increase in traffic have begun. It should be noted that the bridge was hit by traffic on Highway 62 and instead of raising the bridge to the appropriate height, the bridge was simply repaired and left at the current height. Cost information will presented in a later section, entitled "Schedule and Budget."



Figure 4: Existing Column Damage

Another concern is the bridge deck width, as the current bridge deck is 7 feet-6 inches wide, far less than the stan-

ward 12-foot width for a bicycle-shared pedestrian bridge. This would pose a challenge to bicyclists, pedestrians, and persons with disabilities alike as there would not be much room to maneuver while over the span of the bridge. The limited width also does not allow room for the City of Edina to perform day to day maintenance, such as snow removal. For the City of Edina to utilize their sidewalk snow plows, a new structure would be needed to provide the necessary width clearance, along with a heavier load rating. Moreover, the bridge should be replaced as it is approaching the end of its design life, which is 2033. This is a minor consideration, as the bridge passed its last inspection in 2012, and it satisfies MnDOT's requirements for staying in service. As MnDOT owns and structurally maintains the bridge, they would prefer to rehabilitate the bridge versus constructing a new structure, as long as the bridge continues to pass inspections. Extending the lifespan will likely increase maintenance costs over time which is a major consideration for DLN Consulting.

Building a New Structure 350 feet West of the Current Bridge Location

Due to the limitations surrounding the location of the existing bridge, another design option considered was for a new structure to be built 350 feet west of the current bridge location, connecting it to the bike paths on either end with long straight ramps matching into where the stairs are in the existing structure. This U-shaped design allows for larger radii on each curve, and a more seamless connection of the bike path on either side of Highway 62. The less favorable helix ramp design, which potentially causes bikers to dismount from their bikes and walk their bikes down the ramp, doesn't need to be considered, as there is plenty of space to construct the long ramps.

This option would feature the south ramp being close to the planned pickle ball courts and the tennis courts, but does not affect the Frisbee Golf Course. With the use of decorative Mechanically Stabilized Earth (MSE) walls that provide structural stability by distributing the load, the bridge has the potential to look aesthetically appealing to travelers on Highway 62 and will reduce noise for both residents on Rose Court Avenue and park visitors in Rosland Park. It will also act as a divider between the highway and the residents on the north end of the bridge, and park goes on the south end. Screens are particularly desirable for the residents north of the design location, as it would reduce the negative visibility of the highway. Some park goes on the south side may feel that these structural walls may be intrusive to the park, which is a concern worth noting.

Other things to consider with this option are that users do not like to see long straight ramps and may try to avoid them even though they are the same length of travel as a switchback; switchbacks are much more appealing to users. Additionally, there will be upwards of 10 trees that need to be removed for the ramps. The ditch on the south side would need to be addressed as previously stated for drainage concerns. These trees could be replaced elsewhere in Rosland Park for sustainability purposes.

Building a New Structure at the Current Location

Building a new structure at the same bridge location up to current MnDOT standards would eliminate most of the disadvantages of retrofitting the existing bridge. While it would have a slightly higher capital cost, a new bridge will reduce maintenance costs and improve the safety for pedestrians and motorists.

To keep the bridge designs at the current location, there are issues that needed to be addressed. On the north end of the bridge, there was limited space to work with between Rose Court Avenue and the Highway 62 Right-of-Way boundary. Any design that was considered as a viable option for the north end would require coordination with MnDOT, since their Right-of-Way would be encroached upon; this concern would be mitigated by effective communication during the design and construction process. Designs that involved disturbing Rose Court Avenue, whether passing completely over the road or reconfiguration of Rose Court Avenue, were not deemed viable because of the potential nuisance to the residents and minimal room for a suitable realignment of Rose Court Avenue. Some feasible approach options on the north end include a helix ramp with a small radius or a switchback ramp. A primary design goal for the north end was to construct the approach ramp without the need to acquire more property.

On the south end of the bridge in Rosland Park, one consideration of the design was to reduce impact on the park,

an example of that would be to accommodate the Frisbee Golf Course. This posed a challenge as one of the basket targets is adjacent to the end of the stairs of the current structure; this basket target can be moved to create a new course for the City of Edina residents. If the bridge were to remain at the current location, a viable approach would require the removal and relocation of at least one of the basket targets. Despite the minor inconvenience of relocating a basket or two, the south end has more room for possible designs, being limited only by West 64th Street, and the tennis courts southwest of the span. This includes a helix ramp, a long curved ramp that would be partially ground supported, and a switchback ramp.

The bridge was designed to have a steel girder with a concrete deck (Example in Figure 6, taken from (Steel-Construction.info 2016) as this was a simple choice to design, an easy design to construct, and an easier bridge to maintain. However, based on the size and span length of the bridge, a truss bridge would be more economical to implement (TriMet 2015). When designing the span of the bridge, the dead load combinations were determined according to AISC design code, and the MnDOT LRFD bridge design manual. The self-weight of the span included the structural steel girders and the six inch reinforced concrete deck. The live loads were determined according to the ASCE 7 design code and the MnDOT LRFD design Manual. Also included in the live load calculation was an accommodation of the standard LH-10 vehicle. This standard is required for pedestrian bridges with a bridge deck wider than 10 feet. This will allow the City of Edina to use their sidewalk snow plows on the bridge, as well as MnDOT to use small inspection vehicles/machinery on the bridge. For an exact calculation, the Oregon DOT bridge design manual was referenced for the design vehicle components associated with a pedestrian bridge (O. B. Office 2015). Snow loads that were found in accordance with ASCE 7 were dependent on the geographical location. The software utilized in the design process of the new pedestrian bridge include Microsoft Excel, and AutoCAD. See sample calculations in Appendix C.



Figure 5: Example of a Slab/Girder Pedestrian Bridge

9 Mile Creek Watershed Regulations

Other regulations that were considered in the design of the bridge span and approaches included ADA slopes, and Nine Mile Creek Watershed considerations. Since this project will have over 5000 square feet of changes, and over 50 cubic yards of soil disturbed, it will trigger a watershed permit to ensure that the project does not negatively effect the overall watershed drainage and sustainability. The Nine Mile Creek Watershed District must approve the final design of incorporating the storm water drainage into the storm water management system

(Nine Mile Creek Watershed District 2016).

Creating a Sustainable Bridge

An important aspect that was considered while analyzing the different design options was how to minimize the environmental and societal impact of constructing/retrofitting a bridge. This included how to reduce the materials used for construction, and using local materials. Also, our team considered how to not only leave the land just as it was found, but improve upon it by adding vegetation, drainage buffers, and new trees. All of these sustainability practices were done referencing the Envision rating system for sustainable infrastructure.

Design Options Analyzed in Depth

This section will identify the primary design options considered to replace or retrofit the pedestrian bridge. These options include two options for a new bridge (the recommended options) including a new bridge 350' to the west with two long ramps or a new bridge in the same location with two switchbacks. Options to retrofit the existing bridge include building a ramp on both sides of the existing bridge, and two options to build a ramp on the north side and a spiral on the south side. One of these two options utilizes a "switchback" ramp on the north side, whereas the other option utilizes a "long" ramp.

Option 1: New Bridge with 2 Switchbacks

The recommended design option is to build a new bridge in the current location that uses two symmetrical switchbacks. This option is desirable as it would meet all pertinent standards, including the ADA requirements for path slope, MnDOT requirements for bridge clearance, and the recommended path width for bikes of ten feet. This option would require the removal of trees on the north end and would preserve the existing tennis courts, pickleball courts and the frisbee golf course. This option is shown in Figure 6.

Option 2: New Bridge with 2 Long Ramps

An alternate design option considered utilizing a new bridge, is a bridge constructed 350 feet to the west of the current bridge, with long ramps parallel to Highway 62/ W. 64th Street on both the north and south sides, as shown in Figure 7. This option is cheaper than option 1, as it is easier to construct the long ramps than to construct the switchbacks. However, this option has issues with perception, as users think that that the ramps are longer if they have to bike/ walk to another location instead of using switchbacks at the same location. As this is an important issue for the City of Edina, this option was deemed to be an alternate option to the new bridge with 2 switchbacks.

Apart from the high cost associated with a new bridge, a primary design consideration for a new bridge was the need for a manageable drainage system for runoff. The primary design solution was to have a vegetative buffer along the length of the ramp to catch excess runoff and control the flow of the water, which serves the secondary purpose of being decorative and more aesthetically pleasing. A similar buffer is being planned around the future pickle ball courts in Rosland Park.

There are not many trees in the immediate area of the southern end of the bridge due to the Frisbee golf course, however there are at least ten trees that will need to be removed from the south end to accommodate the new bridge. These trees would be replaced in nearby Rosland Park for sustainability purposes.

The ramps leading up the bridge deck would be constructed on Mechanically Stabilized Earth (MSE) walls for the majority of their length. This wall type provides a less expensive alternative to having a conventional structure such as concrete columns, beams, and decks along the length, as MSE walls are soil reinforced structures that distribute the load of the path, bikers, and other structural components along the entire length of the path instead of concentrating

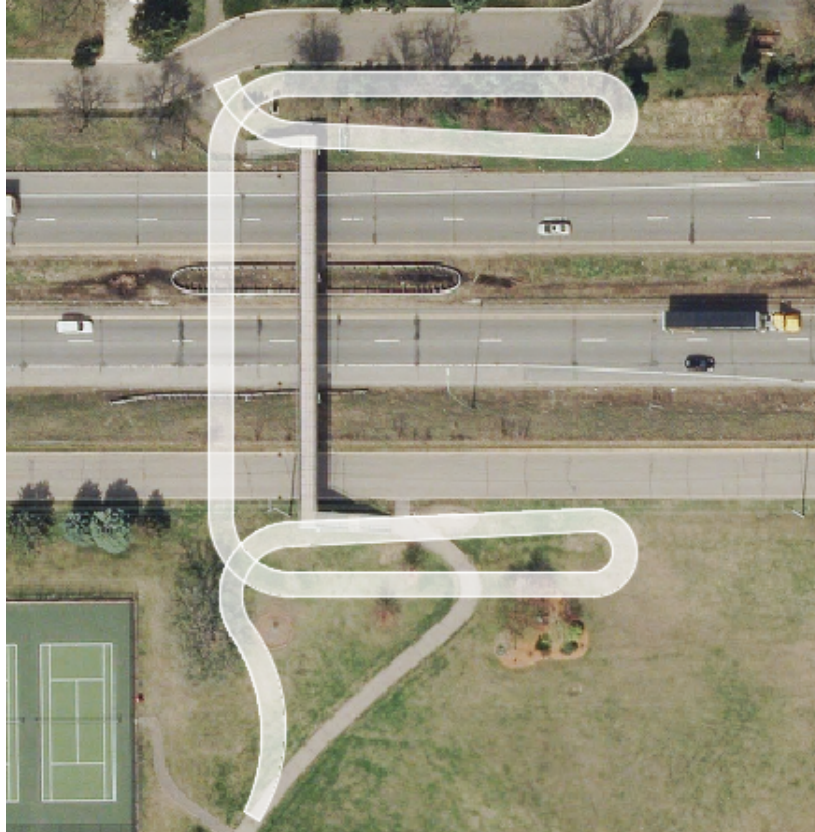


Figure 6: Option 1: New Bridge with 2 Switchbacks



Figure 7: Option 2: 2 Long Ramps Illustration

this loading in one conventional pile, pillar, or other similar structure. More information about these MSE walls can be found in Appendix A: Mechanically Stabilized Earth (MSE) Walls. The ends of the path would be ground supported in order to further reduce the costs associated with this project.

Option 3: “Residential” Switchback and “Park” Ramp

If the current bridge is kept, the primary design option that was considered was to retrofit the existing bridge with a switchback at the north end and a ramp “flowing” into Rosland Park. This option is shown in Figure #8. One particular benefit of this design option is the ability to keep the existing bridge in place, which significantly reduces the costs associated with the project. Further, this option is generally bike friendly, with the biggest points of concern being the 180° turns associated with the two points on the switch back and the connection on the north end.

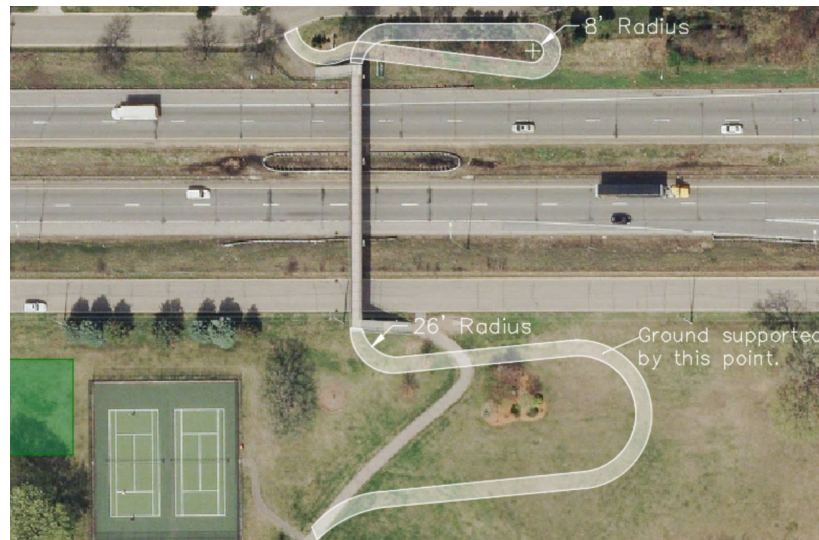


Figure 8: Option 3: “Residential” Switchback and “Park” Ramp Illustration

An additional benefit associated with a switchback-ramp combination is that the ramp on the north side (residential section) would be mainly ground supported, as the soil in the area of concern has a well-defined slope associated with it. Some earth work would still be needed in order to provide the defined slope. A large portion of the ramp on the southern side would also be ground-supported, further reducing the overall project costs.

Two major disadvantages of a switchback-ramp combination are that the switchback design requires additional engineering to ensure that the clearances are met according to the prescribed standards. Additionally, the structural costs of the switchback in the residential neighborhood would also increase the overall cost of the structure. Second, the ramp on the south side negatively impacts the existing frisbee golf course. Officials at the City of Edina would like to retain all existing facilities within Rosland Park, unless critically necessary to remove those facilities.

Option 4: “Residential” Switchback and “Park” Spiral

A fourth option considered to reduce the footprint of the southern ramp in option 2 is a spiral on the south (park) side. This option is shown in Figure 9. One of the primary benefits to this option is that a spiral is a single structure, instead of a ramp, which is an extended structure that requires more soil work and ground supports. Additionally, a spiral would impact a smaller portion of the park, particularly the Frisbee golf course near the bridge’s southern pier. A switchback on the south side would require more construction and design time, which is not necessary for the southern side, as there is ample room to design a full length ramp.

The biggest disadvantage to having a spiral on the southern end of the bridge is that spirals are not the most bike-friendly option. Bikers typically will walk their bikes down spirals instead of riding down the spiral path if the radius is too tight or the biker deems it necessary to reduce their speed significantly in order to maintain safe conditions. Further, more effort will be needed to ensure that both clearance requirements and ADA standards are met, as the MnDOT Bridge Manual suggest 10’ of clearance for bikes in a tunnel-like situation, with a minimum of 8’3” of

vertical clearance. (MnDOT Bridge M. B. Office 2015) The combination of these two standards governs the range of radii that can be used for a spiral bike path.

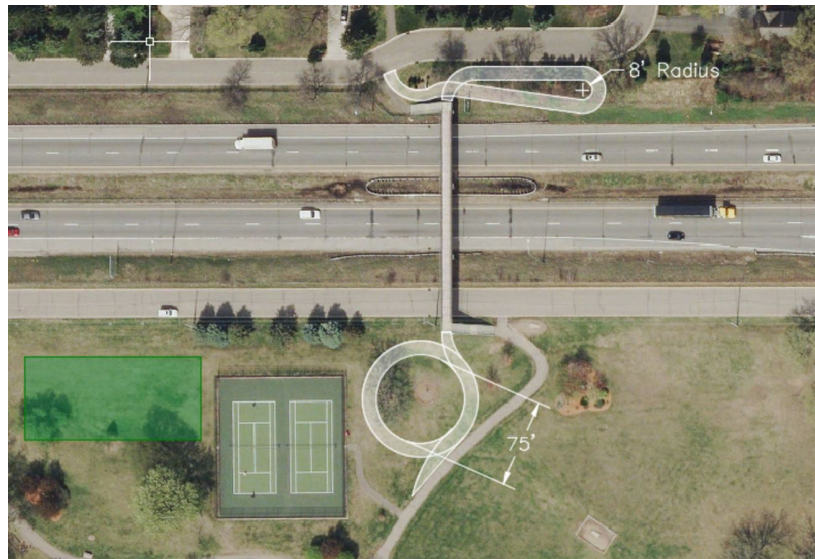


Figure 9: Option 4: “Residential” Switchback and “Park” Spiral Illustration

Option 5: “Long Ramp,” Road Connection and “Park” Spiral

This option includes a “long” ramp on the north (residential) side stretching to the west and either a spiral or “flowing” ramp on the south (park) side. This option is shown with a spiral on the south side in Figure 10. The primary benefit of this option is that it generally avoids undesirable 180° turns that are found in the switchback options, with the exception of the 180° turns present immediately at the ramp to bridge connection.



Figure 10: Option 5: “Residential” Ramp and “Park” Spiral Illustration

The biggest disadvantage with this option is that bikers and pedestrians would have to use West 64th Street in order to get to the bike path on the north side. Use of West 64th Street is undesirable, as it would add an unnecessary 300-350'

of length to the path (unnecessary in that it is not needed to satisfy ADA requirements). A mixed use road with bikes, cars, and pedestrians also increases the safety risks to the biker, which should be avoided where possible; however, concerns about bike traffic on a residential road could be mitigated by changing West 64th into a bike boulevard, reducing the adverse affects of having bikes travelling on a residential road.

Other Options Considered

During the brainstorming process, other options were briefly considered but ruled out due to the relative impracticality of pursuing those options. Example pictures for these options can be found in Appendix B: Pictures of Other Design Options Considered.

“Flyover” Bridge

The “flyover” bridge option, included the bike path on the north (residential) side gradually sloping down connecting the current bike path. This option was ruled out because of the concerns of right-of-way and the high costs associated with obtaining land and the restriction of bridge use for those who live in the residential area directly to the north of the bridge, as the stairs would have to be removed to facilitate construction of the bridge. The residents of this area were considered to be some of the bridge’s primary users, due to their proximity to the park on the south side.

“Residential” Spiral

The spiral option on the north (residential) side, located where the stairs currently exist, was ruled out due to the inability to meet both ADA requirements for a ramp and clearance requirements for a walkway. At a minimum, this option would require moving West 64th Street to provide enough space for the spiral; further, spirals are not preferred in designing for bike-friendliness, as most bikers will typically walk their bikes down the ramp.

Tunnel

Bike tunnels have been used in a number of projects to reduce the overall path length needed for sloping. This reduction in sloping compared to a bridge is due to the smaller overhead clearance required for a bike within a tunnel versus a semi-trailer passing under a bike bridge. However, a tunnel was quickly ruled out for this project as tunneling would require extensive construction, the potential closing of Highway 62 (a major thoroughfare in the Twin Cities metro), and the presence of a shallow water table in the area surrounding the bridge.

A tunnel option could be reconsidered if Highway 62 was widened to support an increased traffic volume. The large amount of earthwork necessary to widen Highway 62 would make a tunnel significantly more cost effective and would reduce the overall ramp length needed to achieve a slope that satisfies ADA requirements.

“Residential” Elevator

In extremely tight spaces, bike elevators have been conceived to reduce the overall space requirements while ultimately still providing bike connectivity between two previously disconnected bike networks. (Authority and Pathway 2016) However, an elevator was deemed to be a less than desirable option for this project, as the bike traffic was not enough to warrant the increased design constraints, capital costs, and maintenance costs. Further, local weather conditions would significantly reduce the intended lifespan of an outdoor elevator due to the temperature variations, leading to the need for a new elevator in the relatively near future.

Primary Design Refinement

Bridge Structure

Any of the approach options could be retrofitted to the existing bridge, but due to the previously stated concerns, DLN Consulting designed a new structure. For a new bridge, DLN Consulting found the best design choice would be for a structure at the same location with switchback ramps on either end (Option 1). The bridge span currently runs high to low from Rosland Park to the residential area. With this new design, the span will run the opposite direction to allow for drainage in the Rosland Park ditches. For the approach on the north end (residential area), the curves and ramps have space constraints and were designed with a minimum turning radius to accommodate the City of Edina's sidewalk snow plows. For the approach in Rosland Park, a larger turn radius was incorporated to allow the ramps to reach ground elevation more quickly, becoming ground supported, and to increase comfort for bicyclists. Additionally, a switchback ramp design is generally more appealing to pedestrians and bicyclists as the perception of distance traveled is less than that of a long ramp. A cross section view of the proposed design can be seen in Figure 11. DLN Consulting estimates the cost for construction of this new structure and the demolition of the existing structure to be approximately \$2.3 million. When analyzing the design options, long term construction and overall bike accessibility were the primary concerns.

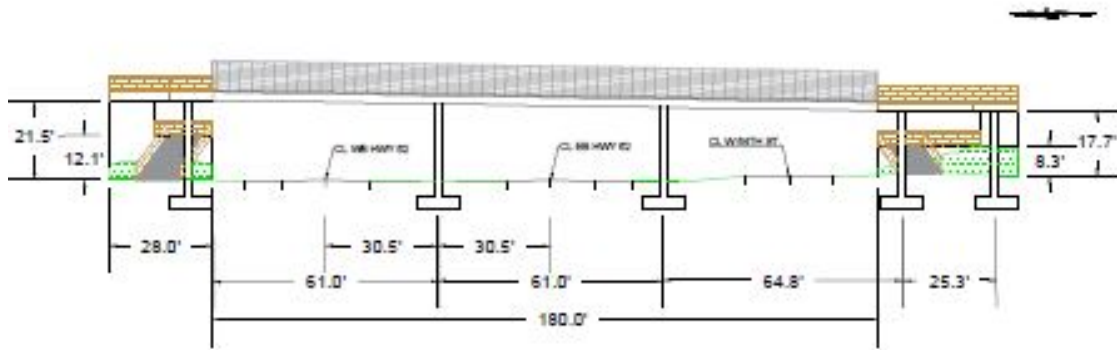


Figure 11: Cross Section of New Bridge Facing East

Drainage Requirements

While there were concerns with the drainage issue in Rosland Park, there is room to construct a larger ditch to discharge the bridge runoff. However, there was not enough data available to conduct a hydraulic analysis in the area to design a new ditch. If no ditch is constructed, the consequences for flooding were deemed more acceptable for the park vs. the risks of flooding in the residential area. This contributed to the bridge design sloping south towards Rosland Park.

Sustainable Practices Associated with Bridge Design

Envision guidelines for infrastructure were used as a framework for determining characteristics of the project that meet or exceed sustainability principles and which areas could be improved. Each of the five categories has been analyzed to determine the overall sustainability of option 1 with MSE walls forming the structural basis of the ramp (ISI 2012).¹

¹Note: neither the students working on this bridge modification project nor their mentors from the City of Edina are Envision Sustainability Professionals (ENV SPs). The project cannot receive an envision award unless a third party evaluator verifies the project meets Envision standards

Quality of Life

Overall, quality of life was the strongest category for the project at hand. Community quality of life will be improved by connecting bike networks and making the bridge ADA accessible. This connection also improves community mobility/ access, site safety (by trading stairs for a ramp), and enhancing the public space by improving general access to the park and adding buffers with an aesthetically appealing quality. After completing the envision checklist for Quality of Life, DLN Consulting gives this project a 60% rating.

Leadership

Leadership, with regards to sustainable processes, is also a major component of the project. In particular, there will be collaboration between City of Edina Engineering, Parks and Recreation, MnDOT, and 9 Mile Cree Watershed. Furthermore, the city residents will be involved in the process to determine if the project should be pursued any further and to involve those who will be impacted by the project. Finally, infrastructure integration is a key component to this project, as well as extending the useful life of the park nearby and the bridge if an option utilizing the existing bridge is used. After completing the envision checklist for Leadership, DLN Consulting gives this project a 56% rating.

Resource Management

Resource management at all levels was considered for this project. A particular portion of the new bridge construction focusing on resource management was the ramp being constructed using the soils present in the surrounding area to the furthest extent possible. This will reduce the amount of material needed for the ramp supports in Rosland Park. While it is not required, it is recommended that the materials from the existing bridge be recycled, though this would come at an increased disposal cost. A further analysis of the structure should be conducted to determine if any of the existing materials have salvageable value to help offset these costs. Finally, replacing the current bridge before it is deficient will save the City of Edina and the Minnesota Department of Transportation a significant portion of funds due to increasing maintenance costs. After completing the envision checklist for Resource Management, DLN Consulting gives this project a 32% rating.

Natural World

Sustaining the natural world is a high priority for this project, especially regarding the large number of wetlands and lakes in the area surrounding the bridge and the construction site. Procedures were implemented to preserve the wetlands; some design options were eliminated if they impacted the wetlands or the water runoff in the surrounding area. Soils will be restored to preserve the integrity of the soils in the surrounding area. After completing the envision checklist for the Natural World, DLN Consulting gives this project a 52% rating.

Climate and Risk

As the state of the climate is imperative for the community, DLN Consulting took steps to reduce the environmental impact on the climate. Relating back to resource management, the materials for the new pedestrian bridge can all be sourced locally. This will help reduce emissions from transportation and conserve energy. While building a bridge generally is not sustainable, it should be noted that the use of the bridge promotes sustainable practices. Of which include walking, running, and bicycling. This means once the new structure is built, the carbon footprint thereafter will be significantly less than a bridge built to carry regular motorized traffic. After completing the envision checklist for Climate and Risk, DLN Consulting gives this project a 24% rating.

for sustainable practices. The students are still able to use the Envision guidelines as a basis for sustainable practices, however.

Schedule and Budget

The project was completed on schedule so that the City of Edina could incorporate this proposal into their upcoming comprehensive plan renewal. The beginning of the design process commenced with the determination of bridge approaches at the current location. Once these were determined, another option was analyzed at a location 350 feet west of the current structure. The analysis of these options included finding similar projects and converting project costs to 2016 dollars, this was done using skills acquired from a Construction Estimating class taken through the U of M. A meeting with MnDOT Bridge Estimates Supervisor, Jeff Southward, and MnDOT Preliminary Bridge Plans Unit member, Dan Prather, was also used to help refine the cost analysis. They provided very helpful information and comparable projects to help establish a rough estimate for each design option. However, it should be noted that for all of these comparable projects, the engineer's estimate was approximately 5-10% different from the actual project cost, so it would only be reasonable to assume that the estimates in this report are only accurate within 15%.

The project came in under budget at \$35,850, while the estimated cost was \$38,200. This was due to an overestimate of the amount of time allotted for Cost Analysis, Permitting, and the Option Analysis. Additionally, there was an underestimate of the amount of time allotted for composing the final report. The remaining tasks came in at, or near the expected budget. A full break down of the budget for each task can be found in Table 6. A figure showing the weekly time spent by DLN Consulting can be found in Figure 20 and a breakdown of the tasks completed can be found in Figure 21.

Table 1: DLN Consulting Costs

Project Task	Projected Time Expenditure [hr]	Projected Cost	Actual Time Expenditure [hr]	Actual Cost
PDW	6	600	6	600
Meet with Mentors	24	2400	6	2400
Biweekly Project Reports	14	1400	13.5	1350
Report 1st Draft	25	2500	28	2800
Report 2nd Draft	18	1800	15	1500
Final Report	10	1000	74	7400
Midterm Presentation	21	2100	26	2600
Final Presentation	28	2800	18.5	1850
Regulation Research	32	3200	27	2700
Design Conceptualization	87	8700	72.5	7250
Cost Analysis	24	2400	16.5	1650
Permitting	21	2100	7.5	750
Option Analysis/Refinement	72	7200	30	3000
Total	382	38200	358.5	35850

DLN Consulting Billing Rate = \$100/hr

Table 2: Bridge Cost Comparison

Option	Description	Cost (USD)
1	Dual Switchbacks	2.3 M
2	2 Long Ramps	2.1 M
3	"Residential" Switchback and "Park" Ramp	1.9 M
4	"Residential" Switchback and "Park" Spiral	2.2 M
5	"Long" Ramp, Road Connection and "Park" Spiral	2.1 M

Future Design Considerations

Going forward there are some important aspects of this project that need to be addressed. With the limited time and resources available to the DLN Consulting team, not everything could be effectively taken care of in this report. One major issue is that there is a sanitary sewer main that is running parallel to Highway 62 on the north side of the bridge. The conflict with this line is that, according to our basemap data, it is running below the proposed switchback for the north side bridge access. Even if the sanitary line is deep enough that there is not a direct conflict with the approach support structure, it is not common practice to have a utility line running under an immobile structure and this should be addressed before construction.

Something else to consider is the fact that DLN Consulting did not have sufficient soil boring information for the project area, specifically the areas where footings would be needed to support the bridge and approach ramps. This is important information to obtain and can have an immense impact on the cost of the project as well as what design option is really the most feasible. Assumptions were made based off nearby soil information, which was approved of by the team's mentors with the City of Edina. However, it should still be noted these assumptions can lead to further problems down the road if not verified to be accurate and safe assumptions.

Lastly the DLN Consulting team was not able to do sufficient simulations for how the new bridge would impact drainage during rainfall events, or how it would compare to the existing bridge. This is an important aspect of any civil engineering project and further analysis of drainage will be required moving forward. It was discussed with the team's mentors that the increased impervious area should not be nearly enough to require new storm structures or re-routing of rainwater, however these are only educated guesses and not by any means an engineering decision. Finally, the ultimate aspect of the project going forward will be public acceptance and this can have the power to completely change the face of the project.

Summary

The primary goal of this project was to improve user accessibility of the bridge connecting Rosland Park a residential area north of Highway 62 in Edina, MN. Secondary goals associated with this project include connecting two disconnected bike paths on either side of Highway 62, as well as to aide in snow removal from the bridge by the City of Edina. After these goals were satisfied, a cost benefit analysis was performed to determine the most viable and workable options for improving the bridge. The designs took under consideration soil conditions, utility information, and groundwater drainage reviewed by outside consultants and DLN Consulting and produced diagrams illustrating the design options. The design work was completed using Civil3D and a basemap including elevation data provided by the City of Edina.

Multiple design options were considered, from a tunnel under the highway to an elevator, but the final optimal design was a truss bridge with switchback ADA compliant approach ramps. This final design is symmetric, which is always beneficial when considering user enjoyment, and it also has small impact on the park and residential area on either side. Another benefit of this design is that it eliminates a major safety hazard associated with traffic use on Highway 62, that is it eliminates need for any concrete columns in the median or adjacent to the highway. This safety benefit is hard to put a value because it is impossible to say if a conflict would ever occur with the existing bridge columns, however it is obvious that the benefits of having no columns near highway traffic is beneficial not only to highway users but also the City of Edina.

After meeting with the MnDOT bridge department it was decided that a pre-stressed steel structure bridge would be the best option for this application. The benefit of a truss bridge is that it can span up to 230' without supports in the span, and still be much cheaper than a concrete span bridge with pier supports. This bridge type is very common in these types of projects because it is visually appealing, and has simple construction involved with erection once the structure is on site. The traffic impact on Highway 62 is an other huge benefit of using a pre-fabricated truss for the bridge superstructure, MnDOT reports that this superstructure could be placed with just a single overnight closing of Highway 62.

Our final design includes constructing a new truss bridge just to the west of the existing bridge, this will help use dead space for the approach ramps instead of having a larger impact on the park. This bridge will have a 12' wide deck along with 12' wide switchback approach ramps at 5% running slope that will be very appealing to users. The pre-fabricated truss superstructure will easily carry the loads associated with bike and pedestrian traffic, as well as being able to support a heavy vehicle such as a snow plow used during winter maintenance. The final design will tie nicely into the existing bike trail system in the park, and it will require minimal reworking of the existing ground and pathway which is a benefit to permitting and project costs. The total estimated project cost to remove the existing bridge and construct a new bridge to all current standards, will be approximately \$2,300,000. MnDOT is a possible funding source as it would be beneficial to their traffic on Highway 62 to have the existing low-clearance bridge be eliminated from their property and replaced with a newer, low maintenance bridge with much better vertical clearance and zero points of conflicts for highway traffic.

It is believed that the work of DLN Consulting has successfully completed all of the project goals and found a feasible solution to the problem that was presented by the City of Edina. The total fee for the engineering done by the DLN Consulting team is \$35,000. Please note the section of the report that discusses steps going forward with this project because there are still important aspects that need to be addressed. DLN Consulting would like to thank the City of Edina for their participation in the project, and hope that they enjoy our work.

References

- ADA (2016). *ADA Ramp*. URL: <http://www.ada-compliance.com/ada-compliance/ada-ramp>.
- Administration, Federal Highway (1999). *Designing Sidewalks and Trails For Access*. United States Department of Transportation. URL: https://www.fhwa.dot.gov/environment/bicycle_pedestrian/publications/sidewalks/sidewalks.pdf.
- (2015). *Right of Passage: The Controversy Over Vertical Clearance on the Interstate System*. Tech. rep. URL: <https://www.fhwa.dot.gov/infrastructure/50vertical.cfm>.
- Anderson, Peter and Keith Brabant (2010). *Increased Use of MSE Abutments*. Tech. rep.
- Authority, Bay Area Toll and West Span Pathway (2016). *SFOBB West Span BPM Feasibility and Environmental Public Workshop*. Tech. rep. URL: http://mtc.ca.gov/sites/default/files/2016%5C%200120_SFOBB%5C%20West%5C%20Span%5C%20BPM%5C%20Public%5C%20Workshop%5C%20Presentation-FINAL.pdf.
- District, Nine Mile Creek Watershed (2016). *Permits and Regulations*. URL: <http://www.ninemilecreek.org/Regulatory/Reg.asp>.
- ISI (2012). *Envision Rating System for Sustainable Infrastructure*. Institute for Sustainable Infrastructure. URL: <http://isi.dev.wideopentech.com/portal/files/GuidanceManual.pdf>.
- (MDTA), Maryland Transportation Authority (2015). *Intercounty Connector (ICC)/MD 200 - Multimodal Connections*. URL: http://www.mdt.maryland.gov/ICC/Multimodal_Connections.html.
- Office, MnDOT Bridge (2015). *LRFD Bridge Design Manual*. Minnesota Department of Transportation. URL: <http://www.dot.state.mn.us/bridge/lrfd.html>.
- Office, ODOT Bridge (2015). *Bridge Design and Drafting Manual*. Oregon Department of Transportation. URL: http://www.oregon.gov/ODOT/HWY/BRIDGE/Pages/standards_manuals.aspx.
- SteelConstruction.info (2016). *Design of Steel Footbridges*. URL: http://www.steelconstruction.info/Design_of_steel_footbridges.
- TriMet (2015). *Bridge Type Selection and Engineering Overview*. Tech. rep. Portland, OR. URL: <http://trimet.org/search/results.htm?cx=009014880959573829355%5C%3Ab8mecw7atko&cof=FORID%5C%3A10%5C%3BNB%5C%3A1&ie=UTF-8&q=bridge+type+selection>.

Appendix A: Mechanically Stabilized Earth (MSE) Walls

Mechanically Stabilized Earth (MSE) walls were first developed in 1957 by the Reinforced Earth Company (Anderson and Brabant 2010) and were first called Reinforced Earth walls. These structures were initially designed as retaining walls, but were soon used in order to support heavy and concentrated loads from railways, industrial structures, and highway bridges. Currently, they are used in a number of projects to reduce the overall costs associated with the project, as the reinforced structure reduces the overall cost as compared with concrete pillars and beams. Further, the MSE walls can be aesthetically pleasing due to different facing that can be used in the construction of the walls. An example MSE wall is shown in Figure 12 (Anderson and Brabant 2010).



Figure 12: Example of Aesthetically Pleasing MSE Wall

MSE walls function using the principles of soil mechanics to impose an effective lateral restraining force on the soil element. This is accomplished by using inextensible horizontal reinforcing elements placed inside the soil mass, counteracting the lateral strain impacts caused by dilation by adding friction between the reinforcing elements and the soil mass. This combination of forces leads to larger surcharges causing the material to become stronger, adding flexibility and to the overall structure until the failure point of the materials. These structures work well in large, straight road and railroad structures, but are limited by a width to height ratio of 7:10. This limiting ratio is non-applicable for larger structures such as roads and railroads, but is the critical ratio for a bike path.

Appendix B: Pictures of Alternate Design Options

“Flyover” Bridge

Figure 13 shows a “flyover” bridge that would go over all four lanes of Highway 62 in addition to Rose Court Avenue on the north and West 64th Street on the south and connect to the bike path on the north approximately 300 feet past Rose Court Avenue. The northern portion of the path would be a structure near the bridge and transitioning into an abutment and then a ground supported ramp at the far northern end of the bike path. This bridge was deemed unrealistic, as it would require a very large structure and the acquisition of a significant amount of private property, greatly adding to the cost of the project.



Figure 13: Example of “Flyover” Bridge Connecting into Existing Bike Path

“Residential” Spiral

Figure 14 shows a possible spiral on the north side of the bridge. Similarly, figure 15 shows a spiral ramp sized to fit in the current space available. Both were ruled out due to space constraints between Highway 62 and Rose Court Avenue. These constraints lead to a slope of 10-12% in order to satisfy overhead clearance requirements, double the ADA standards for ramp slope.

Tunnel

Figure 16 displays an example of a tunnel passing underneath a highway. A tunnel underneath Highway 62 to replace the existing bridge would need to be more than twice as long and up to five times longer than the tunnel shown in this picture due to the width of Highway 62 itself. The picture is from the Maryland Transportation Authority (MDTA). ((MDTA) 2015) This tunnel option was ruled out due to concerns about area water tables and the large amount of shut down time on Highway 62 needed for construction of a tunnel, significantly increasing the costs associated with the project.



Figure 14: Example of Spiral Ramp on North Side of Highway 62

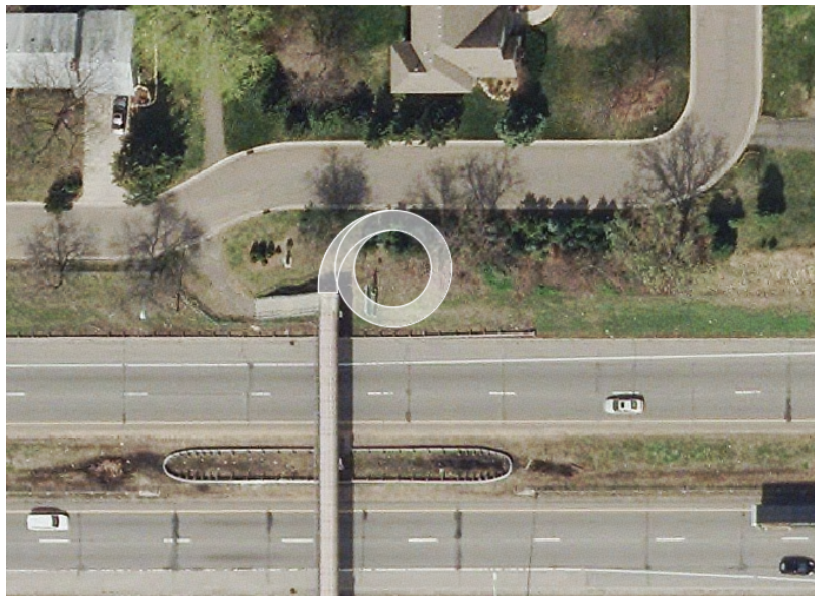


Figure 15: Example of Spiral Ramp Constrained Between Highway 62 and Rose Court Avenue

“Residential” Elevator

Figure 17 displays an example of a proposed bike elevator in San Francisco, California. Authority and Pathway 2016 This option was ruled out due to the high maintenance costs associated with a bike elevator in Minnesota. These maintenance costs would increase the lifetime costs of an elevator.



Figure 16: Example of Bike Tunnel underneath Highway

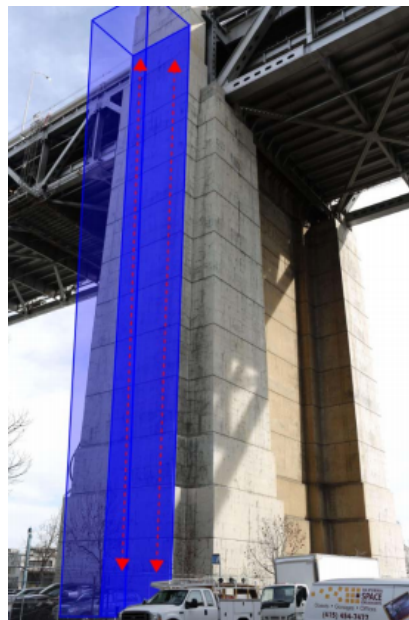


Figure 17: Example of a Bike Elevator for Lift up to Bridge Deck

Appendix C: Sample Calculations (Bridge Design)

GENERAL INFORMATION

Specifications Used:

-AISC 14th Ed. -ASCE 7

-MnDOT LRFD Bridge Design Manual

-Oregon Department of Transportation Pedestrian Live Load

-ACI 318-14

Geometry

Table 3: General Dimensions

Girder Details - W27x84			Slab Details		
Description	Value	Units	Description	Value	Units
Span Length	193	[ft]	Height of Slab	6	[in]
Member Length	20	[ft]	Width of Slab	12	[ft]
Area of Steel	24.7	[in ²]	Girder Spacing	11.75	[ft]
Depth	27	[in]	Top and Bottom Cover	2	[in]
Brace Spacing	10	[ft]	Concrete Compressive Strength	4	[ksi]
Steel Yield Strength	50	[ksi]	Reinforcing Steel Strength	60	[ksi]

Table 4: Loading Information

Description	Unit Loads					Source
	Value	Units	Value	Units		
D_{Steel}	0.084	[k/ft]	0.084	[k/ft]		ASCE 7
D_{Slab}	0.15	[kcf]	0.9	[k/ft]		MnDOT
L_{ped}	0.09	[ksf]	0.09	[k/ft]		ODOT
LH-10	10	[k]	4	[k/ft]		ODOT
$W_{transverse}$	0.05	[ksf]	0.05	[k/ft]		MnDOT
$W_{longitudinal}$	0.012	[ksf]	0.012	[k/ft]		MnDOT
Snow	0.05	[ksf]	0.05	[k/ft]		ASCE 7

For a pedestrian bridge deck wider than 10 feet, LH-10 was used for a 10,000 lb maintenance vehicle requirement. The value of 4000 k/ft was used as a typical point load from one rear wheel of an LH-10 vehicle (O. B. Office 2015).

Factored Loads

AISC LRFD Loading Equations:

$$1.4D \quad (1)$$

$$1.2D + 1.6L + 0.5S \quad (2)$$

$$1.2D + 1.6S + 0.5L \quad (3)$$

$$1.2D + 1.6S + 0.5W \quad (4)$$

$$1.2D + 1.0W + 0.5L + 0.5S \quad (5)$$

$$1.2D + 1.0E + 0.5L + 0.2S \quad (6)$$

$$0.9D + 1.0W \quad (7)$$

$$0.9D + 1.0E \quad (8)$$

Where:

D = 0.984 k/ft

L = 4.09 k/ft

W = 0.05 k/ft

S = 0.05 k/ft

E = 0 k/ft

Table 5: LRFD Factored Loads

Load Factors		
Equation	Value	Units
1	22.386	[k/ft]
2	25.757	[k/ft]
3	21.313	[k/ft]
4	19.293	[k/ft]
5	21.308	[k/ft]
6	21.243	[k/ft]
7	14.441	[k/ft]
8	14.391	[k/ft]

Of these Factored Load Equations, Equation 2 controls. Thus, 25.757 k/ft was used as the design factored load throughout the remainder of the design.

Table 6: Shear and Moment Information

Shear and Moment Requirements				
Location	Shear	Units	Moment	Units
A	68.69	[k]	0	[k-ft]
MID AB		[k]	91.58	[k-ft]
B-	-103.03	[k]	-114.48	[k-ft]
B+	85.86	[k]		
MID BC		[k]	28.62	[k-ft]
C-	-85.86	[k]	-114.48	[k-ft]
C+	103.03	[k]		
MID CD		[k]	91.58	[k-ft]
D	-68.69	[k]	0	[k-ft]

These values were calculated from AISC Table 3-23 Shears, Moments, and Deflections Design Aids For this design, Case 39 was utilized, assuming three equal spans under a uniformly distributed load.

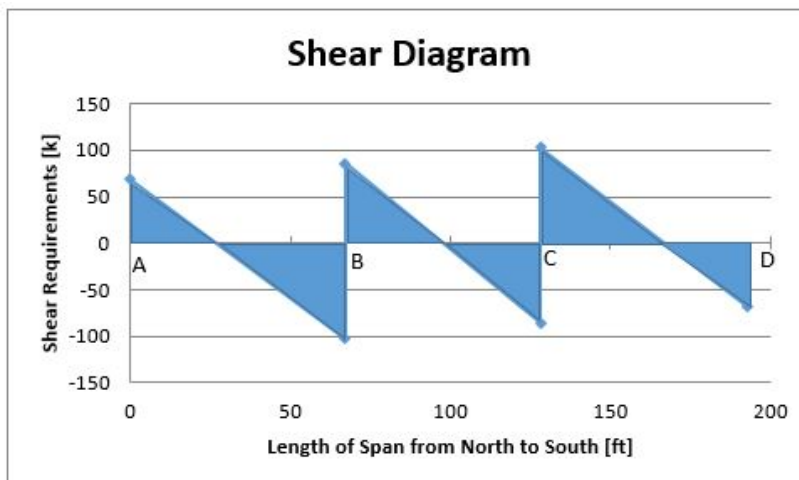


Figure 18: Shear Requirements for the Slab-Girder Bridge Design

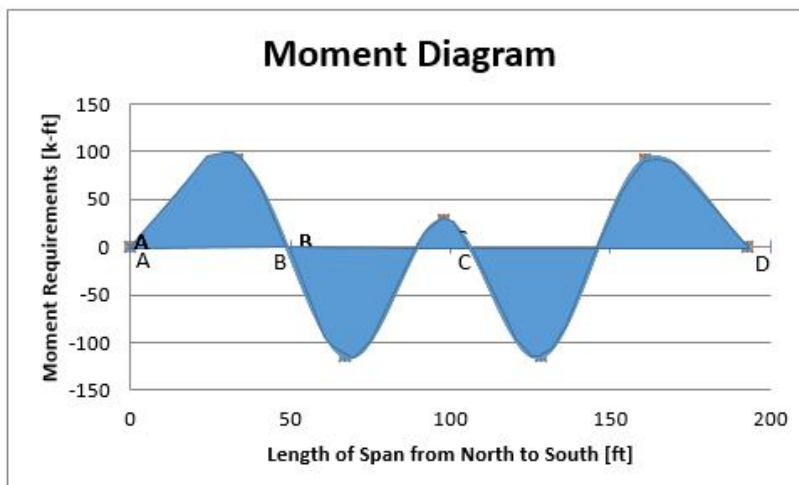


Figure 19: Moment Requirements for the Slab-Girder Bridge Design

Appendix D: TPR 8 and Memo

Figure 20 shows the weekly progression of hours completed by DLN Consulting and Figure 21 shows the completeness of the various tasks associated with the project at hand.

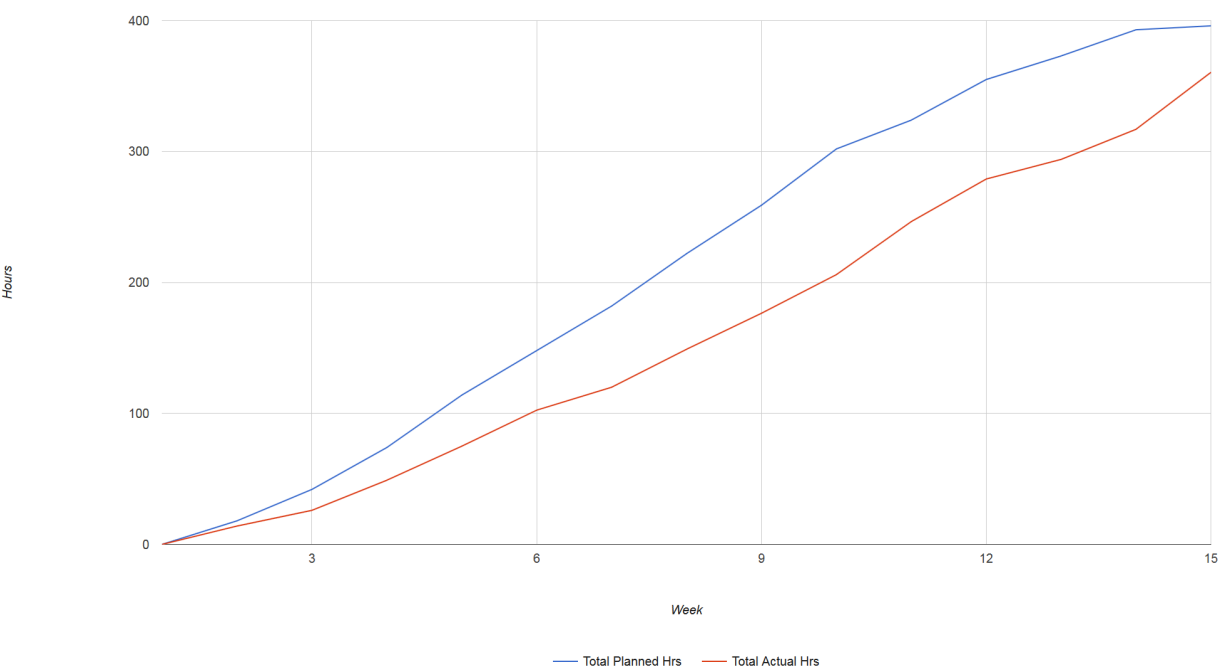


Figure 20: Weekly Progression of Hours Completed by DLN Consulting

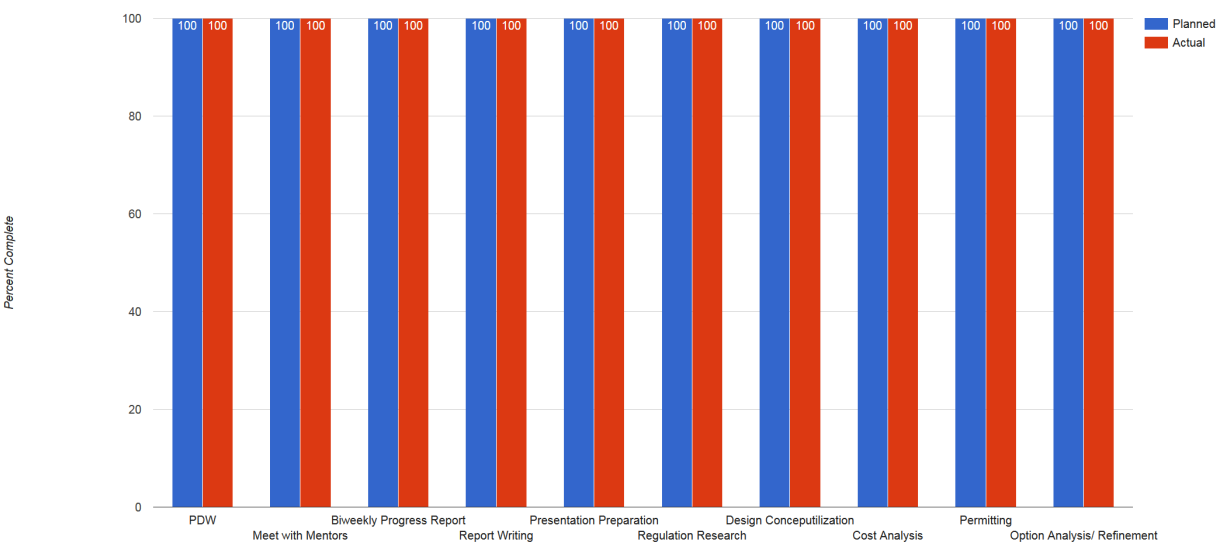


Figure 21: Breakdown of Planned vs. Actual Completeness



CITY OF EDINA

4801 West 50th Street

Edina, MN 55424

www.edinamn.gov

Date: June 16, 2016

Agenda Item #: VI.E.

To: Transportation Commission

Item Type:

Report and Recommendation

From: Mark K. Nolan, AICP, Transportation Planner

Item Activity:

Subject: Draft 2017-2021 Capital Improvement Plan
Transportation Projects

Discussion, Information

ACTION REQUESTED:

No action required.

INTRODUCTION:

City staff in all departments are currently developing the Capital Improvement Plan (CIP) for 2017 to 2021. The attached transportation-related projects are currently on the draft list being prepared by the engineering department.

It should be noted that there is more certainty regarding projects in the first two years of the CIP than those listed in later years; thus, transportation projects listed in the CIP after 2018 will be revisited annually to determine if and when they may be constructed.

All City departments are to have their projects (including estimated cost and description, funding source(s), and ranking) to the finance department by the end of June. The staff-recommended CIP will be presented to city council at a September work session, and the final CIP will be adopted by council in November or December.

ATTACHMENTS:

Draft 2017-2021 CIP Transportation Projects

Map: Draft Anticipated Street Reconstruction 2016-2021

DRAFT 2017-2021 Capital Improvement Plan (CIP)
Anticipated Transportation-Related Projects

Year	Anticipated Project	PACS Fund	TIF Funds
2017	Neighborhood Reconstruction Program: Birchcrest A / Countryside B	Yes	
	Neighborhood Reconstruction Program: Countryside G	Yes	
	Neighborhood Reconstruction Program: Chowen Park D		
	MSA Reconstruction Program: Parklawn Avenue (France Ave to 76th St)	Yes	
	Xerxes Avenue S & W 60th Street Traffic Signal (installed in 2016)		
	Bridge Project: Valley View Road over CP Rail		
	Oaklawn Avenue Sidewalk (72nd St to south of Gilford)	Yes	
	Pedestrian and Bicycle Plan Update (Consultant Fees)	Yes	
2018	Neighborhood Reconstruction Program: Bredesen Park A & E	Yes	
	Neighborhood Reconstruction Program: Concord A & G	Yes	
	Neighborhood Reconstruction Program: Country Club C		
	Neighborhood Reconstruction Program: Normandale Park D		
	MSA Reconstruction Program: W 62nd Street (Valley View Rd to France Ave)	Yes	
	W 58th Street Sidewalk (Wooddale Ave to France Ave)	Yes	
	Valley View Road Sidewalk (Mark Terrace Dr to Gleason Rd)	Yes	
	Vernon Avenue Intersection Improvements (Grandview Study)	Yes	Yes
2019	Neighborhood Reconstruction Program: Chowen Park A		
	Neighborhood Reconstruction Program: Chowen Park B	Yes	
	Neighborhood Reconstruction Program: Indian Trails B & C		
	Neighborhood Reconstruction Program: Todd Park E & G		
	Bridge Project: Benton Avenue over CP Rail		
	Highway 169 Frontage Road Sidewalk (Braemar to Valley View Rd)	Yes	
	Vernon Ave & SB TH100 Exit Ramp Free Right Removal (Grandview Study)	Yes	
	Arcadia Avenue Improvements (Grandview Study)	Yes	Yes
2020	67th Street & York Avenue Intersection Crossing Improvements	Yes	Yes
	Neighborhood Reconstruction Program: Countryside C		
	Neighborhood Reconstruction Program: Creek Valley C		
	Neighborhood Reconstruction Program: Morningside D & E		
	Neighborhood Reconstruction Program: Interlachen Park B		
	MSA Reconstruction Program: W 76th Street & Edinborough Way		
	Valley View Road Bike Facility Extension (anticipated 20% local match)	Yes	
	50th Street & NB TH100 Entrance Ramp Free Right Removal (Grandview Study)	Yes	
2021	New Street/Jerry's Foods Entrance from Eden Avenue (Grandview Study)	Yes	Yes
	Neighborhood Reconstruction Program: Grandview A		
	Neighborhood Reconstruction Program: Countryside I		
	Neighborhood Reconstruction Program: Hilldale	Yes	
	Neighborhood Reconstruction Program: Melody Lake A	Yes	
	MSA Reconstruction Program: Blake Road (Spruce Ave to Scriver Rd)	Yes	
	Bridge Project: Wooddale Bridge Rehabilitation		
	Rosland Park Pedestrian Bridge Replacement (anticipated 20% local match)	Yes	



City of Edina

Anticipated Street Reconstruction

2016 - 2021

DRAFT

Legend
Anticipated Year

2016

2017

2018

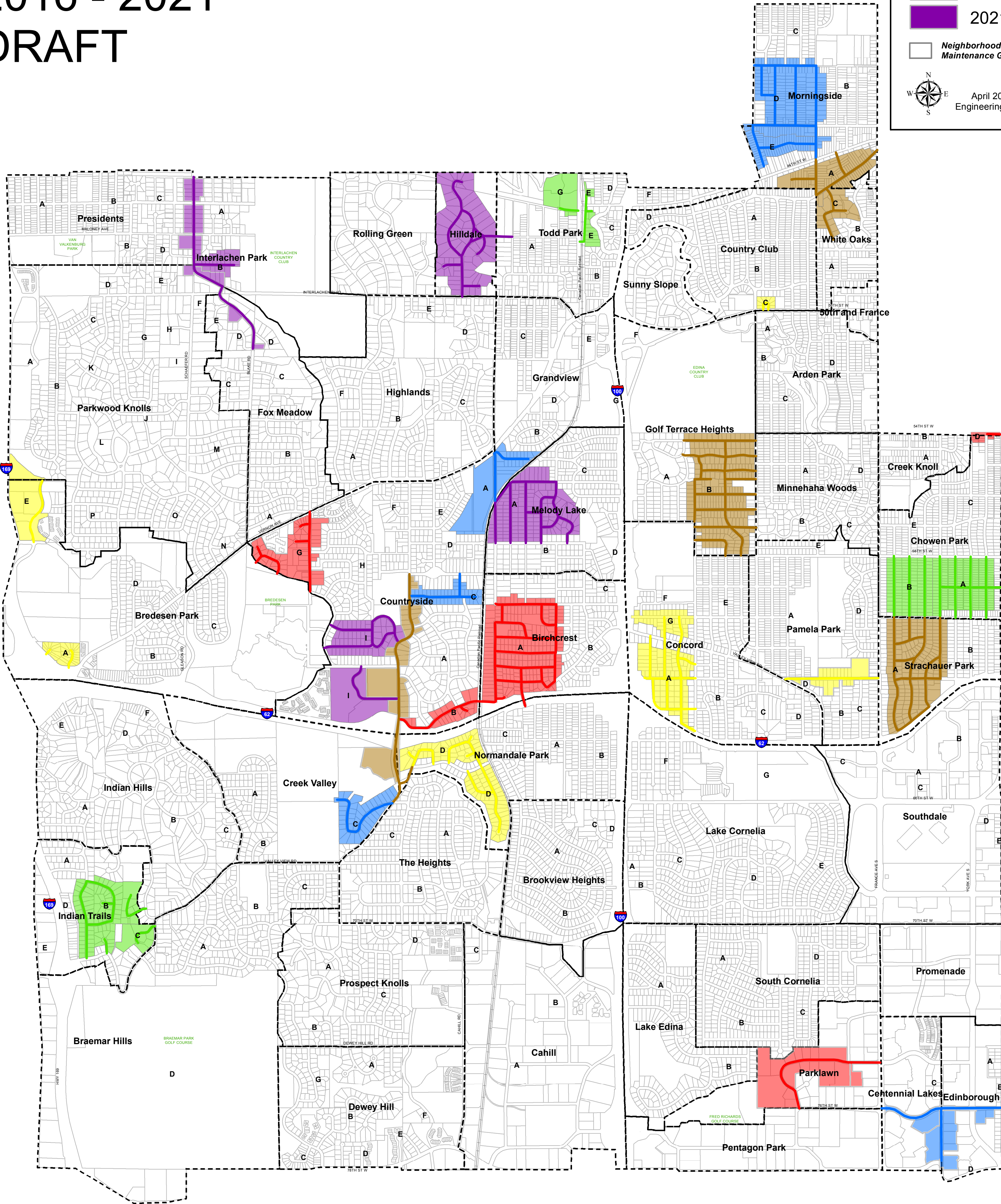
2019

2020

2021

Neighborhood Maintenance Groups

April 2016
Engineering Dept.



Note/Disclaimer

The dates shown on the map represent the anticipated years of reconstruction and are subject to change based on budgetary issues, adjacent projects, and other factors. Not all bituminous roadways within the City are shown. If a road is not highlighted then the potential reconstruction date is beyond the City's long-term planning process.

The City of Edina's street improvement policy is to assess residents for a portion of the roadway reconstruction costs. Public utility improvements are paid for from the City's Utility Fund. Extensive evaluation regarding the condition of the pavement, sanitary sewer, storm sewer, and watermain were used to set the priority of roadway improvements.



CITY OF EDINA

4801 West 50th Street

Edina, MN 55424

www.edinamn.gov

Date: June 16, 2016

Agenda Item #: VI.F.

To: Transportation Commission

Item Type:

Report and Recommendation

From: Joseph Totten, Traffic Safety Coordinator

Item Activity:

Subject: Traffic Safety Report of June 1, 2016

Action

ACTION REQUESTED:

Review and recommend the Traffic Safety Report of Wednesday June 1, 2016 be forwarded to City Council for approval.

INTRODUCTION:

It is not anticipated that residents will be in attendance at the meeting regarding the report's recommendations. An overview of the comments from the Edina Transportation Commission (ETC) will be included in the staff report provided to Council for their July 19, 2016 meeting.

ATTACHMENTS:

Traffic Safety Report of June 1, 2016



Date: June 16, 2016

To: Edina Transportation Commission

From: Joe Totten, Traffic Safety Coordinator

Subject: Traffic Safety Report of June 01, 2016

Information / Background:

The Traffic Safety Committee (TSC) review of traffic safety matters occurred on June 01. The City Engineer, Assistant City Planner, Traffic Safety Coordinator, Sign Coordinator, Transportation Planner, Public Works Director, and Police Lieutenant were in attendance for this meeting.

For these reviews, the recommendations below are provided. On each of the items, persons involved have been contacted and the staff recommendation has been discussed with them. They were informed that if they disagree with the recommendation or have additional facts to present, these comments can be included on the June 16 Edina Transportation Commission and the July 19 City Council meeting agendas.

Section A : Items on which the Traffic Safety Commission recommends approval

AI. Request for a new stop sign for southbound traffic at Alden Dr and Morningside Rd

Existing Conditions and Concerns:

- Residents of in the area requested a southbound stop sign on Alden Drive, due to limited sight distances, and being in an otherwise controlled area.
- Alden Drive and Morningside Road had a camera study performed, with one day having 1,600 movements at the intersection .
- Alden Drive has an ADT of 260 and an 85th-percentile speed of 25.8 mph.
- Morningside Road has an ADT of 1,350 and an 85th-percentile speed of 29.3 mph.
- The intersection is a T-intersection, with Alden Drive having only a southbound approach.
- Alden Drive is only one block long, its other intersection with 42nd Street, is 1250 feet away, and is all-way stop controlled.



Map : Morningside Road and Alden Drive

- Morningside Road has three intersections east of Grimes Avenue and west of France Avenue, one other intersection is uncontrolled, the other is controlled.

Guidance:

- Full warrants for stop sign placement can be seen in Appendix A.

After review, staff recommends placement of a stop sign at this intersection for southbound Alden Drive, and a stop sign to be placed on Eton Place, northbound at Morningside Road. The reasons for this decision are as follows;

- **The sight distance for Alden Drive's approach is very limited, and left turns from Alden Drive are not seen as being safe unless they come to a full stop.**
- **The streets which intersect Morningside Road east of Grimes Avenue are all controlled on their other end, and one of the three (Scott Terrace) is already controlled on at Morningside Road.**
- **Speeds and volumes on Morningside Road clearly indicate that Morningside Road is the major (or through) street.**
- **To make the City of Edina's signage consistent with how the road network is being used, and to make the system consistent throughout the city.**



Photo : Alden Drive, looking south towards Morningside Road

Section B : Items on which the Traffic Safety Committee recommends no action

BI. Request for intersection controls at 55th Street and Oaklawn Avenue

Existing Conditions and Concerns:

- Neighbors are concerned that the lack of any traffic control at this intersection creates a hazard for vehicles, bicyclist and pedestrians using the intersection, and also for use of their front yards and areas near the roadway.
- The intersection is currently uncontrolled.
- A right angle crash at the intersection occurred in 2010, resulting in a non-incapacitating injury. No other contributing factors were listed. The vehicles' directions were northbound and eastbound.
- A right angle crash at the intersection occurred in 2015, and resulted in injury. The vehicles' directions were southbound and westbound.
- 55th Street is yield controlled at its intersection with Brookview Avenue, 300 feet to the east, and is uncontrolled at Kellogg Avenue 300 feet to the west.
- Oaklawn Avenue is stop controlled at its intersection with 54th street 650 feet to the north, and at 56th Street, 625 feet to the south.
- Oaklawn Avenue has an ADT of 155 and an 85th-percentile speed of 25.0 mph. 3.3% of drivers exceeded 30 mph on Oaklawn Avenue during the study.



Photo : 55th Street, looking east towards Oaklawn Avenue



Map : 55th Street and Kellogg Avenue/Oaklawn Avenue, Kellogg Avenue is the westernmost circled intersection. Wooddale Avenue is seen on the far west of this map

- 55th Street has an ADT of 156 and an 85th-percentile speed of 25.9 mph east of the intersection. 2.6% of drivers exceeded 30 mph on 55th Street during the study.
- While placing the tube counting equipment, a neighbor bemoaned the possible placement of a stop sign, describing further signage as a hardship.

Guidance:

- Possible mitigation for the crash type seen in 2010 and 2015 would be stop or yield controls.
- Full warrants for stop sign placement can be seen in Appendix A.

After review, staff recommends no action on this item for the following reasons;

- **The crash history of the intersection is marginal, and does not indicate, independently, that a safety issue is present**
- **Sightlines, while less than optimal, are not atypical in the City of Edina**
- **Speeds indicate that drivers are proceeding with due caution and not driving recklessly**
- **Nearby intersections are uncontrolled**

B2. Request for intersection controls at 55th and Kellogg

Existing Conditions and Concerns:

- Neighbors are concerned that the lack of any traffic control at this intersection creates a hazard for vehicles, bicyclist and pedestrians using the intersection, and also for use of their front yards and areas near the roadway.
- The intersection is currently uncontrolled.
- 55th Street is uncontrolled at its intersection with Oaklawn Avenue, 300 feet to the east, and is stop controlled at its intersection with Wooddale Avenue 300 feet to the west.
- Kellogg Avenue is stop controlled at its intersection with 54th street 650 feet to the north, and at 56th Street, 625 feet to the south.
- Kellogg Avenue has an ADT of 150 and an 85th-percentile speed of 24.9 mph. 2.7% of drivers exceeded 30 mph on Kellogg Avenue during the study.
- 55th Street has an ADT of 359 and an 85th-percentile speed of 25.5 mph west of the intersection. 1.4% of drivers exceeded 30 mph on 55th Street during the study.
- A crash in 2015 was a right angle crash, in which an eastbound and a northbound collided in a right-angle crash. Both drivers stated they did not observe the other vehicle.

Photo : 55th Street, looking west towards Kellogg Avenue

Guidance:

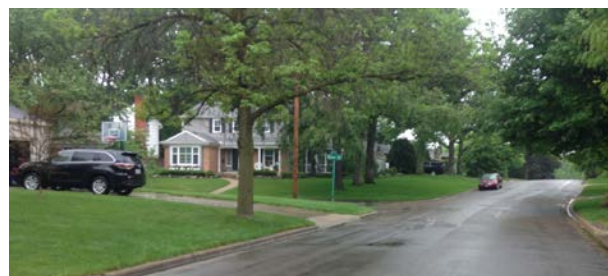
- Full warrants for stop sign placement can be seen in Appendix A.

After review, staff recommends no action on this item for the following reasons;

- **The crash history of the intersection is marginal, and does not indicate, independently, that a safety issue is present**
- **Sightlines, while less than optimal, are not atypical in the City of Edina**
- **Speeds indicate that drivers are proceeding with due caution and not driving recklessly**
- **Nearby intersections are uncontrolled**

B3. Request for Stop Controls at the intersection of Wyman Avenue and 62nd Street

Existing Conditions and Concerns:

Photo : 62nd Street, looking west towards Wyman Avenue

- This request comes from a resident who feels that this intersection is unsafe with the amount of traffic and speed of traffic that approaches the intersection.
- This is a T-intersection with Wyman Road having only a northbound approach.
- Wyman Avenue has a volume of 460 ADT; with a midblock 85th-percentile speed of 23.5 mph.
- 62nd Street has a volume of 340 ADT; with a midblock 85th-percentile speed of 26.2 mph.
- In the opinion of staff, construction traffic is not believed to be a factor in these roadway volumes, as 62nd Street is one block north of the local connector, Maddox Lane.
- No crashes have been reported at this intersection in the past 10 years.



Map : 62nd Street and Wyman Avenue

Guidance:

- Full warrants for stop sign placement can be seen in Appendix A.

After review, staff recommends no action for this item, for the following reasons:

- **There is not a crash history, and the intersection seems to be functioning well**
- **The speeds of the approaches indicate that drivers are utilizing due care while proceeding**
- **Sightlines are very good in one direction and relatively poor in another, however the poor sightlines are appropriate for the low speed traffic observed in the studies**
- **Other nearby intersections are uncontrolled**

B4. Request for more Speed Limit Signs along Valley View Road, from Gleason Road to Braemar Boulevard

Existing Conditions and Concerns:

- A request was received for a speed study and “strict enforcement” of speed limits along Valley View Road, specifically west of Gleason Road, for westbound traffic, which is coming down the hill in this location.

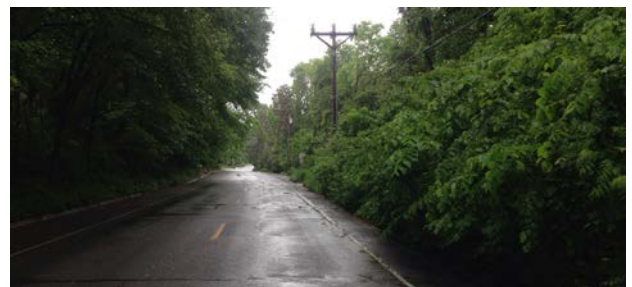


Photo : Valley View Road, looking west away from Gleason Road

- A count taken in this location showed an 85th percentile speed of 35.2 mph and an ADT of 1991.
- A full speed study was reported to the Police Department for targeted enforcement.
- When contacted for the results of the study, the requestor wanted more to be done to discourage speeding in the area, including more speed limit signage.
- Other requests from the requestor included signage that said “Speed Limit Strictly Enforced” or other signage to give the impression that enforcement in the area was stronger than had been observed by the requestor.
- The requestor feels that the rural ambiance of Valley View Road from Gleason Road to Braemar Boulevard is a reason for reminding drivers of the 30 mph speed limit.
- Two (2) crashes in the last ten years cited speed as a contributing factor from Braemar Boulevard to Gleason Road.

Guidance

- Posted speed limits are not an effective means of reducing speeds, without a similar reduction in design speeds.

After review, staff recommends no action on this item for the following reasons;

- **Enforcement would be present regardless of this decision; this item has been forwarded to the police for enforcement at their discretion**
- **Further signage alone is not seen as an effective means of changing driver behavior**
- **Signage such as “Speed Limits Strictly Enforced” are not found in the MNMUTCD and may imply that other speed limits are not enforced**

Section D: Other items handled by Traffic Safety

D1. Various construction related calls were received, the following are examples of the requests

- On Jeff Place, neighbors were concerned with speeds and volumes using their street to access Tracy Avenue north of Benton Avenue. A count was taken of this location and no pattern of speeding was seen. There was a volume of 410 ADT with an 85th-percentile speed of 29.0 mph. Police is aware of concerns in the area and has used the Dynamic Speed Sign Trailer in the area to reduce driver speeds.
- A resident was unable to exit from US 212 to Gleason Road, and was upset that the detour for the Tracy Avenue project used Gleason Road. How to exit to Gleason Road from eastbound US 212 was explained.
- A call was forwarded to the Three Rivers Park District about the detour signage for the Nine-Mile Creek Regional Trail being in the bike lanes on 70th Street.
- A call was received concerned about future congestion at Interlachen Boulevard and Blake Road due to the upcoming construction on US 169. This will be an item investigated when US 169 is under construction.
- Closures on 69th Street were seen as concerns for neighbors on Brook Drive and McGuire Road with not allowing high school traffic access to Antrim Road. The signs in place the next day clearly stated “No Access to Antrim Road”.
- A count on the Hansen Road detour for Tracy Avenue showed a volume of 3991 ADT and an 85th-percentile speed of 30.1 mph. Nearby counts from past years showed a volume of around 1400 ADT and speeds from 30-32 mph, from 2003-2013. This data was forwarded to the police department.
- Further concerns on Hansen Road were expressed by residents. A radar study showed speeds approaching 35 mph were common on northbound Hansen as it approaches Birchcrest Park.

D2. A resident wanted the planned bike lanes on Benton Avenue marked this year. Previous measurements of Benton Avenue showed that the road is currently too narrow to mark bike lanes and maintain two lanes of traffic and one lane of parking.

D3. A use of the dynamic speed sign trailer aggravated a resident on Valley View Road who noted that the trailer should have been placed a block further east, as the speed limit is not always 30 mph in the school zone near the Edina High School.

D4. A requestor asked for adjustments to the traffic light layouts on France Avenue, southbound, at Minnesota Drive due to a large amount of Red Light Running at this intersection. This request was forwarded to the Police Department and Hennepin County, as France Avenue is a County road.

D5. A requestor asked for a left turn phase for eastbound Vernon Avenue at Interlachen Boulevard. The requestor was referred to Hennepin County which controls the signal.

D6. A resident noted that a stop sign at 64th Street and Warren Avenue was obstructed by vegetation and wanted the sign lowered beneath the branches of a nearby tree. The sign was an appropriate distance from the ground and the road's grade. This item was then forwarded to the City Forester to ensure that the tree obstructing the sign is trimmed back.

D7. A resident noted that the stop sign for westbound Dewey Hill Road was obscured by hedges. The sign was placed in an appropriate position. The Traffic Safety Coordinator worked with the City Forester to address the issue.

D8. A resident asked for a disabled child area sign for their child to be placed on Alden Drive. Information for future concerns was recorded and the address and signage was forwarded to the Traffic Safety Specialist.

D9. A resident requested data for Blake Road, north of Interlachen Boulevard, and use of the dynamic speed sign trailer. The data were provided and the request for the signage forwarded to the Police Department.

D10. A request was fielded for slowing traffic on West Shore Drive, north of 66th Street, and near the Edina Art Center. A count in this location found a volume of 231 ADT and an 85th-percentile speed of 31.8 mph. A detailed speed report of this area was forwarded to the Edina Police Department.

D11. Several residents near Todd Park called in with concerns over speeds on Division Street and noted that the crosswalk across Division Street, on Rutledge Avenue, to be added this summer (and considered in the Traffic Safety Report of January 06, 2016) would be ineffective if the high speeds were not addressed. Two counters were placed in this location and found much higher volumes than had previously been observed on Division Street, with an approximate volume of 1425 ADT and 85th-percentile speeds of 32.0 mph between Parkside Lane and Rutledge Avenue. Detailed speed reports were sent to the Edina Police Department for targeted enforcement, and counts will be retaken after the crosswalk is added for comparison.

Appendix A:

Stop Sign Warrants

When it is determined that a full stop is always required on an approach to an intersection a STOP (R1-1) sign shall be used.

At intersections where a full stop is not necessary at all times, consideration should first be given to using less restrictive measures such as YIELD signs.

The use of STOP signs on the minor-street approaches should be considered if engineering judgment indicates that a stop is always required because of one or more of the following conditions:

- A. The vehicular traffic volumes on the through street or highway exceed 6,000 vehicles per day;
- B. A restricted view exists that requires road users to stop in order to adequately observe conflicting traffic on the through street or highway.
- C. Crash records indicate that three or more crashes that are susceptible to correction with the installation of a STOP sign have been reported within a 12-month period, or that five or more such crashes have been reported within a 2-year period. Such crashes include right-angle collisions involving road users from the minor street failing to yield the right-of-way to traffic on the through street or highway.

Additional warrants which do not specify the type of control are as follows;

- A. An intersection of a less important road with a main road where application of the normal right-of way rule would not be expected to provide reasonable compliance with the law;
- B. A street entering a designated through highway or street; and/or
- C. An un-signalized intersection in a signalized area.

In addition, the use of YIELD or STOP signs should be considered at the intersection of two minor streets or local roads where the intersection has more than three approaches and where one or more of the following conditions exist:

- A. The combined vehicular, bicycle, and pedestrian volume entering the intersection from all approaches averages more the 2,000 units per day;
- B. The ability to see conflicting traffic on an approach is not sufficient to allow a road user to stop or yield in compliance with the normal right-of-way rule if such stopping or yielding is necessary; and/or
- C. Crash records indicate that five or more crashes that involve the failure to yield the right-of-way rule have been reported within a 3-year period, or that three or more such crashes have been reported within a 2-year period.

Additional warrants from the city of Edina list that:

- 1. If an intersection experiences five (5) or more right angle accidents in a three (3) year period, stop signs should be considered.
- 2. If the presence of a sight obstruction is contributing to accidents at an intersection, removal of the sight obstruction should be sought before considering a stop sign.
- 3. If the 85th percentile speed on any leg of an intersection is more than five (5) MPH over the posted speed limit, a stop sign should be considered for the intersecting street.
- 4. If traffic volumes exceed 1,000 vehicles per day on each of the intersecting streets, stop signs should be considered.
- 5. Residential stop signs shall not be installed in an attempt to control speed.
- 6. Residential stop signs shall not be installed in an attempt to control volume.



CITY OF EDINA

4801 West 50th Street

Edina, MN 55424

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Date: June 16, 2016

Agenda Item #: IX.A.

To: Transportation Commission

Item Type:

Other

From: Mark K. Nolan, AICP, Transportation Planner

Item Activity:

Subject: Staff Comments for June 2016

Information

ACTION REQUESTED:

None.

INTRODUCTION:

In addition to other items of interest to the ETC, staff will update the Commission on the following topics:

- 2016 Neighborhood and State Aid Reconstruction Projects
- 2016 Sidewalk Projects
- 2017 Neighborhood and State Aid Reconstruction Project Maps
- 2018 Comprehensive Plan Update



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Date: June 16, 2016

Agenda Item #: X.A.

To: Transportation Commission

Item Type:

Other

From: Mark K. Nolan, AICP, Transportation Planner

Item Activity:

Subject: Schedule of Meeting and Event Dates as of June 16, 2016

Information

ACTION REQUESTED:

INTRODUCTION:

ATTACHMENTS:

Schedule of Upcoming Meetings/Dates/Events

TRANSPORTATION COMMISSION SCHEDULE OF MEETING AND EVENT DATES AS OF JUNE 16, 2016

SCHEDULE OF UPCOMING MEETINGS/DATES/EVENTS

Thursday	Jun 16	Regular ETC Meeting	6:00 PM	COMMUNITY ROOM
Tuesday	Jun 21	ETC Joint Work Session with City Council	6:15 PM	COMMUNITY ROOM
Thursday	Jul 21	Regular ETC Meeting	6:00 PM	COUNCIL CHAMBERS
Thursday	Aug 18	Regular ETC Meeting	6:00 PM	COMMUNITY ROOM
Thursday	Sep 15	Regular ETC Meeting	6:00 PM	COMMUNITY ROOM
Thursday	Oct 27	Regular ETC Meeting	6:00 PM	COUNCIL CHAMBERS
Thursday	Nov 17	Regular ETC Meeting	6:00 PM	COMMUNITY ROOM
Thursday	Dec 15	Regular ETC Meeting	6:00 PM	COMMUNITY ROOM
Thursday	Jan 19	Regular ETC Meeting	6:00 PM	COUNCIL CHAMBERS
Thursday	Feb 16	Regular ETC Meeting	6:00 PM	COMMUNITY ROOM