Application

04774 - 2016 Roadway Modernization

05263 - Lexington Avenue (CSAH 51) Reconstruction, County Road E to I-694

Regional Solicitation - Roadways Including Multimodal Elements

Status:	Submitted
Submitted Date:	07/15/2016 8:30 AM

Primary Contact

Name:*		Joseph	Frank	Lux
	Salutation	First Name	Middle Name	Last Name
Title:	Senior Planner			
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	City	State/Province	Postal Code/Zip	
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	Phone		Ext.	
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What Grant Programs are you most interested in?	Regional Solicitation - Roadways Including Multimodal Elements			

Organization Information

Name:	RAMSEY COUNTY

Jurisdictional Agency (if different):	
Organization Type:	County Government
Organization Website:	
Address:	DEPT OF PUBLIC WORKS 1425 PAUL KIRKWOOD DR
*	ARDEN HILLS (City) / Minnesota (State/Province) / 55112 (Postal Code/Zip)
County:	Ramsey
Phone:*	651-266-7100 Ext.
Fax:	
PeopleSoft Vendor Number	0000023983A30

Project Information

Project Name	Lexington Avenue Reconstruction
Primary County where the Project is Located	Ramsey
Jurisdictional Agency (If Different than the Applicant):	Same
Brief Project Description (Limit 2,800 characters; approximately 400 words) *Include location, road name/functional class, type of improvement, etc.*	The project will reconstruct Lexington Avenue, CSAH 51, from County Road E to I-694. Proposed development and an associated traffic study indicated operational benefits could be obtained by adding a traffic signal at an existing commercial access serving a Target store on the east side of Lexington and mixed retail on the west and closing other accesses. The existing pavement, curb, and storm sewer are deficient and will be replaced. Right-turn lanes will be added where they do not exist.
TIP Description Guidance (will be used in TIP if the project is selected for funding)	Lexington Avenue (CSAH 51) Reconstruction
Project Length (Miles)	0.58

Project Funding

Are you applying for funds from another source(s) to implement this project?	No
If yes, please identify the source(s)	
Federal Amount	$3,693,080.00
Match Amount	$923,270.00
Minimum of 20% of project total	
Project Total	$4,616,350.00
Match Percentage	20.0%
Minimum of 20% *Compute the match percentage by dividing the match amount by the project total*	
Source of Match Funds	CSAH, MSA, and local funds.

A minimum of 20% of the total project cost must come from non-federal sources; additional match funds over the 20% minimum can come from other federal sources

Preferred Program Year

Select one: 2020

For TDM projects, select 2018 or 2019. For Roadway, Transit, or Trail/Pedestrian projects, select 2020 or 2021.

Additional Program Years:

Select all years that are feasible if funding in an earlier year becomes available.

Specific Roadway Elements

CONSTRUCTION PROJECT ELEMENTS/COST ESTIMATES	Cost
Mobilization (approx. 5% of total cost)	$183,733.00
Removals (approx. 5% of total cost)	$183,733.00
Roadway (grading, borrow, etc.)	$52,000.00
Roadway (aggregates and paving)	$2,197,271.00
Subgrade Correction (muck)	$0.00
Storm Sewer	$252,560.00
Ponds	$120,000.00
Concrete Items (curb & gutter, sidewalks, median barriers)	$271,740.00
Traffic Control	$104,000.00
Striping	$136,750.00
Signing	$27,300.00
Lighting	$0.00
Turf - Erosion & Landscaping	$128,200.00
Bridge	$0.00
Retaining Walls	$0.00

Noise Wall (do not include in cost effectiveness measure)	$0.00
Traffic Signals	$407,050.00
Wetland Mitigation	$0.00
Other Natural and Cultural Resource Protection	$0.00
RR Crossing	$0.00
Roadway Contingencies	$404,213.00
Other Roadway Elements	$0.00
Totals	**$4,468,550.00**

Specific Bicycle and Pedestrian Elements

CONSTRUCTION PROJECT ELEMENTS/COST ESTIMATES	**Cost**
Path/Trail Construction	$0.00
Sidewalk Construction	$35,000.00
On-Street Bicycle Facility Construction	$0.00
Right-of-Way	$0.00
Pedestrian Curb Ramps (ADA)	$60,000.00
Crossing Aids (e.g., Audible Pedestrian Signals, HAWK)	$52,800.00
Pedestrian-scale Lighting	$0.00
Streetscaping	$0.00
Wayfinding	$0.00
Bicycle and Pedestrian Contingencies	$0.00
Other Bicycle and Pedestrian Elements	$0.00
Totals	**$147,800.00**

Specific Transit and TDM Elements

CONSTRUCTION PROJECT ELEMENTS/COST ESTIMATES	**Cost**
Fixed Guideway Elements	$0.00
Stations, Stops, and Terminals	$0.00
Support Facilities	$0.00
Transit Systems (e.g. communications, signals, controls, fare collection, etc.)	$0.00
Vehicles	$0.00
Contingencies	$0.00

Right-of-Way	$0.00
Other Transit and TDM Elements	$0.00
Totals	**$0.00**

Transit Operating Costs

Number of Platform hours	0
Cost Per Platform hour (full loaded Cost)	$0.00
Substotal	$0.00
Other Costs - Administration, Overhead,etc.	$0.00

Totals

Total Cost	$4,616,350.00
Construction Cost Total	$4,616,350.00
Transit Operating Cost Total	$0.00

Requirements - All Projects

All Projects

1.The project must be consistent with the goals and policies in these adopted regional plans: Thrive MSP 2040 (2014), the 2040 Transportation Policy Plan, the 2040 Regional Parks Policy Plan (2015), and the 2040 Water Resources Policy Plan (2015).

Check the box to indicate that the project meets this requirement. Yes

2.The project must be consistent with the 2040 Transportation Policy Plan. Reference the 2040 Transportation Plan objectives and strategies that relate to the project.

List the goals, objectives, strategies, and associated pages:

The project is consistent with TPP policies on Transportation System Stewardship, particularly Objective A, to efficiently preserve and maintain the regional transportation system. It is also consistent with Objective B, to reduce the transportation system's vulnerability to natural and man-made incidents and threats. These are found on pages 58 and 161 of the TPP.

3.The project or the transportation problem/need that the project addresses must be in a local planning or programming document. Reference the name of the appropriate comprehensive plan, regional/statewide plan, capital improvement program, corridor study document [studies on trunk highway must be approved by the Minnesota Department of Transportation and the Metropolitan Council], or other official plan or program of the applicant agency [includes Safe Routes to School Plans] that the project is included in and/or a transportation problem/need that the project addresses.

List the applicable documents and pages:

The Arden Hills and Shoreview comprehensive plans recognize the need to preserve the arterial systems in the Cities.

4.The project must exclude costs for studies, preliminary engineering, design, or construction engineering. Right-of-way costs are only eligible as part of bicycle/pedestrian projects, transit stations/stops, transit terminals, park-and-ride facilities, or pool-and-ride lots. Noise barriers, drainage projects, fences, landscaping, etc., are not eligible for funding as a standalone project, but can be included as part of the larger submitted project, which is otherwise eligible.

Check the box to indicate that the project meets this requirement. Yes

5.Applicants that are not cities or counties in the seven-county metro area with populations over 5,000 must contact the MnDOT Metro State Aid Office prior to submitting their application to determine if a public agency sponsor is required.

Check the box to indicate that the project meets this requirement. Yes

6.Applicants must not submit an application for the same project elements in more than one funding application category.

Check the box to indicate that the project meets this requirement. Yes

7.The requested funding amount must be more than or equal to the minimum award and less than or equal to the maximum award. The cost of preparing a project for funding authorization can be substantial. For that reason, minimum federal amounts apply. Other federal funds may be combined with the requested funds for projects exceeding the maximum award, but the source(s) must be identified in the application. Funding amounts by application category are listed below.
Roadway Expansion: *$1,000,000 to $7,000,000*
Roadway Reconstruction/ Modernization: *$1,000,000 to $7,000,000*
Roadway System Management *$250,000 to $7,000,000*
Bridges Rehabilitation/ Replacement: *$1,000,000 to $7,000,000*

Check the box to indicate that the project meets this requirement. Yes

8.The project must comply with the Americans with Disabilities Act.

Check the box to indicate that the project meets this requirement. Yes

9.The project must be accessible and open to the general public.

Check the box to indicate that the project meets this requirement. Yes

10.The owner/operator of the facility must operate and maintain the project for the useful life of the improvement.

Check the box to indicate that the project meets this requirement. Yes

11.The project must represent a permanent improvement with independent utility. The term independent utility means the project provides benefits described in the application by itself and does not depend on any construction elements of the project being funded from other sources outside the regional solicitation, excluding the required non-federal match. Projects that include traffic management or transit operating funds as part of a construction project are exempt from this policy.

Check the box to indicate that the project meets this requirement. Yes

12.The project must not be a temporary construction project. A temporary construction project is defined as work that must be replaced within five years and is ineligible for funding. The project must also not be staged construction where the project will be replaced as part of future stages. Staged construction is eligible for funding as long as future stages build on, rather than replace, previous work.

Check the box to indicate that the project meets this requirement. Yes

13.The project applicant must send written notification regarding the proposed project to all affected state and local units of government prior to submitting the application.

Check the box to indicate that the project meets this requirement. Yes

Roadways Including Multimodal Elements

1.All roadway and bridge projects must be identified as a Principal Arterial (Non-Freeway facilities only) or A-Minor Arterial as shown on the latest TAB approved roadway functional classification map.

Check the box to indicate that the project meets this requirement. Yes

Roadway Expansion and Reconstruction/Modernization projects only:

2.The project must be designed to meet 10-ton load limit standards.

Check the box to indicate that the project meets this requirement. Yes

Bridge Rehabilitation/Replacement projects only:

3.Projects requiring a grade-separated crossing of a Principal Arterial freeway must be limited to the federal share of those project costs identified as local (non-MnDOT) cost responsibility using MnDOTs Cost Participation for Cooperative Construction Projects and Maintenance Responsibilities manual. In the case of a federally funded trunk highway project, the policy guidelines should be read as if the funded trunk highway route is under local jurisdiction.

Check the box to indicate that the project meets this requirement.

4.The bridge must carry vehicular traffic. Bridges can carry traffic from multiple modes. However, bridges that are exclusively for bicycle or pedestrian traffic must apply under one of the Bicycle and Pedestrian Facilities application categories. Rail-only bridges are ineligible for funding.

Check the box to indicate that the project meets this requirement.

5.The length of the bridge must equal or exceed 20 feet.

Check the box to indicate that the project meets this requirement.

6. The bridge must have a sufficiency rating less than 80 for rehabilitation projects and less than 50 for replacement projects. Additionally, the bridge must also be classified as structurally deficient or functionally obsolete.

Check the box to indicate that the project meets this requirement.

Requirements - Roadways Including Multimodal Elements

Project Information-Roadways

County, City, or Lead Agency	Ramsey County Public Works 1425 Paul Kirkwold Dr. Aden Hills, MN 55112
Functional Class of Road	Class A Minor Arterial- Augmenter
Road System *TH, CSAH, MSAS, CO. RD., TWP. RD., CITY STREET*	CSAH
Road/Route No. *i.e., 53 for CSAH 53*	51
Name of Road *Example; 1st ST., MAIN AVE*	Lexington Avenue

Zip Code where Majority of Work is Being Performed	55112
(Approximate) Begin Construction Date	05/11/2020
(Approximate) End Construction Date	10/16/2020

TERMINI:(Termini listed must be within 0.3 miles of any work)

From: **(Intersection or Address)**	County Road E (CSAH 15)
To: **(Intersection or Address)** *DO NOT INCLUDE LEGAL DESCRIPTION*	I-694 South Ramp
Or At	
Primary Types of Work *Examples: GRADE, AGG BASE, BIT BASE, BIT SURF, SIDEWALK, CURB AND GUTTER,STORM SEWER, SIGNALS, LIGHTING, GUARDRAIL, BIKE PATH, PED RAMPS, BRIDGE, PARK AND RIDE, ETC.*	Grading, Aggregate Base, Strom Sewer, Concrete Surfacing, Sidewalk, Traffic Signal, including Audible Pedestrian Signals and Countdown Timers

BRIDGE/CULVERT PROJECTS (IF APPLICABLE)

Old Bridge/Culvert No.:	
New Bridge/Culvert No.:	
Structure is Over/Under **(Bridge or culvert name):**	

Expander/Augmentor/Connector/Non-Freeway Principal Arterial

Select one:	Augmentor
Area	0.843
Project Length	0.598
Average Distance	1.4097
Upload Map	

Reliever: Relieves a Principal Arterial that is a Freeway Facility

Facility being relieved	I-694
Number of hours per day volume exceeds capacity (based on the Congestion Report)	7.0

Reliever: Relieves a Principal Arterial that is a Non-Freeway Facility

Facility being relieved

Number of hours per day volume exceeds capacity (based on the table below)	0

Non-Freeway Facility Volume/Capacity Table

Hour	NB/EB Volume	SB/WB Volume	Capacity	Volume exceeds capacity
12:00am - 1:00am			0	
1:00am - 2:00am			0	
2:00am - 3:00am			0	
3:00am - 4:00am			0	
4:00am - 5:00am			0	
5:00am - 6:00am			0	
6:00am - 7:00am			0	
7:00am - 8:00am			0	
8:00am - 9:00am			0	
9:00am - 10:00am			0	
10:00am - 11:00am			0	
11:00am - 12:00pm			0	
12:00pm - 1:00pm			0	
1:00pm - 2:00pm			0	
2:00pm - 3:00pm			0	
3:00pm - 4:00pm			0	
4:00pm - 5:00pm			0	
5:00pm - 6:00pm			0	
6:00pm - 7:00pm			0	
7:00pm - 8:00pm			0	
8:00pm - 9:00pm			0	
9:00pm - 10:00pm			0	
10:00pm - 11:00pm			0	
11:00pm - 12:00am			0	

Measure B: Project Location Relative to Jobs, Manufacturing, and Education

Existing Employment within 1 Mile:	17596
Existing Manufacturing/Distribution-Related Employment within 1 Mile:	5759

Existing Students:	5869
Upload Map	1466531310735_Regional Economy Map.pdf

Measure C: Current Heavy Commercial Traffic

Location:	north of County Road E
Current daily heavy commercial traffic volume:	1240
Date heavy commercial count taken:	June 7, 2016

Measure D: Freight Elements

Response (Limit 1,400 characters; approximately 200 words)	This segment of Lexington Avenue has approximately 115 acres of industrial land adjacent to it that relies on it for access to I-694. Currently, congestion at the Red Fox Road intersection and along the corridor inhibit freight movements. This project will benefit the industrial users by reducing congestion and improving safety at the Red Fox Road interchange and reducing conflicts by consolidating accesses.

Measure A: Current Daily Person Throughput

Location	north of County Road E
Current AADT Volume	21300
Existing Transit Routes on the Project	225, 227, 261, 860
For New Roadways only, list transit routes that will be moved to the new roadway	
Upload Transit Map	1467401730924_Transit Connections Map.pdf

Response: Current Daily Person Throughput

Average Annual Daily Transit Ridership	0
Current Daily Person Throughput	27690.0

Measure B: 2040 Forecast ADT

Use Metropolitan Council model to determine forecast (2040) ADT volume	Yes
If checked, METC Staff will provide Forecast (2040) ADT volume	

OR

Identify the approved county or city travel demand model to determine forecast (2040) ADT volume

Forecast (2040) ADT volume

Measure A: Project Location and Impact to Disadvantaged Populations

Select one:

Project located in Area of Concentrated Poverty with 50% or more of residents are people of color (ACP50):	
Project located in Area of Concentrated Poverty:	
Projects census tracts are above the regional average for population in poverty or population of color:	
Project located in a census tract that is below the regional average for population in poverty or populations of color or includes children, people with disabilities, or the elderly:	Yes
Response (Limit 2,800 characters; approximately 400 words)	This segment of Lexington Avenue is located in a commercial district that includes a large number of manufacturing jobs immediately adjacent to it. Affordable housing is provided in a large apartment complex located adjacent to the project area and just north of I-694. As well, affordable housing areas are located north and south of the project area and are accessed via Lexington Avenue.

The response should address the benefits, impacts, and mitigation for the populations affected by the project.

Upload Map	1467731886510_Socio Economic Map.pdf

Measure B: Affordable Housing

City/Township	Segment Length in Miles (Population)
	0

Total Project Length

Total Project Length (Total Population)	0.58

Affordable Housing Scoring - To Be Completed By Metropolitan Council Staff

City/Township	Segment Length (Miles)	Total Length (Miles)	Score	Segment Length/Total Length	Housing Score Multiplied by Segment percent

0	**0**	**0**	**0**

Affordable Housing Scoring - To Be Completed By Metropolitan Council Staff

Total Project Length (Miles)	0
Total Housing Score	0

Measure A: Year of Roadway Construction

Year of Original Roadway Construction or Most Recent Reconstruction	Segment Length	Calculation	Calculation 2
1977	0.05	98.85	172.213
1979	0.2	395.8	689.547
1982	0.324	642.168	1118.76
	1	**1137**	**1981**

Average Construction Year

Weighted Year	1980

Total Segment Length (Miles)

Total Segment Length	0.574

Measure B: Geometric, Structural, or Infrastructure Improvements

Improving a non-10-ton roadway to a 10-ton roadway:	Yes
Response (Limit 700 characters; approximately 100 words)	The segment of Lexington Avenue that is proposed for reconstruction was reconstructed in 3 segments, all f which exhibit pavement stress related to the stopping and starting movements of the 20,000+ vehicles per day. We propose to salvage the base and replace the bituminous pavement with concrete to alleviate the rutting that is present and provide lower life-cycle costs.
Improved clear zones or sight lines:	
Response (Limit 700 characters; approximately 100 words)	

Improved roadway geometrics:	Yes
Response (Limit 700 characters; approximately 100 words)	Right-turn lanes will be added where they are not present and a median provided in place of the existing center left-turn lane to work in concert with access management efforts outlined below.
Access management enhancements:	Yes
Response (Limit 700 characters; approximately 100 words)	In cooperation with a developer, we are closing the last of four random accesses that were in place and replacing them with a single, signal-controlled access that is opposite one serving a Super Target store and assorted retail uses. A problematic full access nearby will be reduced to right-in/right-out operation or consolidated with the new signalized access and another commercial access will be restricted to a 3/4 access, with left turns out of the site prohibited.
Vertical/horizontal alignments improvements:	
Response (Limit 700 characters; approximately 100 words)	
Improved stormwater mitigation:	Yes
Response (Limit 700 characters; approximately 100 words)	Storm sewers will be upgraded to meet current treatment standards.
Signals/lighting upgrades:	Yes
Response (Limit 700 characters; approximately 100 words)	The existing signals will be upgraded to include APS, countdown timers, flashing yellow left-turn indications and a new signal will be added at the consolidated access point.
Other Improvements	Yes
Response (Limit 700 characters; approximately 100 words)	An existing gap of approximately a quarter mile in the sidewalk will be close with new sidewalk and all pedestrian crossings brought up to current ADA standards. The trail on the east side of the project will be repaved and its curb ramps upgraded.

Measure A: Congestion Reduction/Air Quality

Total Peak Hour Delay Per Vehicle Without The Project	Total Peak Hour Delay Per Vehicle With The Project	Total Peak Hour Delay Per Vehicle Reduced by Project	Volume (Vehicles per hour)	Total Peak Hour Delay Reduced by the Project:	EXPLANATION of methodology used to calculate railroad crossing delay, if applicable.	Synchro or HCM Reports
13.2	13.0	0.2	2688	537.6	The average value is used to measure the total peak hour delay per vehicle for five intersections on Lexington Ave. The total delay only at the intersection between Lexington Ave and Target Entrance is little increased because the traffic signal will be installed at this intersection through thus project.	1468437949934_Lexington Ave_Synchro - Report.pdf

Total Delay

Total Peak Hour Delay Reduced	537.6

Measure B:Roadway projects that do not include new roadway segments or railroad grade-separation elements

Total (CO, NOX, and VOC) Peak Hour Emissions Per Vehicle without the Project (Kilograms):	Total (CO, NOX, and VOC) Peak Hour Emissions Per Vehicle with the Project (Kilograms):	Total (CO, NOX, and VOC) Peak Hour Emissions Reduced Per Vehicle by the Project (Kilograms):	Volume (Vehicles Per Hour):	Total (CO, NOX, and VOC) Peak Hour Emissions Reduced by the Project (Kilograms):
2.82	2.75	0.07	2688.0	188.16
3	**3**		**2688**	**188**

Total

Total Emissions Reduced:	188.16
Upload Synchro Report	1468439688276_Lexington Ave_Synchro - Report.pdf

Measure B: Roadway projects that are constructing new roadway segments, but do not include railroad grade-separation elements (for Roadway Expansion applications only):

Total (CO, NOX, and VOC) Peak Hour Emissions Per Vehicle without the Project (Kilograms):	Total (CO, NOX, and VOC) Peak Hour Emissions Per Vehicle with the Project (Kilograms):	Total (CO, NOX, and VOC) Peak Hour Emissions Reduced Per Vehicle by the Project (Kilograms):	Volume (Vehicles Per Hour):	Total (CO, NOX, and VOC) Peak Hour Emissions Reduced by the Project (Kilograms):
0	**0**		**0**	**0**

Total Parallel Roadways

Emissions Reduced on Parallel Roadways	0
Upload Synchro Report	

New Roadway Portion:

Cruise speed in miles per hour with the project:	0
Vehicle miles traveled with the project:	0
Total delay in hours with the project:	0
Total stops in vehicles per hour with the project:	0
Fuel consumption in gallons:	0
Total (CO, NOX, and VOC) Peak Hour Emissions Reduced or Produced on New Roadway (Kilograms):	0

EXPLANATION of methodology and assumptions used:(Limit 1,400 characters; approximately 200 words)	
Total (CO, NOX, and VOC) Peak Hour Emissions Reduced by the Project (Kilograms):	0.0

Measure B:Roadway projects that include railroad grade-separation elements

Cruise speed in miles per hour without the project:	0
Vehicle miles traveled without the project:	0
Total delay in hours without the project:	0
Total stops in vehicles per hour without the project:	0
Cruise speed in miles per hour with the project:	0
Vehicle miles traveled with the project:	0
Total delay in hours with the project:	0
Total stops in vehicles per hour with the project:	0
Fuel consumption in gallons (F1)	0
Fuel consumption in gallons (F2)	0
Fuel consumption in gallons (F3)	0
Total (CO, NOX, and VOC) Peak Hour Emissions Reduced by the Project (Kilograms):	0
EXPLANATION of methodology and assumptions used:(Limit 1,400 characters; approximately 200 words)	

Transit Projects Not Requiring Construction

If the applicant is completing a transit or TDM application that is operations only, check the box and do not complete the remainder of the form. These projects will receive full points for the Risk Assessment.
Park-and-Ride and other transit construction projects require completion of the Risk Assessment below.

Check Here if Your Transit Project Does Not Require Construction

Measure A: Risk Assessment

1)Project Scope (5 Percent of Points)

Meetings or contacts with stakeholders have occurred	Yes

100%

Stakeholders have been identified

40%

Stakeholders have not been identified or contacted

0%

2)Layout or Preliminary Plan (5 Percent of Points)

Layout or Preliminary Plan completed

100%

Layout or Preliminary Plan started Yes

50%

Layout or Preliminary Plan has not been started

0%

Anticipated date or date of completion 03/02/2018

3)Environmental Documentation (5 Percent of Points)

EIS

EA

PM Yes

Document Status:

Document approved (include copy of signed cover sheet)

100%

Document submitted to State Aid for review

75% date submitted

Document in progress; environmental impacts identified; review request letters sent

50%

Document not started Yes

0%

Anticipated date or date of completion/approval 01/12/2018

4)Review of Section 106 Historic Resources (10 Percent of Points)

No known historic properties eligible for or listed in the National Register of Historic Places are located in the project area, and project is not located on an identified historic bridge Yes

100%

Historic/archeological review under way; determination of no historic properties affected or no adverse effect anticipated

80%

Historic/archaeological review under way; determination of adverse effect anticipated

40%

Unsure if there are any historic/archaeological resources in the project area

0%

Anticipated date or date of completion of historic/archeological review:

Project is located on an identified historic bridge

5)Review of Section 4f/6f Resources (10 Percent of Points)

4(f) Does the project impacts any public parks, public wildlife refuges, public golf courses, wild & scenic rivers or public private historic properties?
6(f) Does the project impact any public parks, public wildlife refuges, public golf courses, wild & scenic rivers or historic property that was purchased or improved with federal funds?

No Section 4f/6f resources located in the project area Yes

100%

No impact to 4f property. The project is an independent bikeway/walkway project covered by the bikeway/walkway Negative Declaration statement; letter of support received

100%

Section 4f resources present within the project area, but no known adverse effects

80%

Project impacts to Section 4f/6f resources likely coordination/documentation has begun

50%

Project impacts to Section 4f/6f resources likely coordination/documentation has not begun

30%

Unsure if there are any impacts to Section 4f/6f resources in the project area

0%

6)Right-of-Way (15 Percent of Points)

Right-of-way, permanent or temporary easements not required Yes

100%

Right-of-way, permanent or temporary easements has/have been acquired

100%

Right-of-way, permanent or temporary easements required, offers made

75%

Right-of-way, permanent or temporary easements required, appraisals made

50%

Right-of-way, permanent or temporary easements required, parcels identified

25%

Right-of-way, permanent or temporary easements required, parcels not identified

0%

Right-of-way, permanent or temporary easements identification has not been completed

0%

Anticipated date or date of acquisition

7)Railroad Involvement (25 Percent of Points)

No railroad involvement on project Yes

100%

Railroad Right-of-Way Agreement is executed (include signature page) 100%

Railroad Right-of-Way Agreement required; Agreement has been initiated

60%

Railroad Right-of-Way Agreement required; negotiations have begun

40%

Railroad Right-of-Way Agreement required; negotiations not begun

0%

Anticipated date or date of executed Agreement

8)Interchange Approval (15 Percent of Points)*

**Please contact Karen Scheffing at MnDOT (Karen.Scheffing@state.mn.us or 651-234-7784) to determine if your project needs to go through the Metropolitan Council/MnDOT Highway Interchange Request Committee.*

Project does not involve construction of a new/expanded interchange or new interchange ramps Yes

100%

Interchange project has been approved by the Metropolitan Council/MnDOT Highway Interchange Request Committee

100%

Interchange project has not been approved by the Metropolitan Council/MnDOT Highway Interchange Request Committee

0%

9)Construction Documents/Plan (10 Percent of Points)

Construction plans completed/approved (include signed title sheet)

100%

Construction plans submitted to State Aid for review

75%

Construction plans in progress; at least 30% completion

50%

Construction plans have not been started Yes

0%

Anticipated date or date of completion	03/02/2018

10)Letting

Anticipated Letting Date	02/06/2020

Measure A: Roadway Projects that do not Include Railroad Grade-Separation Elements

Crash Modification Factor Used:	0.33
Rationale for Crash Modification Selected:	Lexington Avenue (CSAH 51) is a 40 MPH roadway that has an Adjusted Average Daily Traffic volume of 20200. The intersection that would receive the signal is currently a 3 leg intersection where Lexington Avenue has the right of way and there is a stop sign at Target road (service road to target and other commercial buildings). Most accidents in the corridor occur from traffic turning onto Lexington Avenue from Target Road or other accesses along the west side of the roadway. Proposed project would eliminate access on the west side of Lexington from Target Road to Red Fox Road and reroute access to the Target Road intersection where the proposed signal would be installed. CMF 323 addresses a left turning schemes at a 4 leg intersection of high speed in an urban setting. It has a 4 star rating and is on the HSM list in bold.
(Limit 1400 Characters; approximately 200 words)	
Project Benefit ($) from B/C Ratio	$605,059.00
Worksheet Attachment	1468253321479_Target Road benefit-cost-worksheet.xls

Roadway projects that include railroad grade-separation elements:

Current AADT volume:	20200.0
Average daily trains:	0
Crash Risk Exposure eliminated:	0

Measure A: Multimodal Elements and Existing Connections

Response (Limit 2,800 characters; approximately 400 words)	Presently this segment of Lexington Avenue has an eight-foot wide sidewalk on part of the west side and a trail on the east side. There is a gap of approximately a quarter-mile in the sidewalk that will be closed by constructing new sidewalk. All curb ramps will be brought up to current ADA standards and APS and countdown timers will be added to all traffic signals.

Measure A: Cost Effectiveness

Total Project Cost (entered in Project Cost Form):	$4,616,350.00
Enter Amount of the Noise Walls:	$0.00
Total Project Cost subtract the amount of the noise walls:	$4,616,350.00
Points Awarded in Previous Criteria	
Cost Effectiveness	$0.00

Other Attachments

File Name	Description	File Size
Accident Diagram (Lexington @ Red Fox Rd).pdf	Crash Diagram- Lexington Avenue/Red Fox Road Intersection	90 KB
Accident Diagram (Target @ Service Ent.).pdf	Crash Diagram- Lexington Avenue/South Target Access	217 KB
Arden Hills Resolution 2016-020.pdf	Arden Hills City Council Resolution of Support	691 KB
County Maintenance Letter Lexington.pdf	Ramsey County- Intent to Maintain Letter	56 KB
Lexington Ave Co Rd E to I694-Layout.pdf	Concept Layout	2.2 MB
LexingtonAveCoRdEtoI694 Location Map.pdf	Project Location Map	714 KB
RADCsah51RamsRM.pdf	RADCsah51RamsRM	213 KB
Support Resolution STP Funds for Lexington South of I694 07-07-2016.pdf	Shoreview City Council Resolution of Support	439 KB

Regional Economy

Roadway Reconstruction/Modernization Project: Lexington Avenue (CSAH 51) Reconstruction | Map ID: 1466525370993

Results

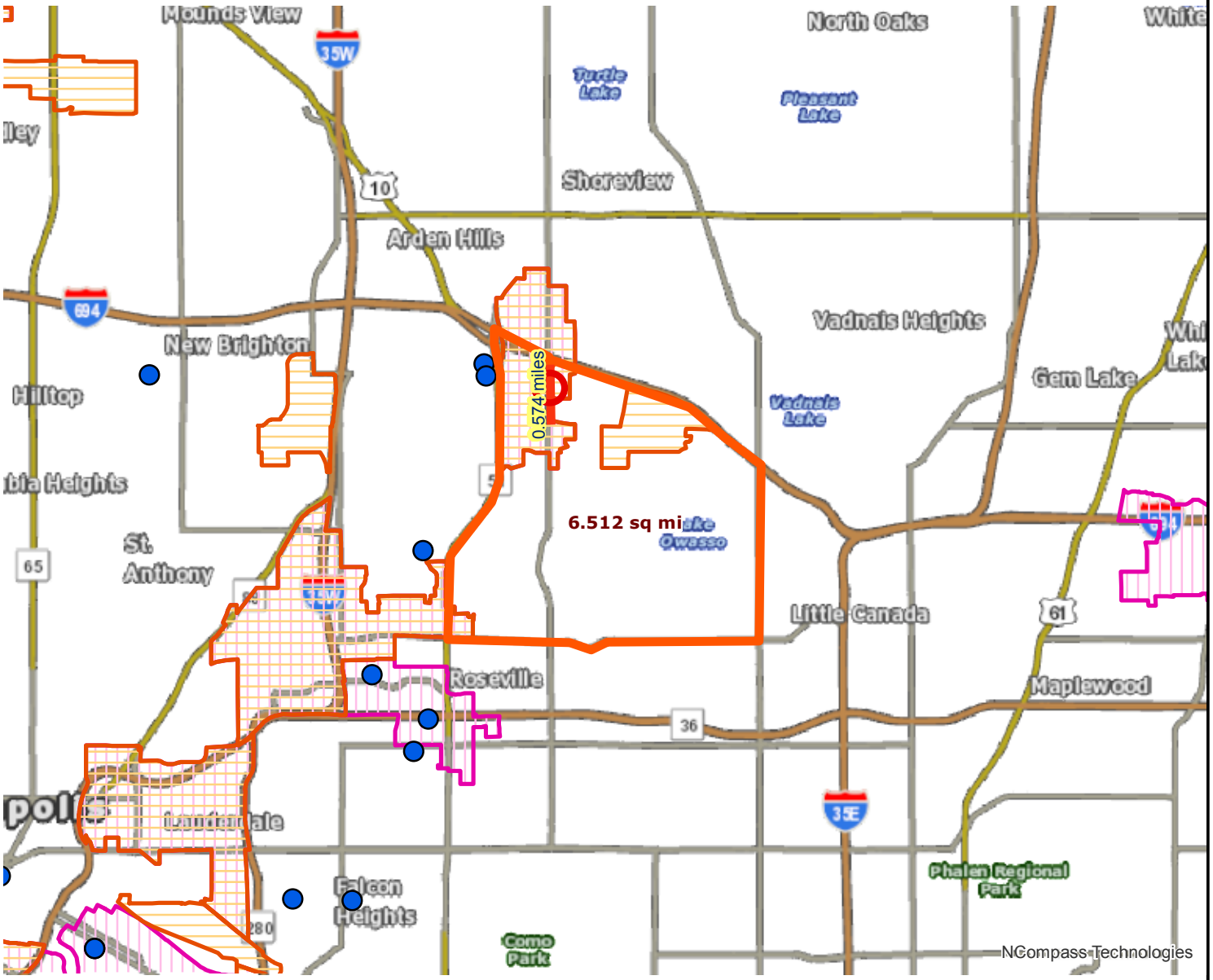
WITHIN ONE MI of project:

Totals by City:

Arden Hills
Population: 6828
Employment: 11477
Mfg and Dist Employment: 3714

Shoreview
Population: 9934
Employment: 6119
Mfg and Dist Employment: 2045

Postsecondary Students:
5869



Project Points
Project
Project Area
PostSecondary Education Centers
Manfacturing/Distribution Centers
Job Concentration Centers

0 0.75 1.5 3 4.5 6 Miles

Created: 6/21/2016
LandscapeRSA5

For complete disclaimer of accuracy, please visit
http://giswebsite.metc.state.mn.us/gissitenew/notice.aspx

METROPOLITAN COUNCIL

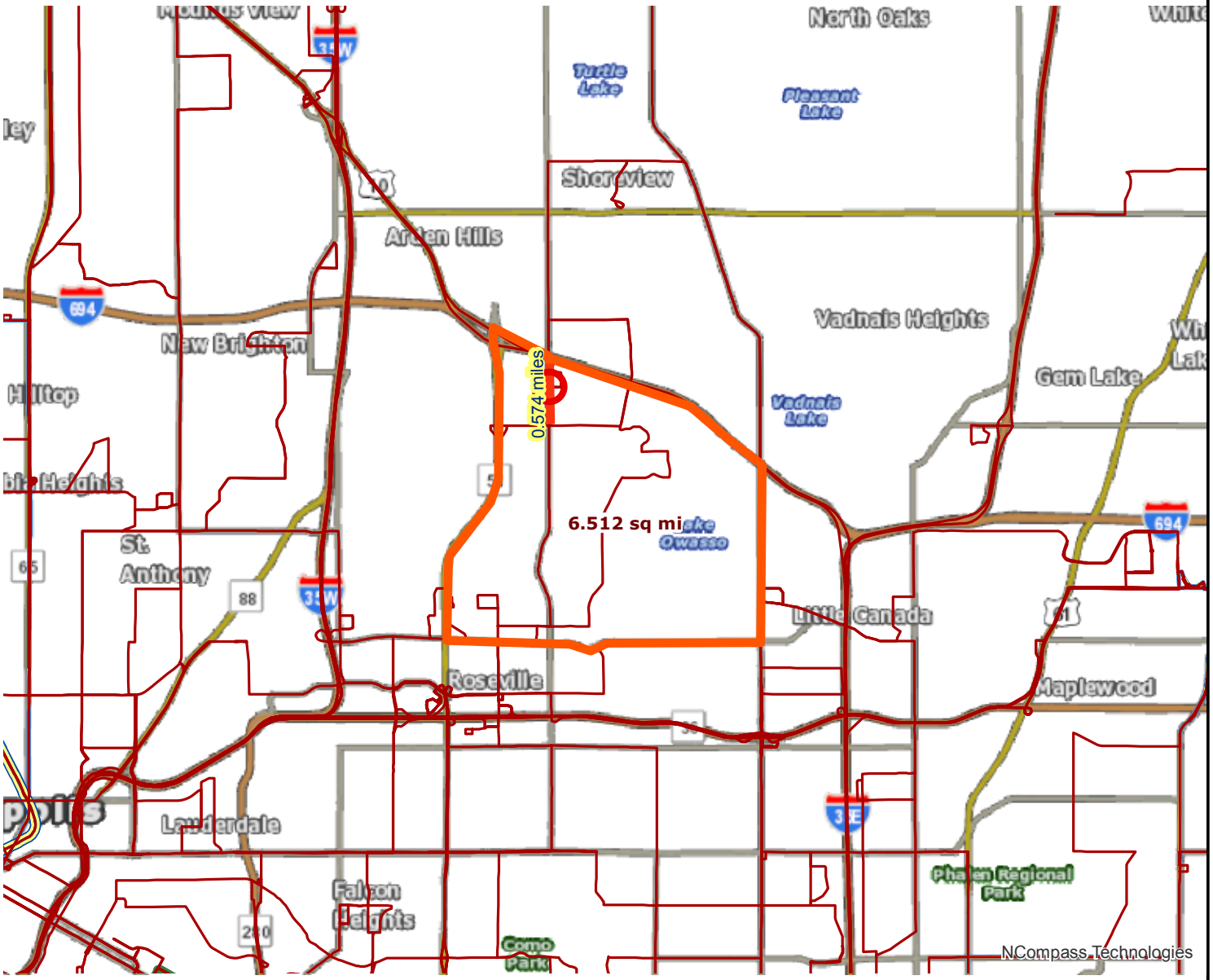
Transit Connections

Roadway Reconstruction/Modernization Project: Lexington Avenue (CSAH 51) Reconstruction | Map ID: 1466525370993

Results

Transit with a Direct Connection to project:
225 227 261 860

**indicates Planned Alignments*



Project Points | Project Area | **Transitway** | Northstar Line | **Planned Alignments**

Project | Transit Routes | Green Line | Arterial BRT

0 0.75 1.5 3 4.5 6 Miles

Created: 6/21/2016
LandscapeRSA3

For complete disclaimer of accuracy, please visit
http://giswebsite.metc.state.mn.us/gissitenew/notice.aspx

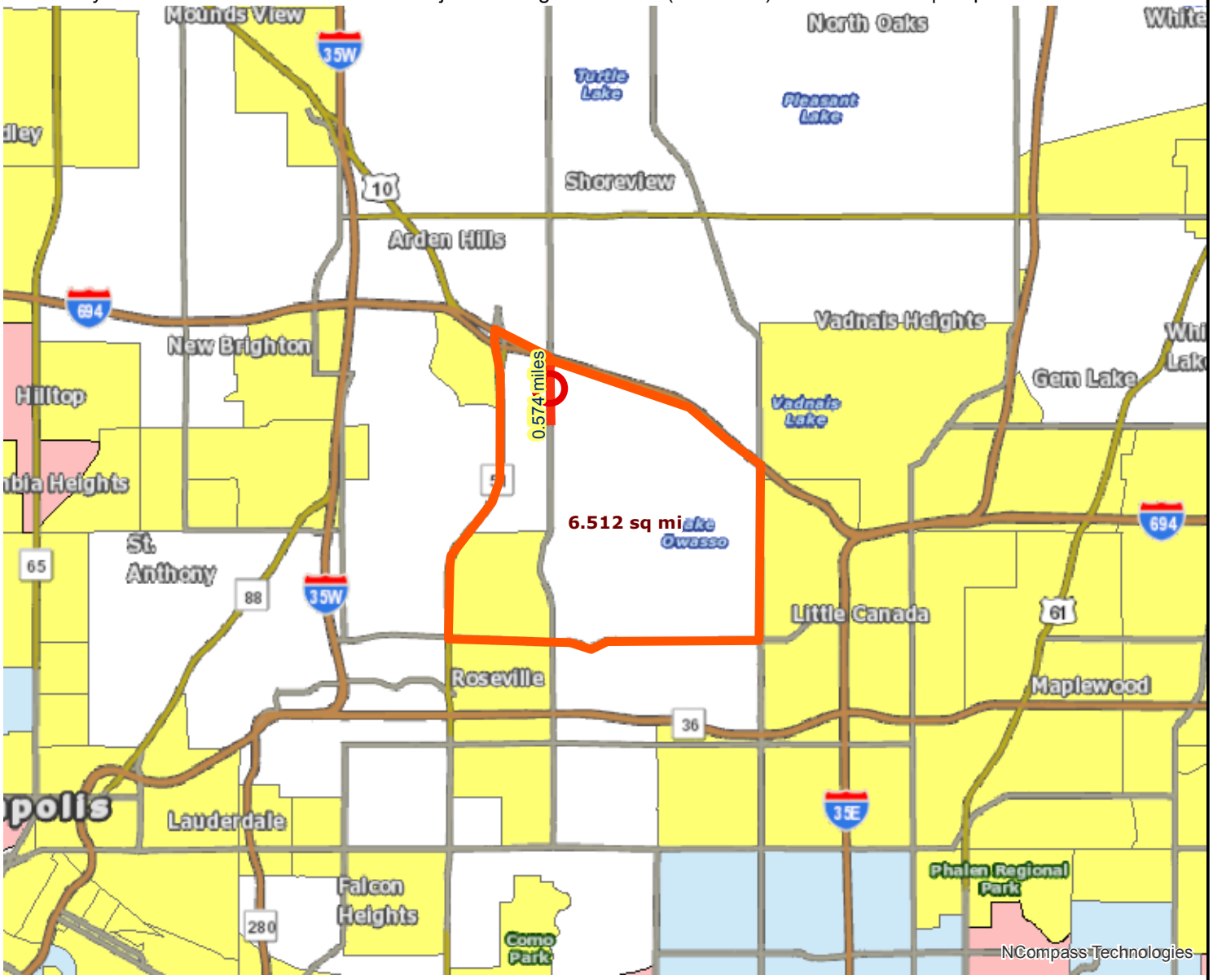
METROPOLITAN COUNCIL

Socio-Economic Conditions

Roadway Reconstruction/Modernization Project: Lexington Avenue (CSAH 51) Reconstruction | Map ID: 1466525370993

Results

Project located in
a census tract that is below
the regional average for
population in poverty
or populations of color,
or includes children,
people with disabilities,
or the elderly:
(0 to 12 Points)



Project Points
Project
Project Area

Area of Concentrated Povertry > 50% residents of color
Area of Concentrated Poverty
Above reg'l avg conc of race/poverty

0 0.75 1.5 3 4.5 6 Miles

Created: 6/21/2016
LandscapeRSA2

For complete disclaimer of accuracy, please visit
http://giswebsite.metc.state.mn.us/gissitenew/notice.aspx

METROPOLITAN COUNCIL

3: Lexington Ave & Red Fox Road

Direction	All
Future Volume (vph)	3030
Total Delay / Veh (s/v)	27
CO Emissions (kg)	3.04
NOx Emissions (kg)	0.59
VOC Emissions (kg)	0.70

6: Lexington Ave & 694 Ramps

Direction	All
Future Volume (vph)	3194
Total Delay / Veh (s/v)	15
CO Emissions (kg)	2.51
NOx Emissions (kg)	0.49
VOC Emissions (kg)	0.58

9: Sub Entrance 2 & Red Fox Road

Direction	All
Future Volume (vph)	678
Total Delay / Veh (s/v)	2
CO Emissions (kg)	0.16
NOx Emissions (kg)	0.03
VOC Emissions (kg)	0.04

11: Lexington Ave & Cub Foods Entrance

Direction	All
Future Volume (vph)	2390
Total Delay / Veh (s/v)	4
CO Emissions (kg)	1.18
NOx Emissions (kg)	0.23
VOC Emissions (kg)	0.27

13: Lexington Ave & New Entrance/Target Entrance

Direction	All
Future Volume (vph)	2330
Total Delay / Veh (s/v)	2
CO Emissions (kg)	0.95
NOx Emissions (kg)	0.19
VOC Emissions (kg)	0.22

17: Lexington Ave & Grey Fox Road

Direction	All
Future Volume (vph)	2495
Total Delay / Veh (s/v)	18
CO Emissions (kg)	2.22
NOx Emissions (kg)	0.43
VOC Emissions (kg)	0.51

20: Sub Entrance 1 & Red Fox Road

Direction	All
Future Volume (vph)	515
Total Delay / Veh (s/v)	0
CO Emissions (kg)	0.10
NOx Emissions (kg)	0.02
VOC Emissions (kg)	0.02

Lexington Ave

Direction	NB	SB	All
Total Delay / Veh (s/v)	10	9	9
CO Emissions (kg)	4.41	2.07	6.48
NOx Emissions (kg)	0.86	0.40	1.26
VOC Emissions (kg)	1.02	0.48	1.50
Performance Index	24.3	11.6	35.9

3: Lexington Ave & Red Fox Road

Direction	All
Future Volume (vph)	3030
Total Delay / Veh (s/v)	26
CO Emissions (kg)	2.96
NOx Emissions (kg)	0.58
VOC Emissions (kg)	0.69

6: Lexington Ave & 694 Ramps

Direction	All
Future Volume (vph)	3194
Total Delay / Veh (s/v)	15
CO Emissions (kg)	2.51
NOx Emissions (kg)	0.49
VOC Emissions (kg)	0.58

9: Sub Entrance 2 & Red Fox Road

Direction	All
Future Volume (vph)	679
Total Delay / Veh (s/v)	2
CO Emissions (kg)	0.16
NOx Emissions (kg)	0.03
VOC Emissions (kg)	0.04

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Direction	All
Future Volume (vph)	2330
Total Delay / Veh (s/v)	4
CO Emissions (kg)	1.09
NOx Emissions (kg)	0.21
VOC Emissions (kg)	0.25

17: Lexington Ave & Grey Fox Road

Direction	All
Future Volume (vph)	2494
Total Delay / Veh (s/v)	16
CO Emissions (kg)	2.10
NOx Emissions (kg)	0.41
VOC Emissions (kg)	0.49

20: Sub Entrance 1 & Red Fox Road

Direction	All
Future Volume (vph)	515
Total Delay / Veh (s/v)	0
CO Emissions (kg)	0.10
NOx Emissions (kg)	0.02
VOC Emissions (kg)	0.02

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Performance Index	24.1	11.6	35.7

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Lexington Ave

Direction	NB	SB	All
Total Delay / Veh (s/v)	9	9	9
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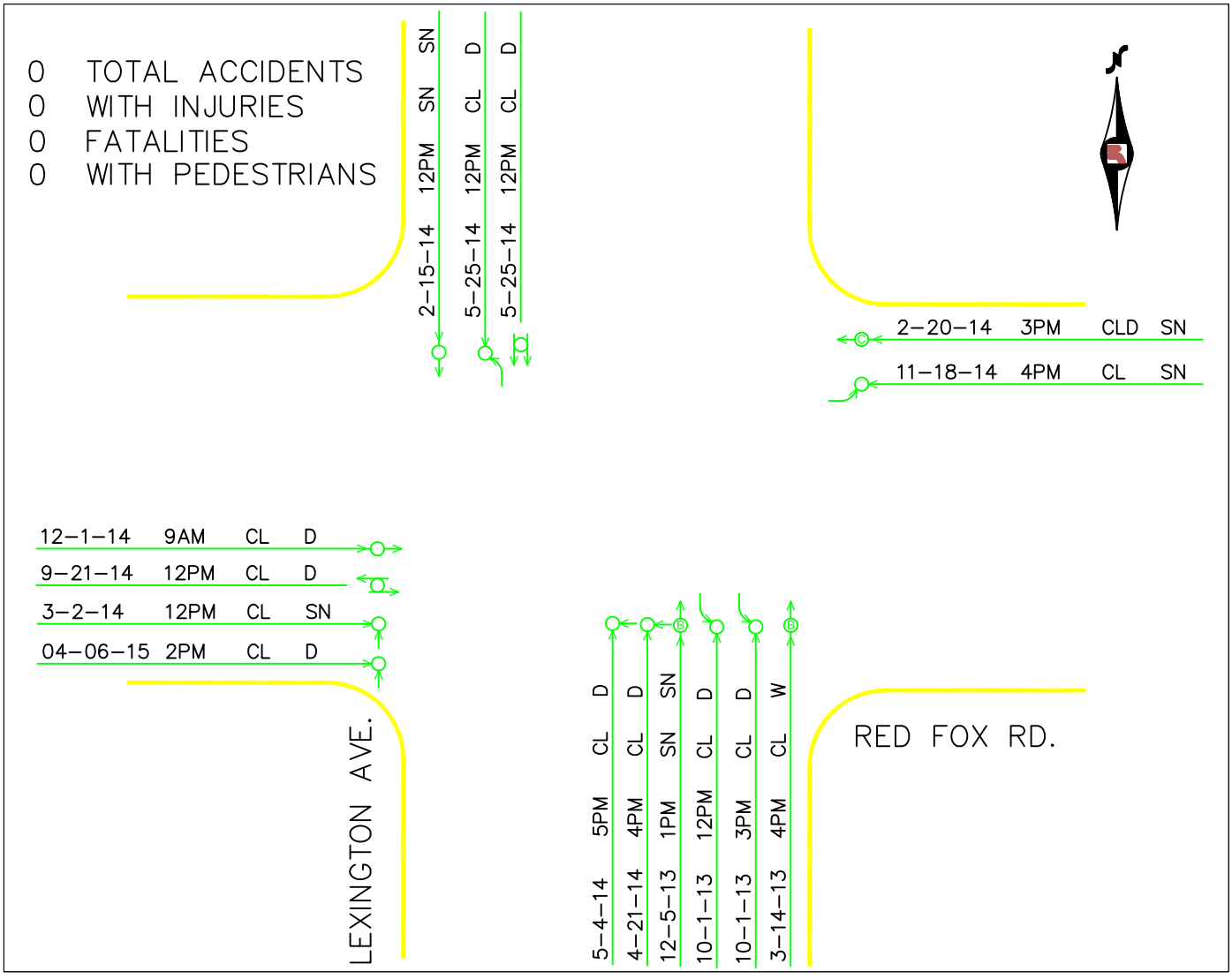


LEGEND

- ACCIDENT WITH PEDESTRIAN
- HEAD-ON
- HEAD-ON SIDESWIPE
- OVERTAKING SIDESWIPE
- REAR END
- RIGHT ANGLE
- LEFT TURN
- OUT OF CONTROL

Accident Severity

- NO INJURY
- © POSSIBLE INJURY
- Ⓑ NON-INCAPACITATING INJURY
- Ⓐ INCAPACITATING INJURY
- FATALITY

Weather

CL=CLEAR
CLD=CLOUDY
R=RAINING
SN=SNOWING
F=FOGGY

Road Surface

D=DRY
W=WET
I=ICY
SN=SNOWY

EXAMPLE:
Date Time Weather Road Surface

RAMSEY COUNTY

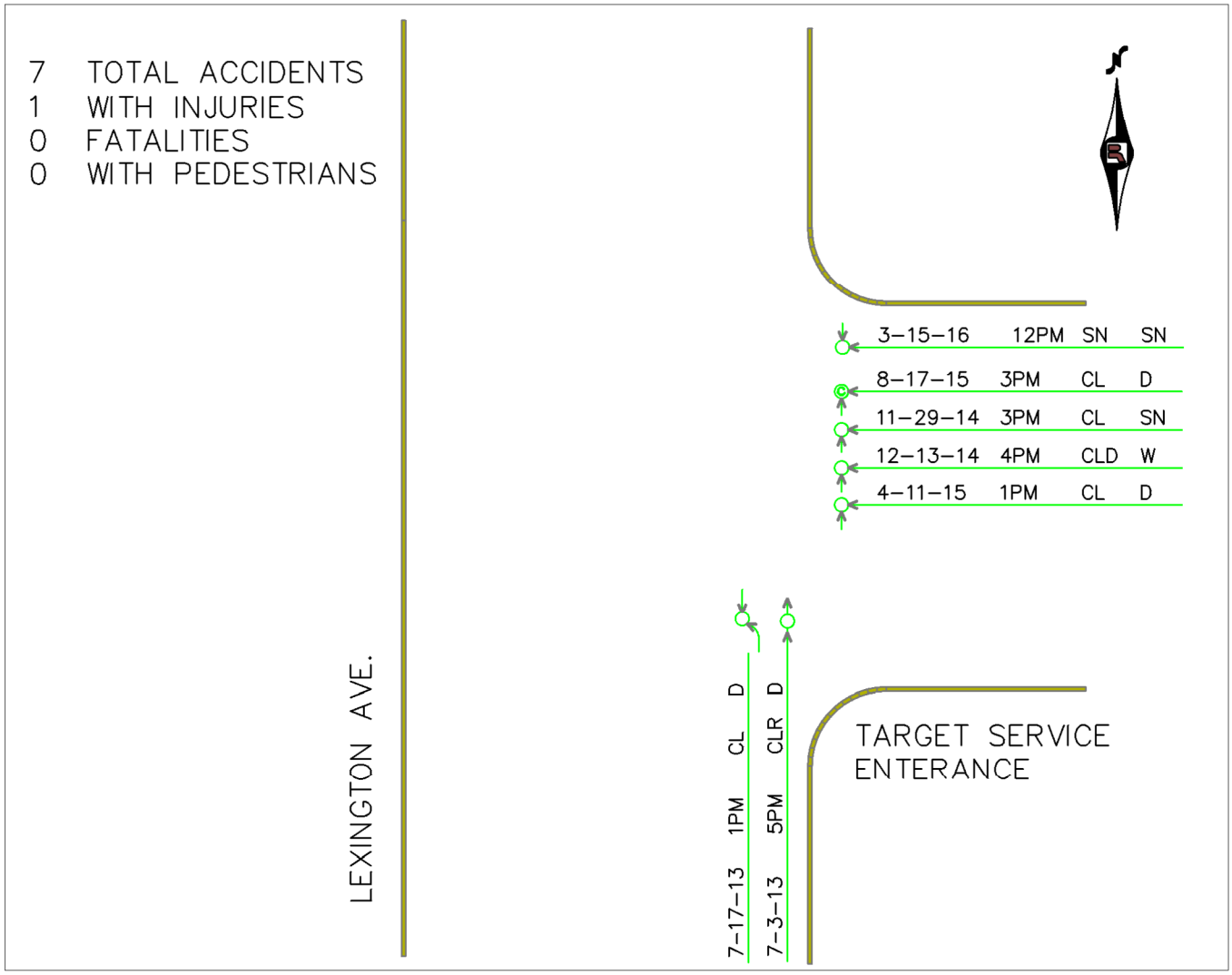
ACCIDENT DIAGRAM

RAMSEY COUNTY
Department of Public Works

Lexington Ave at Red Fox Rd.

2013-2015

7 TOTAL ACCIDENTS
1 WITH INJURIES
0 FATALITIES
0 WITH PEDESTRIANS



LEGEND

- ACCIDENT WITH PEDESTRIAN
- HEAD-ON
- HEAD-ON SIDESWIPE
- OVERTAKING SIDESWIPE
- REAR END
- RIGHT ANGLE
- LEFT TURN
- OUT OF CONTROL

Accident Severity
- NO INJURY
- Ⓒ POSSIBLE INJURY
- Ⓑ NON-INCAPACITATING INJURY
- Ⓐ INCAPACITATING INJURY
- FATALITY

Weather
- CL=CLEAR
- CLD=CLOUDY
- R=RAINING
- SN=SNOWING
- F=FOGGY

Road Surface
- D=DRY
- W=WET
- I=ICY
- SN=SNOWY

EXAMPLE:
Date Time Weather Road Surface

RAMSEY COUNTY

RAMSEY COUNTY
Department of Public Works

ACCIDENT DIAGRAM

Lexington Ave. at Target Service Enterance
2013–2015

ARDEN HILLS

CITY OF ARDEN HILLS
COUNTY OF RAMSEY
STATE OF MINNESOTA

RESOLUTION NO. 2016-020

A RESOLUTION SUPPORTING RAMSEY COUNTY'S REQUEST FOR FEDERAL FUNDING FOR LEXINGTON AVENUE ROAD IMPROVEMENTS

WHEREAS, the City of Arden Hills has partnered with Ramsey County and the City of Shoreview to best serve transportation needs of the residents of the region;

WHEREAS, traffic congestion is a major problem along the Lexington Avenue corridor;

WHEREAS, The pavement surface is failing due to excessive rutting and is creating a safety hazard during rain events, due to stormwater collecting in the rutted wheelpaths;

WHEREAS, pedestrian facilities along this corridor are included in both Ramsey County and Arden Hills long range planning documents;

WHEREAS, Ramsey County, the Minnesota Department of Transportation and City of Arden Hills have already invested in pedestrian facilities along this corridor;

WHEREAS, these improvements will benefit commuters throughout the region.

THEREFORE, BE IT RESOLVED: The City of Arden Hills supports Ramsey County's request for Federal funding to construct these needed improvements.

ADOPTED BY THE CITY COUNCIL OF THE CITY OF ARDEN HILLS THIS 27th DAY OF JUNE, 2016.

David Grant

David Grant, MAYOR

ATTEST:

Julie Hanson

Julie Hanson, CITY CLERK

RAMSEY COUNTY
Public Works

July 11, 2016

Elaine Koutsoukos, TAB Coordinator
Metropolitan Council
390 Robert St. N.
Saint Paul, MN 55101

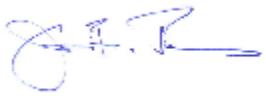
SURFACE TRANSPORTATION PROGRAM FUNDING APPLICATION FOR RECONSTRUCTION/MODERNIZATION OF LEXINGTON AVENUE, RAMSEY COUNTY STATE AID HIGHWAY (CSAH 51), BETWEEN COUNTY ROAD E AND I-694- INTENT TO MAINTAIN

Dear Ms. Koutsoukos:

Ramsey County, as the political subdivision with jurisdiction over Lexington Avenue (CSAH 51) hereby states its intention to operate and maintain the facility, including any improvements funded through the Surface Transportation Program, for the full design life of the facility and planned improvements.

The application for Surface Transportation Program funds that we have submitted would not replace any regionally-funded improvements that were opened to traffic within the last five years.

Sincerely,



James E. Tolaas, P.E.
Director of Public Works/County Engineer

Enclosure

1425 Paul Kirkwold Drive
Arden Hills, MN 55112
Phone: (651) 266-7100
www.co.ramsey.mn.us

#

RAMSEY COUNTY

CONCEPTUAL LAYOUT

LEXINGTON AVENUE

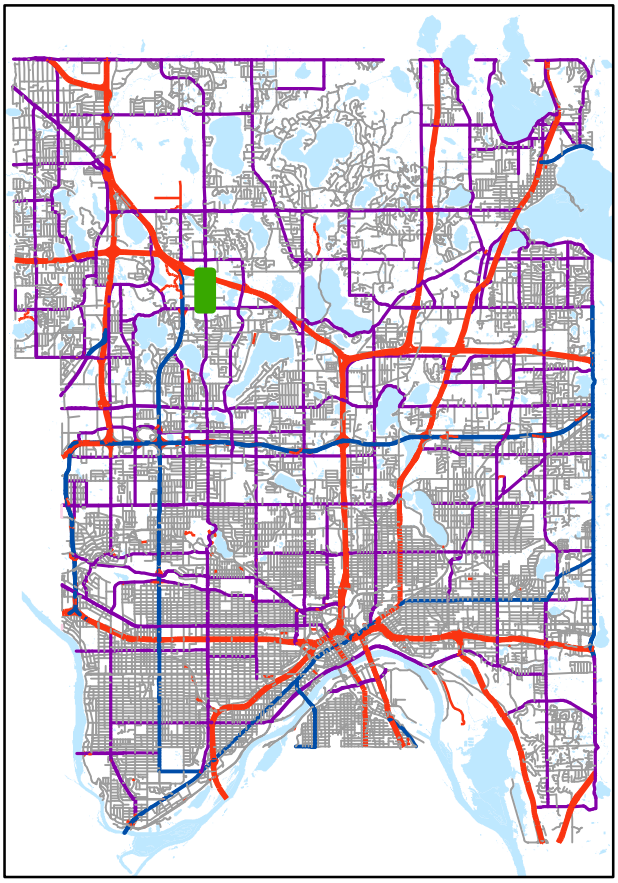
FROM COUNTY ROAD E TO I-694

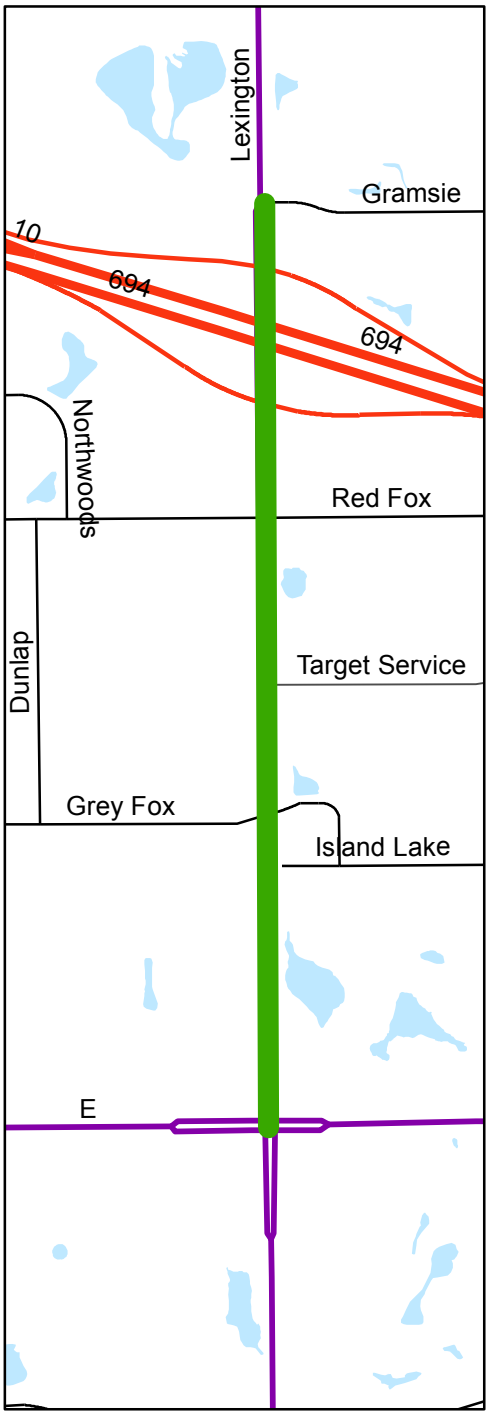
SCALE IN FEET

0 250 500

P:\PROJECTS\LEXINGTON AVE CO RD E TO I694.DWG July 6, 2016 3:09 PM

Lexington Ave (51) County Rd. E to I-694





0 0.5 1 2
Miles

N

Map Produced 7/12/2016 by Ramsey County Public Works

RAMSEY COUNTY
Working with you to enhance our quality of life

Prepared by Ramsey County Enterprise GIS | RCGISMetaData@Co.Ramsey.MN.US
LexingtonAveCoRdEtoI694 7/12/2016

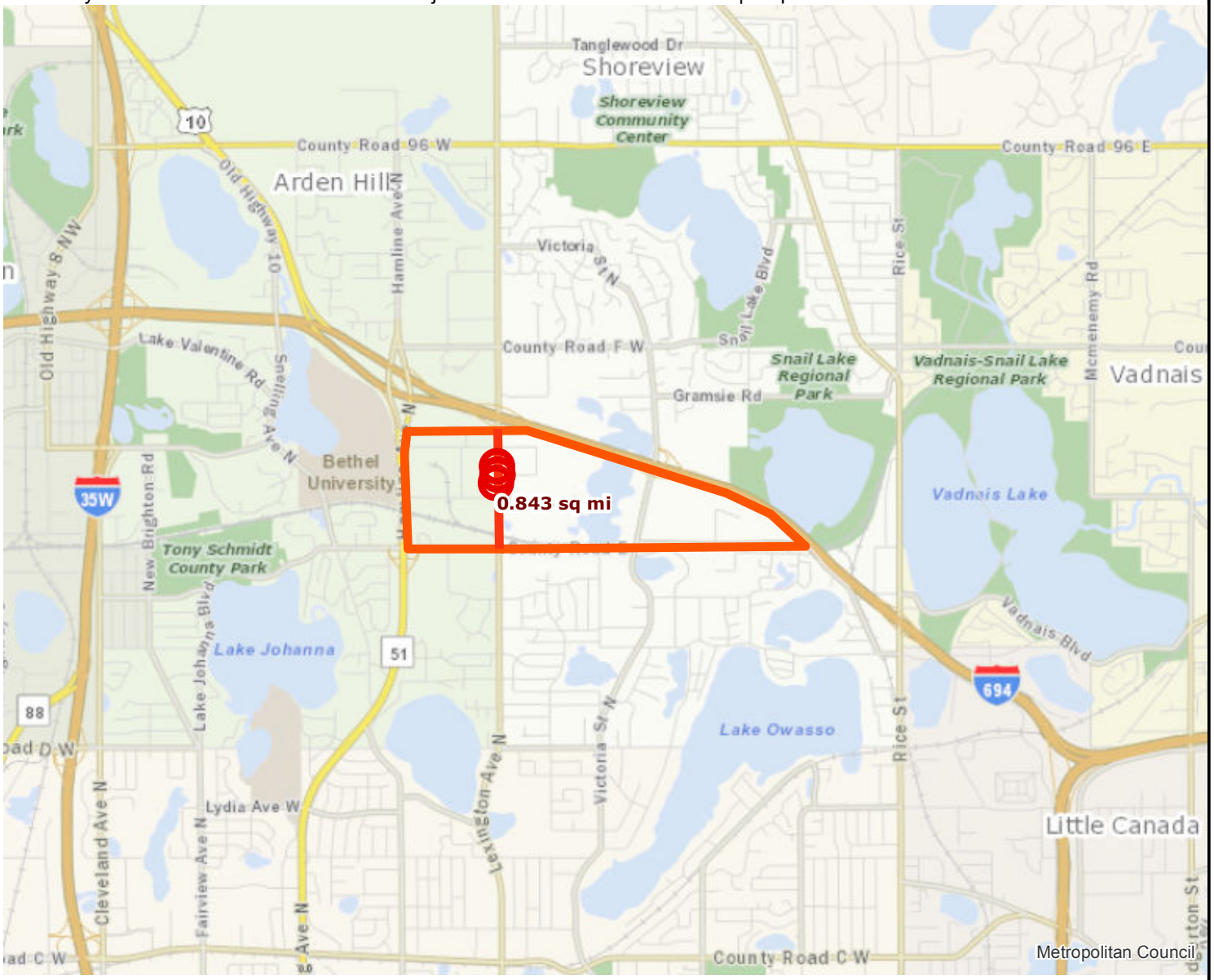
Roadway Area Definition

Roadway Reconstruction/Modernization Project: 05263 Csah 51 Lex Rams | Map ID: 1472046868778

Results

Project Length: 0.598 miles

Project Area: 0.843 sq mi



Project Points
Project
Project Area
Principal Arterials
A Minor Arterials
Principal Arterials Planned
A Minor Arterials Planned

0 0.5 1 2 3 4 Miles

Created: 8/24/2016
LandscapeRSA1

For complete disclaimer of accuracy, please visit
http://giswebsite.metc.state.mn.us/gissitenew/notice.aspx

METROPOLITAN COUNCIL

EXTRACT OF MINUTES OF MEETING OF THE CITY COUNCIL OF SHOREVIEW, MINNESOTA HELD JULY 5, 2016

* * * * * * * * * * * *

Pursuant to due call and notice thereof, a meeting of the City Council of the City of Shoreview, Minnesota, was duly called and held at the Shoreview City Hall in said City on July 5, 2016, at 7:00 p.m. The following members were present:

Mayor Martin, Council members Quigley, Johnson, Springhorn, Wickstrom,

and the following members were absent: None.

Member Quigley introduced the following resolution and moved its adoption.

RESOLUTION NO. 16-62

SUPPORTING LEXINGTON AVENUE CORRIDOR IMPROVEMENTS FROM I-694 TO COUNTY ROAD E

WHEREAS, Ramsey County is proposing improvements to Lexington Avenue, from I-694 to County Road E in Shoreview; and

WHEREAS, the proposed improvements address growing traffic, safety and congestion issues in the Lexington Avenue Corridor; and

WHEREAS, the proposed improvements would be beneficial to both motorized and non-motorized modes of transportation in and around the Corridor, as well as serve the economic development interests of the Community; and

WHEREAS, Ramsey County is submitting a proposal for Surface Transportation Program funding that seeks to minimize Shoreview's financial participation; and

WHEREAS, the Shoreview City Council has discussed and considered the proposed improvements to the Lexington Avenue Corridor.

NOW, THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF SHOREVIEW, MINNESOTA THAT the Shoreview City Council is supportive of Ramsey County's proposed improvement of the Lexington Avenue Corridor from I-694 to County Road E.

The motion for the adoption of the foregoing resolution was duly seconded by Member Johnson, and upon vote being taken thereon, the following voted in favor thereof: All present members;

and the following voted against the same: None.

WHEREUPON, said resolution was declared duly passed and adopted this 5th day of July, 2016.

STATE OF MINNESOTA)
)
COUNTY OF RAMSEY)
)
CITY OF SHOREVIEW)

I, the undersigned, being the duly qualified and acting Manager of the City of Shoreview of Ramsey County, Minnesota, do hereby certify that I have carefully compared the attached and foregoing extract of minutes of a meeting of said City Council held on the 5th day of July, 2016, with the original thereof on file in my office and the same is a full, true and complete transcript there from insofar as the same relates to the proposed improvement of Lexington Avenue.

WITNESS MY HAND officially as such Manager and the corporate seal of the City of Shoreview, Minnesota, this 6th day of July 2016.

Terry Schwerm
City Manager

CMF / CRF Details

CMF ID: 323

Install a traffic signal (major road speed limit at least 40 mph)

Description: Install a traffic signal (major road speed limit at least 40 mph)

Prior Condition: ***No Prior Condition(s)***

Category: Intersection traffic control

Study: ***Safety Effects of Left-Turn Phasing Schemes at High-Speed Intersections*****, Davis and Aul, 2007**

Star Quality Rating:	★★★★☆

Crash Modification Factor (CMF)	
Value:	0.33
Adjusted Standard Error:	0.06
Unadjusted Standard Error:	0.05

Crash Reduction Factor (CRF)

Value:	67 *(This value indicates a **decrease** in crashes)*
Adjusted Standard Error:	6
Unadjusted Standard Error:	5

Applicability

Crash Type:	Angle
Crash Severity:	All
Roadway Types:	Not Specified
Number of Lanes:	
Road Division Type:	
Speed Limit:	
Area Type:	Urban
Traffic Volume:	
Time of Day:	

If countermeasure is intersection-based

Intersection Type:	Roadway/roadway (not interchange related)
Intersection Geometry:	4-leg
Traffic Control:	Stop-controlled
Major Road Traffic Volume:	

Minor Road Traffic Volume:	

Development Details

Date Range of Data Used:	
Municipality:	
State:	
Country:	
Type of Methodology Used:	Before/after using empirical Bayes or full Bayes
Sample Size Used:	

Other Details

Included in Highway Safety Manual?	Yes. HSM lists this CMF in **bold** font to indicate that it has the highest reliability since it has an adjusted standard error of 0.1 or less.
Date Added to Clearinghouse:	
Comments:	Countermeasure name changed to match HSM

This site is funded by the U.S. Department of Transportation Federal Highway Administration and maintained by the University of North Carolina Highway Safety Research Center

HSIP worksheet

Control Section	T.H. / Roadway	Location	Beginning Ref. Pt.	Ending Ref. Pt.	State, County, City or Township	Study Period Begins	Study Period Ends
	CSAH 51	County Road E (CSAH 15) to I-694 at Target Raod Signal			Ramsey County	1/1/2013	12/31/2015

Description of Proposed Work: Reconstruct from County Road E to I-694. Addition of a signal at the Target road, closing west side access points from Target road to Red Fox Road and rerout to signal.

Accident Diagram Codes		1 Rear End	2 Sideswipe Same Direction	3 Left Turn Main Line	5 Right Angle	4,7 Ran off Road	8, 9 Head On/ Sideswipe - Opposite Direction	Pedestrian	6, 90, 99 Other	Total
Study Period: Number of Crashes	Fatal **F**									
	Personal Injury (PI) **A**									
	Personal Injury (PI) **B**									
	Personal Injury (PI) **C**				1					**1**
	Property Damage **PD**	1		1	4					**6**
% Change in Crashes *Use Desktop Reference for Crash Reduction Factors	Fatal **F**									
	PI **A**									
	PI **B**									
	PI **C**				-67%					
	Property Damage **PD**	-67%		-67%	-67%					
Change in Crashes = No. of crashes **X** % change in crashes	Fatal **F**									
	PI **A**									
	PI **B**									
	PI **C**				**-0.67**					**-0.67**
	Property Damage **PD**	**-0.67**		**-0.67**	**-2.68**					**-4.02**

Year (Safety Improvement Construction): **2020**

Project Cost (exclude Right of Way): **$ 4,616,350**

Right of Way Costs (optional):

Traffic Growth Factor: **0.5%**

Capital Recovery

1. **Discount Rate:** **2%**
2. **Project Service Life (n):** **25**

Type of Crash	Study Period: Change in Crashes	Annual Change in Crashes	Cost per Crash	Annual Benefit
F			**$ 1,140,000**	
A			**$ 570,000**	
B			**$ 170,000**	
C	**-0.67**	**-0.22**	**$ 83,000**	**$ 18,554**
PD	**-4.02**	**-1.34**	**$ 7,600**	**$ 10,193**
Total				**$ 28,747**

B/C= 0.13

Using present worth values,

B= $ 605,059

C= $ 4,616,350

See "Calculations" sheet for amortization.

Office of Traffic, Safety and Technology **August 2015**

Amortizing…

Year	Crash Benefits	Present Worth Benefits	Present Worth Costs
2020	$ 28,747	$ 28,747	$ 4,616,350
2021	$ 28,891	$ 28,324	
2022	$ 29,035	$ 27,908	
2023	$ 29,180	$ 27,497	
2024	$ 29,326	$ 27,093	
2025	$ 29,473	$ 26,694	
2026	$ 29,620	$ 26,302	
2027	$ 29,768	$ 25,915	
2028	$ 29,917	$ 25,534	
2029	$ 30,067	$ 25,158	
2030	$ 30,217	$ 24,788	
2031	$ 30,368	$ 24,424	
2032	$ 30,520	$ 24,065	
2033	$ 30,673	$ 23,711	
2034	$ 30,826	$ 23,362	
2035	$ 30,980	$ 23,019	
2036	$ 31,135	$ 22,680	
2037	$ 31,291	$ 22,347	
2038	$ 31,447	$ 22,018	
2039	$ 31,604	$ 21,694	
2040	$ 31,762	$ 21,375	
2041	$ 31,921	$ 21,061	
2042	$ 32,081	$ 20,751	
2043	$ 32,241	$ 20,446	
2044	$ 32,402	$ 20,145	
0	$ -	$ -	
0	$ -	$ -	
0	$ -	$ -	
0	$ -	$ -	
0	$ -	$ -	
0	$ -	$ -	
	Totals =	**$ 605,059 (B)**	**$ 4,616,350 (C)**

year (n)= 1, 2, 3,….
discount rate (i) = 7%

$$\text{Crash Benefits (@ year n)} = (\text{Crash Benefits})_{n-1} \times (1 + \text{Traffic Growth Factor})$$

$$\text{Present Worth Benefits (@ year n)} = (\text{Crash Benefits})_{n} \times 1/(1 + \text{Discount Rate})^{n}$$

Type of Crash	Crash Severity	Cost per Crash
Fatal	K	$ 1,140,000
Personal Injury	A Incapacitating	$ 570,000
	B Non-Incapacitating	$ 170,000
	C Possible	$ 83,000
Property Damage	PDO or N	$ 7,600

Source: MnDOT Office of Transportation System Management
(July 2015)