METROPOLITAN COUNCIL

Application

19839 - 2024 Roadway Expansion
20186 - CSAH 46 Expansion from Trunk Highway 3 to US Highway 52
Regional Solicitation - Roadways Including Multimodal Elements

Status: Editing
Submitted Date:

Primary Contact

Feel free to edit your profile any time your information changes. Create your own personal alerts using My Alerts.

Name:* He/him/his (Pronouns) Imran (First Name) (Middle Name) Ahmed (Last Name)

Title: Senior Projects Manager

Department: Transportation

Email: Imran.Ahmed@co.dakota.mn.us

Address: Dakota County Western Service Center
14955 Galaxie Ave

* Apple Valley (City) Minnesota (State/Province) 55124 (Postal Code/Zip)

Phone:* 952-891-7991 (Phone) (Ext.)

Fax: 952-891-7127

What Grant Programs are you most interested in? Regional Solicitation - Roadways Including Multimodal Elements

Organization Information

Name: DAKOTA COUNTY

Jurisdictional Agency (if different):

Organization Type: County Government

Organization Website:

Address: TRANSPORTATION DEPT
14955 GALAXIE AVE

* APPLE VALLEY (City) Minnesota (State/Province) 55124 (Postal Code/Zip)

County: Dakota

Phone:* 952-891-7100 (Ext.)

Fax:

PeopleSoft Vendor Number 0000002621A15

Project Information

Project Name CSAH 46 Expansion Safety and Mobility Project

Primary County where the Project is Located Dakota

Cities or Townships where the Project is Located: Cities of Coates, Rosemount, and Empire

Jurisdictional Agency (If Different than the Applicant):

Brief Project Description (Include location, road name/functional class, type of improvement, etc.)

The CSAH 46 project expands five miles of roadway from TH 3 to TH 52 from a two-lane undivided to a four-lane divided section to address safety and mobility needs due to increasing traffic volumes and disproportionately high truck volumes. In addition, improvements will modify the interchange ramp intersections at TH 52 with roundabouts to address the operations and safety issues. A multimodal trail will also be constructed along the north side with a new trail underpass connecting the Vermillion Highlands Greenway.

CSAH 46 (160th Street) is an A Minor Arterial Expander on the west end near TH 3 and an A Minor Arterial Connector on the east end near TH 52. The project corridor provides a vital east-west arterial, connecting the Cities of Burnsville, Lakeville, Apple Valley, Rosemount, Coates, and Hastings. This route also serves as a critical connection to major state highways such as TH 52, TH 3, and access to I-35, TH 77, and TH 61 just beyond the project limits.

The lack of continuous east-west connections south of CSAH 46 requires residents and businesses to rely upon this roadway for heavy freight movement and connectivity to major north-south routes. CSAH 46 provides freight access to Dakota Aggregates, Cemstone, Aggregate Industries, UMore Park, and several other businesses. The 2017 Regional Truck Highway Corridors Study identified CSAH 46 from CSAH 23 (Cedar Avenue) to the CSAH 46/TH 52 interchange as a Tier 3 corridor (score 8.8). The 2021 Truck Corridor Study upgraded this segment of CSAH 46 to a Tier 2 truck route (score 19.7), an increase of 10.9.

Project benefits include:

-Improve safety and mobility for all transportation modes

-Reconstruct roundabouts at the CSAH 46/TH 52 interchange ramps to improve intersection safety and operations

-Accommodate traffic volume increases including commercial freight vehicles

-Provide safe, equitable non-motorized facilities that connect users to local and regional destinations

-Implement access management strategies

-Provide a four-lane facility between CSAH 5 west of I-35 in Lakeville to TH 52 in Coates

The County/City partnership has developed a project vision that will improve safety, increase mobility, and promote the efficient movement of vehicles. The project is in an area planned for significant growth with the UMore Park's innovative community plan incorporating nearly 4,700 acres. Along with the University, Dakota County communities have development plans that are equitable and sustainable as a priority in this rapidly growing region south of the Twin Cities.

(Limit 2,800 characters; approximately 400 words)

TRANSPORTATION IMPROVEMENT PROGRAM (TIP) DESCRIPTION - will be used in TIP if the project is selected for funding. <u>See MnDOT's TIP description guidance.</u>

CSAH 46 from TH 3 to the CSAH 46/TH 52 interchange ? Reconstruct and expand to a four-lane divided roadway, CSAH 46 grade-separated crossing, interchange ramp roundabouts in Coates/Rosemount/Empire

Include both the CSAH/MSAS/TH references and their corresponding street names in the TIP Description (see Resources link on Regional Solicitation webpage for examples).

Project Length (Miles)

to the nearest one-tenth of a mile

5.0

Project Funding

Are you applying for competitive funds from another source(s) to implement this project?	Yes
If yes, please identify the source(s)	Minnesota Highway Freight Program
Federal Amount	$10,000,000.00
Match Amount	$31,600,000.00
Minimum of 20% of project total	
Project Total	$41,600,000.00
For transit projects, the total cost for the application is total cost minus fare revenues.	
Match Percentage	75.96%
Minimum of 20% *Compute the match percentage by dividing the match amount by the project total*	
Source of Match Funds	Dakota County: $29,200,000, Rosemount: $2,400,000

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:	2028, 2029
Select 2026 or 2027 for TDM and Unique projects only. For all other applications, select 2028 or 2029.	
Additional Program Years:	2027
Select all years that are feasible if funding in an earlier year becomes available.	

Project Information-Roadways

NOTE: If your project has already been assigned a State Aid Project # (SAP or SP), please Indicate SAP# here

SAP#:	
County, City, or Lead Agency	Dakota County
Functional Class of Road	A Minor Expander/A Minor Connector
Road System	CSAH
TH, CSAH, MSAS, CO. RD., TWP. RD., CITY STREET	
Road/Route No.	46
i.e., 53 for CSAH 53	
Name of Road	160th Street West/Brandel Drive
Example; 1st ST., MAIN AVE	

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

From: **Road System**	TH 3
Road/Route No.	3
i.e., 53 for CSAH 53	
Name of Road	TH 3
Example; 1st ST., MAIN AVE	
To: **Road System**	TH 52
DO NOT INCLUDE LEGAL DESCRIPTION	
Road/Route No.	52
i.e., 53 for CSAH 53	
Name of Road	TH 52
Example; 1st ST., MAIN AVE	
In the City/Cities of:	Coates, Rosemount, and Empire
(List all cities within project limits)	

OR:

At:
Road System

(TH, CSAH, MSAS, CO. RD., TWP. RD., City Street)

Road/Route No.

i.e., 53 for CSAH 53

Name of Road

Example; 1st ST., MAIN AVE

In the City/Cities of:

(List all cities within project limits)

PROJECT LENGTH

Miles

(nearest 0.1 miles)

Primary Types of Work (check all the apply)

New Construction

Reconstruction	Yes
Resurfacing	
Bituminous Pavement	Yes
Concrete Pavement	
Roundabout	Yes
New Bridge	
Bridge Replacement	
Bridge Rehab	Yes
New Signal	
Signal Replacement/Revision	
Bike Trail	Yes
Other (do not include incidental items)	GRADE, AGG BASE, BIT BASE, BIT SURF, SIDEWALK, CURB AND GUTTER, STORM SEWER, LIGHTING, BIKE PATH, PED RAMPS, RETAINING WALLS, BRIDGE
BRIDGE/CULVERT PROJECTS (IF APPLICABLE)	
Old Bridge/Culvert No.:	
New Bridge/Culvert No.:	
Structure is Over/Under (Bridge or culvert name):	
OTHER INFORMATION:	
Zip Code where Majority of Work is Being Performed	55068
Approximate Begin Construction Date	11/01/2027
Approximate End Construction Date	08/31/2029
Miles of Trail (nearest 0.1 miles)	5.0
Miles of Sidewalk (nearest 0.1 miles)	0
Miles of trail on the **Regional Bicycle Transportation Network** (nearest 0.1 miles):	0
Is this a new trail?	Yes

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 (2018), the 2040 Regional Parks Policy Plan (2018), 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 goals, objectives, and strategies that relate to the project.

Briefly list the goals, objectives, strategies, and associated pages:

With reference to the Thrive MSP 2040 TPP, Table 2-1 on pages 2.6 - 2.16 (and related sections/pages), the proposed modernization project relates primarily to these goals and corresponding objectives & strategies:

A. Transportation System Stewardship (p 2.6):

Goal A: Transportation System Stewardship:

Objective: Efficiently preserve and maintain the regional transportation system in a state of good repair.

Objective: Operate the regional transportation system to efficiently and cost-effectively connect people and freight to destinations

Strategies: A1 and A2 (Page 2.6)

B. Safety and Security (p 2.7):

Objective: Reduce crashes and improve safety and security for all modes of passenger travel and freight transportation.

Strategies: B1, B4, B5, and B6 (Page 2.7)

C. Access to Destinations (p 2.8-2.11):

Objective: Increase the availability of multimodal travel options, especially in congested highway corridors.

Objective: Increase travel time reliability and predictability for travel on highway and transit systems and transit systems.

Objective: Ensure access to freight terminals such as river ports, airports, and intermodal rail yards.

Objective: improve multimodal travel options for people of all ages and abilities to connect to jobs and other opportunities, particularly for historically underrepresented populations.

Strategies: C1-4, C6-10 , C15-17 and C19 (Page 2.8-2.10)

D. Competitive Economy (p 2.11-2.12):

Objective: Improve multimodal access to regional job concentrations identified in Thrive MSP 2040.

Objective: Invest in a multimodal transportation system to attract and retain businesses and residents.

Objective: Support the region's economic competitiveness through efficient movement of freight

Strategies: D1-5 (Page 2.11)

E. Healthy Environment (p 2.12-2.14):

Objective: Reduce impacts of transportation construction, operations, and use on the natural, cultural and developed environments.

Objective: Increase the availability and attractiveness of transit, bicycling, and walking to encourage healthy communities and active car-free lifestyles.

Objective: Provide a transportation system that promotes community cohesion and connectivity for people of all ages and abilities, particularly for historically under-represented populations.

Strategies: E1-7 (Page 2.12-2.13)

F. Leveraging Transportation Investments to Guide Land Use (p 2.14-p 2.16):

Objective: Focus regional growth in areas that support the full range of multimodal travel.

Objective: Maintain adequate highway, riverfront, and rail-accessible land to meet existing and future demand for freight movement

Objective: Encourage local land use design that integrates highways, streets, transit, walking, and bicycling.

Strategies: F1, F2, F3, & F5-8 (Page 2.14-2.15)

Limit 2,800 characters, approximately 400 words

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: Unique projects are exempt from this qualifying requirement because of their innovative nature.

Dakota County 2040 Transportation Plan

Chapter 9

Goal 6: Expansion of Transportation Corridors

Figure 43 - Dakota County Highway Capacity Deficiencies, 2019 (page 9-6)

Figure 44 - Dakota County Highway Capacity Deficiencies, 2040 (page 9-7)

The project will be expanding CSAH 46 to a 4-lane divided roadway from TH 3 to the CSAH 46/TH 52 interchange. The project will maintain a regional east-west corridor, improve mobility of freight, and provide multimodal facilities.

Dakota County 2023-2027 Capital Improvement Program (CIP)

CIP Sheet (page (Trans 58)

Limit 2,800 characters, approximately 400 words

4. The project must exclude costs for studies, preliminary engineering, design, or construction engineering. Right-of-way costs are only eligible as part of 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. Unique project costs are limited to those that are federally eligible.

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

5. Applicant is a public agency (e.g., county, city, tribal government, transit provider, etc.) or non-profit organization (TDM and Unique Projects applicants only). Applicants that are not State Aid 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 in Table 1. For unique projects, the minimum award is $500,000 and the maximum award is the total amount available each funding cycle (approximately $4,000,000 for the 2024 funding cycle).

***Strategic Capacity (Roadway Expansion):** $1,000,000 to $10,000,000*
***Roadway Reconstruction/Modernization:** $1,000,000 to $7,000,000*
***Traffic Management Technologies (Roadway System Management):** $500,000 to $3,500,000*
***Spot Mobility and Safety:** $1,000,000 to $3,500,000*
***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 (ADA).

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

9. In order for a selected project to be included in the Transportation Improvement Program (TIP) and approved by USDOT, the public agency sponsor must either have a current Americans with Disabilities Act (ADA) self-evaluation or transition plan that covers the public right of way/transportation, as required under Title II of the ADA. The plan must be completed by the local agency before the Regional Solicitation application deadline. For future Regional Solicitation funding cycles, this requirement may include that the plan has undergone a recent update, e.g., within five years prior to application.

The applicant is a public agency that employs 50 or more people and has a completed ADA transition plan that covers the public right of way/transportation. Yes

(TDM and Unique Project Applicants Only) The applicant is not a public agency subject to the self-evaluation requirements in Title II of the ADA.

Date plan completed: 06/19/2018

Link to plan: https://www.co.dakota.mn.us/Transportation/TransportationStudies/Past/Documents/ADATransitionPlan.pdf#search=dakota%20county%20ada%20transition%20plan

The applicant is a public agency that employs fewer than 50 people and has a completed ADA self-evaluation that covers the public right of way/transportation.

Date self-evaluation completed:

Link to plan:

Upload plan or self-evaluation if there is no link

Upload as PDF

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

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

11. The owner/operator of the facility must operate and maintain the project year-round for the useful life of the improvement. This includes assurance of year-round use of bicycle, pedestrian, and transit facilities, per FHWA direction established 8/27/2008 and updated 4/15/2019. *Unique projects are exempt from this qualifying requirement.*

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

12. 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

13. 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

14. 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 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. Bridge Rehabilitation/Replacement projects must be located on a minor collector and above functionally classified roadway in the urban areas or a major collector and above in the rural areas.

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

Roadway Strategic Capacity and Reconstruction/Modernization and Spot Mobility 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 and Strategic Capacity 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 MnDOT?s ?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. Yes

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.

Bridge Rehabilitation/Replacement projects only:

5. The length of the in-place structure is 20 feet or longer.

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

6. The bridge must have a Local Planning Index (LPI) of less than 60 OR a National Bridge Inventory (NBI) Rating of 3 or less for either Deck Geometry, Approach Roadway, or Waterway Adequacy as reported on the most recent Minnesota Structure Inventory Report.

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

Roadway Expansion, Reconstruction/Modernization, and Bridge Rehabilitation/Replacement projects only:

*7. All roadway projects that involve the construction of a new/expanded interchange or new interchange ramps must have approval by the Metropolitan Council/MnDOT Interchange Planning Review Committee prior to application submittal. Please contact David Elvin at MnDOT (*David.Elvin@state.mn.us *or 651-234-7795) to determine whether your project needs to go through this process as described in* Appendix F of the 2040 Transportation Policy Plan.

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

Requirements - Roadways Including Multimodal Elements

Specific Roadway Elements

CONSTRUCTION PROJECT ELEMENTS/COST ESTIMATES	Cost
Mobilization (approx. 5% of total cost)	$1,560,000.00
Removals (approx. 5% of total cost)	$1,352,000.00
Roadway (grading, borrow, etc.)	$7,280,000.00
Roadway (aggregates and paving)	$12,896,000.00
Subgrade Correction (muck)	$0.00
Storm Sewer	$780,000.00
Ponds	$1,560,000.00
Concrete Items (curb & gutter, sidewalks, median barriers)	$1,872,000.00
Traffic Control	$260,000.00
Striping	$156,000.00

Signing	$291,200.00
Lighting	$153,920.00
Turf - Erosion & Landscaping	$260,000.00
Bridge	$1,040,000.00
Retaining Walls	$7,280,000.00
Noise Wall (not calculated in cost effectiveness measure)	$0.00
Traffic Signals	$0.00
Wetland Mitigation	$208,000.00
Other Natural and Cultural Resource Protection	$0.00
RR Crossing	$0.00
Roadway Contingencies	$1,040,000.00
Other Roadway Elements	$2,496,000.00
Totals	**$40,485,120.00**

Specific Bicycle and Pedestrian Elements

CONSTRUCTION PROJECT ELEMENTS/COST ESTIMATES	Cost
Path/Trail Construction	$936,000.00
Sidewalk Construction	$0.00
On-Street Bicycle Facility Construction	$0.00
Right-of-Way	$0.00
Pedestrian Curb Ramps (ADA)	$74,880.00
Crossing Aids (e.g., Audible Pedestrian Signals, HAWK)	$0.00
Pedestrian-scale Lighting	$0.00
Streetscaping	$0.00
Wayfinding	$0.00
Bicycle and Pedestrian Contingencies	$104,000.00
Other Bicycle and Pedestrian Elements	$0.00
Totals	**$1,114,880.00**

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
Subtotal	$0.00
Other Costs - Administration, Overhead,etc.	$0.00

PROTECT Funds Eligibility

One of the new federal funding sources is Promoting Resilient Operations for Transformative, Efficient, and Cost-Saving Transportation (PROTECT). Please describe which specific elements of your project and associated costs out of the Total TAB-Eligible Costs are eligible to receive PROTECT funds. Examples of potential eligible items may include: storm sewer, ponding, erosion control/landscaping, retaining walls, new bridges over floodplains, and road realignments out of floodplains.

INFORMATION: Promoting Resilient Operations for Transformative, Efficient, and Cost-Saving Transportation (PROTECT) Formula Program Implementation Guidance (dot.gov).

Response:

The CSAH 46 Expansion Safety and Mobility Project will incorporate elements that will increase the resiliency of local and regional transportation system networks within the CSAH 46 area. The project provides transportation benefits by making CSAH 46 more resilient to endure current and future severe weather events and natural disasters. The project will reduce long-term, life cycle infrastructure costs by preventing future damage, maintenance, and reconstruction. Project element improvements that are eligible to receive PROTECT funds include the following: Storm sewer systems will be designed to current standards to include high intensity rainfall events and installed to remove rainwater from surface transportation facilities; Flood detention basins will be installed for a 100-year design event to prevent the intrusion of floodwaters into surface transportation systems; Ponding systems will be examined to ensure proper surface draining to minimize infiltration and determinantal effects of standing water; Retaining walls will be constructed to manage property run-off water to prevent erosion in addition to soil reinforcement with natural sloping sites; Riprap installation at storm sewer and culvert outlets for erosion protection; The number of drainage structures on the roadway surface will be increased to meet current standards; Native seed mixtures will be used following MnDOT standards. Weed control will be used during establishment. These are vegetation management practices in transportation rights-of-way to improve roadway safety, prevent invasive species, and provide wildfire and erosion control.

Totals

Total Cost $41,600,000.00

Construction Cost Total $41,600,000.00

Transit Operating Cost Total $0.00

Congestion within Project Area:

The measure will analyze the level of congestion within the project area. Council staff will provide travel speed data on the "Level of Congestion" map. The analysis will compare the peak hour travel speed within the project area to fee-flow conditions.

Free-Flow Travel Speed: 58

The Free-Flow Travel Speed is the black number.

Peak Hour Travel Speed: 56

The Peak Hour Travel Speed is the red number.

Percentage Decrease in Travel Speed in Peak Hour compared to Free-Flow: 3.45%

Upload Level of Congestion map: 1702240002328_1_CSAH46_LevelofCongestion.pdf

Congestion on adjacent Parallel Routes:

Adjacent Parallel Corridor CSAH 66 (200th Street)

Adjacent Parallel Corridor Start and End Points:

Start Point: Canada Circle

End Point: 164th Street

Free-Flow Travel Speed: 59

The Free-Flow Travel Speed is the black number.

Peak Hour Travel Speed: 58

The Peak Hour Travel Speed is the red number.

Percentage Decrease in Travel Speed in Peak Hour Compared to Free-Flow: 1.69%

Upload Level of Congestion Map: 1702240002328_1_CSAH46_LevelofCongestion.pdf

Principal Arterial Intersection Conversion Study:

Proposed interchange or at-grade project that reduces delay at a High Priority Intersection:

(80 Points)

Proposed at-grade project that reduces delay at a Medium Priority Intersection:

(60 Points)

Proposed at-grade project that reduces delay at a Low Priority Intersection:

(50 Points)

Proposed interchange project that reduces delay at a Medium Priority Intersection:

(40 Points)

Proposed interchange project that reduces delay at a Low Priority Intersection:

(0 Points)

Not listed as a priority in the study: Yes

(0 Points)

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

Existing Employment within 1 Mile:	1134
Existing Manufacturing/Distribution-Related Employment within 1 Mile:	216
Existing Post-Secondary Students within 1 Mile:	0
Upload Map	1702240266763_1_CSAH46_RegionalEconomy.pdf

Please upload attachment in PDF form

Measure C: Current Heavy Commercial Traffic

RESPONSE: Select one for your project, based on the updated 2021 Regional Truck Corridor Study:

Along Tier 1:

Miles: 0

(to the nearest 0.1 miles)

Along Tier 2: Yes

Miles: 5.0

(to the nearest 0.1 miles)

Along Tier 3:

Miles: 0

(to the nearest 0.1 miles)

The project provides a direct and immediate connection (i.e., intersects) with either a Tier 1, Tier 2, or Tier 3 corridor:

None of the tiers:

Measure A: Current Daily Person Throughput

Location	East of Biscayne Avenue
Current AADT Volume	11553
Existing Transit Routes on the Project	N/A

For New Roadways only, list transit routes that will likely be diverted to the new proposed roadway (if applicable).

Upload Transit Connections Map 1702240222710_2_CSAH46_Transit.pdf

Please upload attachment in PDF form

Response: Current Daily Person Throughput

Average Annual Daily Transit Ridership	0
Current Daily Person Throughput	15019.0

Measure B: 2040 Forecast ADT

Use Metropolitan Council model to determine forecast (2040) ADT volume No

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 Dakota County Transportation Plan July 2021

Forecast (2040) ADT volume 21000

Measure A: Engagement

i. Describe any Black, Indigenous, and People of Color populations, low-income populations, disabled populations, youth, or older adults within a ½ mile of the proposed project. Describe how these populations relate to regional context. Location of affordable housing will be addressed in Measure C.

ii. Describe how Black, Indigenous, and People of Color populations, low-income populations, persons with disabilities, youth, older adults, and residents in affordable housing were engaged, whether through community planning efforts, project needs identification, or during the project development process.

iii. Describe the progression of engagement activities in this project. A full response should answer these questions:

1. What engagement methods and tools were used?
2. How did you engage specific communities and populations likely to be directly impacted by the project?
3. What techniques did you use to reach populations traditionally not involved in community engagement related to transportation projects?
4. How were the project?s purpose and need identified?
5. How was the community engaged as the project was developed and designed?
6. How did you provide multiple opportunities for of Black, Indigenous, and People of Color populations, low-income populations, persons with disabilities, youth, older adults, and residents in affordable housing to engage at different points of project development?
7. How did engagement influence the project plans or recommendations? How did you share back findings with community and re-engage to assess responsiveness of these changes?
8. If applicable, how will NEPA or Title VI regulations will guide engagement activities?

Response:

EPA's EJScreen Community Report is a mapping tool that combines environmental and socioeconomic data. The project area, with a ½ mile buffer, includes a population of 521 people, eight percent who are people of color. Two or more races makes up five percent of the total population, followed by Hispanic (two percent) and Asian (one percent). The project area has a per capita income of $47,388 and persons with disabilities make up seven percent of the total population.

For the development of the Dakota County 2040 Transportation Plan dated July 2021, extensive engagement took place to include all County residents and business owners. The plan involved in-person and online engagement efforts, such as County social media posts and emails that provided details on upcoming events and informational materials distributed. Additionally, engagement activities were advertised through library posters that included dates and times, and online surveys were available for public participation.

The Dakota County community was actively engaged through pop-up events held at various locations to gain a better understanding of the County's transportation issues. This included the following organized listening sessions at "familiar locations that are easily accessible for underrepresented communities":

-Eagan Senior Board

-Somali Listening Session

-African American Listening Session

The County's outreach efforts led to the discovery of multiple safety concerns that affect all CSAH 46 corridor users, including motorists and non-motorized users. The lack of proper infrastructure for bicyclists and pedestrians is a major cause of concern, as it poses a significant risk to their safety. Furthermore, navigating the corridor is challenging due to the scarcity of safe crossing areas for users.

In the Fall of 2020, Dakota County, the cities of Coates, Rosemount, and Empire partnered on the preliminary design of the CSAH 46 expansion to a four-lane section from TH 3 to the CSAH 46/TH 52 interchange. As part of the preliminary design phase, the project team mailed out an introductory letter to residents that would be impacted by the roadway improvement. The letter encouraged residents to visit the project website to provide input on issues/concerns they were seeing along the corridor. This information was incorporated into the corridor operations review and roadway alignment stages. The County utilized its social media presence to engage a broader range of community members. These public engagement efforts included the BIPOC, low-income, elderly, and disabled communities residing within the ½ mile project area.

(Limit 2,800 characters; approximately 400 words):

Measure B: Disadvantaged Communities Benefits and Impacts

Describe the project?s benefits to Black, Indigenous, and People of Color populations, low-income populations, children, people with disabilities, youth, and older adults. Benefits could relate to:

? pedestrian and bicycle safety improvements;
? public health benefits;
? direct access improvements for residents or improved access to destinations such as jobs, school, health care, or other;
? travel time improvements;
? gap closures;
? new transportation services or modal options;
? leveraging of other beneficial projects and investments;
? and/or community connection and cohesion improvements.

This is not an exhaustive list. A full response will support the benefits claimed, identify benefits specific to Disadvantaged communities residing or engaged in activities near the project area, identify benefits addressing a transportation issue affecting Disadvantaged communities specifically identified through engagement, and substantiate benefits with data.

Acknowledge and describe any negative project impacts to Black, Indigenous, and People of Color populations, low-income populations, children, people with disabilities, youth, and older adults. Describe measures to mitigate these impacts. Unidentified or unmitigated negative impacts may result in a reduction in points.

Below is a list of potential negative impacts. This is not an exhaustive list.

? Decreased pedestrian access through sidewalk removal / narrowing, placement of barriers along the walking path, increase in auto-oriented curb cuts, etc.
? Increased speed and/or ?cut-through? traffic.
? Removed or diminished safe bicycle access.
? Inclusion of some other barrier to access to jobs and other destinations.

Response:

The project will provide direct benefits to BIPOC, low-income and disabled populations. EPA's data within a ½ mile of the project includes a population with 16 percent people of color, a low-income population with a per capita income of $47,388 and seven percent persons with disabilities. The Socio-Economic Map also indicates that 94 publicly subsidized rental housing units are within a ½ mile of the project corridor. The benefits to these disadvantaged communities include:

Travel Time: The CSAH 46 expansion to a four-lane divided roadway will maintain the mobility and safety of freight along the corridor that currently carries more than 15 percent truck traffic daily. Expanded capacity will result in a safer commute for workers, increased travel time reliability, and decreased congestion for residents and workers. As an important east-west arterial, the improvements will also provide regional cost savings to disadvantaged populations that are not within the ½-mile buffer.

Multimodal Safety: The project improvements include an underpass to make it safer for nonmotorized users to cross CSAH 46. The corridor reconstruction as a divided roadway also provides a median to reduce the distance a non-motorized user must travel across at other corridor locations. From 2020 to 2022, 20 percent of the segment crashes involved heavy trucks. Access management improvements with the divided roadway will provide a safer facility for all modes of travel. In addition, 30 percent of the TH 52 East Ramp intersection crashes involved heavy trucks. Eliminating the left-turn movement with the installation of a roundabout will significantly decrease the number of crashes.

Community Connectivity: The project aims to improve connectivity between communities in Dakota County. By providing improved roadway capacity, the project will give better access to economic opportunities and vital services for relatively isolated populations.

Public Health: The installation of a multiuse trail on the north side and underpass connecting to the Vermillion Highlands Greenway will encourage more people to travel on foot or by bicycle, having a positive impact on the public health for all underserved communities by promoting exercise and family development.

There will be temporary construction impacts on the traveling public, residents, and businesses. Roadway users relying on CSAH 46 will be directed to other alternate routes, as needed. The project construction will incorporate proper noise, dust, and traffic mitigation and will not negatively impact equity populations present in the project area by maintaining access to businesses, housing, and minimizing construction nuisances.

(Limit 2,800 characters; approximately 400 words):

Measure C: Affordable Housing Access

Describe any affordable housing developments?existing, under construction, or planned?within ½ mile of the proposed project. The applicant should note the number of existing subsidized units, which will be provided on the Socio-Economic Conditions map. Applicants can also describe other types of affordable housing (e.g., naturally-occurring affordable housing, manufactured housing) and under construction or planned affordable housing that is within a half mile of the project. If applicable, the applicant can provide self-generated PDF maps to support these additions. Applicants are encouraged to provide a self-generated PDF map describing how a project connects affordable housing residents to destinations (e.g., childcare, grocery stores, schools, places of worship).

Describe the project?s benefits to current and future affordable housing residents within ½ mile of the project. Benefits must relate to affordable housing residents. Examples may include:

? specific direct access improvements for residents
? improved access to destinations such as jobs, school, health care or other;
? new transportation services or modal options;
? and/or community connection and cohesion improvements.

This is not an exhaustive list. Since residents of affordable housing are more likely not to own a private vehicle, higher points will be provided to roadway projects that include other multimodal access improvements. A full response will support the benefits claimed, identify benefits specific to residents of affordable housing, identify benefits addressing a transportation issue affecting residents of affordable housing specifically identified through engagement, and substantiate benefits with data.

Response:

According to the Socio-Economic Conditions map, there are a total of 94 affordable housing units that are publicly subsidized rental housing units in the census tracts located within a ½ mile of the project. Outside of the ½-mile buffer, the area has many affordable housing options, including apartment complexes, duplexes, and multi-family homes north of the CSAH 46TH 3 intersection. As shown on the attached Equity Populations and Destinations map, the availability of affordable housing options include the Cameo Place, Cambrian Commons, Prestwick Place, Rosemount Townhouses, and Rosemont Plaza Apartments.

The CSAH 46 project will improve the existing infrastructure for these residents of affordable housing with a 10-foot trail along the north side of the corridor and a new trail underpass. The constructed trail system will provide a safer route for pedestrians and bicyclists to visit destinations along the CSAH 46 corridor and eventually connect into the County?s Vermillion Highlands Greenway. The grade-separated crossing of CSAH 46 will provide non-motorized users a safer alternative to crossing the CSAH 46 corridor.

The project will expand CSAH 46 to a four-lane divided roadway to maintain mobility for freight vehicles along the corridor. According to the Dakota County 2040 Transportation Plan dated July 2021, the Highway Capacity Deficiencies 2019 map identifies the project segment of CSAH 46 over capacity based on its volume to capacity ratio. The project improvements to expand the roadway capacity to four lanes will provide improved mobility for heavy commercial truck traffic, which allows the delivery of goods (such as concrete, sand and gravel) in a cost-efficient manner to the community near the project corridor and the overall region. Improving facility conditions for a roadway carrying more than 15 percent truck traffic daily will also provide safer transportation option for other modes of travel relying on this vital east-west arterial.

Increased capacity within the project area will also provide affordable housing residents living with less congestion, improved safety, and increased travel time reliability to reach Rosemont destinations. Rosemont High School, Middle School, and Elementary School are accessible for residents to provide educational opportunities. Outside of the ½-mile project area also has several places of worship and social services available for residents.

(Limit 2,800 characters; approximately 400 words):

Measure D: BONUS POINTS

Project is located in an Area of Concentrated Poverty:

Project?s census tracts are above the regional average for population in poverty or population of color (Regional Environmental Justice Area):

Project located in a census tract that is below the regional average for population in poverty or populations of color (Regional Environmental Justice Area): Yes

Upload the ?Socio-Economic Conditions? map used for this measure. 1702240596333_3_CSAH46_SocioEconomic.pdf

Measure A: Infrastructure Age

Year of Original Roadway Construction or Most Recent Reconstruction	Segment Length	Calculation	Calculation 2
2001.0	5.0	10005.0	2001.0
	5	**10005**	**2001**

Average Construction Year

Weighted Year 2001.0

Total Segment Length (Miles)

Total Segment Length	5.0

Measure A: Congestion Reduction/Air Quality

Total Peak Hour Delay Per Vehicle Without The Project (Seconds/Vehicle)	Total Peak Hour Delay Per Vehicle With The Project (Seconds/Vehicle)	Total Peak Hour Delay Per Vehicle Reduced by Project (Seconds/Vehicle)	Volume without the Project (Vehicles per hour)	Volume with the Project (Vehicles Per Hour):	Total Peak Hour Delay without the Project:	Total Peak Hour Delay by the Project:	Total Peak hour Delay Reduced by project	EXPLANATION of methodology used to calculate railroad crossing delay, if applicable.	Synchro or HCM Reports
2.0	1.0	1.0	1146	1146	1146.0	1146.0	0	N/A	1702241379331_5_CSAH 46 Traffic Operations.pdf
0	0	0	1093	1093	0	0	0	n/a	1702241403283_5_CSAH 46 Traffic Operations.pdf
0	1.0	-1	1099	1099	-1099	-1099	0	n/a	1702241444015_5_CSAH 46 Traffic Operations.pdf
0	0	0	1061	1061	0	0	0	n/a	1702241462166_5_CSAH 46 Traffic Operations.pdf
0	0	0	1098	1098	0	0	0	n/a	1702241482102_5_CSAH 46 Traffic Operations.pdf
1.0	1.0	0	1090	1090	0	0	0	n/a	1702241504599_5_CSAH 46 Traffic Operations.pdf
1.0	1.0	0	1202	1202	0	0	0	n/a	1702241526796_5_CSAH 46 Traffic Operations.pdf
11.0	5.0	6.0	1378	1378	8268.0	8268.0	0	n/a	1702241553350_5_CSAH 46 Traffic Operations.pdf
5.0	5.0	0	1212	1212	0	0	0	n/a	1702241571106_5_CSAH 46 Traffic Operations.pdf
						8315			

Vehicle Delay Reduced

Total Peak Hour Delay Reduced	Total Peak Hour Delay Reduced	Delay Reduced Total
8315.0	8315.0	0

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

Total (CO, NOX, and VOC) Peak Hour Emissions without the Project (Kilograms):	Total (CO, NOX, and VOC) Peak Hour Emissions with the Project (Kilograms):	Total (CO, NOX, and VOC) Peak Hour Emissions Reduced by the Project (Kilograms):
20.58	23.18	-2.6
21	**23**	**-3**

Total

Total Emissions Reduced:	-2.6
Upload Synchro Report	1702241732183_5_CSAH 46 Traffic Operations.pdf

Please upload attachment in PDF form (Save Form, then click 'Edit' in top right to upload file.)

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

Total Parallel Roadway

Emissions Reduced on Parallel Roadways	0
Upload Synchro Report	

Please upload attachment in PDF form (Save Form, then click 'Edit' in top right to upload file.)

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)	

Measure A: Benefit of Crash Reduction

Crash Modification Factor Used:	Crash modification factors (CMFs) were selected from the FHWA's CMF Clearinghouse to estimate crash reduction related to the project. CMF 7566 and 9786 - Convert two-lane roadway to four-lane divided roadway and CMF 9445 and 9449 - Convert to roundabout interchanges were used.

(Limit 700 Characters; approximately 100 words)

Rationale for Crash Modification Selected:

The first countermeasure proposed on the CSAH 46 corridor is the conversion of a two-lane roadway to a four-lane divided roadway. CMF 9786 applies to fatal and serious injury crashes, and CMF 7566 applies to all crash severities. These CMFs were applied to all crashes along the corridor, excluding the TH 52 ramp intersections.

The second proposed countermeasure is the construction of two-lane roundabouts at the CSAH 46 and TH 52 ramp intersections, which are currently minor-road stop-controlled. CMF 9449 applies to fatal, serious, minor, or possible injury crashes, while CMF 9445 applies to all crash severities. A crash reduction of 100 percent was used for angle and left turn crashes. Based on engineering judgment these crashes are no longer able to occur for the roundabout configuration. These CMFs were applied to crashes at the two ramp intersections.

(Limit 1400 Characters; approximately 200 words)

Project Benefit ($) from B/C Ratio:	$43,017,449.00
Total Fatal (K) Crashes:	1
Total Serious Injury (A) Crashes:	3
Total Non-Motorized Fatal and Serious Injury Crashes:	0
Total Crashes:	65
Total Fatal (K) Crashes Reduced by Project:	1
Total Serious Injury (A) Crashes Reduced by Project:	2
Total Non-Motorized Fatal and Serious Injury Crashes Reduced by Project:	0
Total Crashes Reduced by Project:	44
Worksheet Attachment	1702241982999_6_CSAH46_Safety Analysis_BC_Updated.pdf

Please upload attachment in PDF form

Roadway projects that include railroad grade-separation elements:

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

Measure B: Pedestrian Safety

Determine if these measures do not apply to your project. *Does the project match either of the following descriptions?*

If either of the items are checked yes, then ***score for entire pedestrian safety measure is zero****. Applicant does not need to respond to the sub-measures and can proceed to the next section.*

Project is primarily a freeway (or transitioning to a freeway) <u>and</u> does not provide safe and comfortable pedestrian facilities and crossings.	No
Existing location lacks any pedestrian facilities (e.g., sidewalks, marked crossings, wide shoulders in rural contexts) <u>and</u> project does not add pedestrian elements (e.g., reconstruction of a roadway without sidewalks, that doesn?t also add pedestrian crossings and sidewalk or sidepath on one or both sides).	No

SUB-MEASURE 1: Project-Based Pedestrian Safety Enhancements and Risk Elements

To receive maximum points in this category, pedestrian safety countermeasures selected for implementation in projects should be, to the greatest extent feasible, consistent with the countermeasure recommendations in the Regional Pedestrian Safety Action Plan and state and national best practices. Links to resources are provided on the Regional Solicitation Resources web page.

Please answer the following two questions with as much detail as possible based on the known attributes of the proposed design. If any aspect referenced in this section is not yet determined, describe the range of options being considered, to the greatest extent available. If there are project elements that may increase pedestrian risk, describe how these risks are being mitigated.

1. Describe how this project will address the safety needs of people crossing the street at signalized intersections, unsignalized intersections, midblock locations, and roundabouts.

Treatments and countermeasures should be well-matched to the roadway?s context (e.g., appropriate for the speed, volume, crossing distance, and other location attributes). Refer to the Regional Solicitation Resources web page for guidance links.

Response:

From 2013 to 2023, there were 80 crashes at the CSAH 46 and TH 52 ramp intersections with more than two-thirds of those crashes occurring at the east ramps. In addition, there was one fatal crash during the same period that occurred at the west ramps. Traffic control at these two intersections currently requires the side-street traffic to stop before entering or crossing CSAH 46. Out of the 80 crashes, 41 were right-angle crashes where most of the right-angle crashes represented drivers failing to stop or failing to yield from a stop condition. Although the crash history does not identify pedestrian-related crashes, the vehicle-related crashes at these ramp intersections impact the safety of other modes of travel, including pedestrians.

The CSAH 46 project plans to address the safety needs of people crossing at the CSAH 46 and TH 52 ramp intersections with the construction of roundabouts. According to the PEDSAFE and FHWA Proven Safety Countermeasures resources, the installation of a roundabout will reduce speeds and improve safety at all intersections by eliminating angle collisions. The lower vehicular speeds and reduced conflict environment creates a more comfortable environment for walking and biking. A reduction in vehicular crashes will provide a safer environment for all modes of transportation traveling through the newly constructed roundabouts.

The roundabout improvement also addresses the pedestrian safety needs at the CSAH 46 and TH 52 ramp intersections by including two-stage crossings, with a pedestrian refuge island on each leg of the roundabout. These pedestrian refuges will increase visibility for non-motorized users while reducing vehicle speeds for safer crossings. The roundabout design will include setbacks that provide better visibility for motorists to enter and exit the traffic circle while also ensuring the safety of pedestrians who will have shorter distances to cross. Additionally, marked crosswalks with high visibility markings will be installed to reinforce the presence of pedestrians and cyclists, ensuring that drivers are aware of their surroundings and can take necessary precautions to ensure the safety of non-motorized users.

The project will also address the safety needs of people crossing CSAH 46 at unsignalized intersections and mid-block locations along the corridor. The improvements include an underpass to make it safer for pedestrians and bicyclists to cross the CSAH 46 roadway barrier. The corridor reconstruction as a divided roadway also provides a median to reduce the distance a non-motorized user must travel across at other mid-block locations.

(Limit 2,800 characters; approximately 400 words)

Is the distance in between signalized intersections increasing (e.g., removing a signal)?

Select one: No

If yes, describe what measures are being used to fill the gap between protected crossing opportunities for pedestrians (e.g., adding High-Intensity Activated Crosswalk beacons to help motorists yield and help pedestrians find a suitable gap for crossing, turning signal into a roundabout to slow motorist speed, etc.).

Response:

(Limit 1,400 characters; approximately 200 words)

Will your design increase the crossing distance or crossing time across any leg of an intersection? (e.g., by adding turn or through lanes, widening lanes, using a multi-phase crossing, prohibiting crossing on any leg of an intersection, pedestrian bridge requiring length detour, etc.). This does not include any increases to crossing distances solely due to the addition of bike lanes (i.e., no other through or turn lanes being added or widened).

Select one: Yes

If yes,
? How many intersections will likely be affected?

Response: 11

? Describe what measures are being used to reduce exposure and delay for pedestrians (e.g., median crossing islands, curb bulb-outs, etc.)

Response:

The reconstruction of the CSAH 46 to a four-lane divided roadway will provide a median to reduce the distance a non-motorized user must travel across the corridor at other mid-block locations. The median will provide a pedestrian refuge to safely cross the four-lane roadway.

While it may be a longer distance for users to travel, there are options for pedestrians to safely cross CSAH 46. Pedestrians can use the new trail on the north side of CSAH 46 to cross at the existing traffic signal at TH 3, at the new grade-separated crossing at the Vermillion Highlands Greenway approximately midpoint of the project corridor, or at the roundabouts at the CSAH 46/TH 52 interchange ramps.

(Limit 1,400 characters; approximately 200 words)

? If grade separated pedestrian crossings are being added and increasing crossing time, describe any features that are included that will reduce the detour required of pedestrians and make the separated crossing a more appealing option (e.g., shallow tunnel that doesn?t require much elevation change instead of pedestrian bridge with numerous switchbacks).

Response:

The project will be constructing a grade-separated crossing of CSAH 46 that will eventually become part of the County's Vermillion Highlands Greenway. Depending on the non-motorized user's comfort level, they may cross CSAH 46 at grade or be inclined to cross at the proposed CSAH 46 grade separated crossing. Since this grade separated crossing would provide a crossing of CSAH 46 where one does not exist today, it will improve crossing times by eliminating the waiting time to find a gap in traffic and eliminate pedestrian crossing exposure.

(Limit 1,400 characters; approximately 200 words)

If mid-block crossings are restricted or blocked, explain why this is necessary and how pedestrian crossing needs and safety are supported in other ways (e.g., nearest protected or enhanced crossing opportunity).

Response:

As the project transitions into final design, the corridor will be reviewed for possible mid-block crossings. For the number of lanes, speed, volume of traffic, and percentage of truck traffic mid-block crossings may not be feasible/appropriate. The existing traffic signal at TH 3 and CSAH 46, the grade-separated crossing of CSAH 46, and the trail along the north side of CSAH 46; would be in place to facilitate crossing needs and safety for non-motorized users.

(Limit 1,400 characters; approximately 200 words)

2. Describe how motorist speed will be managed in the project design, both for through traffic and turning movements. *Describe any project-related factors that may affect speed directly or indirectly, even if speed is not the intended outcome (e.g., wider lanes and turning radii to facilitate freight movements, adding turn lanes to alleviate peak hour congestion, etc.). Note any strategies or treatments being considered that are intended to help motorists drive slower (e.g., visual narrowing, narrow lanes, truck aprons to mitigate wide turning radii, etc.) or protect pedestrians if increasing motorist speed (e.g., buffers or other separation from moving vehicles, crossing treatments appropriate for higher speed roadways, etc.).*

Response:

The CSAH 46 improvements include expanding the roadway as divided four-lane with a center median. The expansion of the roadway is anticipated to provide more gaps in traffic for vehicles on the cross streets. The expansion will also provide faster moving vehicles with the ability to navigate around slower moving trucks exiting or entering CSAH 46 from the gravel mining and concrete fabrication businesses. Turn lanes will be provided at public cross streets and at driveway facilities that serve the gravel and concrete industries. The turn lanes will facilitate the separation of decelerating vehicles from thru traffic, allowing thru traffic to maintain speed, mobility and improve corridor safety.

Roundabouts are designed to slow vehicles at intersections and facilitate transitions from high-speed roadways to lower speeds. The project will construct two multi-lane roundabouts at the CSAH 46 and TH 52 interchange ramps. To enhance traffic flow and ensure safety, splitter islands will be included at each leg of the roundabout. These islands will separate incoming and outgoing vehicles, effectively diverting traffic into the correct lane. The islands' curvature creates a diversion that slows down the speed of incoming vehicles and will be reduced to 35 miles per hour.

(Limit 2,800 characters; approximately 400 words)

If known, what are the existing and proposed design, operation, and posted speeds? Is this an increase or decrease from existing conditions?

Response:

The existing speed limit along CSAH 46 is 55 mph and the proposed design speed for the divided 4-lane roadway is 55 mph.

(Limit 1,400 characters; approximately 200 words)

SUB-MEASURE 2: Existing Location-Based Pedestrian Safety Risk Factors

These factors are based on based on trends and patterns observed in pedestrian crash analysis done for the Regional Pedestrian Safety Action Plan. Check off how many of the following factors are present. Applicants receive more points if more risk factors are present.

Existing road configuration is a One-way, 3+ through lanes

or

Existing road configuration is a Two-way, 4+ through lanes	
Existing road has a design speed, posted speed limit, or speed study/data showing 85th percentile travel speeds in excess of 30 MPH or more	Yes
Existing road has AADT of greater than 15,000 vehicles per day	
List the AADT	

SUB-MEASURE 3: Existing Location-Based Pedestrian Safety Exposure Factors

These factors are based on based on trends and patterns observed in pedestrian crash analysis done for the Regional Pedestrian Safety Action Plan. Check off how many of the following existing location exposure factors are present. Applicants receive more points if more risk factors are present.

□

Existing road has transit running on or across it with 1+ transit stops in the project area (If flag-stop route with no fixed stops, then 1+ locations in the project area where roadside stops are allowed. Do not count portions of transit routes with no stops, such as non-stop freeway sections of express or limited-stop routes.)	
Existing road has high-frequency transit running on or across it and 1+ high-frequency stops in the project area (high-frequency defined as service at least every 15 minutes from 6am to 7pm weekdays and 9am to 6pm Saturdays.)	
Existing road is within 500? of 1+ shopping, dining, or entertainment destinations (e.g., grocery store, restaurant)	
If checked, please describe:	

(Limit 1,400 characters; approximately 200 words)

Existing road is within 500? of other known pedestrian generators (e.g., school, civic/community center, senior housing, multifamily housing, regulatorily-designated affordable housing)	Yes
If checked, please describe:	The University of Minnesota Outreach, Research, and Education (Umore) Park property. The University is currently using Umore Park area for mining, agricultural, and continued research. Umore Park borders both the north and south side of CSAH 46 from Biscayne Avenue to east of Blaine Avenue (about three miles).

(Limit 1,400 characters; approximately 200 words)

Measure A: Multimodal Elements and Existing Connections

Response:

The existing corridor has a minimal amount of existing trail (along the north side of CSAH 46 from TH 3 to Biscayne Avenue). The project improvements include the construction of a 10-foot wide multiuse trail along the north side of CSAH 46 from TH 3 to the CSAH 46/TH 52 interchange. A new multimodal trail will provide a safer off-road pathway for pedestrians and cyclists (currently walk or bike in the CSAH 46 shoulder), connecting an east-west connection from TH 3 to the CSAH 46/TH 52 interchange. The project will provide non-motorized users with a safer alternative that connects them to destinations in the surrounding area (cities of Coates, Rosemount, and Empire), including businesses in Coates, Whitetail Woods Regional Park in the City of Empire, and businesses and UMore Park in Rosemount. The CSAH 46 project also includes the construction of a new underpass providing easy access to the Vermillion Highlands Greenway, a 13-mile-long path that spans the cities of Rosemount and Empire.

On the east end of the project segment, the existing CSAH 46/TH 52 interchange can be viewed as a bicycle barrier. The new roundabouts at both interchange ramps will provide a new surface on the bridge provide bicyclists with a a traffic separated option to continue along CSAH 46 versus traveling through the ramp intersections in the paved shoulder. Depending on a bicyclist's experience level, they may not be comfortable crossing the existing bridge and may look to other means of transportation. The roundabouts at both interchange ramps would allow bicyclists to travel along this portion of CSAH 46, on a facility separated from traffic.

While the project is not currently located along an RBTN corridor, it will eventually provide a connection via the County's future Vermillion Highlands Greenway to the RBTN Tier 2 alignment located along CSAH 42.

Dakota County's 2018 ADA Transition Plan identified the CSAH 46 corridor from the first frontage road along the north side of CSAH 46 east of TH 3 to Asher Avenue a priority location for sidewalks. As part of the project, a trail will be constructed along the north side of CSAH 46 from TH 3 to the CSAH 46/TH 52 interchange, and all existing non-compliant pedestrian curb ramps will be upgraded.

(Limit 2,800 characters; approximately 400 words)

Transit Projects Not Requiring Construction

If the applicant is completing a transit 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 - Construction Projects

1. Public Involvement (20 Percent of Points)

Projects that have been through a public process with residents and other interested public entities are more likely than others to be successful. The project applicant must indicate that events and/or targeted outreach (e.g., surveys and other web-based input) were held to help identify the transportation problem, how the potential solution was selected instead of other options, and the public involvement completed to date on the project. The focus of this section is on the opportunity for public input as opposed to the quality of input. NOTE: A written response is required and failure to respond will result in zero points.

Multiple types of targeted outreach efforts (such as meetings or online/mail outreach) specific to this project with the general public and partner agencies have been used to help identify the project need.

100%

At least one meeting specific to this project with the general public has been used to help identify the project need.

50%

At least online/mail outreach effort specific to this project with the general public has been used to help identify the project need. Yes

50%

No meeting or outreach specific to this project was conducted, but the project was identified through meetings and/or outreach related to a larger planning effort.

25%

No outreach has led to the selection of this project.

0%

Describe the type(s) of outreach selected for this project (i.e., online or in-person meetings, surveys, demonstration projects), the method(s) used to announce outreach opportunities, and how many people participated. Include any public website links to outreach opportunities.

Response:

In the Fall of 2020, Dakota County, the cities of Coates, Rosemount, and Empire partnered on the preliminary design of the CSAH 46 expansion to a four-lane section from TH 3 to the CSAH 46/TH 52 interchange. As part of the preliminary design phase, the project team mailed out an introductory letter to residents that would be impacted by the roadway improvement. The letter encouraged residents to visit the project website to provide input on issues/concerns they were seeing along the corridor. This information was incorporated into the corridor operations review and roadway alignment stages. The County utilized its social media presence to engage a broader range of community members. These public engagement efforts included the BIPOC, low-income, elderly, and disabled communities residing within the ½ mile project area.

(Limit 2,800 characters; approximately 400 words)

2. Layout (25 Percent of Points)

Layout includes proposed geometrics and existing and proposed right-of-way boundaries. A basic layout should include a base map (north arrow; scale; legend; city and/or county limits; existing ROW, labeled; existing signals;* and bridge numbers*) and design data (proposed alignments; bike and/or roadway lane widths; shoulder width;* proposed signals;* and proposed ROW). An aerial photograph with a line showing the project?s termini does not suffice and will be awarded zero points. *If applicable*

Layout approved by the applicant and all impacted jurisdictions (i.e., cities/counties/MnDOT. If a MnDOT trunk highway is impacted, approval by MnDOT must have occurred to receive full points. A PDF of the layout must be attached along with letters from each jurisdiction to receive points.

100%

A layout does not apply (signal replacement/signal timing, stand-alone streetscaping, minor intersection improvements). Applicants that are not certain whether a layout is required should contact Colleen Brown at MnDOT Metro State Aid ? colleen.brown@state.mn.us.

100%

For projects where MnDOT trunk highways are impacted and a MnDOT Staff Approved layout is required. Layout approved by the applicant and all impacted local jurisdictions (i.e., cities/counties), and layout review and approval by MnDOT is pending. A PDF of the layout must be attached along with letters from each jurisdiction to receive points. Yes

75%

Layout completed but not approved by all jurisdictions. A PDF of the layout must be attached to receive points.

50%

Layout has been started but is not complete. A PDF of the layout must be attached to receive points.

25%

Layout has not been started

0%

Attach Layout 1702242588230_8_CSAH 46 from TH 3 to US 52 Layout.pdf

Please upload attachment in PDF form

Additional Attachments

Please upload attachment in PDF form

3. Review of Section 106 Historic Resources (15 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%

There are historical/archeological properties present but determination of ?no historic properties affected? is anticipated.

100%

Historic/archeological property impacted; determination of ?no adverse effect? anticipated

80%

Historic/archeological property impacted; determination of ?adverse effect? anticipated

40%

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

0%

Project is located on an identified historic bridge

4. Right-of-Way (25 Percent of Points)

Right-of-way, permanent or temporary easements, and MnDOT agreement/limited-use permit either not required or all have been acquired

100%

Right-of-way, permanent or temporary easements, and/or MnDOT agreement/limited-use permit required - plat, legal descriptions, or official map complete

50%

Right-of-way, permanent or temporary easements, and/or MnDOT agreement/limited-use permit required - parcels identified Yes

25%

Right-of-way, permanent or temporary easements, and/or MnDOT agreement/limited-use permit required - parcels not all identified

0%

5. Railroad Involvement (15 Percent of Points)

No railroad involvement on project or railroad Right-of-Way agreement is executed (include signature page, if applicable) Yes

100%

Signature Page

Please upload attachment in PDF form

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

50%

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

0%

Measure A: Cost Effectiveness

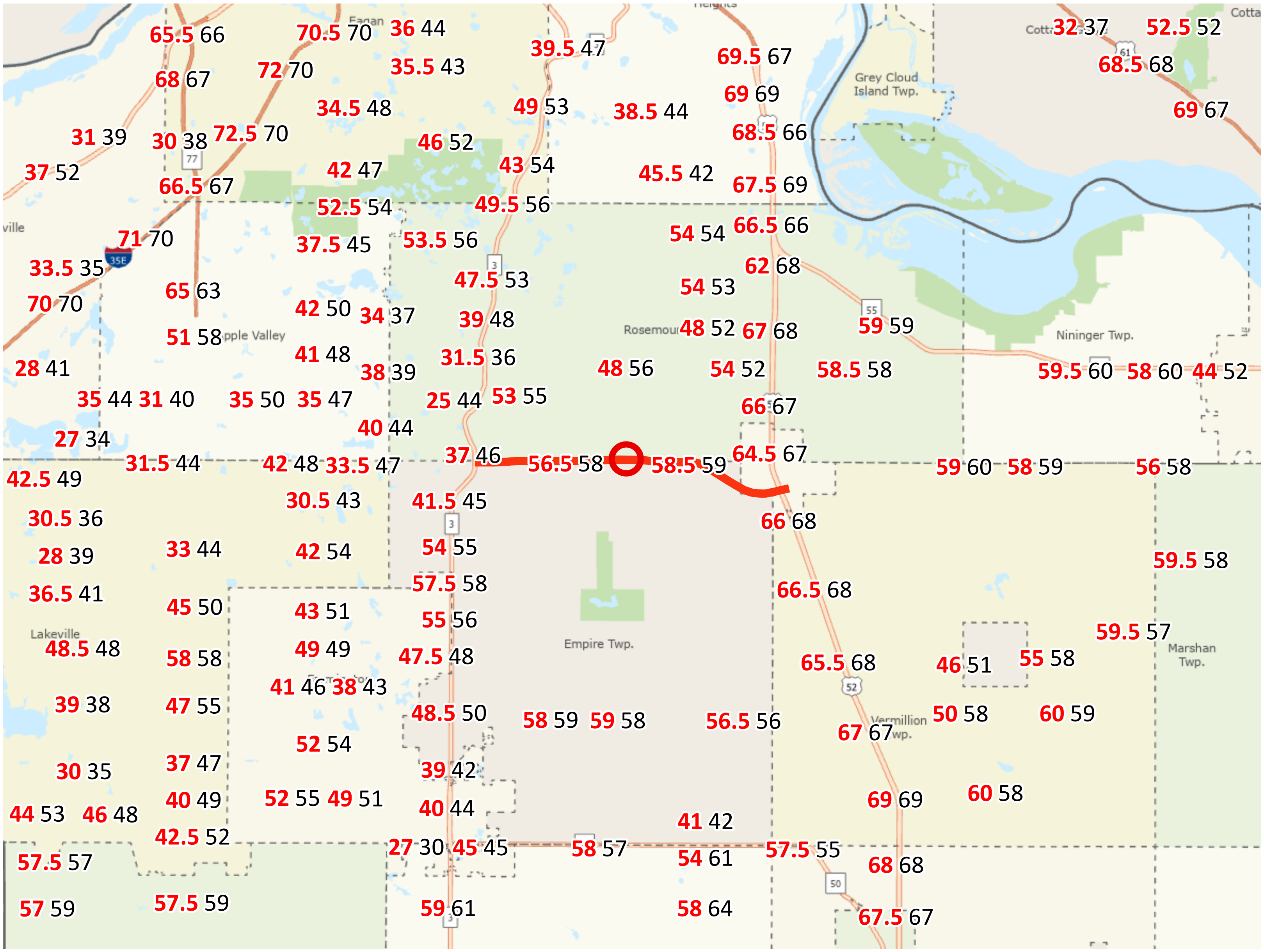
Total Project Cost (entered in Project Cost Form):	$41,600,000.00
Enter Amount of the Noise Walls:	$0.00
Total Project Cost subtract the amount of the noise walls:	$41,600,000.00
Enter amount of any outside, competitive funding:	$0.00
Attach documentation of award:	
Points Awarded in Previous Criteria	
Cost Effectiveness	$0.00

Other Attachments

File Name	Description	File Size
Dakota County Approved General Layout.pdf	Dakota County's Approved General Layout	1.1 MB
OtherAttach_CountyRES_CSAH46.pdf	County Resolution	78 KB
OtherAttach_CSAH46_1pager.pdf	Project Summary	226 KB
OtherAttach_MnDOTLOS_CSAH46.pdf	MnDOT Letter of Support	224 KB
OtherAttach_RS Grant Program support letters.pdf	Business Letters of Support	722 KB

Level of Congestion

Strategic Capacity Project: CSAH 46 from TH 3 to US 52 | Map ID: 1695908007979



Project Points

Project

0 1.25 2.5 5 7.5 10 Miles

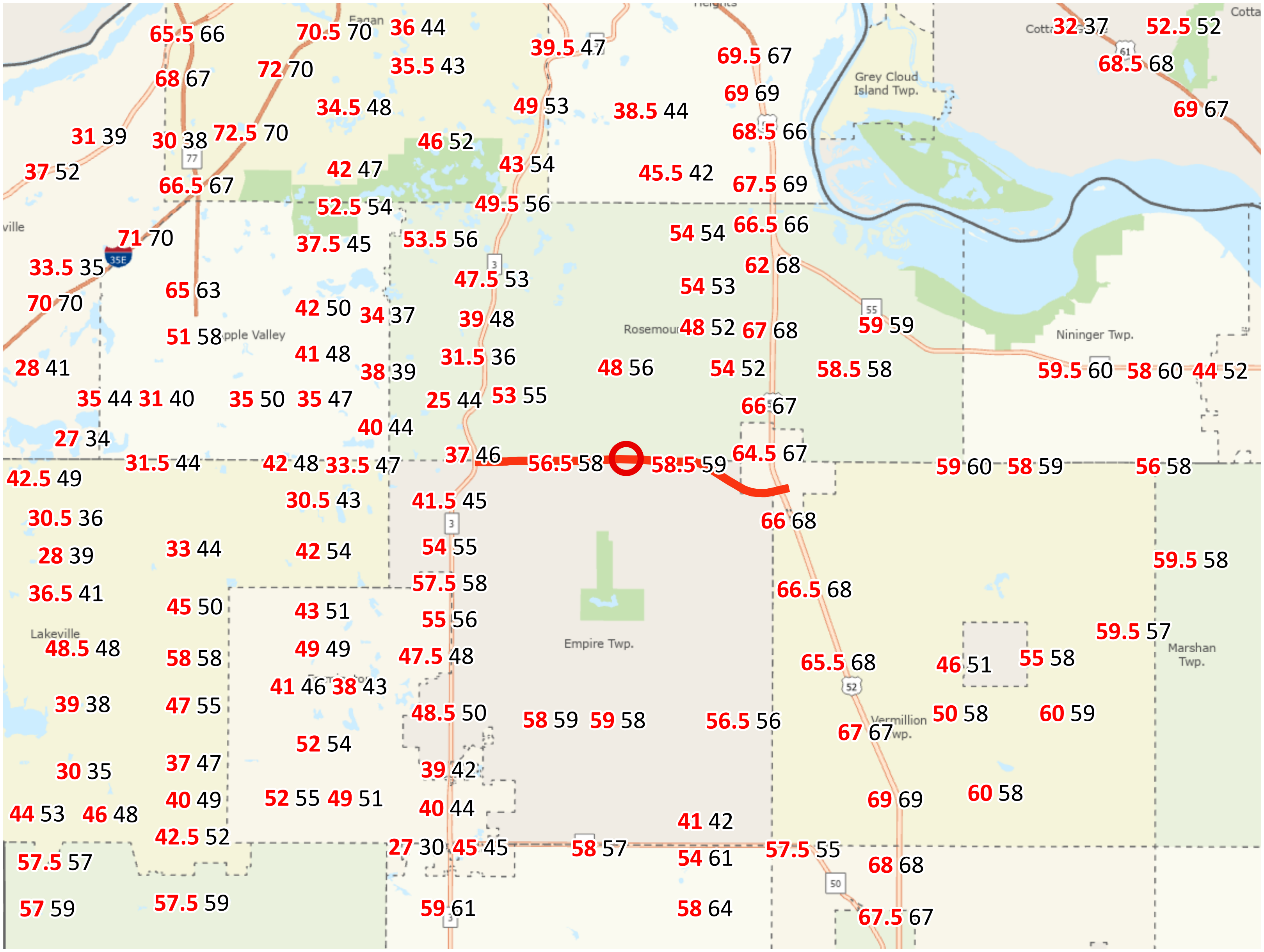
Created: 9/28/2023
LandscapeRSA1

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

METROPOLITAN COUNCIL

Level of Congestion

Strategic Capacity Project: CSAH 46 from TH 3 to US 52 | Map ID: 1695908007979



Project Points

Project

0 1.25 2.5 5 7.5 10 Miles

Created: 9/28/2023
LandscapeRSA1

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

METROPOLITAN COUNCIL

Regional Economy

Strategic Capacity Project: CSAH 46 from TH 3 to US 52 | Map ID: 1695908007979

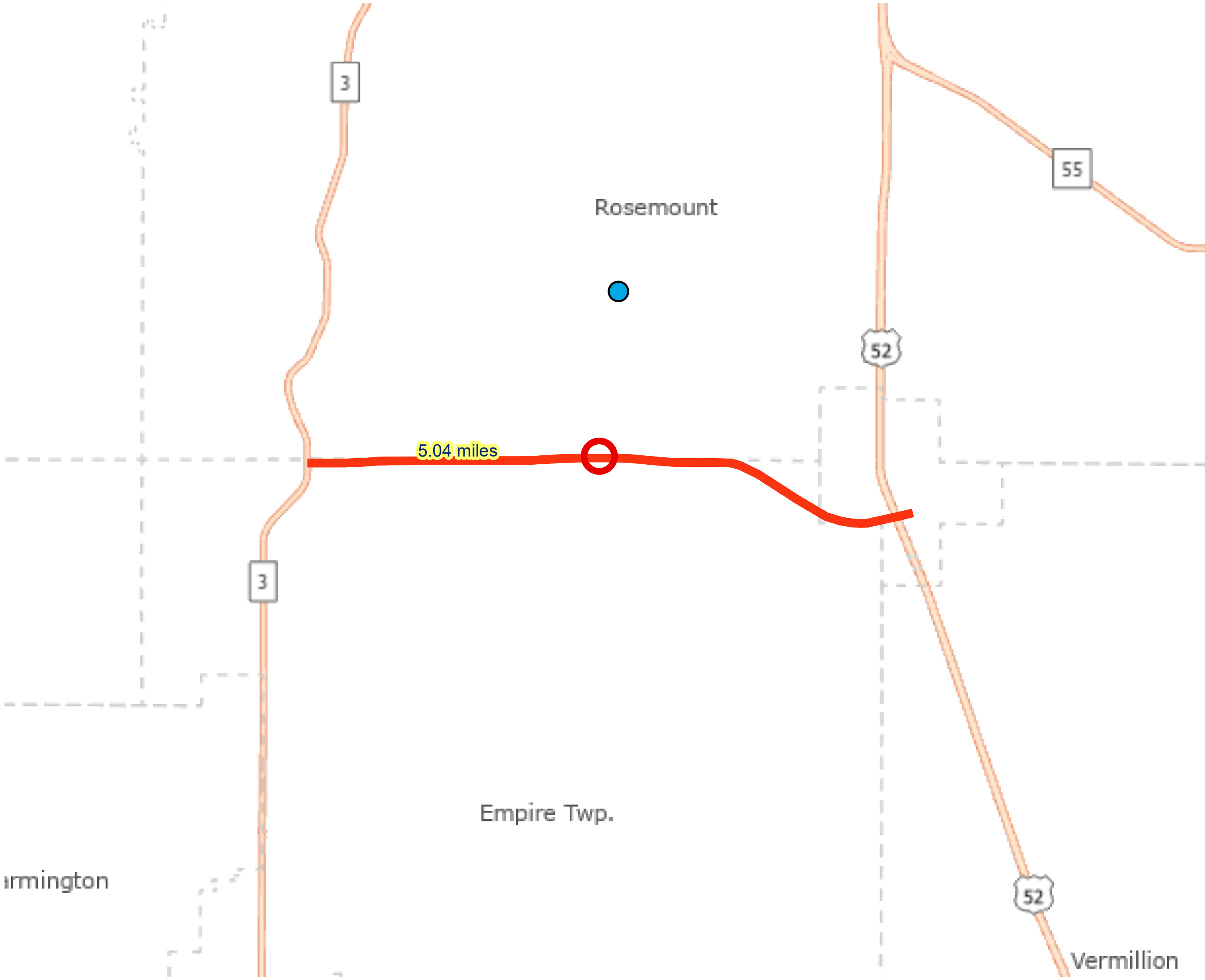
Results

WITHIN ONE MI of project:
Postsecondary Students: 0

Totals by City:

Empire Twp.
Population: 16
Employment: 45
Mfg and Dist Employment: 43

Rosemount
Population: 55
Employment: 1089
Mfg and Dist Employment: 173



Project Points
Postsecondary Education Centers
Job Concentration Centers
Project
Manfacturing/Distribution Centers

0 0.75 1.5 3 4.5 6 Miles

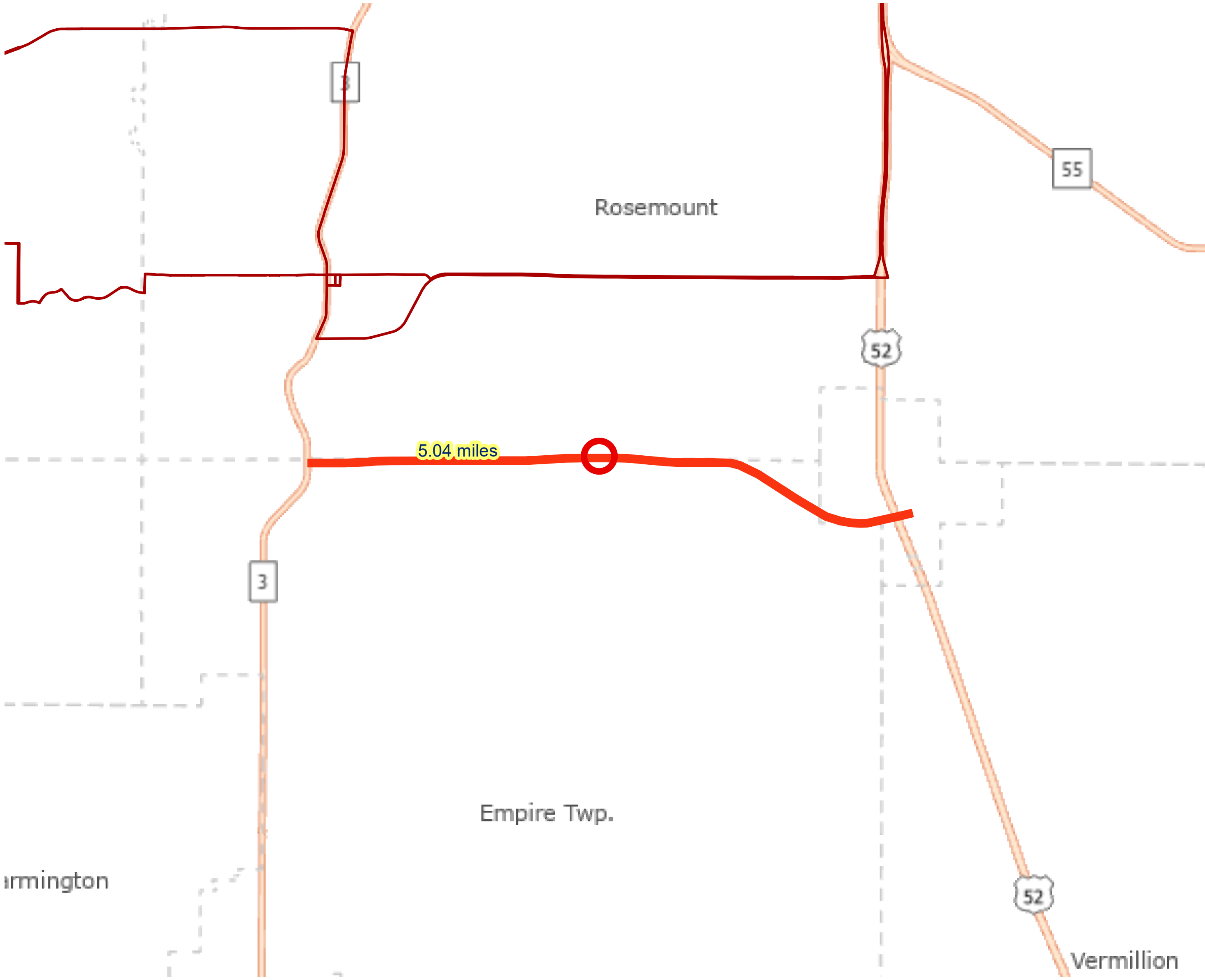
Created: 9/28/2023
LandscapeRSA5

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

METROPOLITAN COUNCIL

Transit Connections

Strategic Capacity Project: CSAH 46 from TH 3 to US 52 | Map ID: 1695908007979



Results

Transit with a Direct Connection to project:
-- NONE --

**indicates Planned Alignments*

Transit Market areas: 5

Project Points — Transit Routes
Project
Project Area

0 0.75 1.5 3 4.5 6 Miles

Created: 9/28/2023
LandscapeRSA3

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

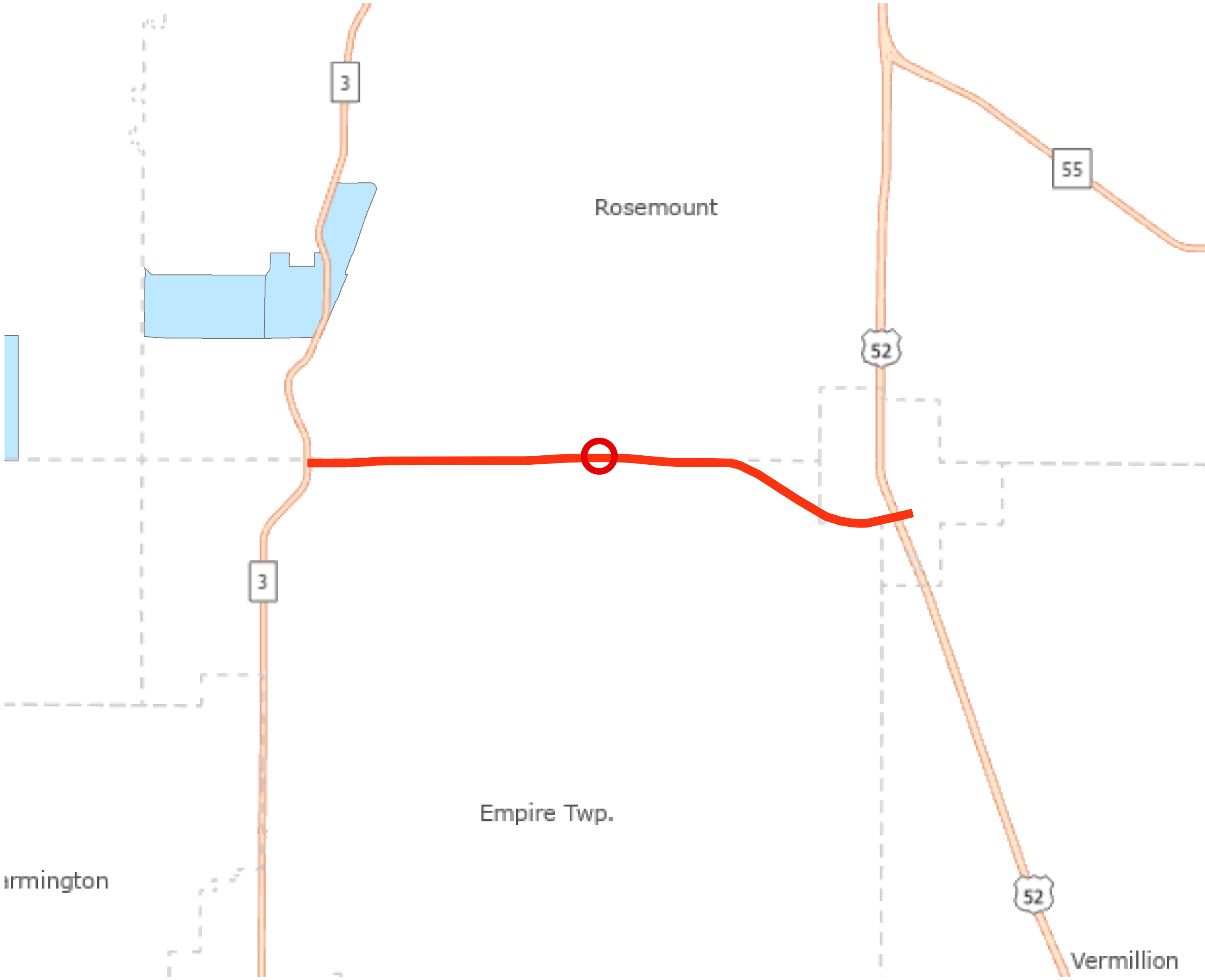
METROPOLITAN COUNCIL

Socio-Economic Conditions Strategic Capacity Project: CSAH 46 from TH 3 to US 52 | Map ID: 1695908007979

Results

Total of publicly subsidized rental housing units in census tracts within 1/2 mile: 94

Project located in census tracts that are BELOW the regional average for population in poverty or population of color.



Points | Area of Concentrated Poverty

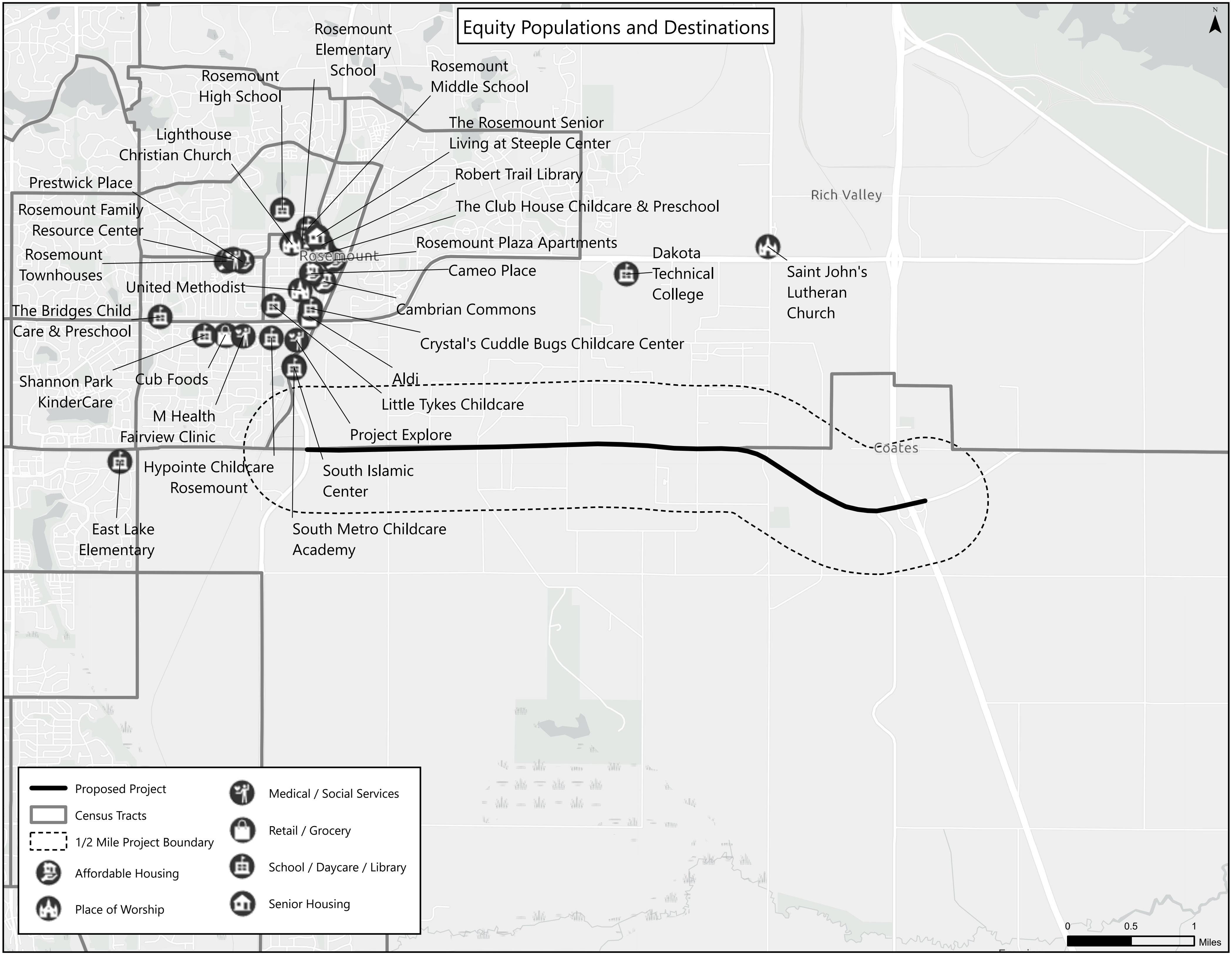
Lines | Regional Environmental Justice Area

0 0.75 1.5 3 4.5 6 Miles

Created: 9/28/2023
LandscapeRSA2

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

METROPOLITAN COUNCIL



Equity Populations and Destinations
Rosemount Elementary School
Rosemount High School
Rosemount Middle School
The Rosemount Senior Living at Steeple Center
Lighthouse Christian Church
Robert Trail Library
Prestwick Place
The Club House Childcare & Preschool
Rosemount Family Resource Center
Rosemount Plaza Apartments
Rosemount Townhouses
Rosemount
Dakota Technical College
Saint John's Lutheran Church
Rich Valley
Cameo Place
United Methodist
Cambrian Commons
The Bridges Child Care & Preschool
Crystal's Cuddle Bugs Childcare Center
Shannon Park KinderCare
Cub Foods
Aldi
Little Tykes Childcare
M Health Fairview Clinic
Project Explore
Coates
Hypointe Childcare Rosemount
South Islamic Center
East Lake Elementary
South Metro Childcare Academy
Proposed Project
Census Tracts
1/2 Mile Project Boundary
Affordable Housing
Place of Worship
Medical / Social Services
Retail / Grocery
School / Daycare / Library
Senior Housing
0
0.5
1
Miles
N

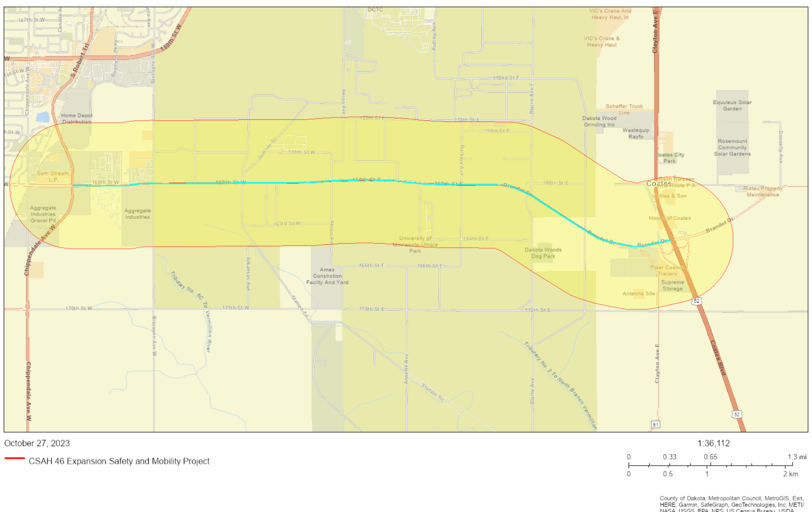
EJScreen Community Report

This report provides environmental and socioeconomic information for user-defined areas, and combines that data into environmental justice and supplemental indexes.

Dakota County, MN

.5 miles Ring around the Corridor
Population: 521
Area in square miles: 5.67

A3 Landscape



COMMUNITY INFORMATION

Low income: 16 percent

People of color: 8 percent

Less than high school education: 5 percent

Limited English households: 1 percent

Unemployment: 2 percent

Persons with disabilities: 7 percent

Male: 48 percent

Female: 52 percent

84 years Average life expectancy

$47,388 Per capita income

Number of households: 239

Owner occupied: 94 percent

BREAKDOWN BY RACE

White: 92%

Black: 0%

American Indian: 0%

Asian: 1%

Hawaiian/Pacific Islander: 0%

Other race: 0%

Two or more races: 5%

Hispanic: 2%

BREAKDOWN BY AGE

From Ages 1 to 4	5%
From Ages 1 to 18	21%
From Ages 18 and up	79%
From Ages 65 and up	20%

LIMITED ENGLISH SPEAKING BREAKDOWN

Speak Spanish	20%
Speak Other Indo-European Languages	0%
Speak Asian-Pacific Island Languages	80%
Speak Other Languages	0%

Notes: Numbers may not sum to totals due to rounding. Hispanic population can be of any race.
Source: U.S. Census Bureau, American Community Survey (ACS) 2017 -2021. Life expectancy data comes from the Centers for Disease Control.

LANGUAGES SPOKEN AT HOME

LANGUAGE	PERCENT
No language data available.	

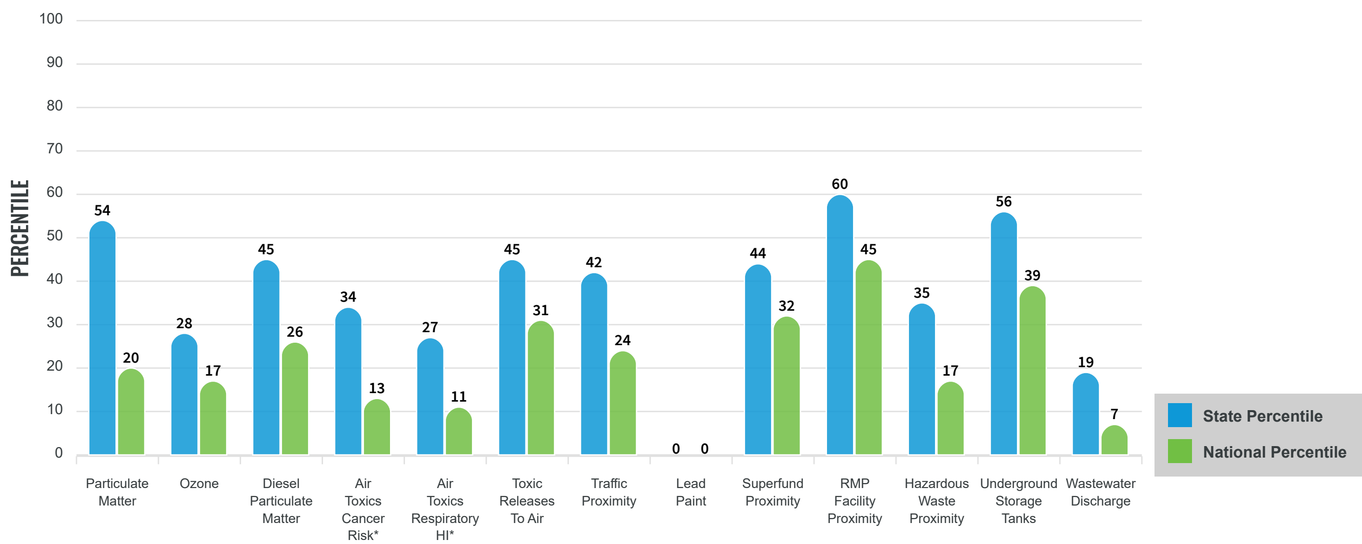
Environmental Justice & Supplemental Indexes

The environmental justice and supplemental indexes are a combination of environmental and socioeconomic information. There are thirteen EJ indexes and supplemental indexes in EJScreen reflecting the 13 environmental indicators. The indexes for a selected area are compared to those for all other locations in the state or nation. For more information and calculation details on the EJ and supplemental indexes, please visit the EJScreen website.

EJ INDEXES

The EJ indexes help users screen for potential EJ concerns. To do this, the EJ index combines data on low income and people of color populations with a single environmental indicator.

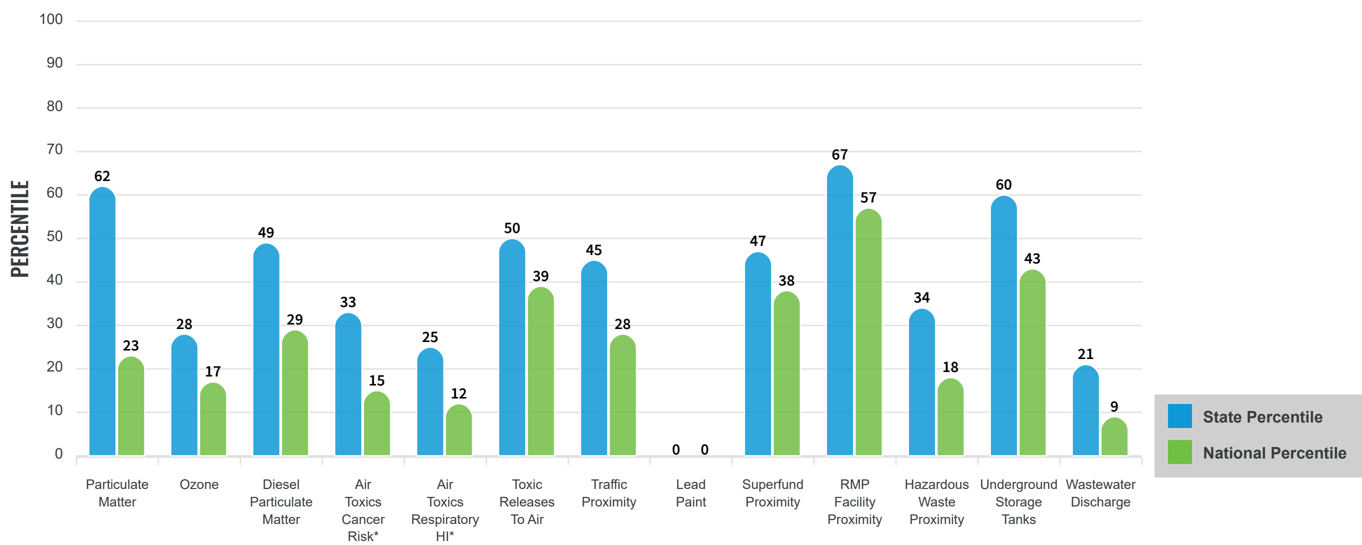
EJ INDEXES FOR THE SELECTED LOCATION



SUPPLEMENTAL INDEXES

The supplemental indexes offer a different perspective on community-level vulnerability. They combine data on percent low-income, percent linguistically isolated, percent less than high school education, percent unemployed, and low life expectancy with a single environmental indicator.

SUPPLEMENTAL INDEXES FOR THE SELECTED LOCATION



These percentiles provide perspective on how the selected block group or buffer area compares to the entire state or nation.

Report for .5 miles Ring around the Corridor

EJScreen Environmental and Socioeconomic Indicators Data

SELECTED VARIABLES	VALUE	STATE AVERAGE	PERCENTILE IN STATE	USA AVERAGE	PERCENTILE IN USA
POLLUTION AND SOURCES					
Particulate Matter (μg/m^3)	7.45	6.78	64	8.08	30
Ozone (ppb)	58.1	58.2	27	61.6	24
Diesel Particulate Matter (μg/m^3)	0.173	0.21	46	0.261	38
Air Toxics Cancer Risk* (lifetime risk per million)	20	22	12	25	5
Air Toxics Respiratory HI*	0.2	0.26	7	0.31	4
Toxic Releases to Air	750	1,500	47	4,600	53
Traffic Proximity (daily traffic count/distance to road)	42	140	45	210	36
Lead Paint (% Pre-1960 Housing)	0.04	0.33	18	0.3	24
Superfund Proximity (site count/km distance)	0.065	0.19	46	0.13	52
RMP Facility Proximity (facility count/km distance)	1.1	0.48	86	0.43	89
Hazardous Waste Proximity (facility count/km distance)	0.12	1.3	33	1.9	23
Underground Storage Tanks (count/km^2)	2.1	1.8	73	3.9	60
Wastewater Discharge (toxicity-weighted concentration/m distance)	0.00036	0.19	55	22	40
SOCIOECONOMIC INDICATORS					
Demographic Index	12%	22%	30	35%	14
Supplemental Demographic Index	8%	11%	34	14%	19
People of Color	8%	20%	35	39%	19
Low Income	16%	23%	40	31%	29
Unemployment Rate	2%	4%	35	6%	31
Limited English Speaking Households	1%	2%	71	5%	58
Less Than High School Education	5%	7%	55	12%	37
Under Age 5	5%	6%	42	6%	47
Over Age 64	20%	17%	66	17%	66
Low Life Expectancy	14%	17%	16	20%	7

*Diesel particulate matter, air toxics cancer risk, and air toxics respiratory hazard index are from the EPA's Air Toxics Data Update, which is the Agency's ongoing, comprehensive evaluation of air toxics in the United States. This effort aims to prioritize air toxics, emission sources, and locations of interest for further study. It is important to remember that the air toxics data presented here provide broad estimates of health risks over geographic areas of the country, not definitive risks to specific individuals or locations. Cancer risks and hazard indices from the Air Toxics Data Update are reported to one significant figure and any additional significant figures here are due to rounding. More information on the Air Toxics Data Update can be found at: https://www.epa.gov/haps/air-toxics-data-update.

Sites reporting to EPA within defined area:

Superfund 0
Hazardous Waste, Treatment, Storage, and Disposal Facilities 0
Water Dischargers 0
Air Pollution 4
Brownfields 2
Toxic Release Inventory 1

Other community features within defined area:

Schools 0
Hospitals 0
Places of Worship 0

Other environmental data:

Air Non-attainment .... No
Impaired Waters .... No

Selected location contains American Indian Reservation Lands* .... No
Selected location contains a "Justice40 (CEJST)" disadvantaged community .... No
Selected location contains an EPA IRA disadvantaged community .... No

Report for .5 miles Ring around the Corridor

EJScreen Environmental and Socioeconomic Indicators Data

HEALTH INDICATORS					
INDICATOR	HEALTH VALUE	STATE AVERAGE	STATE PERCENTILE	US AVERAGE	US PERCENTILE
Low Life Expectancy	14%	17%	16	20%	7
Heart Disease	4.1	5.6	18	6.1	12
Asthma	8.9	9	39	10	20
Cancer	5.7	6.4	30	6.1	37
Persons with Disabilities	6.4%	11.4%	12	13.4%	10

CLIMATE INDICATORS					
INDICATOR	HEALTH VALUE	STATE AVERAGE	STATE PERCENTILE	US AVERAGE	US PERCENTILE
Flood Risk	4%	8%	28	12%	35
Wildfire Risk	0%	4%	0	14%	0

CRITICAL SERVICE GAPS					
INDICATOR	HEALTH VALUE	STATE AVERAGE	STATE PERCENTILE	US AVERAGE	US PERCENTILE
Broadband Internet	4%	11%	26	14%	24
Lack of Health Insurance	1%	5%	12	9%	7
Housing Burden	No	N/A	N/A	N/A	N/A
Transportation Access	No	N/A	N/A	N/A	N/A
Food Desert	No	N/A	N/A	N/A	N/A

Footnotes

Report for .5 miles Ring around the Corridor

Regional Solicitation - CSAH 46

1	Biscayane Avenue		
	Existing Volume	1146	vehicles
	Existing Delay	2	sec/veh
	Existing Total Delay	2292	seconds
	Future Volume	1146	vehicles
	Future Delay	1	sec/veh
	Future Total Delay	1146	seconds
	Total Delay Reduction	1146	seconds

2	Station Trail		
	Existing Volume	1093	vehicles
	Existing Delay	0	sec/veh
	Existing Total Delay	0	seconds
	Future Volume	1093	vehicles
	Future Delay	0	sec/veh
	Future Total Delay	0	seconds
	Total Delay Reduction	0	seconds

3	Arkon Trail		
	Existing Volume	1099	vehicles
	Existing Delay	0	sec/veh
	Existing Total Delay	0	seconds
	Future Volume	1099	vehicles
	Future Delay	1	sec/veh
	Future Total Delay	1099	seconds
	Total Delay Reduction	-1099	seconds

4	Asher Aveune		
	Existing Volume	1061	vehicles
	Existing Delay	0	sec/veh
	Existing Total Delay	0	seconds
	Future Volume	1061	vehicles
	Future Delay	0	sec/veh
	Future Total Delay	0	seconds
	Total Delay Reduction	0	seconds

5	Barbara Avenue		
	Existing Volume	1098	vehicles
	Existing Delay	0	sec/veh
	Existing Total Delay	0	seconds
	Future Volume	1098	vehicles
	Future Delay	0	sec/veh
	Future Total Delay	0	seconds
	Total Delay Reduction	0	seconds

6	Blaine Avneue		
	Existing Volume	1090	vehicles
	Existing Delay	1	sec/veh
	Existing Total Delay	1090	seconds
	Future Volume	1090	vehicles
	Future Delay	1	sec/veh
	Future Total Delay	1090	seconds
	Total Delay Reduction	0	seconds

7	Clayton Avenue		
	Existing Volume	1202	vehicles
	Existing Delay	1	sec/veh
	Existing Total Delay	1202	seconds
	Future Volume	1202	vehicles
	Future Delay	1	sec/veh
	Future Total Delay	1202	seconds
	Total Delay Reduction	0	seconds

8	US 52 Southbound Ramps		
	Existing Volume	1378	vehicles
	Existing Delay	11	sec/veh
	Existing Total Delay	15158	seconds
	Future Volume	1378	vehicles
	Future Delay	5	sec/veh
	Future Total Delay	6890	seconds
	Total Delay Reduction	8268	seconds

9	US 52 Northbound Ramps		
	Existing Volume	1212	vehicles
	Existing Delay	5	sec/veh
	Existing Total Delay	6060	seconds
	Future Volume	1212	vehicles
	Future Delay	5	sec/veh
	Future Total Delay	6060	seconds
	Total Delay Reduction	0	seconds

Total Network Delay Reduction	**8315**	**seconds**

Emissions

Existing	1	2	3	4	5	6	7	8	9	Total
CO	2.07	1.81	1.86	1.2	1.15	2.03	1.58	1.31	1.42	14.43
NO	0.4	0.35	0.36	0.23	0.22	0.4	0.31	0.25	0.28	2.8
VOC	0.48	0.42	0.43	0.28	0.27	0.47	0.37	0.3	0.33	3.35
							Network Total			20.58

Build	1	2	3	4	5	6	7	8	9	Total
CO	2.07	1.81	1.86	1.2	1.15	2.01	1.58	2.13	2.44	16.25
NO	0.4	0.35	0.36	0.23	0.22	0.39	0.31	0.41	0.48	3.15
VOC	0.48	0.42	0.43	0.28	0.27	0.47	0.37	0.49	0.57	3.78
							Network Total			23.18

Reduction	**-2.6**

10: Biscayne Ave & CSAH 46

Direction	All
Future Volume (vph)	1146
Total Delay / Veh (s/v)	2
CO Emissions (kg)	2.07
NOx Emissions (kg)	0.40
VOC Emissions (kg)	0.48

20: Station Trail & CSAH 46

Direction	All
Future Volume (vph)	1093
Total Delay / Veh (s/v)	0
CO Emissions (kg)	1.81
NOx Emissions (kg)	0.35
VOC Emissions (kg)	0.42

30: Arkon Ave & CSAH 46

Direction	All
Future Volume (vph)	1099
Total Delay / Veh (s/v)	0
CO Emissions (kg)	1.86
NOx Emissions (kg)	0.36
VOC Emissions (kg)	0.43

40: Asher Ave & CSAH 46

Direction	All
Future Volume (vph)	1061
Total Delay / Veh (s/v)	0
CO Emissions (kg)	1.20
NOx Emissions (kg)	0.23
VOC Emissions (kg)	0.28

50: Barbara Ave & CSAH 46

Direction	All
Future Volume (vph)	1098
Total Delay / Veh (s/v)	0
CO Emissions (kg)	1.15
NOx Emissions (kg)	0.22
VOC Emissions (kg)	0.27

60: Blaine Ave & CSAH 46

Direction	All
Future Volume (vph)	1090
Total Delay / Veh (s/v)	1
CO Emissions (kg)	2.03
NOx Emissions (kg)	0.40
VOC Emissions (kg)	0.47

70: Clayton Ave & CSAH 46

Direction	All
Future Volume (vph)	1202
Total Delay / Veh (s/v)	1
CO Emissions (kg)	1.58
NOx Emissions (kg)	0.31
VOC Emissions (kg)	0.37

80: US 52 Southbound Ramps/Clayton Ave & CSAH 46

Direction	All
Future Volume (vph)	1378
Total Delay / Veh (s/v)	11
CO Emissions (kg)	1.31
NOx Emissions (kg)	0.25
VOC Emissions (kg)	0.30

90: US 52 Northbound Ramps/Clayton Ave & CSAH 46

Direction	All
Future Volume (vph)	1212
Total Delay / Veh (s/v)	5
CO Emissions (kg)	1.42
NOx Emissions (kg)	0.28
VOC Emissions (kg)	0.33

Intersection	
Intersection Delay, s/veh	5.4
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	2	2	2	2
Conflicting Circle Lanes	2	2	2	2
Adj Approach Flow, veh/h	569	422	119	388
Demand Flow Rate, veh/h	581	431	122	396
Vehicles Circulating, veh/h	191	118	443	524
Vehicles Exiting, veh/h	729	447	328	25
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	5.4	4.4	4.9	6.7
Approach LOS	A	A	A	A

Lane	Left	Right	Left	Right	Left	Right	Left	Right
Designated Moves	LT	TR	LT	TR	LT	R	LT	R
Assumed Moves	LT	TR	LT	TR	LT	R	LT	R
RT Channelized								
Lane Util	0.470	0.530	0.471	0.529	0.762	0.238	0.364	0.636
Follow-Up Headway, s	2.667	2.535	2.667	2.535	2.667	2.535	2.667	2.535
Critical Headway, s	4.645	4.328	4.645	4.328	4.645	4.328	4.645	4.328
Entry Flow, veh/h	273	308	203	228	93	29	144	252
Cap Entry Lane, veh/h	1132	1207	1211	1285	898	974	834	910
Entry HV Adj Factor	0.979	0.979	0.978	0.982	0.978	0.966	0.981	0.980
Flow Entry, veh/h	267	301	199	224	91	28	141	247
Cap Entry, veh/h	1109	1182	1185	1262	879	941	817	892
V/C Ratio	0.241	0.255	0.168	0.177	0.104	0.030	0.173	0.277
Control Delay, s/veh	5.5	5.4	4.5	4.4	5.1	4.1	6.2	7.0
LOS	A	A	A	A	A	A	A	A
95th %tile Queue, veh	1	1	1	1	0	0	1	1

Intersection	
Intersection Delay, s/veh	5.2
Intersection LOS	A

Approach	EB		WB		NB		SB	
Entry Lanes		2		2		2		2
Conflicting Circle Lanes		2		2		2		2
Adj Approach Flow, veh/h		719		406		161		33
Demand Flow Rate, veh/h		733		414		164		34
Vehicles Circulating, veh/h		44		239		558		556
Vehicles Exiting, veh/h		545		483		219		97
Ped Vol Crossing Leg, #/h		0		0		0		0
Ped Cap Adj		1.000		1.000		1.000		1.000
Approach Delay, s/veh		5.2		4.9		6.3		4.5
Approach LOS		A		A		A		A
Lane	Left	Right	Left	Right	Left	Right	Left	Right
Designated Moves	LT	TR	LT	TR	LT	R	LT	TR
Assumed Moves	LT	TR	LT	TR	LT	R	LT	R
RT Channelized								
Lane Util	0.471	0.529	0.471	0.529	0.921	0.079	0.235	0.765
Follow-Up Headway, s	2.667	2.535	2.667	2.535	2.667	2.535	2.667	2.535
Critical Headway, s	4.645	4.328	4.645	4.328	4.645	4.328	4.645	4.328
Entry Flow, veh/h	345	388	195	219	151	13	8	26
Cap Entry Lane, veh/h	1296	1368	1083	1159	808	884	809	885
Entry HV Adj Factor	0.979	0.982	0.978	0.982	0.980	1.000	0.983	0.962
Flow Entry, veh/h	338	381	191	215	148	13	8	25
Cap Entry, veh/h	1269	1343	1059	1138	792	884	796	851
V/C Ratio	0.266	0.284	0.180	0.189	0.187	0.015	0.010	0.029
Control Delay, s/veh	5.2	5.2	5.0	4.8	6.5	4.2	4.6	4.5
LOS	A	A	A	A	A	A	A	A
95th %tile Queue, veh	1	1	1	1	1	0	0	0

10: Biscayne Ave & CSAH 46

Direction	All
Future Volume (vph)	1146
Total Delay / Veh (s/v)	1
CO Emissions (kg)	2.07
NOx Emissions (kg)	0.40
VOC Emissions (kg)	0.48

20: Station Trail & CSAH 46

Direction	All
Future Volume (vph)	1093
Total Delay / Veh (s/v)	0
CO Emissions (kg)	1.81
NOx Emissions (kg)	0.35
VOC Emissions (kg)	0.42

30: Arkon Ave & CSAH 46

Direction	All
Future Volume (vph)	1099
Total Delay / Veh (s/v)	1
CO Emissions (kg)	1.86
NOx Emissions (kg)	0.36
VOC Emissions (kg)	0.43

40: Asher Ave & CSAH 46

Direction	All
Future Volume (vph)	1061
Total Delay / Veh (s/v)	0
CO Emissions (kg)	1.20
NOx Emissions (kg)	0.23
VOC Emissions (kg)	0.28

50: Barbara Ave & CSAH 46

Direction	All
Future Volume (vph)	1098
Total Delay / Veh (s/v)	0
CO Emissions (kg)	1.15
NOx Emissions (kg)	0.22
VOC Emissions (kg)	0.27

60: Blaine Ave & CSAH 46

Direction	All
Future Volume (vph)	1089
Total Delay / Veh (s/v)	1
CO Emissions (kg)	2.01
NOx Emissions (kg)	0.39
VOC Emissions (kg)	0.47

70: Clayton Ave & CSAH 46

Direction	All
Future Volume (vph)	1202
Total Delay / Veh (s/v)	1
CO Emissions (kg)	1.58
NOx Emissions (kg)	0.31
VOC Emissions (kg)	0.37

80: US 52 Southbound Ramps/Clayton Ave & CSAH 46

Direction	All
Future Volume (vph)	1378
Total Delay / Veh (s/v)	0
CO Emissions (kg)	2.13
NOx Emissions (kg)	0.41
VOC Emissions (kg)	0.49

90: US 52 Northbound Ramps/Clayton Ave & CSAH 46

Direction	All
Future Volume (vph)	1213
Total Delay / Veh (s/v)	0
CO Emissions (kg)	2.44
NOx Emissions (kg)	0.48
VOC Emissions (kg)	0.57

Regional Solicitation - CSAH 46

1

Biscayane Avenue		
Existing Volume	1146	vehicles
Existing Delay	2	sec/veh
Existing Total Delay	2292	seconds
Future Volume	1146	vehicles
Future Delay	1	sec/veh
Future Total Delay	1146	seconds
Total Delay Reduction	1146	seconds

2

Station Trail		
Existing Volume	1093	vehicles
Existing Delay	0	sec/veh
Existing Total Delay	0	seconds
Future Volume	1093	vehicles
Future Delay	0	sec/veh
Future Total Delay	0	seconds
Total Delay Reduction	0	seconds

3

Arkon Trail		
Existing Volume	1099	vehicles
Existing Delay	0	sec/veh
Existing Total Delay	0	seconds
Future Volume	1099	vehicles
Future Delay	1	sec/veh
Future Total Delay	1099	seconds
Total Delay Reduction	-1099	seconds

4

Asher Aveune		
Existing Volume	1061	vehicles
Existing Delay	0	sec/veh
Existing Total Delay	0	seconds
Future Volume	1061	vehicles
Future Delay	0	sec/veh
Future Total Delay	0	seconds
Total Delay Reduction	0	seconds

5

Barbara Avenue		
Existing Volume	1098	vehicles
Existing Delay	0	sec/veh
Existing Total Delay	0	seconds
Future Volume	1098	vehicles
Future Delay	0	sec/veh
Future Total Delay	0	seconds
Total Delay Reduction	0	seconds

6

Blaine Avneue		
Existing Volume	1090	vehicles
Existing Delay	1	sec/veh
Existing Total Delay	1090	seconds
Future Volume	1090	vehicles
Future Delay	1	sec/veh
Future Total Delay	1090	seconds
Total Delay Reduction	0	seconds

7

Clayton Avenue		
Existing Volume	1202	vehicles
Existing Delay	1	sec/veh
Existing Total Delay	1202	seconds
Future Volume	1202	vehicles
Future Delay	1	sec/veh
Future Total Delay	1202	seconds
Total Delay Reduction	0	seconds

8

US 52 Southbound Ramps		
Existing Volume	1378	vehicles
Existing Delay	11	sec/veh
Existing Total Delay	15158	seconds
Future Volume	1378	vehicles
Future Delay	5	sec/veh
Future Total Delay	6890	seconds
Total Delay Reduction	8268	seconds

9

US 52 Northbound Ramps		
Existing Volume	1212	vehicles
Existing Delay	5	sec/veh
Existing Total Delay	6060	seconds
Future Volume	1212	vehicles
Future Delay	5	sec/veh
Future Total Delay	6060	seconds
Total Delay Reduction	0	seconds

Total Network Delay Reduction	**8315**	**seconds**

Emissions

Existing	1	2	3	4	5	6	7	8	9	Total
CO	2.07	1.81	1.86	1.2	1.15	2.03	1.58	1.31	1.42	14.43
NO	0.4	0.35	0.36	0.23	0.22	0.4	0.31	0.25	0.28	2.8
VOC	0.48	0.42	0.43	0.28	0.27	0.47	0.37	0.3	0.33	3.35
							Network Total			20.58

Build	1	2	3	4	5	6	7	8	9	Total
CO	2.07	1.81	1.86	1.2	1.15	2.01	1.58	2.13	2.44	16.25
NO	0.4	0.35	0.36	0.23	0.22	0.39	0.31	0.41	0.48	3.15
VOC	0.48	0.42	0.43	0.28	0.27	0.47	0.37	0.49	0.57	3.78
							Network Total			23.18

Reduction	**-2.6**

10: Biscayne Ave & CSAH 46

Direction	All
Future Volume (vph)	1146
Total Delay / Veh (s/v)	2
CO Emissions (kg)	2.07
NOx Emissions (kg)	0.40
VOC Emissions (kg)	0.48

20: Station Trail & CSAH 46

Direction	All
Future Volume (vph)	1093
Total Delay / Veh (s/v)	0
CO Emissions (kg)	1.81
NOx Emissions (kg)	0.35
VOC Emissions (kg)	0.42

30: Arkon Ave & CSAH 46

Direction	All
Future Volume (vph)	1099
Total Delay / Veh (s/v)	0
CO Emissions (kg)	1.86
NOx Emissions (kg)	0.36
VOC Emissions (kg)	0.43

40: Asher Ave & CSAH 46

Direction	All
Future Volume (vph)	1061
Total Delay / Veh (s/v)	0
CO Emissions (kg)	1.20
NOx Emissions (kg)	0.23
VOC Emissions (kg)	0.28

50: Barbara Ave & CSAH 46

Direction	All
Future Volume (vph)	1098
Total Delay / Veh (s/v)	0
CO Emissions (kg)	1.15
NOx Emissions (kg)	0.22
VOC Emissions (kg)	0.27

60: Blaine Ave & CSAH 46

Direction	All
Future Volume (vph)	1090
Total Delay / Veh (s/v)	1
CO Emissions (kg)	2.03
NOx Emissions (kg)	0.40
VOC Emissions (kg)	0.47

70: Clayton Ave & CSAH 46

Direction	All
Future Volume (vph)	1202
Total Delay / Veh (s/v)	1
CO Emissions (kg)	1.58
NOx Emissions (kg)	0.31
VOC Emissions (kg)	0.37

80: US 52 Southbound Ramps/Clayton Ave & CSAH 46

Direction	All
Future Volume (vph)	1378
Total Delay / Veh (s/v)	11
CO Emissions (kg)	1.31
NOx Emissions (kg)	0.25
VOC Emissions (kg)	0.30

90: US 52 Northbound Ramps/Clayton Ave & CSAH 46

Direction	All
Future Volume (vph)	1212
Total Delay / Veh (s/v)	5
CO Emissions (kg)	1.42
NOx Emissions (kg)	0.28
VOC Emissions (kg)	0.33

Intersection	
Intersection Delay, s/veh	5.4
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	2	2	2	2
Conflicting Circle Lanes	2	2	2	2
Adj Approach Flow, veh/h	569	422	119	388
Demand Flow Rate, veh/h	581	431	122	396
Vehicles Circulating, veh/h	191	118	443	524
Vehicles Exiting, veh/h	729	447	328	25
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	5.4	4.4	4.9	6.7
Approach LOS	A	A	A	A

Lane	Left	Right	Left	Right	Left	Right	Left	Right
Designated Moves	LT	TR	LT	TR	LT	R	LT	R
Assumed Moves	LT	TR	LT	TR	LT	R	LT	R
RT Channelized								
Lane Util	0.470	0.530	0.471	0.529	0.762	0.238	0.364	0.636
Follow-Up Headway, s	2.667	2.535	2.667	2.535	2.667	2.535	2.667	2.535
Critical Headway, s	4.645	4.328	4.645	4.328	4.645	4.328	4.645	4.328
Entry Flow, veh/h	273	308	203	228	93	29	144	252
Cap Entry Lane, veh/h	1132	1207	1211	1285	898	974	834	910
Entry HV Adj Factor	0.979	0.979	0.978	0.982	0.978	0.966	0.981	0.980
Flow Entry, veh/h	267	301	199	224	91	28	141	247
Cap Entry, veh/h	1109	1182	1185	1262	879	941	817	892
V/C Ratio	0.241	0.255	0.168	0.177	0.104	0.030	0.173	0.277
Control Delay, s/veh	5.5	5.4	4.5	4.4	5.1	4.1	6.2	7.0
LOS	A	A	A	A	A	A	A	A
95th %tile Queue, veh	1	1	1	1	0	0	1	1

Intersection	
Intersection Delay, s/veh	5.2
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	2	2	2	2
Conflicting Circle Lanes	2	2	2	2
Adj Approach Flow, veh/h	719	406	161	33
Demand Flow Rate, veh/h	733	414	164	34
Vehicles Circulating, veh/h	44	239	558	556
Vehicles Exiting, veh/h	545	483	219	97
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	5.2	4.9	6.3	4.5
Approach LOS	A	A	A	A

Lane	Left	Right	Left	Right	Left	Right	Left	Right
Designated Moves	LT	TR	LT	TR	LT	R	LT	TR
Assumed Moves	LT	TR	LT	TR	LT	R	LT	R
RT Channelized								
Lane Util	0.471	0.529	0.471	0.529	0.921	0.079	0.235	0.765
Follow-Up Headway, s	2.667	2.535	2.667	2.535	2.667	2.535	2.667	2.535
Critical Headway, s	4.645	4.328	4.645	4.328	4.645	4.328	4.645	4.328
Entry Flow, veh/h	345	388	195	219	151	13	8	26
Cap Entry Lane, veh/h	1296	1368	1083	1159	808	884	809	885
Entry HV Adj Factor	0.979	0.982	0.978	0.982	0.980	1.000	0.983	0.962
Flow Entry, veh/h	338	381	191	215	148	13	8	25
Cap Entry, veh/h	1269	1343	1059	1138	792	884	796	851
V/C Ratio	0.266	0.284	0.180	0.189	0.187	0.015	0.010	0.029
Control Delay, s/veh	5.2	5.2	5.0	4.8	6.5	4.2	4.6	4.5
LOS	A	A	A	A	A	A	A	A
95th %tile Queue, veh	1	1	1	1	1	0	0	0

10: Biscayne Ave & CSAH 46

Direction	All
Future Volume (vph)	1146
Total Delay / Veh (s/v)	1
CO Emissions (kg)	2.07
NOx Emissions (kg)	0.40
VOC Emissions (kg)	0.48

20: Station Trail & CSAH 46

Direction	All
Future Volume (vph)	1093
Total Delay / Veh (s/v)	0
CO Emissions (kg)	1.81
NOx Emissions (kg)	0.35
VOC Emissions (kg)	0.42

30: Arkon Ave & CSAH 46

Direction	All
Future Volume (vph)	1099
Total Delay / Veh (s/v)	1
CO Emissions (kg)	1.86
NOx Emissions (kg)	0.36
VOC Emissions (kg)	0.43

40: Asher Ave & CSAH 46

Direction	All
Future Volume (vph)	1061
Total Delay / Veh (s/v)	0
CO Emissions (kg)	1.20
NOx Emissions (kg)	0.23
VOC Emissions (kg)	0.28

50: Barbara Ave & CSAH 46

Direction	All
Future Volume (vph)	1098
Total Delay / Veh (s/v)	0
CO Emissions (kg)	1.15
NOx Emissions (kg)	0.22
VOC Emissions (kg)	0.27

60: Blaine Ave & CSAH 46

Direction	All
Future Volume (vph)	1089
Total Delay / Veh (s/v)	1
CO Emissions (kg)	2.01
NOx Emissions (kg)	0.39
VOC Emissions (kg)	0.47

70: Clayton Ave & CSAH 46

Direction	All
Future Volume (vph)	1202
Total Delay / Veh (s/v)	1
CO Emissions (kg)	1.58
NOx Emissions (kg)	0.31
VOC Emissions (kg)	0.37

80: US 52 Southbound Ramps/Clayton Ave & CSAH 46

Direction	All
Future Volume (vph)	1378
Total Delay / Veh (s/v)	0
CO Emissions (kg)	2.13
NOx Emissions (kg)	0.41
VOC Emissions (kg)	0.49

90: US 52 Northbound Ramps/Clayton Ave & CSAH 46

Direction	All
Future Volume (vph)	1213
Total Delay / Veh (s/v)	0
CO Emissions (kg)	2.44
NOx Emissions (kg)	0.48
VOC Emissions (kg)	0.57

Regional Solicitation - CSAH 46

1	Biscayane Avenue		
	Existing Volume	1146	vehicles
	Existing Delay	2	sec/veh
	Existing Total Delay	2292	seconds
	Future Volume	1146	vehicles
	Future Delay	1	sec/veh
	Future Total Delay	1146	seconds
	Total Delay Reduction	1146	seconds

2	Station Trail		
	Existing Volume	1093	vehicles
	Existing Delay	0	sec/veh
	Existing Total Delay	0	seconds
	Future Volume	1093	vehicles
	Future Delay	0	sec/veh
	Future Total Delay	0	seconds
	Total Delay Reduction	0	seconds

3	Arkon Trail		
	Existing Volume	1099	vehicles
	Existing Delay	0	sec/veh
	Existing Total Delay	0	seconds
	Future Volume	1099	vehicles
	Future Delay	1	sec/veh
	Future Total Delay	1099	seconds
	Total Delay Reduction	-1099	seconds

4	Asher Aveune		
	Existing Volume	1061	vehicles
	Existing Delay	0	sec/veh
	Existing Total Delay	0	seconds
	Future Volume	1061	vehicles
	Future Delay	0	sec/veh
	Future Total Delay	0	seconds
	Total Delay Reduction	0	seconds

5	Barbara Avenue		
	Existing Volume	1098	vehicles
	Existing Delay	0	sec/veh
	Existing Total Delay	0	seconds
	Future Volume	1098	vehicles
	Future Delay	0	sec/veh
	Future Total Delay	0	seconds
	Total Delay Reduction	0	seconds

6	Blaine Avneue		
	Existing Volume	1090	vehicles
	Existing Delay	1	sec/veh
	Existing Total Delay	1090	seconds
	Future Volume	1090	vehicles
	Future Delay	1	sec/veh
	Future Total Delay	1090	seconds
	Total Delay Reduction	0	seconds

7	Clayton Avenue		
	Existing Volume	1202	vehicles
	Existing Delay	1	sec/veh
	Existing Total Delay	1202	seconds
	Future Volume	1202	vehicles
	Future Delay	1	sec/veh
	Future Total Delay	1202	seconds
	Total Delay Reduction	0	seconds

8	US 52 Southbound Ramps		
	Existing Volume	1378	vehicles
	Existing Delay	11	sec/veh
	Existing Total Delay	15158	seconds
	Future Volume	1378	vehicles
	Future Delay	5	sec/veh
	Future Total Delay	6890	seconds
	Total Delay Reduction	8268	seconds

9	US 52 Northbound Ramps		
	Existing Volume	1212	vehicles
	Existing Delay	5	sec/veh
	Existing Total Delay	6060	seconds
	Future Volume	1212	vehicles
	Future Delay	5	sec/veh
	Future Total Delay	6060	seconds
	Total Delay Reduction	0	seconds

Total Network Delay Reduction	**8315**	**seconds**

Emissions

Existing	1	2	3	4	5	6	7	8	9	Total
CO	2.07	1.81	1.86	1.2	1.15	2.03	1.58	1.31	1.42	14.43
NO	0.4	0.35	0.36	0.23	0.22	0.4	0.31	0.25	0.28	2.8
VOC	0.48	0.42	0.43	0.28	0.27	0.47	0.37	0.3	0.33	3.35
							Network Total			20.58

Build	1	2	3	4	5	6	7	8	9	Total
CO	2.07	1.81	1.86	1.2	1.15	2.01	1.58	2.13	2.44	16.25
NO	0.4	0.35	0.36	0.23	0.22	0.39	0.31	0.41	0.48	3.15
VOC	0.48	0.42	0.43	0.28	0.27	0.47	0.37	0.49	0.57	3.78
							Network Total			23.18

Reduction	**-2.6**

10: Biscayne Ave & CSAH 46

Direction	All
Future Volume (vph)	1146
Total Delay / Veh (s/v)	2
CO Emissions (kg)	2.07
NOx Emissions (kg)	0.40
VOC Emissions (kg)	0.48

20: Station Trail & CSAH 46

Direction	All
Future Volume (vph)	1093
Total Delay / Veh (s/v)	0
CO Emissions (kg)	1.81
NOx Emissions (kg)	0.35
VOC Emissions (kg)	0.42

30: Arkon Ave & CSAH 46

Direction	All
Future Volume (vph)	1099
Total Delay / Veh (s/v)	0
CO Emissions (kg)	1.86
NOx Emissions (kg)	0.36
VOC Emissions (kg)	0.43

40: Asher Ave & CSAH 46

Direction	All
Future Volume (vph)	1061
Total Delay / Veh (s/v)	0
CO Emissions (kg)	1.20
NOx Emissions (kg)	0.23
VOC Emissions (kg)	0.28

50: Barbara Ave & CSAH 46

Direction	All
Future Volume (vph)	1098
Total Delay / Veh (s/v)	0
CO Emissions (kg)	1.15
NOx Emissions (kg)	0.22
VOC Emissions (kg)	0.27

60: Blaine Ave & CSAH 46

Direction	All
Future Volume (vph)	1090
Total Delay / Veh (s/v)	1
CO Emissions (kg)	2.03
NOx Emissions (kg)	0.40
VOC Emissions (kg)	0.47

70: Clayton Ave & CSAH 46

Direction	All
Future Volume (vph)	1202
Total Delay / Veh (s/v)	1
CO Emissions (kg)	1.58
NOx Emissions (kg)	0.31
VOC Emissions (kg)	0.37

80: US 52 Southbound Ramps/Clayton Ave & CSAH 46

Direction	All
Future Volume (vph)	1378
Total Delay / Veh (s/v)	11
CO Emissions (kg)	1.31
NOx Emissions (kg)	0.25
VOC Emissions (kg)	0.30

90: US 52 Northbound Ramps/Clayton Ave & CSAH 46

Direction	All
Future Volume (vph)	1212
Total Delay / Veh (s/v)	5
CO Emissions (kg)	1.42
NOx Emissions (kg)	0.28
VOC Emissions (kg)	0.33

Intersection	
Intersection Delay, s/veh	5.4
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	2	2	2	2
Conflicting Circle Lanes	2	2	2	2
Adj Approach Flow, veh/h	569	422	119	388
Demand Flow Rate, veh/h	581	431	122	396
Vehicles Circulating, veh/h	191	118	443	524
Vehicles Exiting, veh/h	729	447	328	25
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	5.4	4.4	4.9	6.7
Approach LOS	A	A	A	A

Lane	Left	Right	Left	Right	Left	Right	Left	Right
Designated Moves	LT	TR	LT	TR	LT	R	LT	R
Assumed Moves	LT	TR	LT	TR	LT	R	LT	R
RT Channelized								
Lane Util	0.470	0.530	0.471	0.529	0.762	0.238	0.364	0.636
Follow-Up Headway, s	2.667	2.535	2.667	2.535	2.667	2.535	2.667	2.535
Critical Headway, s	4.645	4.328	4.645	4.328	4.645	4.328	4.645	4.328
Entry Flow, veh/h	273	308	203	228	93	29	144	252
Cap Entry Lane, veh/h	1132	1207	1211	1285	898	974	834	910
Entry HV Adj Factor	0.979	0.979	0.978	0.982	0.978	0.966	0.981	0.980
Flow Entry, veh/h	267	301	199	224	91	28	141	247
Cap Entry, veh/h	1109	1182	1185	1262	879	941	817	892
V/C Ratio	0.241	0.255	0.168	0.177	0.104	0.030	0.173	0.277
Control Delay, s/veh	5.5	5.4	4.5	4.4	5.1	4.1	6.2	7.0
LOS	A	A	A	A	A	A	A	A
95th %tile Queue, veh	1	1	1	1	0	0	1	1

Intersection	
Intersection Delay, s/veh	5.2
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	2	2	2	2
Conflicting Circle Lanes	2	2	2	2
Adj Approach Flow, veh/h	719	406	161	33
Demand Flow Rate, veh/h	733	414	164	34
Vehicles Circulating, veh/h	44	239	558	556
Vehicles Exiting, veh/h	545	483	219	97
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	5.2	4.9	6.3	4.5
Approach LOS	A	A	A	A

Lane	Left	Right	Left	Right	Left	Right	Left	Right
Designated Moves	LT	TR	LT	TR	LT	R	LT	TR
Assumed Moves	LT	TR	LT	TR	LT	R	LT	R
RT Channelized								
Lane Util	0.471	0.529	0.471	0.529	0.921	0.079	0.235	0.765
Follow-Up Headway, s	2.667	2.535	2.667	2.535	2.667	2.535	2.667	2.535
Critical Headway, s	4.645	4.328	4.645	4.328	4.645	4.328	4.645	4.328
Entry Flow, veh/h	345	388	195	219	151	13	8	26
Cap Entry Lane, veh/h	1296	1368	1083	1159	808	884	809	885
Entry HV Adj Factor	0.979	0.982	0.978	0.982	0.980	1.000	0.983	0.962
Flow Entry, veh/h	338	381	191	215	148	13	8	25
Cap Entry, veh/h	1269	1343	1059	1138	792	884	796	851
V/C Ratio	0.266	0.284	0.180	0.189	0.187	0.015	0.010	0.029
Control Delay, s/veh	5.2	5.2	5.0	4.8	6.5	4.2	4.6	4.5
LOS	A	A	A	A	A	A	A	A
95th %tile Queue, veh	1	1	1	1	1	0	0	0

10: Biscayne Ave & CSAH 46

Direction	All
Future Volume (vph)	1146
Total Delay / Veh (s/v)	1
CO Emissions (kg)	2.07
NOx Emissions (kg)	0.40
VOC Emissions (kg)	0.48

20: Station Trail & CSAH 46

Direction	All
Future Volume (vph)	1093
Total Delay / Veh (s/v)	0
CO Emissions (kg)	1.81
NOx Emissions (kg)	0.35
VOC Emissions (kg)	0.42

30: Arkon Ave & CSAH 46

Direction	All
Future Volume (vph)	1099
Total Delay / Veh (s/v)	1
CO Emissions (kg)	1.86
NOx Emissions (kg)	0.36
VOC Emissions (kg)	0.43

40: Asher Ave & CSAH 46

Direction	All
Future Volume (vph)	1061
Total Delay / Veh (s/v)	0
CO Emissions (kg)	1.20
NOx Emissions (kg)	0.23
VOC Emissions (kg)	0.28

50: Barbara Ave & CSAH 46

Direction	All
Future Volume (vph)	1098
Total Delay / Veh (s/v)	0
CO Emissions (kg)	1.15
NOx Emissions (kg)	0.22
VOC Emissions (kg)	0.27

60: Blaine Ave & CSAH 46

Direction	All
Future Volume (vph)	1089
Total Delay / Veh (s/v)	1
CO Emissions (kg)	2.01
NOx Emissions (kg)	0.39
VOC Emissions (kg)	0.47

70: Clayton Ave & CSAH 46

Direction	All
Future Volume (vph)	1202
Total Delay / Veh (s/v)	1
CO Emissions (kg)	1.58
NOx Emissions (kg)	0.31
VOC Emissions (kg)	0.37

80: US 52 Southbound Ramps/Clayton Ave & CSAH 46

Direction	All
Future Volume (vph)	1378
Total Delay / Veh (s/v)	0
CO Emissions (kg)	2.13
NOx Emissions (kg)	0.41
VOC Emissions (kg)	0.49

90: US 52 Northbound Ramps/Clayton Ave & CSAH 46

Direction	All
Future Volume (vph)	1213
Total Delay / Veh (s/v)	0
CO Emissions (kg)	2.44
NOx Emissions (kg)	0.48
VOC Emissions (kg)	0.57

Regional Solicitation - CSAH 46

1

Biscayane Avenue		
Existing Volume	1146	vehicles
Existing Delay	2	sec/veh
Existing Total Delay	2292	seconds
Future Volume	1146	vehicles
Future Delay	1	sec/veh
Future Total Delay	1146	seconds
Total Delay Reduction	1146	seconds

2

Station Trail		
Existing Volume	1093	vehicles
Existing Delay	0	sec/veh
Existing Total Delay	0	seconds
Future Volume	1093	vehicles
Future Delay	0	sec/veh
Future Total Delay	0	seconds
Total Delay Reduction	0	seconds

3

Arkon Trail		
Existing Volume	1099	vehicles
Existing Delay	0	sec/veh
Existing Total Delay	0	seconds
Future Volume	1099	vehicles
Future Delay	1	sec/veh
Future Total Delay	1099	seconds
Total Delay Reduction	-1099	seconds

4

Asher Aveune		
Existing Volume	1061	vehicles
Existing Delay	0	sec/veh
Existing Total Delay	0	seconds
Future Volume	1061	vehicles
Future Delay	0	sec/veh
Future Total Delay	0	seconds
Total Delay Reduction	0	seconds

5

Barbara Avenue		
Existing Volume	1098	vehicles
Existing Delay	0	sec/veh
Existing Total Delay	0	seconds
Future Volume	1098	vehicles
Future Delay	0	sec/veh
Future Total Delay	0	seconds
Total Delay Reduction	0	seconds

6

Blaine Avneue		
Existing Volume	1090	vehicles
Existing Delay	1	sec/veh
Existing Total Delay	1090	seconds
Future Volume	1090	vehicles
Future Delay	1	sec/veh
Future Total Delay	1090	seconds
Total Delay Reduction	0	seconds

7

Clayton Avenue		
Existing Volume	1202	vehicles
Existing Delay	1	sec/veh
Existing Total Delay	1202	seconds
Future Volume	1202	vehicles
Future Delay	1	sec/veh
Future Total Delay	1202	seconds
Total Delay Reduction	0	seconds

8

US 52 Southbound Ramps		
Existing Volume	1378	vehicles
Existing Delay	11	sec/veh
Existing Total Delay	15158	seconds
Future Volume	1378	vehicles
Future Delay	5	sec/veh
Future Total Delay	6890	seconds
Total Delay Reduction	8268	seconds

9

US 52 Northbound Ramps		
Existing Volume	1212	vehicles
Existing Delay	5	sec/veh
Existing Total Delay	6060	seconds
Future Volume	1212	vehicles
Future Delay	5	sec/veh
Future Total Delay	6060	seconds
Total Delay Reduction	0	seconds

Total Network Delay Reduction	**8315**	**seconds**

Emissions

Existing	1	2	3	4	5	6	7	8	9	Total
CO	2.07	1.81	1.86	1.2	1.15	2.03	1.58	1.31	1.42	14.43
NO	0.4	0.35	0.36	0.23	0.22	0.4	0.31	0.25	0.28	2.8
VOC	0.48	0.42	0.43	0.28	0.27	0.47	0.37	0.3	0.33	3.35
							Network Total			20.58

Build	1	2	3	4	5	6	7	8	9	Total
CO	2.07	1.81	1.86	1.2	1.15	2.01	1.58	2.13	2.44	16.25
NO	0.4	0.35	0.36	0.23	0.22	0.39	0.31	0.41	0.48	3.15
VOC	0.48	0.42	0.43	0.28	0.27	0.47	0.37	0.49	0.57	3.78
							Network Total			23.18

Reduction	**-2.6**

10: Biscayne Ave & CSAH 46

Direction	All
Future Volume (vph)	1146
Total Delay / Veh (s/v)	2
CO Emissions (kg)	2.07
NOx Emissions (kg)	0.40
VOC Emissions (kg)	0.48

20: Station Trail & CSAH 46

Direction	All
Future Volume (vph)	1093
Total Delay / Veh (s/v)	0
CO Emissions (kg)	1.81
NOx Emissions (kg)	0.35
VOC Emissions (kg)	0.42

30: Arkon Ave & CSAH 46

Direction	All
Future Volume (vph)	1099
Total Delay / Veh (s/v)	0
CO Emissions (kg)	1.86
NOx Emissions (kg)	0.36
VOC Emissions (kg)	0.43

40: Asher Ave & CSAH 46

Direction	All
Future Volume (vph)	1061
Total Delay / Veh (s/v)	0
CO Emissions (kg)	1.20
NOx Emissions (kg)	0.23
VOC Emissions (kg)	0.28

50: Barbara Ave & CSAH 46

Direction	All
Future Volume (vph)	1098
Total Delay / Veh (s/v)	0
CO Emissions (kg)	1.15
NOx Emissions (kg)	0.22
VOC Emissions (kg)	0.27

60: Blaine Ave & CSAH 46

Direction	All
Future Volume (vph)	1090
Total Delay / Veh (s/v)	1
CO Emissions (kg)	2.03
NOx Emissions (kg)	0.40
VOC Emissions (kg)	0.47

70: Clayton Ave & CSAH 46

Direction	All
Future Volume (vph)	1202
Total Delay / Veh (s/v)	1
CO Emissions (kg)	1.58
NOx Emissions (kg)	0.31
VOC Emissions (kg)	0.37

80: US 52 Southbound Ramps/Clayton Ave & CSAH 46

Direction	All
Future Volume (vph)	1378
Total Delay / Veh (s/v)	11
CO Emissions (kg)	1.31
NOx Emissions (kg)	0.25
VOC Emissions (kg)	0.30

90: US 52 Northbound Ramps/Clayton Ave & CSAH 46

Direction	All
Future Volume (vph)	1212
Total Delay / Veh (s/v)	5
CO Emissions (kg)	1.42
NOx Emissions (kg)	0.28
VOC Emissions (kg)	0.33

Intersection	
Intersection Delay, s/veh	5.4
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	2	2	2	2
Conflicting Circle Lanes	2	2	2	2
Adj Approach Flow, veh/h	569	422	119	388
Demand Flow Rate, veh/h	581	431	122	396
Vehicles Circulating, veh/h	191	118	443	524
Vehicles Exiting, veh/h	729	447	328	25
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	5.4	4.4	4.9	6.7
Approach LOS	A	A	A	A

Lane	Left	Right	Left	Right	Left	Right	Left	Right
Designated Moves	LT	TR	LT	TR	LT	R	LT	R
Assumed Moves	LT	TR	LT	TR	LT	R	LT	R
RT Channelized								
Lane Util	0.470	0.530	0.471	0.529	0.762	0.238	0.364	0.636
Follow-Up Headway, s	2.667	2.535	2.667	2.535	2.667	2.535	2.667	2.535
Critical Headway, s	4.645	4.328	4.645	4.328	4.645	4.328	4.645	4.328
Entry Flow, veh/h	273	308	203	228	93	29	144	252
Cap Entry Lane, veh/h	1132	1207	1211	1285	898	974	834	910
Entry HV Adj Factor	0.979	0.979	0.978	0.982	0.978	0.966	0.981	0.980
Flow Entry, veh/h	267	301	199	224	91	28	141	247
Cap Entry, veh/h	1109	1182	1185	1262	879	941	817	892
V/C Ratio	0.241	0.255	0.168	0.177	0.104	0.030	0.173	0.277
Control Delay, s/veh	5.5	5.4	4.5	4.4	5.1	4.1	6.2	7.0
LOS	A	A	A	A	A	A	A	A
95th %tile Queue, veh	1	1	1	1	0	0	1	1

Intersection	
Intersection Delay, s/veh	5.2
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	2	2	2	2
Conflicting Circle Lanes	2	2	2	2
Adj Approach Flow, veh/h	719	406	161	33
Demand Flow Rate, veh/h	733	414	164	34
Vehicles Circulating, veh/h	44	239	558	556
Vehicles Exiting, veh/h	545	483	219	97
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	5.2	4.9	6.3	4.5
Approach LOS	A	A	A	A

Lane	Left	Right	Left	Right	Left	Right	Left	Right
Designated Moves	LT	TR	LT	TR	LT	R	LT	TR
Assumed Moves	LT	TR	LT	TR	LT	R	LT	R
RT Channelized								
Lane Util	0.471	0.529	0.471	0.529	0.921	0.079	0.235	0.765
Follow-Up Headway, s	2.667	2.535	2.667	2.535	2.667	2.535	2.667	2.535
Critical Headway, s	4.645	4.328	4.645	4.328	4.645	4.328	4.645	4.328
Entry Flow, veh/h	345	388	195	219	151	13	8	26
Cap Entry Lane, veh/h	1296	1368	1083	1159	808	884	809	885
Entry HV Adj Factor	0.979	0.982	0.978	0.982	0.980	1.000	0.983	0.962
Flow Entry, veh/h	338	381	191	215	148	13	8	25
Cap Entry, veh/h	1269	1343	1059	1138	792	884	796	851
V/C Ratio	0.266	0.284	0.180	0.189	0.187	0.015	0.010	0.029
Control Delay, s/veh	5.2	5.2	5.0	4.8	6.5	4.2	4.6	4.5
LOS	A	A	A	A	A	A	A	A
95th %tile Queue, veh	1	1	1	1	1	0	0	0

10: Biscayne Ave & CSAH 46

Direction	All
Future Volume (vph)	1146
Total Delay / Veh (s/v)	1
CO Emissions (kg)	2.07
NOx Emissions (kg)	0.40
VOC Emissions (kg)	0.48

20: Station Trail & CSAH 46

Direction	All
Future Volume (vph)	1093
Total Delay / Veh (s/v)	0
CO Emissions (kg)	1.81
NOx Emissions (kg)	0.35
VOC Emissions (kg)	0.42

30: Arkon Ave & CSAH 46

Direction	All
Future Volume (vph)	1099
Total Delay / Veh (s/v)	1
CO Emissions (kg)	1.86
NOx Emissions (kg)	0.36
VOC Emissions (kg)	0.43

40: Asher Ave & CSAH 46

Direction	All
Future Volume (vph)	1061
Total Delay / Veh (s/v)	0
CO Emissions (kg)	1.20
NOx Emissions (kg)	0.23
VOC Emissions (kg)	0.28

50: Barbara Ave & CSAH 46

Direction	All
Future Volume (vph)	1098
Total Delay / Veh (s/v)	0
CO Emissions (kg)	1.15
NOx Emissions (kg)	0.22
VOC Emissions (kg)	0.27

60: Blaine Ave & CSAH 46

Direction	All
Future Volume (vph)	1089
Total Delay / Veh (s/v)	1
CO Emissions (kg)	2.01
NOx Emissions (kg)	0.39
VOC Emissions (kg)	0.47

70: Clayton Ave & CSAH 46

Direction	All
Future Volume (vph)	1202
Total Delay / Veh (s/v)	1
CO Emissions (kg)	1.58
NOx Emissions (kg)	0.31
VOC Emissions (kg)	0.37

80: US 52 Southbound Ramps/Clayton Ave & CSAH 46

Direction	All
Future Volume (vph)	1378
Total Delay / Veh (s/v)	0
CO Emissions (kg)	2.13
NOx Emissions (kg)	0.41
VOC Emissions (kg)	0.49

90: US 52 Northbound Ramps/Clayton Ave & CSAH 46

Direction	All
Future Volume (vph)	1213
Total Delay / Veh (s/v)	0
CO Emissions (kg)	2.44
NOx Emissions (kg)	0.48
VOC Emissions (kg)	0.57

Regional Solicitation - CSAH 46

1	Biscayane Avenue		
	Existing Volume	1146	vehicles
	Existing Delay	2	sec/veh
	Existing Total Delay	2292	seconds
	Future Volume	1146	vehicles
	Future Delay	1	sec/veh
	Future Total Delay	1146	seconds
	Total Delay Reduction	1146	seconds

2	Station Trail		
	Existing Volume	1093	vehicles
	Existing Delay	0	sec/veh
	Existing Total Delay	0	seconds
	Future Volume	1093	vehicles
	Future Delay	0	sec/veh
	Future Total Delay	0	seconds
	Total Delay Reduction	0	seconds

3	Arkon Trail		
	Existing Volume	1099	vehicles
	Existing Delay	0	sec/veh
	Existing Total Delay	0	seconds
	Future Volume	1099	vehicles
	Future Delay	1	sec/veh
	Future Total Delay	1099	seconds
	Total Delay Reduction	-1099	seconds

4	Asher Aveune		
	Existing Volume	1061	vehicles
	Existing Delay	0	sec/veh
	Existing Total Delay	0	seconds
	Future Volume	1061	vehicles
	Future Delay	0	sec/veh
	Future Total Delay	0	seconds
	Total Delay Reduction	0	seconds

5	Barbara Avenue		
	Existing Volume	1098	vehicles
	Existing Delay	0	sec/veh
	Existing Total Delay	0	seconds
	Future Volume	1098	vehicles
	Future Delay	0	sec/veh
	Future Total Delay	0	seconds
	Total Delay Reduction	0	seconds

6	Blaine Avneue		
	Existing Volume	1090	vehicles
	Existing Delay	1	sec/veh
	Existing Total Delay	1090	seconds
	Future Volume	1090	vehicles
	Future Delay	1	sec/veh
	Future Total Delay	1090	seconds
	Total Delay Reduction	0	seconds

7	Clayton Avenue		
	Existing Volume	1202	vehicles
	Existing Delay	1	sec/veh
	Existing Total Delay	1202	seconds
	Future Volume	1202	vehicles
	Future Delay	1	sec/veh
	Future Total Delay	1202	seconds
	Total Delay Reduction	0	seconds

8	US 52 Southbound Ramps		
	Existing Volume	1378	vehicles
	Existing Delay	11	sec/veh
	Existing Total Delay	15158	seconds
	Future Volume	1378	vehicles
	Future Delay	5	sec/veh
	Future Total Delay	6890	seconds
	Total Delay Reduction	8268	seconds

9	US 52 Northbound Ramps		
	Existing Volume	1212	vehicles
	Existing Delay	5	sec/veh
	Existing Total Delay	6060	seconds
	Future Volume	1212	vehicles
	Future Delay	5	sec/veh
	Future Total Delay	6060	seconds
	Total Delay Reduction	0	seconds

Total Network Delay Reduction	**8315**	**seconds**

Emissions

Existing	1	2	3	4	5	6	7	8	9	Total
CO	2.07	1.81	1.86	1.2	1.15	2.03	1.58	1.31	1.42	14.43
NO	0.4	0.35	0.36	0.23	0.22	0.4	0.31	0.25	0.28	2.8
VOC	0.48	0.42	0.43	0.28	0.27	0.47	0.37	0.3	0.33	3.35
							Network Total			20.58

Build	1	2	3	4	5	6	7	8	9	Total
CO	2.07	1.81	1.86	1.2	1.15	2.01	1.58	2.13	2.44	16.25
NO	0.4	0.35	0.36	0.23	0.22	0.39	0.31	0.41	0.48	3.15
VOC	0.48	0.42	0.43	0.28	0.27	0.47	0.37	0.49	0.57	3.78
							Network Total			23.18

Reduction	**-2.6**

10: Biscayne Ave & CSAH 46

Direction	All
Future Volume (vph)	1146
Total Delay / Veh (s/v)	2
CO Emissions (kg)	2.07
NOx Emissions (kg)	0.40
VOC Emissions (kg)	0.48

20: Station Trail & CSAH 46

Direction	All
Future Volume (vph)	1093
Total Delay / Veh (s/v)	0
CO Emissions (kg)	1.81
NOx Emissions (kg)	0.35
VOC Emissions (kg)	0.42

30: Arkon Ave & CSAH 46

Direction	All
Future Volume (vph)	1099
Total Delay / Veh (s/v)	0
CO Emissions (kg)	1.86
NOx Emissions (kg)	0.36
VOC Emissions (kg)	0.43

40: Asher Ave & CSAH 46

Direction	All
Future Volume (vph)	1061
Total Delay / Veh (s/v)	0
CO Emissions (kg)	1.20
NOx Emissions (kg)	0.23
VOC Emissions (kg)	0.28

50: Barbara Ave & CSAH 46

Direction	All
Future Volume (vph)	1098
Total Delay / Veh (s/v)	0
CO Emissions (kg)	1.15
NOx Emissions (kg)	0.22
VOC Emissions (kg)	0.27

60: Blaine Ave & CSAH 46

Direction	All
Future Volume (vph)	1090
Total Delay / Veh (s/v)	1
CO Emissions (kg)	2.03
NOx Emissions (kg)	0.40
VOC Emissions (kg)	0.47

70: Clayton Ave & CSAH 46

Direction	All
Future Volume (vph)	1202
Total Delay / Veh (s/v)	1
CO Emissions (kg)	1.58
NOx Emissions (kg)	0.31
VOC Emissions (kg)	0.37

80: US 52 Southbound Ramps/Clayton Ave & CSAH 46

Direction	All
Future Volume (vph)	1378
Total Delay / Veh (s/v)	11
CO Emissions (kg)	1.31
NOx Emissions (kg)	0.25
VOC Emissions (kg)	0.30

90: US 52 Northbound Ramps/Clayton Ave & CSAH 46

Direction	All
Future Volume (vph)	1212
Total Delay / Veh (s/v)	5
CO Emissions (kg)	1.42
NOx Emissions (kg)	0.28
VOC Emissions (kg)	0.33

Intersection	
Intersection Delay, s/veh	5.4
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	2	2	2	2
Conflicting Circle Lanes	2	2	2	2
Adj Approach Flow, veh/h	569	422	119	388
Demand Flow Rate, veh/h	581	431	122	396
Vehicles Circulating, veh/h	191	118	443	524
Vehicles Exiting, veh/h	729	447	328	25
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	5.4	4.4	4.9	6.7
Approach LOS	A	A	A	A

Lane	Left	Right	Left	Right	Left	Right	Left	Right
Designated Moves	LT	TR	LT	TR	LT	R	LT	R
Assumed Moves	LT	TR	LT	TR	LT	R	LT	R
RT Channelized								
Lane Util	0.470	0.530	0.471	0.529	0.762	0.238	0.364	0.636
Follow-Up Headway, s	2.667	2.535	2.667	2.535	2.667	2.535	2.667	2.535
Critical Headway, s	4.645	4.328	4.645	4.328	4.645	4.328	4.645	4.328
Entry Flow, veh/h	273	308	203	228	93	29	144	252
Cap Entry Lane, veh/h	1132	1207	1211	1285	898	974	834	910
Entry HV Adj Factor	0.979	0.979	0.978	0.982	0.978	0.966	0.981	0.980
Flow Entry, veh/h	267	301	199	224	91	28	141	247
Cap Entry, veh/h	1109	1182	1185	1262	879	941	817	892
V/C Ratio	0.241	0.255	0.168	0.177	0.104	0.030	0.173	0.277
Control Delay, s/veh	5.5	5.4	4.5	4.4	5.1	4.1	6.2	7.0
LOS	A	A	A	A	A	A	A	A
95th %tile Queue, veh	1	1	1	1	0	0	1	1

Intersection	
Intersection Delay, s/veh	5.2
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	2	2	2	2
Conflicting Circle Lanes	2	2	2	2
Adj Approach Flow, veh/h	719	406	161	33
Demand Flow Rate, veh/h	733	414	164	34
Vehicles Circulating, veh/h	44	239	558	556
Vehicles Exiting, veh/h	545	483	219	97
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	5.2	4.9	6.3	4.5
Approach LOS	A	A	A	A

Lane	Left	Right	Left	Right	Left	Right	Left	Right
Designated Moves	LT	TR	LT	TR	LT	R	LT	TR
Assumed Moves	LT	TR	LT	TR	LT	R	LT	R
RT Channelized								
Lane Util	0.471	0.529	0.471	0.529	0.921	0.079	0.235	0.765
Follow-Up Headway, s	2.667	2.535	2.667	2.535	2.667	2.535	2.667	2.535
Critical Headway, s	4.645	4.328	4.645	4.328	4.645	4.328	4.645	4.328
Entry Flow, veh/h	345	388	195	219	151	13	8	26
Cap Entry Lane, veh/h	1296	1368	1083	1159	808	884	809	885
Entry HV Adj Factor	0.979	0.982	0.978	0.982	0.980	1.000	0.983	0.962
Flow Entry, veh/h	338	381	191	215	148	13	8	25
Cap Entry, veh/h	1269	1343	1059	1138	792	884	796	851
V/C Ratio	0.266	0.284	0.180	0.189	0.187	0.015	0.010	0.029
Control Delay, s/veh	5.2	5.2	5.0	4.8	6.5	4.2	4.6	4.5
LOS	A	A	A	A	A	A	A	A
95th %tile Queue, veh	1	1	1	1	1	0	0	0

10: Biscayne Ave & CSAH 46

Direction	All
Future Volume (vph)	1146
Total Delay / Veh (s/v)	1
CO Emissions (kg)	2.07
NOx Emissions (kg)	0.40
VOC Emissions (kg)	0.48

20: Station Trail & CSAH 46

Direction	All
Future Volume (vph)	1093
Total Delay / Veh (s/v)	0
CO Emissions (kg)	1.81
NOx Emissions (kg)	0.35
VOC Emissions (kg)	0.42

30: Arkon Ave & CSAH 46

Direction	All
Future Volume (vph)	1099
Total Delay / Veh (s/v)	1
CO Emissions (kg)	1.86
NOx Emissions (kg)	0.36
VOC Emissions (kg)	0.43

40: Asher Ave & CSAH 46

Direction	All
Future Volume (vph)	1061
Total Delay / Veh (s/v)	0
CO Emissions (kg)	1.20
NOx Emissions (kg)	0.23
VOC Emissions (kg)	0.28

50: Barbara Ave & CSAH 46

Direction	All
Future Volume (vph)	1098
Total Delay / Veh (s/v)	0
CO Emissions (kg)	1.15
NOx Emissions (kg)	0.22
VOC Emissions (kg)	0.27

60: Blaine Ave & CSAH 46

Direction	All
Future Volume (vph)	1089
Total Delay / Veh (s/v)	1
CO Emissions (kg)	2.01
NOx Emissions (kg)	0.39
VOC Emissions (kg)	0.47

70: Clayton Ave & CSAH 46

Direction	All
Future Volume (vph)	1202
Total Delay / Veh (s/v)	1
CO Emissions (kg)	1.58
NOx Emissions (kg)	0.31
VOC Emissions (kg)	0.37

80: US 52 Southbound Ramps/Clayton Ave & CSAH 46

Direction	All
Future Volume (vph)	1378
Total Delay / Veh (s/v)	0
CO Emissions (kg)	2.13
NOx Emissions (kg)	0.41
VOC Emissions (kg)	0.49

90: US 52 Northbound Ramps/Clayton Ave & CSAH 46

Direction	All
Future Volume (vph)	1213
Total Delay / Veh (s/v)	0
CO Emissions (kg)	2.44
NOx Emissions (kg)	0.48
VOC Emissions (kg)	0.57

Regional Solicitation - CSAH 46

1

Biscayane Avenue		
Existing Volume	1146	vehicles
Existing Delay	2	sec/veh
Existing Total Delay	2292	seconds
Future Volume	1146	vehicles
Future Delay	1	sec/veh
Future Total Delay	1146	seconds
Total Delay Reduction	1146	seconds

2

Station Trail		
Existing Volume	1093	vehicles
Existing Delay	0	sec/veh
Existing Total Delay	0	seconds
Future Volume	1093	vehicles
Future Delay	0	sec/veh
Future Total Delay	0	seconds
Total Delay Reduction	0	seconds

3

Arkon Trail		
Existing Volume	1099	vehicles
Existing Delay	0	sec/veh
Existing Total Delay	0	seconds
Future Volume	1099	vehicles
Future Delay	1	sec/veh
Future Total Delay	1099	seconds
Total Delay Reduction	-1099	seconds

4

Asher Aveune		
Existing Volume	1061	vehicles
Existing Delay	0	sec/veh
Existing Total Delay	0	seconds
Future Volume	1061	vehicles
Future Delay	0	sec/veh
Future Total Delay	0	seconds
Total Delay Reduction	0	seconds

5

Barbara Avenue		
Existing Volume	1098	vehicles
Existing Delay	0	sec/veh
Existing Total Delay	0	seconds
Future Volume	1098	vehicles
Future Delay	0	sec/veh
Future Total Delay	0	seconds
Total Delay Reduction	0	seconds

6

Blaine Avneue		
Existing Volume	1090	vehicles
Existing Delay	1	sec/veh
Existing Total Delay	1090	seconds
Future Volume	1090	vehicles
Future Delay	1	sec/veh
Future Total Delay	1090	seconds
Total Delay Reduction	0	seconds

7

Clayton Avenue		
Existing Volume	1202	vehicles
Existing Delay	1	sec/veh
Existing Total Delay	1202	seconds
Future Volume	1202	vehicles
Future Delay	1	sec/veh
Future Total Delay	1202	seconds
Total Delay Reduction	0	seconds

8

US 52 Southbound Ramps		
Existing Volume	1378	vehicles
Existing Delay	11	sec/veh
Existing Total Delay	15158	seconds
Future Volume	1378	vehicles
Future Delay	5	sec/veh
Future Total Delay	6890	seconds
Total Delay Reduction	8268	seconds

9

US 52 Northbound Ramps		
Existing Volume	1212	vehicles
Existing Delay	5	sec/veh
Existing Total Delay	6060	seconds
Future Volume	1212	vehicles
Future Delay	5	sec/veh
Future Total Delay	6060	seconds
Total Delay Reduction	0	seconds

Total Network Delay Reduction	**8315**	**seconds**

Emissions

Existing	1	2	3	4	5	6	7	8	9	Total
CO	2.07	1.81	1.86	1.2	1.15	2.03	1.58	1.31	1.42	14.43
NO	0.4	0.35	0.36	0.23	0.22	0.4	0.31	0.25	0.28	2.8
VOC	0.48	0.42	0.43	0.28	0.27	0.47	0.37	0.3	0.33	3.35
							Network Total			20.58

Build	1	2	3	4	5	6	7	8	9	Total
CO	2.07	1.81	1.86	1.2	1.15	2.01	1.58	2.13	2.44	16.25
NO	0.4	0.35	0.36	0.23	0.22	0.39	0.31	0.41	0.48	3.15
VOC	0.48	0.42	0.43	0.28	0.27	0.47	0.37	0.49	0.57	3.78
							Network Total			23.18

Reduction	**-2.6**

10: Biscayne Ave & CSAH 46

Direction	All
Future Volume (vph)	1146
Total Delay / Veh (s/v)	2
CO Emissions (kg)	2.07
NOx Emissions (kg)	0.40
VOC Emissions (kg)	0.48

20: Station Trail & CSAH 46

Direction	All
Future Volume (vph)	1093
Total Delay / Veh (s/v)	0
CO Emissions (kg)	1.81
NOx Emissions (kg)	0.35
VOC Emissions (kg)	0.42

30: Arkon Ave & CSAH 46

Direction	All
Future Volume (vph)	1099
Total Delay / Veh (s/v)	0
CO Emissions (kg)	1.86
NOx Emissions (kg)	0.36
VOC Emissions (kg)	0.43

40: Asher Ave & CSAH 46

Direction	All
Future Volume (vph)	1061
Total Delay / Veh (s/v)	0
CO Emissions (kg)	1.20
NOx Emissions (kg)	0.23
VOC Emissions (kg)	0.28

50: Barbara Ave & CSAH 46

Direction	All
Future Volume (vph)	1098
Total Delay / Veh (s/v)	0
CO Emissions (kg)	1.15
NOx Emissions (kg)	0.22
VOC Emissions (kg)	0.27

60: Blaine Ave & CSAH 46

Direction	All
Future Volume (vph)	1090
Total Delay / Veh (s/v)	1
CO Emissions (kg)	2.03
NOx Emissions (kg)	0.40
VOC Emissions (kg)	0.47

70: Clayton Ave & CSAH 46

Direction	All
Future Volume (vph)	1202
Total Delay / Veh (s/v)	1
CO Emissions (kg)	1.58
NOx Emissions (kg)	0.31
VOC Emissions (kg)	0.37

80: US 52 Southbound Ramps/Clayton Ave & CSAH 46

Direction	All
Future Volume (vph)	1378
Total Delay / Veh (s/v)	11
CO Emissions (kg)	1.31
NOx Emissions (kg)	0.25
VOC Emissions (kg)	0.30

90: US 52 Northbound Ramps/Clayton Ave & CSAH 46

Direction	All
Future Volume (vph)	1212
Total Delay / Veh (s/v)	5
CO Emissions (kg)	1.42
NOx Emissions (kg)	0.28
VOC Emissions (kg)	0.33

Intersection	
Intersection Delay, s/veh	5.4
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	2	2	2	2
Conflicting Circle Lanes	2	2	2	2
Adj Approach Flow, veh/h	569	422	119	388
Demand Flow Rate, veh/h	581	431	122	396
Vehicles Circulating, veh/h	191	118	443	524
Vehicles Exiting, veh/h	729	447	328	25
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	5.4	4.4	4.9	6.7
Approach LOS	A	A	A	A

Lane	Left	Right	Left	Right	Left	Right	Left	Right
Designated Moves	LT	TR	LT	TR	LT	R	LT	R
Assumed Moves	LT	TR	LT	TR	LT	R	LT	R
RT Channelized								
Lane Util	0.470	0.530	0.471	0.529	0.762	0.238	0.364	0.636
Follow-Up Headway, s	2.667	2.535	2.667	2.535	2.667	2.535	2.667	2.535
Critical Headway, s	4.645	4.328	4.645	4.328	4.645	4.328	4.645	4.328
Entry Flow, veh/h	273	308	203	228	93	29	144	252
Cap Entry Lane, veh/h	1132	1207	1211	1285	898	974	834	910
Entry HV Adj Factor	0.979	0.979	0.978	0.982	0.978	0.966	0.981	0.980
Flow Entry, veh/h	267	301	199	224	91	28	141	247
Cap Entry, veh/h	1109	1182	1185	1262	879	941	817	892
V/C Ratio	0.241	0.255	0.168	0.177	0.104	0.030	0.173	0.277
Control Delay, s/veh	5.5	5.4	4.5	4.4	5.1	4.1	6.2	7.0
LOS	A	A	A	A	A	A	A	A
95th %tile Queue, veh	1	1	1	1	0	0	1	1

Intersection	
Intersection Delay, s/veh	5.2
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	2	2	2	2
Conflicting Circle Lanes	2	2	2	2
Adj Approach Flow, veh/h	719	406	161	33
Demand Flow Rate, veh/h	733	414	164	34
Vehicles Circulating, veh/h	44	239	558	556
Vehicles Exiting, veh/h	545	483	219	97
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	5.2	4.9	6.3	4.5
Approach LOS	A	A	A	A

Lane	Left	Right	Left	Right	Left	Right	Left	Right
Designated Moves	LT	TR	LT	TR	LT	R	LT	TR
Assumed Moves	LT	TR	LT	TR	LT	R	LT	R
RT Channelized								
Lane Util	0.471	0.529	0.471	0.529	0.921	0.079	0.235	0.765
Follow-Up Headway, s	2.667	2.535	2.667	2.535	2.667	2.535	2.667	2.535
Critical Headway, s	4.645	4.328	4.645	4.328	4.645	4.328	4.645	4.328
Entry Flow, veh/h	345	388	195	219	151	13	8	26
Cap Entry Lane, veh/h	1296	1368	1083	1159	808	884	809	885
Entry HV Adj Factor	0.979	0.982	0.978	0.982	0.980	1.000	0.983	0.962
Flow Entry, veh/h	338	381	191	215	148	13	8	25
Cap Entry, veh/h	1269	1343	1059	1138	792	884	796	851
V/C Ratio	0.266	0.284	0.180	0.189	0.187	0.015	0.010	0.029
Control Delay, s/veh	5.2	5.2	5.0	4.8	6.5	4.2	4.6	4.5
LOS	A	A	A	A	A	A	A	A
95th %tile Queue, veh	1	1	1	1	1	0	0	0

10: Biscayne Ave & CSAH 46

Direction	All
Future Volume (vph)	1146
Total Delay / Veh (s/v)	1
CO Emissions (kg)	2.07
NOx Emissions (kg)	0.40
VOC Emissions (kg)	0.48

20: Station Trail & CSAH 46

Direction	All
Future Volume (vph)	1093
Total Delay / Veh (s/v)	0
CO Emissions (kg)	1.81
NOx Emissions (kg)	0.35
VOC Emissions (kg)	0.42

30: Arkon Ave & CSAH 46

Direction	All
Future Volume (vph)	1099
Total Delay / Veh (s/v)	1
CO Emissions (kg)	1.86
NOx Emissions (kg)	0.36
VOC Emissions (kg)	0.43

40: Asher Ave & CSAH 46

Direction	All
Future Volume (vph)	1061
Total Delay / Veh (s/v)	0
CO Emissions (kg)	1.20
NOx Emissions (kg)	0.23
VOC Emissions (kg)	0.28

50: Barbara Ave & CSAH 46

Direction	All
Future Volume (vph)	1098
Total Delay / Veh (s/v)	0
CO Emissions (kg)	1.15
NOx Emissions (kg)	0.22
VOC Emissions (kg)	0.27

60: Blaine Ave & CSAH 46

Direction	All
Future Volume (vph)	1089
Total Delay / Veh (s/v)	1
CO Emissions (kg)	2.01
NOx Emissions (kg)	0.39
VOC Emissions (kg)	0.47

70: Clayton Ave & CSAH 46

Direction	All
Future Volume (vph)	1202
Total Delay / Veh (s/v)	1
CO Emissions (kg)	1.58
NOx Emissions (kg)	0.31
VOC Emissions (kg)	0.37

80: US 52 Southbound Ramps/Clayton Ave & CSAH 46

Direction	All
Future Volume (vph)	1378
Total Delay / Veh (s/v)	0
CO Emissions (kg)	2.13
NOx Emissions (kg)	0.41
VOC Emissions (kg)	0.49

90: US 52 Northbound Ramps/Clayton Ave & CSAH 46

Direction	All
Future Volume (vph)	1213
Total Delay / Veh (s/v)	0
CO Emissions (kg)	2.44
NOx Emissions (kg)	0.48
VOC Emissions (kg)	0.57

Regional Solicitation - CSAH 46

1	Biscayane Avenue		
	Existing Volume	1146	vehicles
	Existing Delay	2	sec/veh
	Existing Total Delay	2292	seconds
	Future Volume	1146	vehicles
	Future Delay	1	sec/veh
	Future Total Delay	1146	seconds
	Total Delay Reduction	1146	seconds

2	Station Trail		
	Existing Volume	1093	vehicles
	Existing Delay	0	sec/veh
	Existing Total Delay	0	seconds
	Future Volume	1093	vehicles
	Future Delay	0	sec/veh
	Future Total Delay	0	seconds
	Total Delay Reduction	0	seconds

3	Arkon Trail		
	Existing Volume	1099	vehicles
	Existing Delay	0	sec/veh
	Existing Total Delay	0	seconds
	Future Volume	1099	vehicles
	Future Delay	1	sec/veh
	Future Total Delay	1099	seconds
	Total Delay Reduction	-1099	seconds

4	Asher Aveune		
	Existing Volume	1061	vehicles
	Existing Delay	0	sec/veh
	Existing Total Delay	0	seconds
	Future Volume	1061	vehicles
	Future Delay	0	sec/veh
	Future Total Delay	0	seconds
	Total Delay Reduction	0	seconds

5	Barbara Avenue		
	Existing Volume	1098	vehicles
	Existing Delay	0	sec/veh
	Existing Total Delay	0	seconds
	Future Volume	1098	vehicles
	Future Delay	0	sec/veh
	Future Total Delay	0	seconds
	Total Delay Reduction	0	seconds

6	Blaine Avneue		
	Existing Volume	1090	vehicles
	Existing Delay	1	sec/veh
	Existing Total Delay	1090	seconds
	Future Volume	1090	vehicles
	Future Delay	1	sec/veh
	Future Total Delay	1090	seconds
	Total Delay Reduction	0	seconds

7	Clayton Avenue		
	Existing Volume	1202	vehicles
	Existing Delay	1	sec/veh
	Existing Total Delay	1202	seconds
	Future Volume	1202	vehicles
	Future Delay	1	sec/veh
	Future Total Delay	1202	seconds
	Total Delay Reduction	0	seconds

8	US 52 Southbound Ramps		
	Existing Volume	1378	vehicles
	Existing Delay	11	sec/veh
	Existing Total Delay	15158	seconds
	Future Volume	1378	vehicles
	Future Delay	5	sec/veh
	Future Total Delay	6890	seconds
	Total Delay Reduction	8268	seconds

9	US 52 Northbound Ramps		
	Existing Volume	1212	vehicles
	Existing Delay	5	sec/veh
	Existing Total Delay	6060	seconds
	Future Volume	1212	vehicles
	Future Delay	5	sec/veh
	Future Total Delay	6060	seconds
	Total Delay Reduction	0	seconds

Total Network Delay Reduction	**8315**	**seconds**

Emissions

Existing	1	2	3	4	5	6	7	8	9	Total
CO	2.07	1.81	1.86	1.2	1.15	2.03	1.58	1.31	1.42	14.43
NO	0.4	0.35	0.36	0.23	0.22	0.4	0.31	0.25	0.28	2.8
VOC	0.48	0.42	0.43	0.28	0.27	0.47	0.37	0.3	0.33	3.35
							Network Total			20.58

Build	1	2	3	4	5	6	7	8	9	Total
CO	2.07	1.81	1.86	1.2	1.15	2.01	1.58	2.13	2.44	16.25
NO	0.4	0.35	0.36	0.23	0.22	0.39	0.31	0.41	0.48	3.15
VOC	0.48	0.42	0.43	0.28	0.27	0.47	0.37	0.49	0.57	3.78
							Network Total			23.18

Reduction	**-2.6**

10: Biscayne Ave & CSAH 46

Direction	All
Future Volume (vph)	1146
Total Delay / Veh (s/v)	2
CO Emissions (kg)	2.07
NOx Emissions (kg)	0.40
VOC Emissions (kg)	0.48

20: Station Trail & CSAH 46

Direction	All
Future Volume (vph)	1093
Total Delay / Veh (s/v)	0
CO Emissions (kg)	1.81
NOx Emissions (kg)	0.35
VOC Emissions (kg)	0.42

30: Arkon Ave & CSAH 46

Direction	All
Future Volume (vph)	1099
Total Delay / Veh (s/v)	0
CO Emissions (kg)	1.86
NOx Emissions (kg)	0.36
VOC Emissions (kg)	0.43

40: Asher Ave & CSAH 46

Direction	All
Future Volume (vph)	1061
Total Delay / Veh (s/v)	0
CO Emissions (kg)	1.20
NOx Emissions (kg)	0.23
VOC Emissions (kg)	0.28

50: Barbara Ave & CSAH 46

Direction	All
Future Volume (vph)	1098
Total Delay / Veh (s/v)	0
CO Emissions (kg)	1.15
NOx Emissions (kg)	0.22
VOC Emissions (kg)	0.27

60: Blaine Ave & CSAH 46

Direction	All
Future Volume (vph)	1090
Total Delay / Veh (s/v)	1
CO Emissions (kg)	2.03
NOx Emissions (kg)	0.40
VOC Emissions (kg)	0.47

70: Clayton Ave & CSAH 46

Direction	All
Future Volume (vph)	1202
Total Delay / Veh (s/v)	1
CO Emissions (kg)	1.58
NOx Emissions (kg)	0.31
VOC Emissions (kg)	0.37

80: US 52 Southbound Ramps/Clayton Ave & CSAH 46

Direction	All
Future Volume (vph)	1378
Total Delay / Veh (s/v)	11
CO Emissions (kg)	1.31
NOx Emissions (kg)	0.25
VOC Emissions (kg)	0.30

90: US 52 Northbound Ramps/Clayton Ave & CSAH 46

Direction	All
Future Volume (vph)	1212
Total Delay / Veh (s/v)	5
CO Emissions (kg)	1.42
NOx Emissions (kg)	0.28
VOC Emissions (kg)	0.33

Intersection	
Intersection Delay, s/veh	5.4
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	2	2	2	2
Conflicting Circle Lanes	2	2	2	2
Adj Approach Flow, veh/h	569	422	119	388
Demand Flow Rate, veh/h	581	431	122	396
Vehicles Circulating, veh/h	191	118	443	524
Vehicles Exiting, veh/h	729	447	328	25
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	5.4	4.4	4.9	6.7
Approach LOS	A	A	A	A

Lane	Left	Right	Left	Right	Left	Right	Left	Right
Designated Moves	LT	TR	LT	TR	LT	R	LT	R
Assumed Moves	LT	TR	LT	TR	LT	R	LT	R
RT Channelized								
Lane Util	0.470	0.530	0.471	0.529	0.762	0.238	0.364	0.636
Follow-Up Headway, s	2.667	2.535	2.667	2.535	2.667	2.535	2.667	2.535
Critical Headway, s	4.645	4.328	4.645	4.328	4.645	4.328	4.645	4.328
Entry Flow, veh/h	273	308	203	228	93	29	144	252
Cap Entry Lane, veh/h	1132	1207	1211	1285	898	974	834	910
Entry HV Adj Factor	0.979	0.979	0.978	0.982	0.978	0.966	0.981	0.980
Flow Entry, veh/h	267	301	199	224	91	28	141	247
Cap Entry, veh/h	1109	1182	1185	1262	879	941	817	892
V/C Ratio	0.241	0.255	0.168	0.177	0.104	0.030	0.173	0.277
Control Delay, s/veh	5.5	5.4	4.5	4.4	5.1	4.1	6.2	7.0
LOS	A	A	A	A	A	A	A	A
95th %tile Queue, veh	1	1	1	1	0	0	1	1

Intersection	
Intersection Delay, s/veh	5.2
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	2	2	2	2
Conflicting Circle Lanes	2	2	2	2
Adj Approach Flow, veh/h	719	406	161	33
Demand Flow Rate, veh/h	733	414	164	34
Vehicles Circulating, veh/h	44	239	558	556
Vehicles Exiting, veh/h	545	483	219	97
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	5.2	4.9	6.3	4.5
Approach LOS	A	A	A	A

Lane	Left	Right	Left	Right	Left	Right	Left	Right
Designated Moves	LT	TR	LT	TR	LT	R	LT	TR
Assumed Moves	LT	TR	LT	TR	LT	R	LT	R
RT Channelized								
Lane Util	0.471	0.529	0.471	0.529	0.921	0.079	0.235	0.765
Follow-Up Headway, s	2.667	2.535	2.667	2.535	2.667	2.535	2.667	2.535
Critical Headway, s	4.645	4.328	4.645	4.328	4.645	4.328	4.645	4.328
Entry Flow, veh/h	345	388	195	219	151	13	8	26
Cap Entry Lane, veh/h	1296	1368	1083	1159	808	884	809	885
Entry HV Adj Factor	0.979	0.982	0.978	0.982	0.980	1.000	0.983	0.962
Flow Entry, veh/h	338	381	191	215	148	13	8	25
Cap Entry, veh/h	1269	1343	1059	1138	792	884	796	851
V/C Ratio	0.266	0.284	0.180	0.189	0.187	0.015	0.010	0.029
Control Delay, s/veh	5.2	5.2	5.0	4.8	6.5	4.2	4.6	4.5
LOS	A	A	A	A	A	A	A	A
95th %tile Queue, veh	1	1	1	1	1	0	0	0

10: Biscayne Ave & CSAH 46

Direction	All
Future Volume (vph)	1146
Total Delay / Veh (s/v)	1
CO Emissions (kg)	2.07
NOx Emissions (kg)	0.40
VOC Emissions (kg)	0.48

20: Station Trail & CSAH 46

Direction	All
Future Volume (vph)	1093
Total Delay / Veh (s/v)	0
CO Emissions (kg)	1.81
NOx Emissions (kg)	0.35
VOC Emissions (kg)	0.42

30: Arkon Ave & CSAH 46

Direction	All
Future Volume (vph)	1099
Total Delay / Veh (s/v)	1
CO Emissions (kg)	1.86
NOx Emissions (kg)	0.36
VOC Emissions (kg)	0.43

40: Asher Ave & CSAH 46

Direction	All
Future Volume (vph)	1061
Total Delay / Veh (s/v)	0
CO Emissions (kg)	1.20
NOx Emissions (kg)	0.23
VOC Emissions (kg)	0.28

50: Barbara Ave & CSAH 46

Direction	All
Future Volume (vph)	1098
Total Delay / Veh (s/v)	0
CO Emissions (kg)	1.15
NOx Emissions (kg)	0.22
VOC Emissions (kg)	0.27

60: Blaine Ave & CSAH 46

Direction	All
Future Volume (vph)	1089
Total Delay / Veh (s/v)	1
CO Emissions (kg)	2.01
NOx Emissions (kg)	0.39
VOC Emissions (kg)	0.47

70: Clayton Ave & CSAH 46

Direction	All
Future Volume (vph)	1202
Total Delay / Veh (s/v)	1
CO Emissions (kg)	1.58
NOx Emissions (kg)	0.31
VOC Emissions (kg)	0.37

80: US 52 Southbound Ramps/Clayton Ave & CSAH 46

Direction	All
Future Volume (vph)	1378
Total Delay / Veh (s/v)	0
CO Emissions (kg)	2.13
NOx Emissions (kg)	0.41
VOC Emissions (kg)	0.49

90: US 52 Northbound Ramps/Clayton Ave & CSAH 46

Direction	All
Future Volume (vph)	1213
Total Delay / Veh (s/v)	0
CO Emissions (kg)	2.44
NOx Emissions (kg)	0.48
VOC Emissions (kg)	0.57

Regional Solicitation - CSAH 46

1	Biscayane Avenue		
	Existing Volume	1146	vehicles
	Existing Delay	2	sec/veh
	Existing Total Delay	2292	seconds
	Future Volume	1146	vehicles
	Future Delay	1	sec/veh
	Future Total Delay	1146	seconds
	Total Delay Reduction	1146	seconds

2	Station Trail		
	Existing Volume	1093	vehicles
	Existing Delay	0	sec/veh
	Existing Total Delay	0	seconds
	Future Volume	1093	vehicles
	Future Delay	0	sec/veh
	Future Total Delay	0	seconds
	Total Delay Reduction	0	seconds

3	Arkon Trail		
	Existing Volume	1099	vehicles
	Existing Delay	0	sec/veh
	Existing Total Delay	0	seconds
	Future Volume	1099	vehicles
	Future Delay	1	sec/veh
	Future Total Delay	1099	seconds
	Total Delay Reduction	-1099	seconds

4	Asher Aveune		
	Existing Volume	1061	vehicles
	Existing Delay	0	sec/veh
	Existing Total Delay	0	seconds
	Future Volume	1061	vehicles
	Future Delay	0	sec/veh
	Future Total Delay	0	seconds
	Total Delay Reduction	0	seconds

5	Barbara Avenue		
	Existing Volume	1098	vehicles
	Existing Delay	0	sec/veh
	Existing Total Delay	0	seconds
	Future Volume	1098	vehicles
	Future Delay	0	sec/veh
	Future Total Delay	0	seconds
	Total Delay Reduction	0	seconds

6	Blaine Avneue		
	Existing Volume	1090	vehicles
	Existing Delay	1	sec/veh
	Existing Total Delay	1090	seconds
	Future Volume	1090	vehicles
	Future Delay	1	sec/veh
	Future Total Delay	1090	seconds
	Total Delay Reduction	0	seconds

7	Clayton Avenue		
	Existing Volume	1202	vehicles
	Existing Delay	1	sec/veh
	Existing Total Delay	1202	seconds
	Future Volume	1202	vehicles
	Future Delay	1	sec/veh
	Future Total Delay	1202	seconds
	Total Delay Reduction	0	seconds

8	US 52 Southbound Ramps		
	Existing Volume	1378	vehicles
	Existing Delay	11	sec/veh
	Existing Total Delay	15158	seconds
	Future Volume	1378	vehicles
	Future Delay	5	sec/veh
	Future Total Delay	6890	seconds
	Total Delay Reduction	8268	seconds

9	US 52 Northbound Ramps		
	Existing Volume	1212	vehicles
	Existing Delay	5	sec/veh
	Existing Total Delay	6060	seconds
	Future Volume	1212	vehicles
	Future Delay	5	sec/veh
	Future Total Delay	6060	seconds
	Total Delay Reduction	0	seconds

Total Network Delay Reduction	**8315**	**seconds**

Emissions

Existing	1	2	3	4	5	6	7	8	9	Total
CO	2.07	1.81	1.86	1.2	1.15	2.03	1.58	1.31	1.42	14.43
NO	0.4	0.35	0.36	0.23	0.22	0.4	0.31	0.25	0.28	2.8
VOC	0.48	0.42	0.43	0.28	0.27	0.47	0.37	0.3	0.33	3.35
							Network Total			20.58

Build	1	2	3	4	5	6	7	8	9	Total
CO	2.07	1.81	1.86	1.2	1.15	2.01	1.58	2.13	2.44	16.25
NO	0.4	0.35	0.36	0.23	0.22	0.39	0.31	0.41	0.48	3.15
VOC	0.48	0.42	0.43	0.28	0.27	0.47	0.37	0.49	0.57	3.78
							Network Total			23.18

Reduction	**-2.6**

10: Biscayne Ave & CSAH 46

Direction	All
Future Volume (vph)	1146
Total Delay / Veh (s/v)	2
CO Emissions (kg)	2.07
NOx Emissions (kg)	0.40
VOC Emissions (kg)	0.48

20: Station Trail & CSAH 46

Direction	All
Future Volume (vph)	1093
Total Delay / Veh (s/v)	0
CO Emissions (kg)	1.81
NOx Emissions (kg)	0.35
VOC Emissions (kg)	0.42

30: Arkon Ave & CSAH 46

Direction	All
Future Volume (vph)	1099
Total Delay / Veh (s/v)	0
CO Emissions (kg)	1.86
NOx Emissions (kg)	0.36
VOC Emissions (kg)	0.43

40: Asher Ave & CSAH 46

Direction	All
Future Volume (vph)	1061
Total Delay / Veh (s/v)	0
CO Emissions (kg)	1.20
NOx Emissions (kg)	0.23
VOC Emissions (kg)	0.28

50: Barbara Ave & CSAH 46

Direction	All
Future Volume (vph)	1098
Total Delay / Veh (s/v)	0
CO Emissions (kg)	1.15
NOx Emissions (kg)	0.22
VOC Emissions (kg)	0.27

60: Blaine Ave & CSAH 46

Direction	All
Future Volume (vph)	1090
Total Delay / Veh (s/v)	1
CO Emissions (kg)	2.03
NOx Emissions (kg)	0.40
VOC Emissions (kg)	0.47

70: Clayton Ave & CSAH 46

Direction	All
Future Volume (vph)	1202
Total Delay / Veh (s/v)	1
CO Emissions (kg)	1.58
NOx Emissions (kg)	0.31
VOC Emissions (kg)	0.37

80: US 52 Southbound Ramps/Clayton Ave & CSAH 46

Direction	All
Future Volume (vph)	1378
Total Delay / Veh (s/v)	11
CO Emissions (kg)	1.31
NOx Emissions (kg)	0.25
VOC Emissions (kg)	0.30

90: US 52 Northbound Ramps/Clayton Ave & CSAH 46

Direction	All
Future Volume (vph)	1212
Total Delay / Veh (s/v)	5
CO Emissions (kg)	1.42
NOx Emissions (kg)	0.28
VOC Emissions (kg)	0.33

Intersection	
Intersection Delay, s/veh	5.4
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	2	2	2	2
Conflicting Circle Lanes	2	2	2	2
Adj Approach Flow, veh/h	569	422	119	388
Demand Flow Rate, veh/h	581	431	122	396
Vehicles Circulating, veh/h	191	118	443	524
Vehicles Exiting, veh/h	729	447	328	25
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	5.4	4.4	4.9	6.7
Approach LOS	A	A	A	A

Lane	Left	Right	Left	Right	Left	Right	Left	Right
Designated Moves	LT	TR	LT	TR	LT	R	LT	R
Assumed Moves	LT	TR	LT	TR	LT	R	LT	R
RT Channelized								
Lane Util	0.470	0.530	0.471	0.529	0.762	0.238	0.364	0.636
Follow-Up Headway, s	2.667	2.535	2.667	2.535	2.667	2.535	2.667	2.535
Critical Headway, s	4.645	4.328	4.645	4.328	4.645	4.328	4.645	4.328
Entry Flow, veh/h	273	308	203	228	93	29	144	252
Cap Entry Lane, veh/h	1132	1207	1211	1285	898	974	834	910
Entry HV Adj Factor	0.979	0.979	0.978	0.982	0.978	0.966	0.981	0.980
Flow Entry, veh/h	267	301	199	224	91	28	141	247
Cap Entry, veh/h	1109	1182	1185	1262	879	941	817	892
V/C Ratio	0.241	0.255	0.168	0.177	0.104	0.030	0.173	0.277
Control Delay, s/veh	5.5	5.4	4.5	4.4	5.1	4.1	6.2	7.0
LOS	A	A	A	A	A	A	A	A
95th %tile Queue, veh	1	1	1	1	0	0	1	1

Intersection	
Intersection Delay, s/veh	5.2
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	2	2	2	2
Conflicting Circle Lanes	2	2	2	2
Adj Approach Flow, veh/h	719	406	161	33
Demand Flow Rate, veh/h	733	414	164	34
Vehicles Circulating, veh/h	44	239	558	556
Vehicles Exiting, veh/h	545	483	219	97
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	5.2	4.9	6.3	4.5
Approach LOS	A	A	A	A

Lane	Left	Right	Left	Right	Left	Right	Left	Right
Designated Moves	LT	TR	LT	TR	LT	R	LT	TR
Assumed Moves	LT	TR	LT	TR	LT	R	LT	R
RT Channelized								
Lane Util	0.471	0.529	0.471	0.529	0.921	0.079	0.235	0.765
Follow-Up Headway, s	2.667	2.535	2.667	2.535	2.667	2.535	2.667	2.535
Critical Headway, s	4.645	4.328	4.645	4.328	4.645	4.328	4.645	4.328
Entry Flow, veh/h	345	388	195	219	151	13	8	26
Cap Entry Lane, veh/h	1296	1368	1083	1159	808	884	809	885
Entry HV Adj Factor	0.979	0.982	0.978	0.982	0.980	1.000	0.983	0.962
Flow Entry, veh/h	338	381	191	215	148	13	8	25
Cap Entry, veh/h	1269	1343	1059	1138	792	884	796	851
V/C Ratio	0.266	0.284	0.180	0.189	0.187	0.015	0.010	0.029
Control Delay, s/veh	5.2	5.2	5.0	4.8	6.5	4.2	4.6	4.5
LOS	A	A	A	A	A	A	A	A
95th %tile Queue, veh	1	1	1	1	1	0	0	0

10: Biscayne Ave & CSAH 46

Direction	All
Future Volume (vph)	1146
Total Delay / Veh (s/v)	1
CO Emissions (kg)	2.07
NOx Emissions (kg)	0.40
VOC Emissions (kg)	0.48

20: Station Trail & CSAH 46

Direction	All
Future Volume (vph)	1093
Total Delay / Veh (s/v)	0
CO Emissions (kg)	1.81
NOx Emissions (kg)	0.35
VOC Emissions (kg)	0.42

30: Arkon Ave & CSAH 46

Direction	All
Future Volume (vph)	1099
Total Delay / Veh (s/v)	1
CO Emissions (kg)	1.86
NOx Emissions (kg)	0.36
VOC Emissions (kg)	0.43

40: Asher Ave & CSAH 46

Direction	All
Future Volume (vph)	1061
Total Delay / Veh (s/v)	0
CO Emissions (kg)	1.20
NOx Emissions (kg)	0.23
VOC Emissions (kg)	0.28

50: Barbara Ave & CSAH 46

Direction	All
Future Volume (vph)	1098
Total Delay / Veh (s/v)	0
CO Emissions (kg)	1.15
NOx Emissions (kg)	0.22
VOC Emissions (kg)	0.27

60: Blaine Ave & CSAH 46

Direction	All
Future Volume (vph)	1089
Total Delay / Veh (s/v)	1
CO Emissions (kg)	2.01
NOx Emissions (kg)	0.39
VOC Emissions (kg)	0.47

70: Clayton Ave & CSAH 46

Direction	All
Future Volume (vph)	1202
Total Delay / Veh (s/v)	1
CO Emissions (kg)	1.58
NOx Emissions (kg)	0.31
VOC Emissions (kg)	0.37

80: US 52 Southbound Ramps/Clayton Ave & CSAH 46

Direction	All
Future Volume (vph)	1378
Total Delay / Veh (s/v)	0
CO Emissions (kg)	2.13
NOx Emissions (kg)	0.41
VOC Emissions (kg)	0.49

90: US 52 Northbound Ramps/Clayton Ave & CSAH 46

Direction	All
Future Volume (vph)	1213
Total Delay / Veh (s/v)	0
CO Emissions (kg)	2.44
NOx Emissions (kg)	0.48
VOC Emissions (kg)	0.57

Regional Solicitation - CSAH 46

1	Biscayane Avenue		
	Existing Volume	1146	vehicles
	Existing Delay	2	sec/veh
	Existing Total Delay	2292	seconds
	Future Volume	1146	vehicles
	Future Delay	1	sec/veh
	Future Total Delay	1146	seconds
	Total Delay Reduction	1146	seconds

2	Station Trail		
	Existing Volume	1093	vehicles
	Existing Delay	0	sec/veh
	Existing Total Delay	0	seconds
	Future Volume	1093	vehicles
	Future Delay	0	sec/veh
	Future Total Delay	0	seconds
	Total Delay Reduction	0	seconds

3	Arkon Trail		
	Existing Volume	1099	vehicles
	Existing Delay	0	sec/veh
	Existing Total Delay	0	seconds
	Future Volume	1099	vehicles
	Future Delay	1	sec/veh
	Future Total Delay	1099	seconds
	Total Delay Reduction	-1099	seconds

4	Asher Aveune		
	Existing Volume	1061	vehicles
	Existing Delay	0	sec/veh
	Existing Total Delay	0	seconds
	Future Volume	1061	vehicles
	Future Delay	0	sec/veh
	Future Total Delay	0	seconds
	Total Delay Reduction	0	seconds

5	Barbara Avenue		
	Existing Volume	1098	vehicles
	Existing Delay	0	sec/veh
	Existing Total Delay	0	seconds
	Future Volume	1098	vehicles
	Future Delay	0	sec/veh
	Future Total Delay	0	seconds
	Total Delay Reduction	0	seconds

6	Blaine Avneue		
	Existing Volume	1090	vehicles
	Existing Delay	1	sec/veh
	Existing Total Delay	1090	seconds
	Future Volume	1090	vehicles
	Future Delay	1	sec/veh
	Future Total Delay	1090	seconds
	Total Delay Reduction	0	seconds

7	Clayton Avenue		
	Existing Volume	1202	vehicles
	Existing Delay	1	sec/veh
	Existing Total Delay	1202	seconds
	Future Volume	1202	vehicles
	Future Delay	1	sec/veh
	Future Total Delay	1202	seconds
	Total Delay Reduction	0	seconds

8	US 52 Southbound Ramps		
	Existing Volume	1378	vehicles
	Existing Delay	11	sec/veh
	Existing Total Delay	15158	seconds
	Future Volume	1378	vehicles
	Future Delay	5	sec/veh
	Future Total Delay	6890	seconds
	Total Delay Reduction	8268	seconds

9	US 52 Northbound Ramps		
	Existing Volume	1212	vehicles
	Existing Delay	5	sec/veh
	Existing Total Delay	6060	seconds
	Future Volume	1212	vehicles
	Future Delay	5	sec/veh
	Future Total Delay	6060	seconds
	Total Delay Reduction	0	seconds

Total Network Delay Reduction	**8315**	**seconds**

Emissions

Existing	1	2	3	4	5	6	7	8	9	Total
CO	2.07	1.81	1.86	1.2	1.15	2.03	1.58	1.31	1.42	14.43
NO	0.4	0.35	0.36	0.23	0.22	0.4	0.31	0.25	0.28	2.8
VOC	0.48	0.42	0.43	0.28	0.27	0.47	0.37	0.3	0.33	3.35
							Network Total			20.58

Build	1	2	3	4	5	6	7	8	9	Total
CO	2.07	1.81	1.86	1.2	1.15	2.01	1.58	2.13	2.44	16.25
NO	0.4	0.35	0.36	0.23	0.22	0.39	0.31	0.41	0.48	3.15
VOC	0.48	0.42	0.43	0.28	0.27	0.47	0.37	0.49	0.57	3.78
							Network Total			23.18

Reduction	**-2.6**

10: Biscayne Ave & CSAH 46

Direction	All
Future Volume (vph)	1146
Total Delay / Veh (s/v)	2
CO Emissions (kg)	2.07
NOx Emissions (kg)	0.40
VOC Emissions (kg)	0.48

20: Station Trail & CSAH 46

Direction	All
Future Volume (vph)	1093
Total Delay / Veh (s/v)	0
CO Emissions (kg)	1.81
NOx Emissions (kg)	0.35
VOC Emissions (kg)	0.42

30: Arkon Ave & CSAH 46

Direction	All
Future Volume (vph)	1099
Total Delay / Veh (s/v)	0
CO Emissions (kg)	1.86
NOx Emissions (kg)	0.36
VOC Emissions (kg)	0.43

40: Asher Ave & CSAH 46

Direction	All
Future Volume (vph)	1061
Total Delay / Veh (s/v)	0
CO Emissions (kg)	1.20
NOx Emissions (kg)	0.23
VOC Emissions (kg)	0.28

50: Barbara Ave & CSAH 46

Direction	All
Future Volume (vph)	1098
Total Delay / Veh (s/v)	0
CO Emissions (kg)	1.15
NOx Emissions (kg)	0.22
VOC Emissions (kg)	0.27

60: Blaine Ave & CSAH 46

Direction	All
Future Volume (vph)	1090
Total Delay / Veh (s/v)	1
CO Emissions (kg)	2.03
NOx Emissions (kg)	0.40
VOC Emissions (kg)	0.47

70: Clayton Ave & CSAH 46

Direction	All
Future Volume (vph)	1202
Total Delay / Veh (s/v)	1
CO Emissions (kg)	1.58
NOx Emissions (kg)	0.31
VOC Emissions (kg)	0.37

80: US 52 Southbound Ramps/Clayton Ave & CSAH 46

Direction	All
Future Volume (vph)	1378
Total Delay / Veh (s/v)	11
CO Emissions (kg)	1.31
NOx Emissions (kg)	0.25
VOC Emissions (kg)	0.30

90: US 52 Northbound Ramps/Clayton Ave & CSAH 46

Direction	All
Future Volume (vph)	1212
Total Delay / Veh (s/v)	5
CO Emissions (kg)	1.42
NOx Emissions (kg)	0.28
VOC Emissions (kg)	0.33

Intersection	
Intersection Delay, s/veh	5.4
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	2	2	2	2
Conflicting Circle Lanes	2	2	2	2
Adj Approach Flow, veh/h	569	422	119	388
Demand Flow Rate, veh/h	581	431	122	396
Vehicles Circulating, veh/h	191	118	443	524
Vehicles Exiting, veh/h	729	447	328	25
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	5.4	4.4	4.9	6.7
Approach LOS	A	A	A	A

Lane	Left	Right	Left	Right	Left	Right	Left	Right
Designated Moves	LT	TR	LT	TR	LT	R	LT	R
Assumed Moves	LT	TR	LT	TR	LT	R	LT	R
RT Channelized								
Lane Util	0.470	0.530	0.471	0.529	0.762	0.238	0.364	0.636
Follow-Up Headway, s	2.667	2.535	2.667	2.535	2.667	2.535	2.667	2.535
Critical Headway, s	4.645	4.328	4.645	4.328	4.645	4.328	4.645	4.328
Entry Flow, veh/h	273	308	203	228	93	29	144	252
Cap Entry Lane, veh/h	1132	1207	1211	1285	898	974	834	910
Entry HV Adj Factor	0.979	0.979	0.978	0.982	0.978	0.966	0.981	0.980
Flow Entry, veh/h	267	301	199	224	91	28	141	247
Cap Entry, veh/h	1109	1182	1185	1262	879	941	817	892
V/C Ratio	0.241	0.255	0.168	0.177	0.104	0.030	0.173	0.277
Control Delay, s/veh	5.5	5.4	4.5	4.4	5.1	4.1	6.2	7.0
LOS	A	A	A	A	A	A	A	A
95th %tile Queue, veh	1	1	1	1	0	0	1	1

Intersection	
Intersection Delay, s/veh	5.2
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	2	2	2	2
Conflicting Circle Lanes	2	2	2	2
Adj Approach Flow, veh/h	719	406	161	33
Demand Flow Rate, veh/h	733	414	164	34
Vehicles Circulating, veh/h	44	239	558	556
Vehicles Exiting, veh/h	545	483	219	97
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	5.2	4.9	6.3	4.5
Approach LOS	A	A	A	A

Lane	Left	Right	Left	Right	Left	Right	Left	Right
Designated Moves	LT	TR	LT	TR	LT	R	LT	TR
Assumed Moves	LT	TR	LT	TR	LT	R	LT	R
RT Channelized								
Lane Util	0.471	0.529	0.471	0.529	0.921	0.079	0.235	0.765
Follow-Up Headway, s	2.667	2.535	2.667	2.535	2.667	2.535	2.667	2.535
Critical Headway, s	4.645	4.328	4.645	4.328	4.645	4.328	4.645	4.328
Entry Flow, veh/h	345	388	195	219	151	13	8	26
Cap Entry Lane, veh/h	1296	1368	1083	1159	808	884	809	885
Entry HV Adj Factor	0.979	0.982	0.978	0.982	0.980	1.000	0.983	0.962
Flow Entry, veh/h	338	381	191	215	148	13	8	25
Cap Entry, veh/h	1269	1343	1059	1138	792	884	796	851
V/C Ratio	0.266	0.284	0.180	0.189	0.187	0.015	0.010	0.029
Control Delay, s/veh	5.2	5.2	5.0	4.8	6.5	4.2	4.6	4.5
LOS	A	A	A	A	A	A	A	A
95th %tile Queue, veh	1	1	1	1	1	0	0	0

10: Biscayne Ave & CSAH 46

Direction	All
Future Volume (vph)	1146
Total Delay / Veh (s/v)	1
CO Emissions (kg)	2.07
NOx Emissions (kg)	0.40
VOC Emissions (kg)	0.48

20: Station Trail & CSAH 46

Direction	All
Future Volume (vph)	1093
Total Delay / Veh (s/v)	0
CO Emissions (kg)	1.81
NOx Emissions (kg)	0.35
VOC Emissions (kg)	0.42

30: Arkon Ave & CSAH 46

Direction	All
Future Volume (vph)	1099
Total Delay / Veh (s/v)	1
CO Emissions (kg)	1.86
NOx Emissions (kg)	0.36
VOC Emissions (kg)	0.43

40: Asher Ave & CSAH 46

Direction	All
Future Volume (vph)	1061
Total Delay / Veh (s/v)	0
CO Emissions (kg)	1.20
NOx Emissions (kg)	0.23
VOC Emissions (kg)	0.28

50: Barbara Ave & CSAH 46

Direction	All
Future Volume (vph)	1098
Total Delay / Veh (s/v)	0
CO Emissions (kg)	1.15
NOx Emissions (kg)	0.22
VOC Emissions (kg)	0.27

60: Blaine Ave & CSAH 46

Direction	All
Future Volume (vph)	1089
Total Delay / Veh (s/v)	1
CO Emissions (kg)	2.01
NOx Emissions (kg)	0.39
VOC Emissions (kg)	0.47

70: Clayton Ave & CSAH 46

Direction	All
Future Volume (vph)	1202
Total Delay / Veh (s/v)	1
CO Emissions (kg)	1.58
NOx Emissions (kg)	0.31
VOC Emissions (kg)	0.37

80: US 52 Southbound Ramps/Clayton Ave & CSAH 46

Direction	All
Future Volume (vph)	1378
Total Delay / Veh (s/v)	0
CO Emissions (kg)	2.13
NOx Emissions (kg)	0.41
VOC Emissions (kg)	0.49

90: US 52 Northbound Ramps/Clayton Ave & CSAH 46

Direction	All
Future Volume (vph)	1213
Total Delay / Veh (s/v)	0
CO Emissions (kg)	2.44
NOx Emissions (kg)	0.48
VOC Emissions (kg)	0.57

Regional Solicitation - CSAH 46

1

Biscayane Avenue		
Existing Volume	1146	vehicles
Existing Delay	2	sec/veh
Existing Total Delay	2292	seconds
Future Volume	1146	vehicles
Future Delay	1	sec/veh
Future Total Delay	1146	seconds
Total Delay Reduction	1146	seconds

2

Station Trail		
Existing Volume	1093	vehicles
Existing Delay	0	sec/veh
Existing Total Delay	0	seconds
Future Volume	1093	vehicles
Future Delay	0	sec/veh
Future Total Delay	0	seconds
Total Delay Reduction	0	seconds

3

Arkon Trail		
Existing Volume	1099	vehicles
Existing Delay	0	sec/veh
Existing Total Delay	0	seconds
Future Volume	1099	vehicles
Future Delay	1	sec/veh
Future Total Delay	1099	seconds
Total Delay Reduction	-1099	seconds

4

Asher Aveune		
Existing Volume	1061	vehicles
Existing Delay	0	sec/veh
Existing Total Delay	0	seconds
Future Volume	1061	vehicles
Future Delay	0	sec/veh
Future Total Delay	0	seconds
Total Delay Reduction	0	seconds

5

Barbara Avenue		
Existing Volume	1098	vehicles
Existing Delay	0	sec/veh
Existing Total Delay	0	seconds
Future Volume	1098	vehicles
Future Delay	0	sec/veh
Future Total Delay	0	seconds
Total Delay Reduction	0	seconds

6

Blaine Avneue		
Existing Volume	1090	vehicles
Existing Delay	1	sec/veh
Existing Total Delay	1090	seconds
Future Volume	1090	vehicles
Future Delay	1	sec/veh
Future Total Delay	1090	seconds
Total Delay Reduction	0	seconds

7

Clayton Avenue		
Existing Volume	1202	vehicles
Existing Delay	1	sec/veh
Existing Total Delay	1202	seconds
Future Volume	1202	vehicles
Future Delay	1	sec/veh
Future Total Delay	1202	seconds
Total Delay Reduction	0	seconds

8

US 52 Southbound Ramps		
Existing Volume	1378	vehicles
Existing Delay	11	sec/veh
Existing Total Delay	15158	seconds
Future Volume	1378	vehicles
Future Delay	5	sec/veh
Future Total Delay	6890	seconds
Total Delay Reduction	8268	seconds

9

US 52 Northbound Ramps		
Existing Volume	1212	vehicles
Existing Delay	5	sec/veh
Existing Total Delay	6060	seconds
Future Volume	1212	vehicles
Future Delay	5	sec/veh
Future Total Delay	6060	seconds
Total Delay Reduction	0	seconds

Total Network Delay Reduction	**8315**	**seconds**

Emissions

Existing	1	2	3	4	5	6	7	8	9	Total
CO	2.07	1.81	1.86	1.2	1.15	2.03	1.58	1.31	1.42	14.43
NO	0.4	0.35	0.36	0.23	0.22	0.4	0.31	0.25	0.28	2.8
VOC	0.48	0.42	0.43	0.28	0.27	0.47	0.37	0.3	0.33	3.35
							Network Total			20.58

Build	1	2	3	4	5	6	7	8	9	Total
CO	2.07	1.81	1.86	1.2	1.15	2.01	1.58	2.13	2.44	16.25
NO	0.4	0.35	0.36	0.23	0.22	0.39	0.31	0.41	0.48	3.15
VOC	0.48	0.42	0.43	0.28	0.27	0.47	0.37	0.49	0.57	3.78
							Network Total			23.18

Reduction	**-2.6**

10: Biscayne Ave & CSAH 46

Direction	All
Future Volume (vph)	1146
Total Delay / Veh (s/v)	2
CO Emissions (kg)	2.07
NOx Emissions (kg)	0.40
VOC Emissions (kg)	0.48

20: Station Trail & CSAH 46

Direction	All
Future Volume (vph)	1093
Total Delay / Veh (s/v)	0
CO Emissions (kg)	1.81
NOx Emissions (kg)	0.35
VOC Emissions (kg)	0.42

30: Arkon Ave & CSAH 46

Direction	All
Future Volume (vph)	1099
Total Delay / Veh (s/v)	0
CO Emissions (kg)	1.86
NOx Emissions (kg)	0.36
VOC Emissions (kg)	0.43

40: Asher Ave & CSAH 46

Direction	All
Future Volume (vph)	1061
Total Delay / Veh (s/v)	0
CO Emissions (kg)	1.20
NOx Emissions (kg)	0.23
VOC Emissions (kg)	0.28

50: Barbara Ave & CSAH 46

Direction	All
Future Volume (vph)	1098
Total Delay / Veh (s/v)	0
CO Emissions (kg)	1.15
NOx Emissions (kg)	0.22
VOC Emissions (kg)	0.27

60: Blaine Ave & CSAH 46

Direction	All
Future Volume (vph)	1090
Total Delay / Veh (s/v)	1
CO Emissions (kg)	2.03
NOx Emissions (kg)	0.40
VOC Emissions (kg)	0.47

70: Clayton Ave & CSAH 46

Direction	All
Future Volume (vph)	1202
Total Delay / Veh (s/v)	1
CO Emissions (kg)	1.58
NOx Emissions (kg)	0.31
VOC Emissions (kg)	0.37

80: US 52 Southbound Ramps/Clayton Ave & CSAH 46

Direction	All
Future Volume (vph)	1378
Total Delay / Veh (s/v)	11
CO Emissions (kg)	1.31
NOx Emissions (kg)	0.25
VOC Emissions (kg)	0.30

90: US 52 Northbound Ramps/Clayton Ave & CSAH 46

Direction	All
Future Volume (vph)	1212
Total Delay / Veh (s/v)	5
CO Emissions (kg)	1.42
NOx Emissions (kg)	0.28
VOC Emissions (kg)	0.33

Intersection	
Intersection Delay, s/veh	5.4
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	2	2	2	2
Conflicting Circle Lanes	2	2	2	2
Adj Approach Flow, veh/h	569	422	119	388
Demand Flow Rate, veh/h	581	431	122	396
Vehicles Circulating, veh/h	191	118	443	524
Vehicles Exiting, veh/h	729	447	328	25
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	5.4	4.4	4.9	6.7
Approach LOS	A	A	A	A

Lane	Left	Right	Left	Right	Left	Right	Left	Right
Designated Moves	LT	TR	LT	TR	LT	R	LT	R
Assumed Moves	LT	TR	LT	TR	LT	R	LT	R
RT Channelized								
Lane Util	0.470	0.530	0.471	0.529	0.762	0.238	0.364	0.636
Follow-Up Headway, s	2.667	2.535	2.667	2.535	2.667	2.535	2.667	2.535
Critical Headway, s	4.645	4.328	4.645	4.328	4.645	4.328	4.645	4.328
Entry Flow, veh/h	273	308	203	228	93	29	144	252
Cap Entry Lane, veh/h	1132	1207	1211	1285	898	974	834	910
Entry HV Adj Factor	0.979	0.979	0.978	0.982	0.978	0.966	0.981	0.980
Flow Entry, veh/h	267	301	199	224	91	28	141	247
Cap Entry, veh/h	1109	1182	1185	1262	879	941	817	892
V/C Ratio	0.241	0.255	0.168	0.177	0.104	0.030	0.173	0.277
Control Delay, s/veh	5.5	5.4	4.5	4.4	5.1	4.1	6.2	7.0
LOS	A	A	A	A	A	A	A	A
95th %tile Queue, veh	1	1	1	1	0	0	1	1

Intersection	
Intersection Delay, s/veh	5.2
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	2	2	2	2
Conflicting Circle Lanes	2	2	2	2
Adj Approach Flow, veh/h	719	406	161	33
Demand Flow Rate, veh/h	733	414	164	34
Vehicles Circulating, veh/h	44	239	558	556
Vehicles Exiting, veh/h	545	483	219	97
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	5.2	4.9	6.3	4.5
Approach LOS	A	A	A	A

Lane	Left	Right	Left	Right	Left	Right	Left	Right
Designated Moves	LT	TR	LT	TR	LT	R	LT	TR
Assumed Moves	LT	TR	LT	TR	LT	R	LT	R
RT Channelized								
Lane Util	0.471	0.529	0.471	0.529	0.921	0.079	0.235	0.765
Follow-Up Headway, s	2.667	2.535	2.667	2.535	2.667	2.535	2.667	2.535
Critical Headway, s	4.645	4.328	4.645	4.328	4.645	4.328	4.645	4.328
Entry Flow, veh/h	345	388	195	219	151	13	8	26
Cap Entry Lane, veh/h	1296	1368	1083	1159	808	884	809	885
Entry HV Adj Factor	0.979	0.982	0.978	0.982	0.980	1.000	0.983	0.962
Flow Entry, veh/h	338	381	191	215	148	13	8	25
Cap Entry, veh/h	1269	1343	1059	1138	792	884	796	851
V/C Ratio	0.266	0.284	0.180	0.189	0.187	0.015	0.010	0.029
Control Delay, s/veh	5.2	5.2	5.0	4.8	6.5	4.2	4.6	4.5
LOS	A	A	A	A	A	A	A	A
95th %tile Queue, veh	1	1	1	1	1	0	0	0

10: Biscayne Ave & CSAH 46

Direction	All
Future Volume (vph)	1146
Total Delay / Veh (s/v)	1
CO Emissions (kg)	2.07
NOx Emissions (kg)	0.40
VOC Emissions (kg)	0.48

20: Station Trail & CSAH 46

Direction	All
Future Volume (vph)	1093
Total Delay / Veh (s/v)	0
CO Emissions (kg)	1.81
NOx Emissions (kg)	0.35
VOC Emissions (kg)	0.42

30: Arkon Ave & CSAH 46

Direction	All
Future Volume (vph)	1099
Total Delay / Veh (s/v)	1
CO Emissions (kg)	1.86
NOx Emissions (kg)	0.36
VOC Emissions (kg)	0.43

40: Asher Ave & CSAH 46

Direction	All
Future Volume (vph)	1061
Total Delay / Veh (s/v)	0
CO Emissions (kg)	1.20
NOx Emissions (kg)	0.23
VOC Emissions (kg)	0.28

50: Barbara Ave & CSAH 46

Direction	All
Future Volume (vph)	1098
Total Delay / Veh (s/v)	0
CO Emissions (kg)	1.15
NOx Emissions (kg)	0.22
VOC Emissions (kg)	0.27

60: Blaine Ave & CSAH 46

Direction	All
Future Volume (vph)	1089
Total Delay / Veh (s/v)	1
CO Emissions (kg)	2.01
NOx Emissions (kg)	0.39
VOC Emissions (kg)	0.47

70: Clayton Ave & CSAH 46

Direction	All
Future Volume (vph)	1202
Total Delay / Veh (s/v)	1
CO Emissions (kg)	1.58
NOx Emissions (kg)	0.31
VOC Emissions (kg)	0.37

80: US 52 Southbound Ramps/Clayton Ave & CSAH 46

Direction	All
Future Volume (vph)	1378
Total Delay / Veh (s/v)	0
CO Emissions (kg)	2.13
NOx Emissions (kg)	0.41
VOC Emissions (kg)	0.49

90: US 52 Northbound Ramps/Clayton Ave & CSAH 46

Direction	All
Future Volume (vph)	1213
Total Delay / Veh (s/v)	0
CO Emissions (kg)	2.44
NOx Emissions (kg)	0.48
VOC Emissions (kg)	0.57

Traffic Safety Benefit-Cost Calculation

Highway Safety Improvement Program (HSIP) Reactive Project

DEPARTMENT OF TRANSPORTATION

A. Roadway Description

Route CSAH 46 **District** **County** Dakota

Begin RP **End RP** **Miles**

Location CSAH 46 Segment (TH 3 to US 52)

B. Project Description

Proposed Work Convert to 4-Lane Divided Roadway

Project Cost* $41,600,000 **Installation Year** 2026

Project Service Life 20 years **Traffic Growth Factor** 2.0%

** exclude Right of Way from Project Cost*

C. Crash Modification Factor

0.25	**Fatal (K) Crashes**	**Reference** Crash Clearinghouse
0.25	**Serious Injury (A) Crashes**	
0.25	**Moderate Injury (B) Crashes**	**Crash Type** KA
0.25	**Possible Injury (C) Crashes**	
0.25	**Property Damage Only Crashes**	www.CMFclearinghouse.org

D. Crash Modification Factor (optional second CMF)

0.34	**Fatal (K) Crashes**	**Reference** Crash Clearinghouse
0.34	**Serious Injury (A) Crashes**	
0.34	**Moderate Injury (B) Crashes**	**Crash Type** All
0.34	**Possible Injury (C) Crashes**	
0.34	**Property Damage Only Crashes**	www.CMFclearinghouse.org

E. Crash Data

Begin Date 1/1/2020 **End Date** 12/31/2022 3 years

Data Source MnDOT

Crash Severity	KA	All
K crashes	1	
A crashes	3	
B crashes		8
C crashes		7
PDO crashes		31

F. Benefit-Cost Calculation

$39,418,365	**Benefit (present value)**
$41,600,000	**Cost**

B/C Ratio = 0.95

Proposed project expected to reduce 12 crashes annually, 1 of which involving fatality or serious injury.

F. Analysis Assumptions

Crash Severity	Crash Cost
K crashes	$1,600,000
A crashes	$800,000
B crashes	$250,000
C crashes	$130,000
PDO crashes	$15,000

Link: mndot.gov/planning/program/appendix_a.html

Real Discount Rate 0.7%
Traffic Growth Rate 2.0%
Project Service Life 20 years

G. Annual Benefit

Crash Severity	Crash Reduction	Annual Reduction	Annual Benefit
K crashes	0.75	0.25	$399,467
A crashes	2.25	0.75	$599,200
B crashes	5.27	1.76	$439,333
C crashes	4.61	1.54	$199,897
PDO crashes	20.43	6.81	$102,145
			$1,740,042

H. Amortized Benefit

Total = $39,418,365

Year	Crash Benefits	Present Value
2026	$1,740,042	$1,740,042
2027	$1,774,843	$1,762,505
2028	$1,810,339	$1,785,258
2029	$1,846,546	$1,808,305
2030	$1,883,477	$1,831,650
2031	$1,921,147	$1,855,296
2032	$1,959,570	$1,879,247
2033	$1,998,761	$1,903,507
2034	$2,038,736	$1,928,081
2035	$2,079,511	$1,952,972
2036	$2,121,101	$1,978,184
2037	$2,163,523	$2,003,722
2038	$2,206,794	$2,029,589
2039	$2,250,929	$2,055,790
2040	$2,295,948	$2,082,330
2041	$2,341,867	$2,109,212
2042	$2,388,704	$2,136,441
2043	$2,436,478	$2,164,021
2044	$2,485,208	$2,191,958
2045	$2,534,912	$2,220,256
0	$0	$0
0	$0	$0
0	$0	$0
0	$0	$0
0	$0	$0
0	$0	$0
0	$0	$0
0	$0	$0
0	$0	$0
0	$0	$0
0	$0	$0

Traffic Safety Benefit-Cost Calculation

Highway Safety Improvement Program (HSIP) Reactive Project

DEPARTMENT OF TRANSPORTATION

A. Roadway Description

Route	CSAH 46	**District**		**County**	Dakota
Begin RP		**End RP**		**Miles**	
Location	CSAH 46 and US 52 East Ramps				

B. Project Description

Proposed Work	Convert to Roundabout		
Project Cost*	$41,600,000	**Installation Year**	2026
Project Service Life	20 years	**Traffic Growth Factor**	2.0%

** exclude Right of Way from Project Cost*

C. Crash Modification Factor

0.67	**Fatal (K) Crashes**	**Reference**	Crash Clearinghouse
0.67	**Serious Injury (A) Crashes**		
0.67	**Moderate Injury (B) Crashes**	**Crash Type**	KABC
0.67	**Possible Injury (C) Crashes**		
0.67	**Property Damage Only Crashes**		www.CMFclearinghouse.org

D. Crash Modification Factor (optional second CMF)

0.76	**Fatal (K) Crashes**	**Reference**	Crash Clearinghouse
0.76	**Serious Injury (A) Crashes**		
0.76	**Moderate Injury (B) Crashes**	**Crash Type**	All
0.76	**Possible Injury (C) Crashes**		
0.76	**Property Damage Only Crashes**		www.CMFclearinghouse.org

E. Crash Data

Begin Date	1/1/2020	**End Date**	12/31/2022	3 years
Data Source	MnDOT			

Crash Severity	KABC	All
K crashes		
A crashes		
B crashes	1	
C crashes		
PDO crashes		2

F. Benefit-Cost Calculation

$674,476	**Benefit (present value)**
$41,600,000	**Cost**

B/C Ratio = 0.02

Proposed project expected to reduce 1 crashes annually, 0 of which involving fatality or serious injury.

F. Analysis Assumptions

Crash Severity	Crash Cost
K crashes	$1,600,000
A crashes	$800,000
B crashes	$250,000
C crashes	$130,000
PDO crashes	$15,000

Link: mndot.gov/planning/program/appendix_a.html

Real Discount Rate 0.7%

Traffic Growth Rate 2.0%

Project Service Life 20 years

G. Annual Benefit

Crash Severity	Crash Reduction	Annual Reduction	Annual Benefit
K crashes	0.00	0.00	$0
A crashes	0.00	0.00	$0
B crashes	0.33	0.11	$27,333
C crashes	0.00	0.00	$0
PDO crashes	0.49	0.16	$2,440
			$29,773

H. Amortized Benefit

Year	Crash Benefits	Present Value
2026	$29,773	$29,773
2027	$30,369	$30,158
2028	$30,976	$30,547
2029	$31,596	$30,941
2030	$32,228	$31,341
2031	$32,872	$31,745
2032	$33,530	$32,155
2033	$34,200	$32,570
2034	$34,884	$32,991
2035	$35,582	$33,417
2036	$36,294	$33,848
2037	$37,019	$34,285
2038	$37,760	$34,728
2039	$38,515	$35,176
2040	$39,285	$35,630
2041	$40,071	$36,090
2042	$40,872	$36,556
2043	$41,690	$37,028
2044	$42,524	$37,506
2045	$43,374	$37,990
0	$0	$0
0	$0	$0
0	$0	$0
0	$0	$0
0	$0	$0
0	$0	$0
0	$0	$0
0	$0	$0
0	$0	$0
0	$0	$0
0	$0	$0

Total = $674,476

Traffic Safety Benefit-Cost Calculation

Highway Safety Improvement Program (HSIP) Reactive Project

DEPARTMENT OF TRANSPORTATION

A. Roadway Description

Route CSAH 46 | **District** | **County** Dakota

Begin RP | **End RP** | **Miles**

Location CSAH 46 and US 52 East Ramps

B. Project Description

Proposed Work Convert to Roundabout

Project Cost* $41,600,000 | **Installation Year** 2026

Project Service Life 20 years | **Traffic Growth Factor** 2.0%

** exclude Right of Way from Project Cost*

C. Crash Modification Factor

0.00	**Fatal (K) Crashes**	**Reference**	Engineering Judgement
0.00	**Serious Injury (A) Crashes**		
0.00	**Moderate Injury (B) Crashes**	**Crash Type**	Angle Crashes
0.00	**Possible Injury (C) Crashes**		
0.00	**Property Damage Only Crashes**		www.CMFclearinghouse.org

D. Crash Modification Factor (optional second CMF)

	Fatal (K) Crashes	**Reference**	Crash Clearinghouse
	Serious Injury (A) Crashes		
	Moderate Injury (B) Crashes	**Crash Type**	
	Possible Injury (C) Crashes		
	Property Damage Only Crashes		www.CMFclearinghouse.org

E. Crash Data

Begin Date 1/1/2020 | **End Date** 12/31/2022 | 3 years

Data Source MnDOT

Crash Severity	Angle Crashes	< optional 2nd CMF >
K crashes		
A crashes		
B crashes	2	
C crashes	1	
PDO crashes	4	

F. Benefit-Cost Calculation

$5,210,349	**Benefit (present value)**
$41,600,000	**Cost**

B/C Ratio = 0.13

Proposed project expected to reduce 3 crashes annually, 0 of which involving fatality or serious injury.

F. Analysis Assumptions

Crash Severity	Crash Cost
K crashes	$1,600,000
A crashes	$800,000
B crashes	$250,000
C crashes	$130,000
PDO crashes	$15,000

Link: mndot.gov/planning/program/appendix_a.html

Real Discount Rate 0.7%

Traffic Growth Rate 2.0%

Project Service Life 20 years

G. Annual Benefit

Crash Severity	Crash Reduction	Annual Reduction	Annual Benefit
K crashes	0.00	0.00	$0
A crashes	0.00	0.00	$0
B crashes	2.00	0.67	$166,667
C crashes	1.00	0.33	$43,333
PDO crashes	4.00	1.33	$20,000
			$230,000

H. Amortized Benefit

Year	Crash Benefits	Present Value
2026	$230,000	$230,000
2027	$234,600	$232,969
2028	$239,292	$235,977
2029	$244,078	$239,023
2030	$248,959	$242,109
2031	$253,939	$245,234
2032	$259,017	$248,400
2033	$264,198	$251,607
2034	$269,482	$254,855
2035	$274,871	$258,145
2036	$280,369	$261,478
2037	$285,976	$264,853
2038	$291,696	$268,273
2039	$297,530	$271,736
2040	$303,480	$275,244
2041	$309,550	$278,797
2042	$315,741	$282,396
2043	$322,056	$286,042
2044	$328,497	$289,735
2045	$335,067	$293,475
0	$0	$0
0	$0	$0
0	$0	$0
0	$0	$0
0	$0	$0
0	$0	$0
0	$0	$0
0	$0	$0
0	$0	$0
0	$0	$0
0	$0	$0

Total = $5,210,349

Traffic Safety Benefit-Cost Calculation

Highway Safety Improvement Program (HSIP) Reactive Project

DEPARTMENT OF TRANSPORTATION

A. Roadway Description

Route	CSAH 46	**District**		**County**	Dakota
Begin RP		**End RP**		**Miles**	
Location	CSAH 46 and US 52 West Ramps				

B. Project Description

Proposed Work	Convert to Roundabout		
Project Cost*	$41,600,000	**Installation Year**	2026
Project Service Life	20 years	**Traffic Growth Factor**	2.0%

** exclude Right of Way from Project Cost*

C. Crash Modification Factor

0.76	**Fatal (K) Crashes**	**Reference**	Crash Clearinghouse
0.76	**Serious Injury (A) Crashes**		
0.76	**Moderate Injury (B) Crashes**	**Crash Type**	All
0.76	**Possible Injury (C) Crashes**		
0.76	**Property Damage Only Crashes**		www.CMFclearinghouse.org

D. Crash Modification Factor (optional second CMF)

	Fatal (K) Crashes	**Reference**	Crash Clearinghouse
	Serious Injury (A) Crashes		
	Moderate Injury (B) Crashes	**Crash Type**	
	Possible Injury (C) Crashes		
	Property Damage Only Crashes		www.CMFclearinghouse.org

E. Crash Data

Begin Date	1/1/2020	**End Date**	12/31/2022	3 years
Data Source	MnDOT			

Crash Severity	All	< optional 2nd CMF >
K crashes		
A crashes		
B crashes		
C crashes		
PDO crashes	3	

F. Benefit-Cost Calculation

$82,913	**Benefit (present value)**	**B/C Ratio = 0.01**
$41,600,000	**Cost**	

Proposed project expected to reduce 1 crashes annually, 0 of which involving fatality or serious injury.

F. Analysis Assumptions

Crash Severity	Crash Cost
K crashes	$1,600,000
A crashes	$800,000
B crashes	$250,000
C crashes	$130,000
PDO crashes	$15,000

Link: mndot.gov/planning/program/appendix_a.html

Real Discount Rate 0.7%

Traffic Growth Rate 2.0%

Project Service Life 20 years

G. Annual Benefit

Crash Severity	Crash Reduction	Annual Reduction	Annual Benefit
K crashes	0.00	0.00	$0
A crashes	0.00	0.00	$0
B crashes	0.00	0.00	$0
C crashes	0.00	0.00	$0
PDO crashes	0.73	0.24	$3,660
			$3,660

H. Amortized Benefit

Year	Crash Benefits	Present Value
2026	$3,660	$3,660
2027	$3,733	$3,707
2028	$3,808	$3,755
2029	$3,884	$3,804
2030	$3,962	$3,853
2031	$4,041	$3,902
2032	$4,122	$3,953
2033	$4,204	$4,004
2034	$4,288	$4,056
2035	$4,374	$4,108
2036	$4,462	$4,161
2037	$4,551	$4,215
2038	$4,642	$4,269
2039	$4,735	$4,324
2040	$4,829	$4,380
2041	$4,926	$4,437
2042	$5,024	$4,494
2043	$5,125	$4,552
2044	$5,227	$4,611
2045	$5,332	$4,670
0	$0	$0
0	$0	$0
0	$0	$0
0	$0	$0
0	$0	$0
0	$0	$0
0	$0	$0
0	$0	$0
0	$0	$0
0	$0	$0
0	$0	$0

Total = $82,913

Traffic Safety Benefit-Cost Calculation

Highway Safety Improvement Program (HSIP) Reactive Project

DEPARTMENT OF TRANSPORTATION

A. Roadway Description

Route	CSAH 46	**District**		**County**	Dakota
Begin RP		**End RP**		**Miles**	
Location	CSAH 46 and US 52 West Ramps				

B. Project Description

Proposed Work	Convert to Roundabout		
Project Cost*	$41,600,000	**Installation Year**	2026
Project Service Life	20 years	**Traffic Growth Factor**	2.0%

** exclude Right of Way from Project Cost*

C. Crash Modification Factor

0.00	**Fatal (K) Crashes**	**Reference**	Engineering Judgement
0.00	**Serious Injury (A) Crashes**		
0.00	**Moderate Injury (B) Crashes**	**Crash Type**	Angle Crashes
0.00	**Possible Injury (C) Crashes**		
0.00	**Property Damage Only Crashes**		www.CMFclearinghouse.org

D. Crash Modification Factor (optional second CMF)

	Fatal (K) Crashes	**Reference**	Crash Clearinghouse
	Serious Injury (A) Crashes		
	Moderate Injury (B) Crashes	**Crash Type**	
	Possible Injury (C) Crashes		
	Property Damage Only Crashes		www.CMFclearinghouse.org

E. Crash Data

Begin Date	1/1/2020	**End Date**	12/31/2022	3 years
Data Source	MnDOT			

Crash Severity	Angle Crashes	< optional 2nd CMF >
K crashes		
A crashes		
B crashes		
C crashes	1	
PDO crashes	1	

F. Benefit-Cost Calculation

$1,094,929	**Benefit (present value)**
$41,600,000	**Cost**

B/C Ratio = 0.03

Proposed project expected to reduce 1 crashes annually, 0 of which involving fatality or serious injury.

F. Analysis Assumptions

Crash Severity	Crash Cost
K crashes	$1,600,000
A crashes	$800,000
B crashes	$250,000
C crashes	$130,000
PDO crashes	$15,000

Link: mndot.gov/planning/program/appendix_a.html

Real Discount Rate 0.7%

Traffic Growth Rate 2.0%

Project Service Life 20 years

G. Annual Benefit

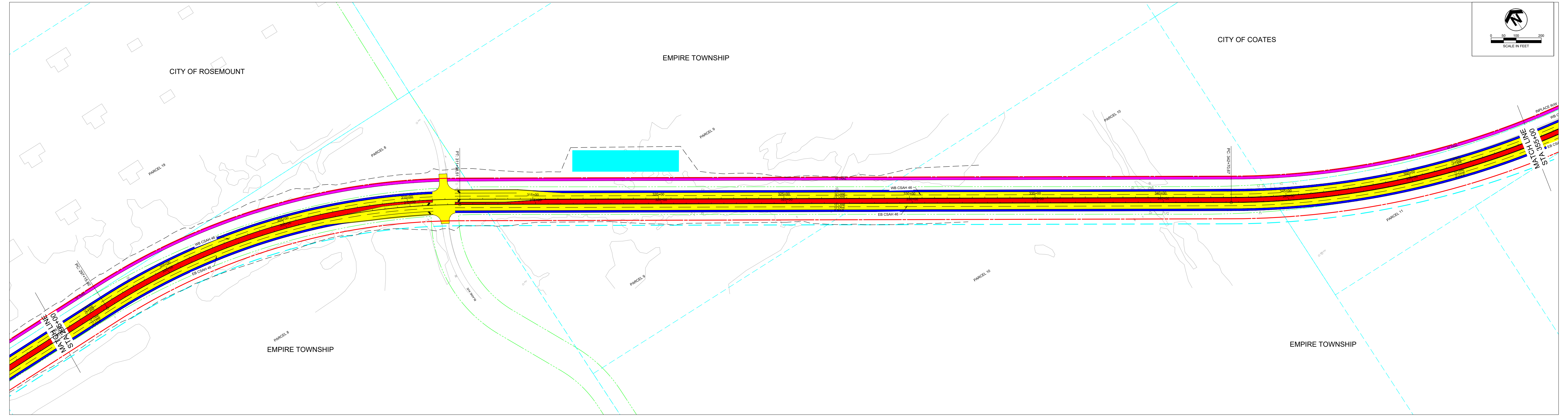
Crash Severity	Crash Reduction	Annual Reduction	Annual Benefit
K crashes	0.00	0.00	$0
A crashes	0.00	0.00	$0
B crashes	0.00	0.00	$0
C crashes	1.00	0.33	$43,333
PDO crashes	1.00	0.33	$5,000
			$48,333

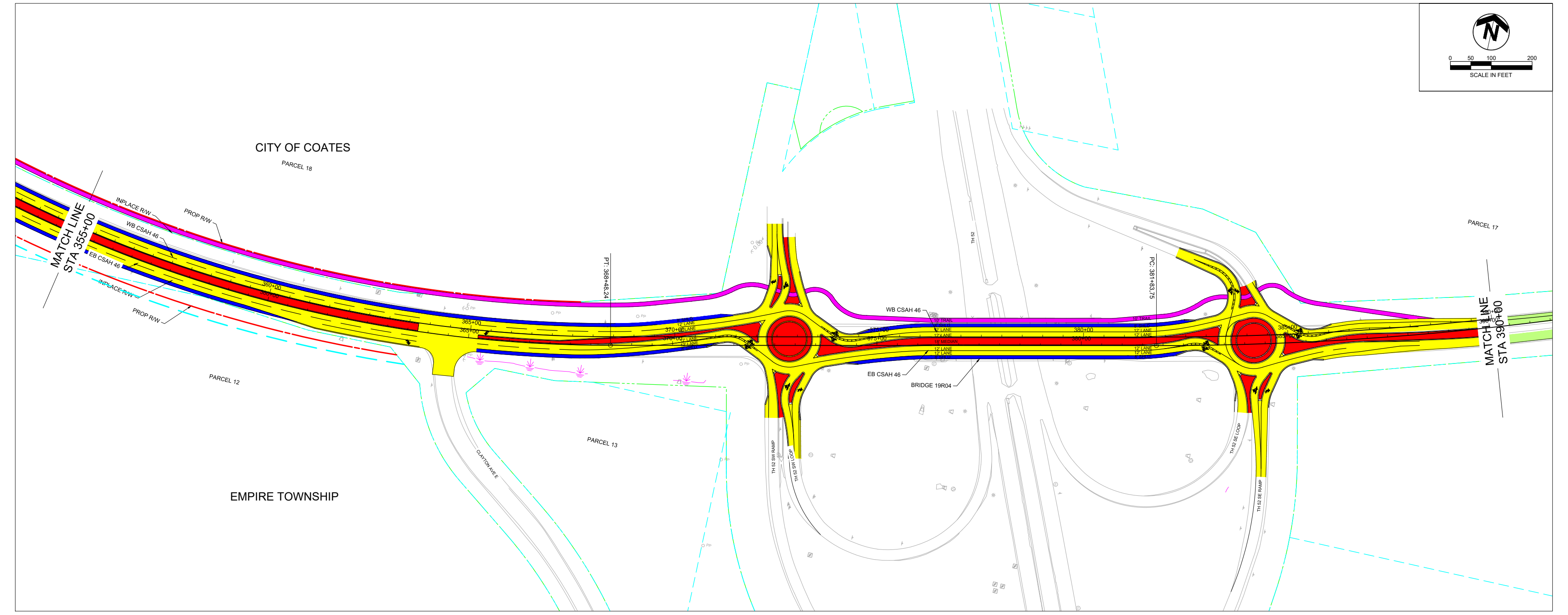
H. Amortized Benefit

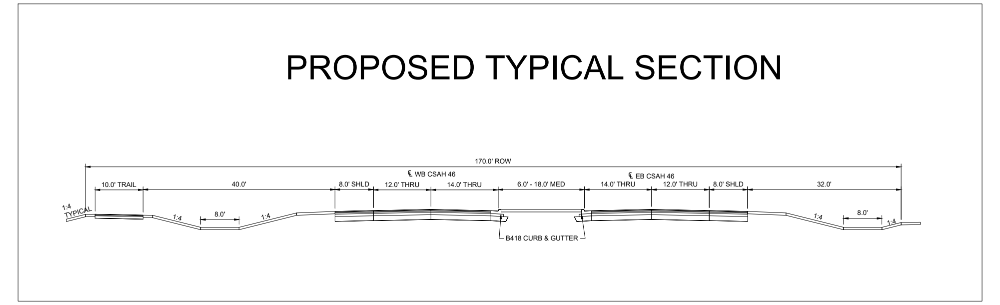
Total = $1,094,929

Year	Crash Benefits	Present Value
2026	$48,333	$48,333
2027	$49,300	$48,957
2028	$50,286	$49,589
2029	$51,292	$50,229
2030	$52,318	$50,878
2031	$53,364	$51,535
2032	$54,431	$52,200
2033	$55,520	$52,874
2034	$56,630	$53,557
2035	$57,763	$54,248
2036	$58,918	$54,948
2037	$60,096	$55,658
2038	$61,298	$56,376
2039	$62,524	$57,104
2040	$63,775	$57,841
2041	$65,050	$58,588
2042	$66,351	$59,344
2043	$67,678	$60,110
2044	$69,032	$60,886
2045	$70,413	$61,672
0	$0	$0
0	$0	$0
0	$0	$0
0	$0	$0
0	$0	$0
0	$0	$0
0	$0	$0
0	$0	$0
0	$0	$0
0	$0	$0
0	$0	$0

Attachment C







CSAH 46 EXPANSION
PRELIMINARY DESIGN
APRIL 14, 2022

Dakota County transportation we get you there

ROSEMOUNT MINNESOTA

EMPIRE TOWNSHIP

DEPARTMENT OF TRANSPORTATION

TKDA

Dakota
COUNTY

Transportation Department
14955 Galaxie Ave.
Apple Valley, MN 55124-8579

December 14, 2023

Elaine Koutsoukos, Transportation Coordinator
Transportation Advisory Board
Metropolitan Council
390 Robert Street North
St. Paul, MN 55101

RE: 2023 Regional Solicitation Application for County State Aid Highway (CSAH) 46 project from Trunk Highway (TH) 3 to US Highway 52 in Rosemount

Dear Ms. Koutsoukos:

Dakota County has reviewed and approved the general layout of the CSAH 46 project from TH 3 to US Highway 52 in Rosemount. The project layout has been attached to this letter.

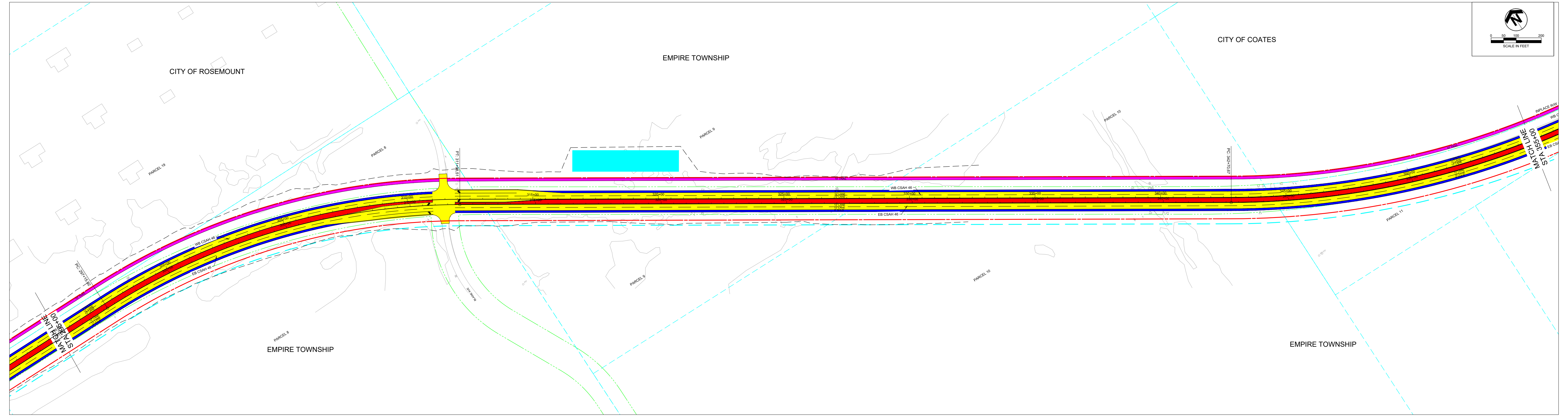
We will be happy to answer any questions you may have regarding this project.

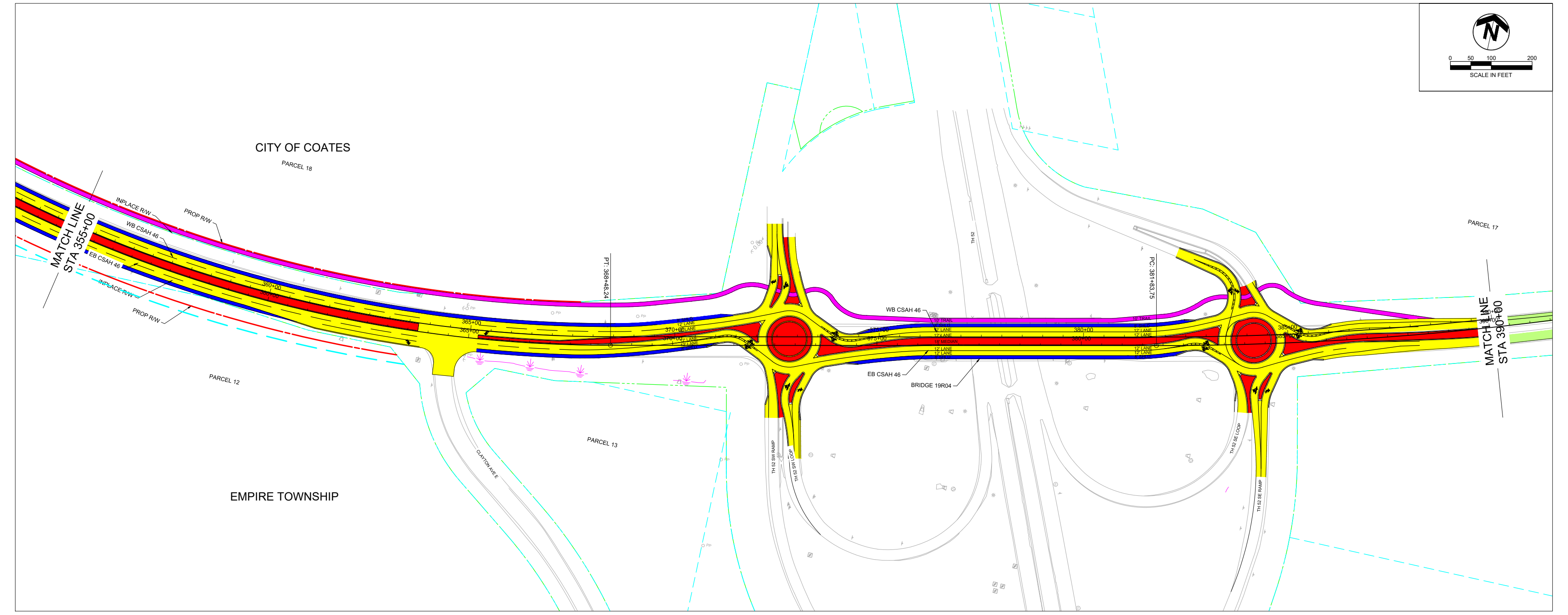
Sincerely,

Erin Laberee
Dakota County Transportation Director/County Engineer

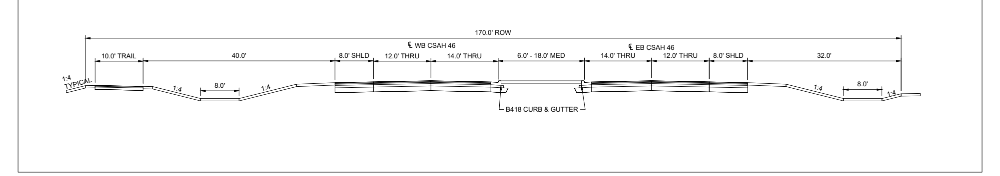
CC:

Attachment C





PROPOSED TYPICAL SECTION



CSAH 46 EXPANSION
PRELIMINARY DESIGN
APRIL 14, 2022

Dakota County transportation — we get you there
ROSEMOUNT MINNESOTA
EMPIRE TOWNSHIP
DEPARTMENT OF TRANSPORTATION
TKDA

BOARD OF COUNTY COMMISSIONERS
DAKOTA COUNTY, MINNESOTA

September 26, 2023 — Resolution No. 23-424

Motion by Commissioner Hamann-Roland — Second by Commissioner Atkins

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Authorization To Submit And Accept Grant Funds For 2023-2024 Regional Federal Funding Solicitation Grant Opportunity

WHEREAS, the Transportation Advisory Board (TAB) is requesting project submittals for federal funding under the Infrastructure Investment and Jobs Act (IIJA) through the Regional Solicitation process; and

WHEREAS, the Solicitation programs fund up to 80 percent of project construction costs; and

WHEREAS, federal funding of projects reduces the burden on local taxpayers for regional improvements; and

WHEREAS, project submittals are due on December 15, 2023; and

WHEREAS, all projects proposed are consistent with the adopted Dakota County 2040 Comprehensive Plan; and

WHEREAS, subject to federal funding award for the projects identified hereto, the Dakota County Board of Commissioners would be asked to consider authorization to execute a grant agreement at a future meeting.

NOW, THEREFORE, BE IT RESOLVED, That the Dakota County Board of Commissioners hereby authorizes the submittal of the following County-led projects to the Regional Solicitation application process for federal funding:

Highway Projects

- 1.1 County State Aid Highway (CSAH) 50 (Kenwood Trail) from 172nd to 175th and Interstate-35 interchange in Lakeville (Strategic Capacity Category)
- 1.2 CSAH 46 (160th Street/Brandel Drive) from Trunk Highway (TH) 3 to TH 52 in Coates, Empire Township and Rosemount (Strategic Capacity Category)
- 1.3 CSAH 32 (117th Street) from US 52 to CSAH 71 in Inver Grove Heights (Reconstruction Category)
- 1.4 CSAH 46 (160th Street) from 1,300 feet west of General Sieben Drive to Highway 61 in Hastings CSAH 32 (117th Street) from US 52 to CSAH 71 in Inver Grove Heights (Reconstruction Category)
- 1.5 CSAH 32 (122nd St) at frontage road on east side of interstate 35 in Burnsville (Spot Mobility Category)
- 1.6 CSAH 4 (Butler Ave) trail from Roberts Street to US Highway 52 in West St. Paul (Multi-Use Trails Category)
- 1.7 CSAH 42 (Egan Drive) trail from CSAH 5 to CSAH 11 in Burnsville (Multi-Use Trails Category)

Safe Routes to School Projects

- 2.1 CSAH 4 (Butler Ave) from CSAH 63 to Smith Ave. in West St. Paul
- 2.2 CSAH 60 (185th St) from CSAH 50 to CSAH 9 in Lakeville

STATE OF MINNESOTA
County of Dakota

	YES		NO
Slavik	X	**Slavik**	
Atkins	X	**Atkins**	
Halverson	X	**Halverson**	
Droste	X	**Droste**	
Workman	X	**Workman**	
Holberg	X	**Holberg**	
Hamann-Roland	X	**Hamann-Roland**	

I, Jeni Reynolds, Clerk to the Board of the County of Dakota, State of Minnesota, do hereby certify that I have compared the foregoing copy of a resolution with the original minutes of the proceedings of the Board of County Commissioners, Dakota County, Minnesota, at their session held on the 26th day of September 2023, now on file in the Office of the County Manager Department, and have found the same to be a true and correct copy thereof.

Witness my hand and official seal of Dakota County this 26th day of September 2023.

Jeni Reynolds

Clerk to the Board

Greenway Multiuse Trails and Bicycle Facilities Projects

3.1 North Creek Greenway – CSAH 42 Grade Separation and Trail to Flagstaff Road in Apple Valley
3.2 Lake Marion Greenway through the Industrial Park in Lakeville
3.3 North Creek Greenway from 199th Street to downtown Farmington
3.4 River to River Greenway from TH 149 trail and TH 149 underpass in Mendota Heights

; and

BE IT FURTHER RESOLVED, That the Dakota County Board of Commissioners hereby authorizes the Physical Development Director to accept grant funds, if awarded, and execute grant agreements subject to approval as to form by the Dakota County Attorney's Office.

STATE OF MINNESOTA
County of Dakota

	YES		NO
Slavik	X	**Slavik**	
Atkins	X	**Atkins**	
Halverson	X	**Halverson**	
Droste	X	**Droste**	
Workman	X	**Workman**	
Holberg	X	**Holberg**	
Hamann-Roland	X	**Hamann-Roland**	

I, Jeni Reynolds, Clerk to the Board of the County of Dakota, State of Minnesota, do hereby certify that I have compared the foregoing copy of a resolution with the original minutes of the proceedings of the Board of County Commissioners, Dakota County, Minnesota, at their session held on the 26th day of September 2023, now on file in the Office of the County Manager Department, and have found the same to be a true and correct copy thereof.

Witness my hand and official seal of Dakota County this 26th day of September 2023.

Jeni Reynolds

Clerk to the Board

Attachment A

County State Aid Highway 46 Expansion

Applicant: Dakota County

Project Location: CSAH 46 from TH 3 to the CSAH 46/TH 52 interchange in the cities of Coates, Rosemount, and Empire, MN

Project Costs:

- Total construction cost: $41,600,000
- Requested Award Amount/Match Amount: $10,000,000 / $31,600,000 (CSAH, Sales & Use Tax, Local)

Project Description

In an effort to plan for continued safety and mobility along the CSAH 46 corridor within the cities of Coates, Rosemount, and Empire. Dakota County, the cities of Coates, Rosemount, and Empire partnered on preliminary design of the CSAH 46 expansion to a divided 4-lane from TH 3 to the CSAH 46/TH 52 interchange. The purpose of the project is to address deficiencies in capacity noted in 2019 as shown in the County's 2040 Transportation Plan and anticipated to worsen over the next 20 years. The CSAH 46 corridor is a regional east-west corridor that connects Lakeville to Hastings. The CSAH 46/TH 52 ramps have experienced right angle crashes and those crashed are anticipated to occur in the no build situation.

At CSAH 46/TH 52 Interchange, looking west

The proposed project will expand CSAH 46 to a divided 4-lane roadway with a raised center median, construct a trail along the north side of CSAH 46, construct a grade separated crossing of CSAH 46 for the future Vermillion Highlands Greenway, construct roundabouts at both of the CSAH 46/TH 52 interchange ramps, and implement access management strategies from TH 3 to the CSAH 46/TH 52 interchange.

Project Benefits

The expansion of CSAH 46 will provide several benefits to this east-west regional corridor and the surrounding community. The proposed project will:

- Improve safety and mobility for all users
- Reconstruct the CSAH 46/TH 52 interchange ramps into roundabouts to improve safety and reduce potential right-angle crashes
- Accommodate future increases in traffic including freight vehicles
- Provide safe, equitable non-motorized facilities that connect users to local and regional destinations
- Implement access management strategies
- Provide 4-lane CSAH 46 between CR 5 (west of I-35 in Lakeville) to TH 52 in Coates

MnDOT Metro District
1500 West County Road B-2
Roseville, MN 55113

11/29/2023

Erin Laberee
Transportation Director
14955 Galaxie Ave.
Apple Valley, MN 55124-8579

Re: MnDOT Letter for Dakota County
Metropolitan Council/Transportation Advisory Board 2024 Regional Solicitation Funding Request for Various Projects

Dear Erin Laberee,

This letter documents MnDOT Metro District's recognition for Dakota County to pursue funding for the Metropolitan Council/Transportation Advisory Board's (TAB) 2024 Regional Solicitation for the following projects.

As proposed, the projects have impacts to MnDOT right-of-way and MnDOT will allow Dakota County to seek improvements as proposed in the applications. Details of any future maintenance agreement with the County will need to be determined during the project development to define how the improvements will be maintained for its useful life if the project receives funding.

County State Aid Highway (CSAH) 4 from TH 3 (Robert Street) to TH 52 in West St. Paul. Project will construct a multi-use trail along the south side of CSAH 4 (Butler Avenue) from TH 3 (Robert Street) in West St. Paul to Sperl Street/Stassen Lane and along the north side of CR 4 from Sperl Street/Stassen Lane to TH 52. The trail will tie into MnDOT's ADA facilities at both CSAH 4 intersections with TH 3 and with TH 52.

117th Street from CSAH 71 (Rich Valley Boulevard) to TH 52 in Inver Grove Heights. This project includes the reconstruction of 117th Street from an undivided 2-lane road to a divided 2-lane roadway with turn lanes and shoulders, the upgrade of two existing railroad crossings to current design standards, and the construction of a multiuse trail on the north side.

CSAH 46 (160th Street) from General Sieben Drive to Highway 61 in Hastings. The project includes the reconstruction of CSAH 46 from Pleasant Drive east to TH 61 from an undivided 2-lane roadway to a 2-lane divided roadway with turn lanes, construction of a multi-use trails on north side for the entire length and the south side from Pleasant Dr to Pine St, constructing single-lane roundabouts at the Pleasant Drive and Pine Street intersections, implementing access management strategies, and replacing the existing bridge over the Vermillion River (east of 31st Street).

CSAH 42 trail (North Side) from CSAH 5 and Nicollet Avenue in Burnsville. This project will upgrade the existing sidewalk to a ten-foot multi-use trail, provide accessible minor-approach crossings, and include any necessary utility relocations.

CSAH 46 from TH 3 to TH 52 in Coates, Empire, and Rosemount. The project includes the reconstruction of CSAH 46 from an undivided 2-lane roadway to a divided 4-lane roadway with turn lanes, construction of a new multi-use trail along the north side, modifying the CSAH 46 bridge over TH 52 to accommodate 4-lanes, a grade-separated crossing for the Vermillion Highlands Greenway, constructing multilane roundabouts for the CSAH 46/TH 52 interchange intersections, and implementing access management strategies along the corridor.

CSAH 32 (Cliff Road) at the intersection of the I-35W east frontage road in Burnsville. This project includes the construction of a roundabout, reconstruction of the east frontage road, and construction of a multi-use trail around the intersection and along the east side of the east frontage road.

River to River Greenway from Marie Avenue to TH 149 (Dodd Road) underpass in Mendota Heights. This project will construct a 1-mile segment of the River to River Greenway regional trail through Valley Park as well as a grade-separated crossing of TH 149 just north of the TH 62 intersection.

MnDOT does not anticipate partnering on local projects beyond current agreements. If your project receives funding, continue to work with MnDOT Area staff to coordinate and review needs and opportunities for cooperation.

MnDOT Metro District looks forward to continued cooperation with Dakota County as this project moves forward and as we work together to improve safety and travel options within the Metro Area.

If you have questions or require additional information at this time, please reach out to South Area Manager Bryant Ficek at bryant.ficek@state.mn.us or 651-443-2564.

Sincerely,

Sheila Kauppi, PE
Metro District Engineer

CC: Bryant Ficek, Metro District Area Manager; Aaron Tag, Metro Program Director; Dan Erickson, Metro State Aid Engineer

September 29, 2023

Ms. Elaine Koutsoukos
Coordinator, Transportation Advisory Board
Metropolitan Council
390 North Robert Street
St. Paul, MN 55101

RE: Letter of Support for the Regional Solicitation Grant Program: County State Aid Highway 46 Project from Trunk Highway 3 to US Highway 52 (Dakota County, MN)

Dear Ms. Koutsoukos:

I am writing in support of Dakota County's application for funding through Metropolitan Council's Regional Solicitation grant program. The awarded federal funding would allow Dakota County, the cities of Rosemount, Coates, and Empire, and their partners to address multimodal safety concerns and encourage economic growth on a key corridor in the rural outskirts of the Minneapolis-St. Paul metropolitan area.

The project aligns with the programs' strategic goals as it addresses critical capacity, safety, and mobility challenges. County State Aid Highway (CSAH) 46 is designated as a Tier 2 Regional Truck Freight Corridor in the region and is essential to commuters, transit riders, freight movement, and residents. The project would reduce freight and vehicle delays on the corridor through the addition of travel lanes, enhancing economic competitiveness for aggregate facilities and other freight-dependent businesses while allowing for future redevelopment. Additionally, this project will modify the interchange access ramp at US Highway (US) 52 with roundabouts to help eliminate right-angle crashes at this location and implement access management along the corridor. A multiuse trail will also be constructed along the north side of CSAH 46 with the incorporation of a new trail underpass connecting to the Vermillion Highlands Greenway. This would fill a gap in the existing trail network and enhance safety and quality of life for people walking, rolling, and biking.

I support Dakota County's application to fund the CSAH 46 Project from Trunk Highway 3 to US 52 and look forward to the infrastructure investment in our region. Please give this grant proposal your full consideration and if I can answer any questions, please do not hesitate to contact me. I may be reached at

Sincerely,

September 29, 2023

Ms. Elaine Koutsoukos
Coordinator, Transportation Advisory Board
Metropolitan Council
390 North Robert Street
St. Paul, MN 55101

RE: Letter of Support for the Regional Solicitation Grant Program: County State Aid Highway 46 Project from Trunk Highway 3 to US Highway 52 (Dakota County, MN)

Dear Ms. Koutsoukos:

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I support Dakota County's application to fund the CSAH 46 Project from Trunk Highway 3 to US 52 and look forward to the infrastructure investment in our region. Please give this grant proposal your full consideration and if I can answer any questions, please do not hesitate to contact me. I may be reached at

Sincerely,

FRANA
companies

Kelly Anderson
Shop/Equipment Manager

email: kanderson@frana.com
Main: 952.935.8600
Mobile: 612.965.9842
Direct: 952.352.2692

2785 160th Street West, Suite 100
Rosemount, MN 55068

www.frana.com

September 29, 2023

Ms. Elaine Koutsoukos
Coordinator, Transportation Advisory Board
Metropolitan Council
390 North Robert Street
St. Paul, MN 55101

RE: Letter of Support for the Regional Solicitation Grant Program: County State Aid Highway 46 Project from Trunk Highway 3 to US Highway 52 (Dakota County, MN)

Dear Ms. Koutsoukos:

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The project aligns with the programs' strategic goals as it addresses critical capacity, safety, and mobility challenges. County State Aid Highway (CSAH) 46 is designated as a Tier 2 Regional Truck Freight Corridor in the region and is essential to commuters, transit riders, freight movement, and residents. The project would reduce freight and vehicle delays on the corridor through the addition of travel lanes, enhancing economic competitiveness for aggregate facilities and other freight-dependent businesses while allowing for future redevelopment. Additionally, this project will modify the interchange access ramp at US Highway (US) 52 with roundabouts to help eliminate right-angle crashes at this location and implement access management along the corridor. A multiuse trail will also be constructed along the north side of CSAH 46 with the incorporation of a new trail underpass connecting to the Vermillion Highlands Greenway. This would fill a gap in the existing trail network and enhance safety and quality of life for people walking, rolling, and biking.

I support Dakota County's application to fund the CSAH 46 Project from Trunk Highway 3 to US 52 and look forward to the infrastructure investment in our region. Please give this grant proposal your full consideration and if I can answer any questions, please do not hesitate to contact me. I may be reached at (612) 801-2785

Sincerely,

Paul Essler

— EST. 1986 —

DAKOTA UNLIMITED

FENCE. GATE. RAIL. IRON. CUSTOM.

main (651) 423-3995
fax (651) 423-3996

15953 Biscayne Ave West
Rosemount, MN 55068

CFO
Paul Essler

info@dakotaunlimited.com
dakotaunlimited.com

(612) 801-2785

Dakota Aggregates

September 29, 2023

Ms. Elaine Koutsoukos
Coordinator, Transportation Advisory Board
Metropolitan Council
390 North Robert Street
St. Paul, MN 55101

RE: Letter of Support for the Regional Solicitation Grant Program: County State Aid Highway 46 Project from Trunk Highway 3 to US Highway 52 (Dakota County, MN)

Dear Ms. Koutsoukos:

I am writing in support of Dakota County's application for funding through Metropolitan Council's Regional Solicitation grant program. The awarded federal funding would allow Dakota County, the cities of Rosemount, Coates and Empire, and their partners to address multimodal safety concerns and encourage economic growth on a key corridor in the rural outskirts of the Minneapolis-St. Paul metropolitan area.

The project aligns with the programs' strategic goals as it addresses critical capacity, safety, and mobility challenges. County State Aid Highway (CSAH) 46 is designated as a Tier 2 Regional Truck Freight Corridor in the region and is essential to commuters, transit riders, freight movement, and residents. The project would reduce freight and vehicle delays on the corridor through the addition of travel lanes, enhancing economic competitiveness for aggregate facilities and other freight-dependent businesses while allowing for future redevelopment. Additionally, this project will modify the interchange access ramp at US Highway (US) 52 with roundabouts to help eliminate right-angle crashes at this location and implement access management along the corridor. A multiuse trail will also be constructed along the north side of CSAH 46 with the incorporation of a new trail underpass connecting to the Vermillion Highlands Greenway. This would fill a gap in the existing trail network and enhance safety and quality of life for people walking, rolling and biking.

The numerous issues that have been previously submitted regarding vital aggregate reserves, truck traffic access, sightlines and elevations remain the utmost important to our business and our customers. Those letters represent the interests of Dakota Aggregates, Ames Construction, Wells Concrete, Cemstone and Minnesota Mining & Aggregates. Dakota Aggregates support of Dakota County's application comes with an understanding that all the issues in our previous communications will be addressed.

Therefore, I support Dakota County's application to fund the CSAH 46 Project from Trunk Highway 3 to US 52 and look forward to the infrastructure investment in our region. Please give this grant proposal your full consideration and if I can answer any questions please do not hesitate to contact me.

Best Regards,

John Rivisto
General Manager, Dakota Aggregates
2025 Centre Pointe Blvd
Mendota Heights, MN 55120
651-286-1248

September 29, 2023

Ms. Elaine Koutsoukos
Coordinator, Transportation Advisory Board
Metropolitan Council
390 North Robert Street
St. Paul, MN 55101

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I support Dakota County's application to fund the CSAH 46 Project from Trunk Highway 3 to US 52 and look forward to the infrastructure investment in our region. Please give this grant proposal your full consideration and if I can answer any questions, please do not hesitate to contact me. I may be reached at

Sincerely,

Mike Sabraski
PRODUCTION MANAGER

DIRECT 763.235.8613
MOBILE 763.203.3184
OFFICE 763.425.5555
mike.sabraski@wellsconcrete.com

WELLS
PRECAST | INNOVATORS

1333 158TH STREET WEST | ROSEMOUNT, MN 55068

Ames Construction
2500 County Road 42 West
Burnsville, MN 55337
T 952-435-7106 • F 952-435-7142

October 4, 2023

Ms. Elaine Koutsoukos
Coordinator, Transportation Advisory Board
Metropolitan Council
390 North Robert Street
St. Paul, MN 55101

RE: Letter of Support for the Regional Solicitation Grant Program: County State Aid Highway 46 Project from Trunk Highway 3 to US Highway 52 (Dakota County, MN)

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I support Dakota County's application to fund the CSAH 46 Project from Trunk Highway 3 to US 52 and look forward to the infrastructure investment in our region. Please give this grant proposal your full consideration and if I can answer any questions, please do not hesitate to contact me. I may be reached at (612) 366 – 4600.

Sincerely,

Shawn L. Dahl
Vice President, Real Estate & Aggregates

September 29, 2023

Ms. Elaine Koutsoukos
Coordinator, Transportation Advisory Board
Metropolitan Council
390 North Robert Street
St. Paul, MN 55101

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Sincerely,

ASTRO PLASTICS
THERMOPLASTIC PROFILE EXTRUSIONS

Reese
Enterprises, Inc.

PATRICK KINVILLE
General Manager

16350 Asher Ave.
P.O. Box 459
Rosemount, MN 55068-0459

Direct: 651-322-3786
Cell: 612-222-0831
pkinville@reeseusa.com

September 29, 2023

Ms. Elaine Koutsoukos
Coordinator, Transportation Advisory Board
Metropolitan Council
390 North Robert Street
St. Paul, MN 55101

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Sincerely,

Lori Heil

AmishShowroom

Tuesday & Wednesday by appt.
Thursday - Saturday 10-6

Eric & Lori Heil
16191 Clayton Ave.
Coates, MN 55068

PH 763-498-7730
FAX 888-611-3910
amishshowroom.com
amishshowroom@yahoo.com

September 29, 2023

Ms. Elaine Koutsoukos
Coordinator, Transportation Advisory Board
Metropolitan Council
390 North Robert Street
St. Paul, MN 55101

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Sincerely,

Rusty Crouch
Coates Transfer Station Manager
Lloyd's Construction Services, Inc.
651.356.3641

September 29, 2023

Ms. Elaine Koutsoukos
Coordinator, Transportation Advisory Board
Metropolitan Council
390 North Robert Street
St. Paul, MN 55101

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Sincerely,

Brad Kreidermacher

Cemstone

CEMSTONE

TROY ROBERTS
PLANT MANAGER
CEMSTONE PRODUCTS COMPANY

p 651.905.4810
f 651.423.9124
e troberts@cemstone.com

1300 158th Street West | Rosemount, MN 55068

September 29, 2023

Ms. Elaine Koutsoukos
Coordinator, Transportation Advisory Board
Metropolitan Council
390 North Robert Street
St. Paul, MN 55101

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Sincerely,

William Lading

aaa auto parts™

East Bethel
20418 Highway 65 NE
East Bethel, MN 55011

Rosemount
2871 West 160th Street
Rosemount, MN 55068

651.423.2432
www.aaaparts.com

September 29, 2023

Ms. Elaine Koutsoukos
Coordinator, Transportation Advisory Board
Metropolitan Council
390 North Robert Street
St. Paul, MN 55101

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Sincerely,

POLAR SERVICE CENTERS

Quala THE TANK PROS | MAINTENANCE

Rob Lewis
BRANCH MANAGER
Rosemount, MN
rob.lewis@quala.us.com

612.590.0096
651.437.0483

ROSEMOUNT

PUBLIC WORKS DEPARTMENT

December 15, 2023

Ms. Elaine Koutsoukos
Coordinator, Transportation Advisory Board
Metropolitan Council
390 North Robert Street
St. Paul, MN 55101

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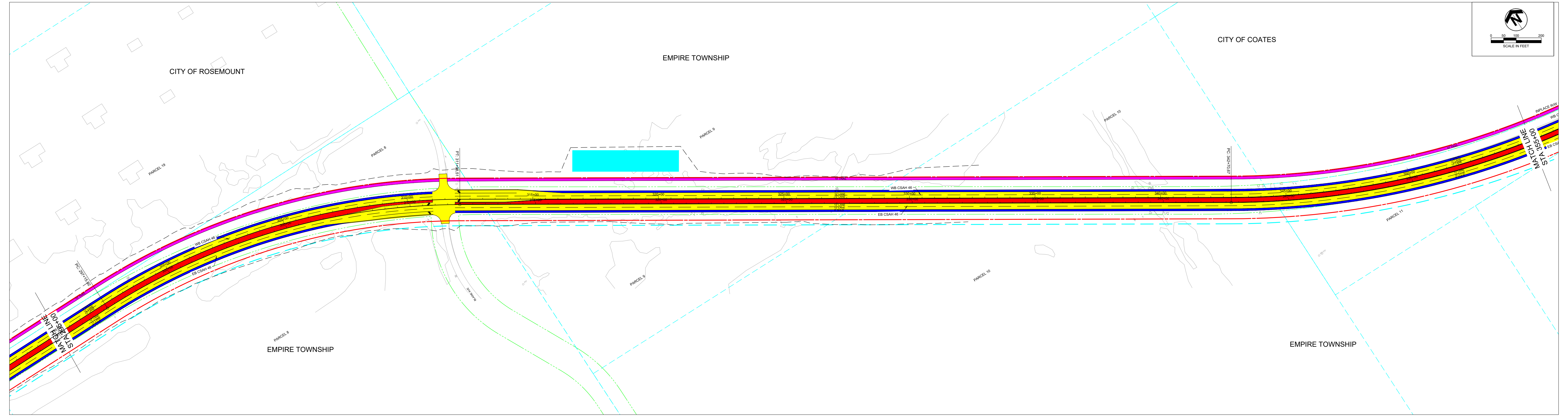
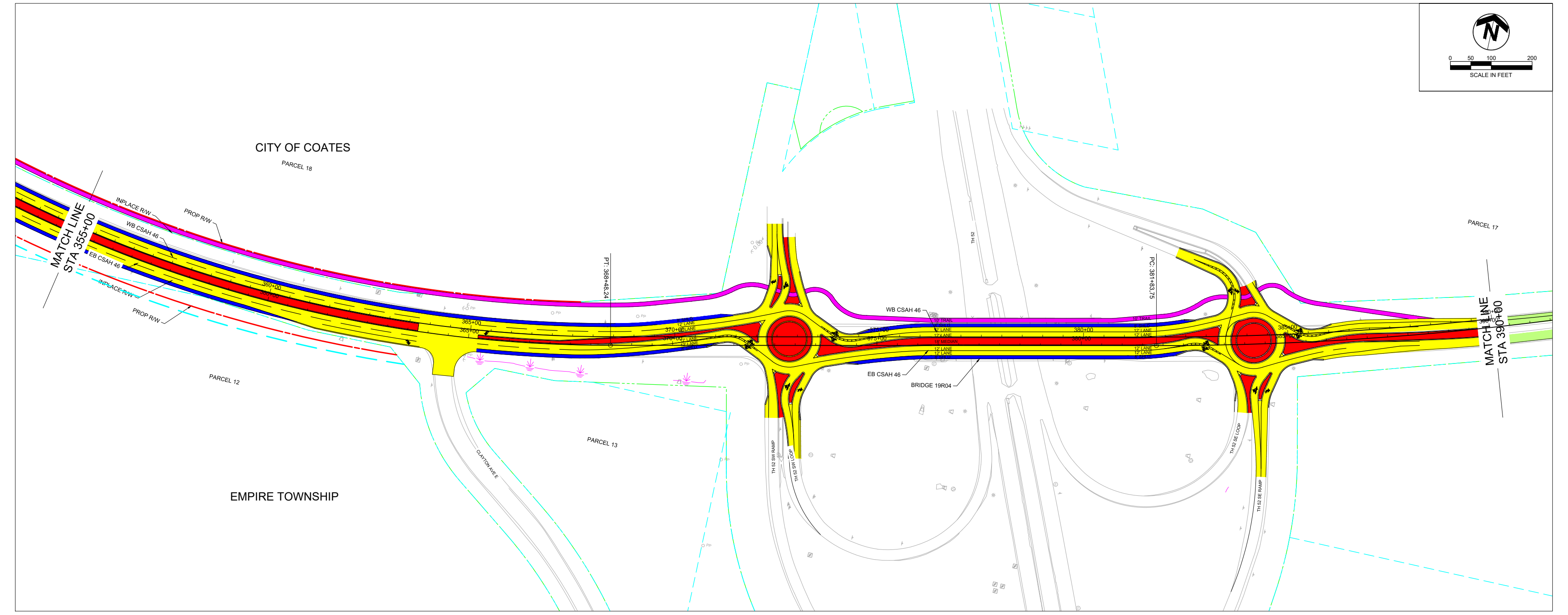
The City of Rosemount support Dakota County's application to fund the CSAH 46 Project from Trunk Highway 3 to US 52 and look forward to the infrastructure investment in our region. Please give this grant proposal your full consideration and if I can answer any questions, please do not hesitate to contact me. I may be reached at (651) 322-2025 or brian.erickson@rosemountmn.gov.

Sincerely,

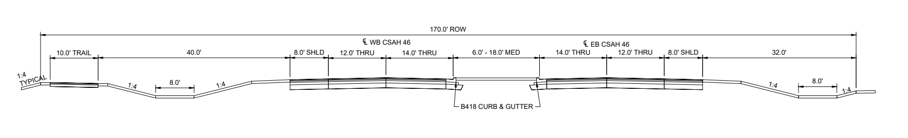
Brian Erickson, P.E.
City Engineer
City of Rosemount

Attachment C





PROPOSED TYPICAL SECTION



CSAH 46 EXPANSION
PRELIMINARY DESIGN
APRIL 14, 2022