Application

17063-2022 Roadway Modernization
17598 - CSAH 42 Roadway Modernization in Apple Valley from Redwood Drive to 147th Street
Regional Solicitation - Roadways Including Multimodal Elements

Status:
Submitted Date:
Submitted
04/13/2022 6:50 PM

## Primary Contact



## Organization Information

Name:

Jurisdictional Agency (if different):
Organization Type: County Government
Organization Website:

| Address: | TRANSPORTATION DEPT |
| :--- | :--- |
|  | 14955 GALAXIE AVE |

* |  | APPLE VALLEY | Minnesota |
| :--- | :--- | :--- |
| City | State/Province |  |

County:

Phone:*

## Fax:

PeopleSoft Vendor Number

Dakota
952-891-7100

0000002621 A 15

## Project Information

Project Name
Primary County where the Project is Located
Cities or Townships where the Project is Located:
Jurisdictional Agency (If Different than the Applicant):

CSAH 42 Roadway Modernization in Apple Valley from
Redwood Drive to 147th Street
Dakota
Apple Valley
Dakota County

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

The project location is a segment of CSAH 42 in Apple Valley, which is a signalized principal arterial with four through lanes and managed access. The one-mile project will extend from Redwood Drive to 147th Street, now serving 31,000 vehicles per day. The project segment exhibits poor average speed performance at current traffic levels (see the Level of Congestion map attached). With a 2040 forecast of 38,000 vehicles per day, design changes must be considered to provide for reasonable traffic operations and safety for all users. The segment also includes three traffic signals installed 33-34 years ago and thus at the end of their useful service lives. CSAH 42 in the area serves residential, park, community, and local business uses; but it has poor pavement quality and outdated accommodations for pedestrians, bicyclists, and transit riders. The time has come to implement long-needed improvements to serve all modes, while managing CSAH 42 to remain at four through lanes.

The main elements of the proposed project include:
(1) removal of the signal at Elm Dr concurrent with construction of a trail underpass nearby in Redwood Park to resolve ped/bike crossing barrier issues; (2) intersection improvements at Garden View Dr and Hayes Rd, including signal replacements; (3) partial reconstruction of CSAH 42, including new pavement and reconstruction along frontage road segments to fill trail gaps and improve the buffer for residents; and (4) median and roadway reconstruction with various design elements to address aging infrastructure, manage access, and best serve pedestrians, bicyclists, transit riders, and motorists. For example, the intersections at both Elm Dr and 147th St will be reconstructed as non-signalized 3/4-access intersections, allowing left turns only exiting from CSAH 42 (signal to be removed at Elm Dr and full-
(Limit 2,800 characters; approximately 400 words)

TRANSPORTATION IMPROVEMENT PROGRAM (TIP)
DESCRIPTION - will be used in TIP if the project is selected for funding. See MnDOT's TIP description guidance.
access stop-controlled intersection at 147th St to be reconstructed to reduce conflicts and ensure no future signalization).

The combination of the access-management elements and other updated traffic controls will improve safety and mobility along CSAH 42 for all users. The enhanced management of access and turns will also ensure that CSAH 42 will continue to operate acceptably with four through lanes and thus eliminate any foreseeable need for roadway expansion. The concurrent trail underpass at the Redwood Park/Pool and Community Center will address long-established concerns about safe crossings for pedestrians and bicyclists, particularly for the area's youth, and will link parkland both north and south of CSAH 42. Other design elements will improve safety and livability for nearby residents by better managing functions along the frontage roads and by improving the use of limited space.

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)
1.0
to the nearest one-tenth of a mile

## Project Funding

Are you applying for competitive funds from another source(s) to implement this project?

If yes, please identify the source(s)
Federal Amount \$6,540,000.00
Match Amount \$1,639,345.00
Minimum of $20 \%$ of project total
Project Total
\$8,179,345.00
For transit projects, the total cost for the application is total cost minus fare revenues.

Minimum of 20\%
Compute the match percentage by dividing the match amount by the project total
Source of Match Funds Dakota County and City of Apple Valley
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:
2025
Select 2024 or 2025 for TDM and Unique projects only. For all other applications, select 2026 or 2027.
Additional Program Years:
Select all years that are feasible if funding in an earlier year becomes available.

## Project Information-Roadways

| County, City, or Lead Agency | Dakota County |
| :---: | :---: |
| Functional Class of Road | Principal Arterial |
| Road System | CSAH |
| TH, CSAH, MSAS, CO. RD., TWP. RD., CITY STREET |  |
| Road/Route No. | 42 |
| i.e., 53 for CSAH 53 |  |
| Name of Road | Co Road 42, Co Highway 42, 150th St (all may apply to this segment) |
| Example; 1st ST., MAIN AVE |  |
| Zip Code where Majority of Work is Being Performed | 55124 |
| (Approximate) Begin Construction Date | 02/03/2025 |
| (Approximate) End Construction Date | 11/28/2025 |
| TERMINI:(Termini listed must be within 0.3 miles of any work) |  |
| From: <br> (Intersection or Address) | CSAH 42 and Redwood Dr |
| To: <br> (Intersection or Address) | CSAH 42 and 147th St W |
| DO NOT INCLUDE LEGAL DESCRIPTION |  |
| Or At |  |
| Miles of Sidewalk (nearest 0.1 miles) | 0 |
| Miles of Trail (nearest 0.1 miles) | 2.0 |
| Miles of Trail on the Regional Bicycle Transportation Network (nearest 0.1 miles) | 0 |
| Primary Types of Work | SIGNALS, PED/BIKE BOX CULVERT, BIKE PATH, PED RAMPS |

Examples: GRADE, AGG BASE, BIT BASE, BIT SURF,
SIDEWALK, CURB AND GUTTER,STORM SEWER,
SIGNALS, LIGHTING, GUARDRAIL, BIKE PATH, PED RAMPS,
BRIDGE, PARK AND RIDE, ETC.
BRIDGE/CULVERT PROJECTS (IF APPLICABLE)
Old Bridge/Culvert No.:
New Bridge/Culvert No.: Not yet assigned
Structure is Over/Under
(Bridge or culvert name):
Ped culvert under CSAH 42 in Redwood Park W of Elm

## 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: The project needs were identified based on reviews of infrastructure needs, including the need to address aging signals and related needs to preserve and modernize facilities, to maintain the region's arterial system in a state of good repair. The existing signals, bus transit stops, and other infrastructure in this area were established in 1988-1989. The segment's intersections and other design elements need to be modernized to address function and context.
B. Safety and Security: The modernized and improved roadway segment will help the region accumulate more long-term safety benefits than could be achieved without the project. The proposed improvements will include implementation of best practices for design of pedestrian and bicycle facilities and will address CSAH 42 as a recognized regional bicycle barrier in this area (tier 1 and 2 in the 2019 update). As detailed in Sections $6 A$ and 6B, safety and security enhancements are integral to the proposed project, including goals to mitigate crash rates and enhance pedestrian/bicyclist safety.
C. Access to Destinations: The improvements in this segment will serve more than 30,000 vehicles per day and will improve the interconnected system of the project's principal arterial, intersecting collectors and streets, and bike-ped-transit facilities. The project is also multimodal, follows Complete Streets principles, and will enhance the experience for all users and residents along CSAH 42, in Redwood Park, which includes the Redwood Community Center and Swimming Pool. The Project will also improve access at or near local
businesses and schools.
D. Competitive Economy: CSAH 42 is a Tier 2

Regional Truck Corridor and is the main east-west non-freeway principal arterial through this longdeveloped part of Dakota County. The project segment is a major commuting route that serves nearby job concentration centers immediately to the east in Apple Valley and to the west in Burnsville.
E. Healthy Environment: The ped/bike improvements and integral traffic efficiency measures in the project will encourage more trail use and promote healthy lifestyles (see also Sections 6B and 7A).

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.

The project is included in the Dakota County 20222026 Capital Improvement Program (CIP), which is found on this web page:
www.co.dakota.mn.us/Government/BudgetFinance/ 2022/Pages/default.aspx. The project details are included on page Trans 95 of the CIP. Please note, this funding application anticipates that all or most of project elements will be from Redwood Drive to 147th St in the City of Apple Valley. The CIP also includes possible planning and design review to the west, to Southcross Dr in Burnsville (intersection not included in this funding application and likely to be addressed as a separate, earlier, project).

On March 22, 2022, the Dakota County Board officially adopted the 2040 Management Plan and Visioning Study for CSAH 42, which also includes references to this project. See documents at this web page:
www.co.dakota.mn.us/Transportation/Transportatio nStudies/Current/Pages/county-highway-42-visioning-study.aspx.

The above-noted planning and programming documents were completed by Dakota County in partnership with the City of Apple Valley.

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 2022 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 the 2022 Regional Solicitation funding cycle, this requirement may include that the plan is updated within the past five years.

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

Link to plan:

## www.co.dakota.mn.us/Transportation/Transportatio

 nStudies/Past/Documents/ADATransitionPlan.pdfThe 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, per FHWA direction established 8/27/2008 and updated 6/27/2017. 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 and bridge projects must be identified as a principal arterial (non-freeway facilities only) or A-minor arterial as shown on the latest TAB approved roadway functional classification map.

Check the box to indicate that the project meets this requirement. Yes
Roadway 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 MnDOTs Cost Participation for Cooperative Construction Projects and Maintenance Responsibilities manual. In the case of a federally funded trunk highway project, the policy guidelines should be read as if the funded trunk highway route is under local jurisdiction.

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

Check the box to indicate that the project meets this requirement.
Bridge Rehabilitation/Replacement projects only:
5.The length of the bridge clear span must exceed 20 feet.

Check the box to indicate that the project meets this requirement.
6. The bridge must have a National Bridge Inventory Rating of 6 or less for rehabilitation projects and 4 or less for replacement projects.

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 Michael Corbett at MnDOT ( Michael.J.Corbett@state.mn.us or 651-234-7793) 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.

| Specific Roadway Elements |  |
| :---: | :---: |
| CONSTRUCTION PROJECT ELEMENTS/COST ESTIMATES | Cost |
| Mobilization (approx. 5\% of total cost) | \$314,590.00 |
| Removals (approx. 5\% of total cost) | \$116,894.00 |
| Roadway (grading, borrow, etc.) | \$595,960.00 |
| Roadway (aggregates and paving) | \$1,052,477.00 |
| Subgrade Correction (muck) | \$0.00 |
| Storm Sewer | \$389,051.00 |
| Ponds | \$0.00 |
| Concrete Items (curb \& gutter, sidewalks, median barriers) | \$549,886.00 |
| Traffic Control | \$38,965.00 |
| Striping | \$38,965.00 |
| Signing | \$38,965.00 |
| Lighting | \$0.00 |
| Turf - Erosion \& Landscaping | \$97,263.00 |
| Bridge | \$0.00 |
| Retaining Walls | \$499,839.00 |
| Noise Wall (not calculated in cost effectiveness measure) | \$0.00 |
| Traffic Signals | \$545,000.00 |
| Wetland Mitigation | \$0.00 |
| Other Natural and Cultural Resource Protection | \$0.00 |
| RR Crossing | \$0.00 |
| Roadway Contingencies | \$1,258,360.00 |
| Other Roadway Elements | \$431,484.00 |
| Totals | \$5,967,699.00 |

## Specific Bicycle and Pedestrian Elements

## CONSTRUCTION PROJECT ELEMENTS/COST ESTIMATES

Sidewalk Construction ..... $\$ 0.00$
On-Street Bicycle Facility Construction ..... $\$ 0.00$
Right-of-Way ..... $\$ 0.00$
Pedestrian Curb Ramps (ADA) ..... \$235,440.00

| Crossing Aids (e.g., Audible Pedestrian Signals, HAWK) | $\$ 0.00$ |
| :--- | ---: |
| Pedestrian-scale Lighting | $\$ 201,650.00$ |
| Streetscaping | $\$ 0.00$ |
| Wayfinding | $\$ 0.00$ |
| Bicycle and Pedestrian Contingencies | $\$ 0.00$ |
| Other Bicycle and Pedestrian Elements | $\$ 1,635,000.00$ |
| Totals | $\$ 2,211,646.00$ |
| Specific Transit and TDM Elements | $\mathbf{C O N T}$ |
| CONSTRUCTION PROJECT ELEMENTS/COST | $\$ 0.00$ |
| Fixed Guideway Elements | $\$ 0.00$ |
| Stations, Stops, and Terminals | $\$ 0.00$ |
| Support Facilities | $\$ 0.00$ |
| Transit Systems (e.g. communications, signals, controls, | $\$ 0.00$ |
| fare collection, etc.) | $\$ 0.00$ |
| Vehicles | $\$ 0.00$ |
| Totals | $\$ 0.00$ |

Transit Operating Costs

## 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. | $\$ 0.00$ |

## Totals

| Total Cost | $\$ 8,179,345.00$ |
| :--- | :--- |
| Construction Cost Total | $\$ 8,179,345.00$ |
| Transit Operating Cost Total | $\$ 0.00$ |

Measure B: Project Location Relative to Jobs, Manufacturing, and Education
Existing Employment within 1 Mile: ..... 9929
Existing Manufacturing/Distribution-Related Employment within 1 Mile: ..... 216
Existing Post-Secondary Students within 1 Mile: ..... 0
Upload Map
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: ..... 1.0
(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:1647983033211_Map-Regional Econ 42 in AV.pdf
Measure A: Current Daily Person Throughput

| Location | CSAH 42 from Redwood Drive to 147th St (2019 AADT) |
| :--- | :--- |
| Current AADT Volume | 31000 |
| Existing Transit Routes on the Project | 2 |
| For New Roadways only, list transit routes that will likely be diverted to the new proposed roadway (if applicable). |  |
| Upload Transit Connections Map | 1647984529939 Map-Transit 42 in AV.pdf |
| Please upload attachment in PDF form. |  |Please upload attachment in PDF form.

Response: Current Daily Person Throughput
Average Annual Daily Transit Ridership ..... 0
Current Daily Person Throughput40300.0

Use Metropolitan Council model to determine forecast (2040) ADT volume

If checked, METC Staff will provide Forecast (2040) ADT volume
OR

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

Forecast (2040) ADT volume

> Regional model as reviewed and included in the Dakota County 2040 Transportation Plan and the 2040 Corridor Management Plan for Highway 42 .
> 38000

## Measure A: Engagement

i.Describe any Black, Indigenous, and People of Color populations, low-income populations, disabled populations, youth, or older adults within a $1 / 2$ 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:

The City of Apple Valley and Dakota County actively engaged with the public to inform those nearby and interested in the project. This included the recent completion of the 2040 Management Plan for Highway 42, which featured development of the preliminary layout included with this funding application with public presentations and public input on design concepts. The segment from Redwood Park to 147th St was specifically targeted in anticipation of this project.

The efforts in 2021 included three rounds of online engagement, including scheduled Zoom meetings in March 2021 and an outdoor in-person open house held July 15, 2021 in Redwood Park. Engagement in 2022 continued, using direct emails and social media in February to announce completion of the 2040 Corridor Management Plan, including project recommendations. For the

Response: engagements in March and July 2021, staff direct mailed more than 1,300 nearby residents and used social media. That engagement also included distribution of door hangers along the frontage roads, including several real-time conversations in the process.

Current engagement has been more positive than efforts in 2015; and this is because commitments have now been made to more context-sensitive design, recognizing the importance of Redwood Park/Pool and the area's setting (see more in Measure C below). The mailing list and promotional area includes census tracts that are Regional Environmental Justice Areas (attached map). Additional outreach included pop-up in-person engagement at three summer-2021 community events in Apple Valley, Burnsville, and Rosemount. In total, the engagement efforts created strong awareness of the proposed project and yielded many comments. The feedback helped shape the
preliminary design; for example:
** Concepts to add left-turn-lane capacity to the CSAH 42 intersection with Garden View Dr were confirmed feasible without expanding to dual left turns, thus avoiding unwanted CSAH 42 expansion.
** Strong interest, from both local businesses and residents, in the concept of reconstructing frontage roads to operate in one-way configurations, freeing space to dedicate for improved trails and options for green space and parking (this detail will require more engagement).
** Removal of the signal at Elm Dr concurrent with construction of a box-culvert crossings for peds/bikes to was confirmed desirable by most stakeholders, helping limit need for overall roadway expansion, and providing a significant improvement for ped/bike safety and for neighborhood cohesion.

Please see the attachment summarizing input received for the CSAH 42 Visioning Study and note the current project webpage:
www.co.dakota.mn.us/Transportation/Transportatio nStudies/Current/Pages/county-highway-42-visioning-study.aspx.

## Measure B: Equity Population Benefits and Impacts

Describe the projects benefits to Black, Indigenous, and People of Color populations, low-income populations, children, people with disabilities, youth, and older adults. Benefits could relate to:
This is not an exhaustive list. A full response will support the benefits claimed, identify benefits specific to Equity populations residing or engaged in activities near the project area, identify benefits addressing a transportation issue affecting Equity populations 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.

The project will provide many transportation equity benefits for underrepresented stakeholders as addressed in this question. The elements of the project will address a historic lack of investment in this mostly residential segment of CSAH 42, which includes Regional Environmental Justice Areas (see attached map). The benefits will be integral with the many improved functions along the roadway segment, including safer signalized intersections for all users and significant upgrades in the Redwood Park/Pool and Community Center area, with the box-culvert underpass in the Park, near Elm Dr.

Importantly, Dakota County staff have now made significant progress in efforts to address the need for modernized and improved infrastructure in the area since 2015, when more restricted recommendations for CSAH 42 intersections were presented and caused controversy. Prior to the 2021 engagement, Dakota County did not fully address the significant barrier that CSAH 42 presents for bicyclists and pedestrians, especially the opportunity to provide a structured crossing in Redwood Park and to improve conditions based on modern signalized intersections and changes along frontage roads. The elements now proposed for this project will provide a significant upgrade to the quality and functions of CSAH 42 infrastructure for adjacent and nearby residents.

## Measure C: Affordable Housing Access

Describe any affordable housing developmentsexisting, under construction, or plannedwithin $1 / 2$ 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 projects benefits to current and future affordable housing residents within $1 / 2$ mile of the project. Benefits must relate to affordable housing residents. Examples may include:
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:
The attached Socio-Economic Conditions Map reports 559 publicly subsidized rental housing units in census tracts within $1 / 2$ mile of the project area. Note the additional pages attached to the required map, based on HousingLink search data, which provide examples of subsidized multi-unit housing available in general area. These and other additional data searches, attached with the SocioEconomic Conditions Map, show that single-family or apartment housing throughout the area may offer affordable options. Note the Housing Link scores for walk/bike access in the examples provided.

Note, see also attached to the Socio- Map a web page describing Apple Grove Court, which is another example of subsidized and affordable housing next to the project location (8005 147th St W). One more example could be the Ecumen Centennial House, a non-profit assisted living center (14625 Pennock www.ecumencentennialhouse.org).

In general, the Socio-Economic Conditions Map and our efforts to find specific examples of subsidized and affordable housing suggest many such sites. However, online data sources are not consistent in displaying all locations, nor in providing good data on affordable rents which appear to be offered by some in the project area.

The project includes numerous safety and access improvements for pedestrians and bicyclists, facilitating better movement along CSAH 42, significantly reducing the barrier impact of CSAH 42, and improving conditions for access to bus transit stops.

The overall project benefits for those living in affordable housing will include improved access to all destinations, and to nearby schools and related
facilities (including Valley Middle School, Apple Valley High School, and the Apple Valley Community Center, all within 1/2-mile of the project). The improved/structured crossing under CSAH 42 serving Redwood Park and Community Pool is integral with the project and is one key example of an improved community connection, increasing community cohesion for many residents. The general project area also includes five nearby churches and approximately 10 parks and playfield areas ranging from neighborhood parks to community destinations (like the Redwood Park/Pool and Community Center) with parking, large picnic sites, trails, and other facilities. The project's safety and access improvements will be widely beneficial to affordable housing residents and to many others along a segment of CSAH 42 that has not received measurable infrastructure investments for more than 30 years.

## Measure D: BONUS POINTS

Project is located in an Area of Concentrated Poverty:
Projects census tracts are above the regional average for population in poverty or population of color (Regional Yes 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):

Upload the Socio-Economic Conditions map used for this measure.

1649092601463_Map-SocioEconomic 42 inAV +More.pdf

## Measure A: Year of Roadway Construction

Year of Original
Roadway Construction
or Most Recent
Reconstruction

Segment Length
Calculation
Calculation 2

## Total Project Length

Total Project Length (as entered in "Project Information" form) 1.0

## Average Construction Year

Weighted Year 1989

## Total Segment Length (Miles)

Total Segment Length

## Measure B: Geometric, Structural, or Infrastructure Improvements

Improved roadway to better accommodate freight movements: Yes
The project will include removal of the signal at Elm Dr, two signal replacements at Garden View and Hayes, and the addition of access restrictions at 147th St. These and other project elements will better accommodate freight movements on CSAH 42, a principal arterial and Tier 2 regional truck corridor.
(Limit 700 characters; approximately 100 words)
Improved clear zones or sight lines:

Response:
Yes
Improved sight lines and related safety for all users will apply at the Garden View Dr intersection and at other locations along the one-mile project.
Incorporating best practices for the at-grade intersection design, including pedestrian crossings, at Garden View Dr and Hayes Rd are examples of the elements included to improve sight lines. Truck aprons may be considered at Garden View Dr to improve safety and operations for motorists and for peds/bikes.
(Limit 700 characters; approximately 100 words)
Improved roadway geometrics:
Yes

Response:
(Limit 700 characters; approximately 100 words)
Access management enhancements:

Response:
(Limit 700 characters; approximately 100 words)
Vertical/horizontal alignment improvements:
Response:
(Limit 700 characters; approximately 100 words)
Improved stormwater mitigation:

Response:
(Limit 700 characters; approximately 100 words)
Signals/lighting upgrades:

Response:
( approximately 100 words)
Other Improvements

As noted above, the geometrics at Garden View Dr and at/approaching other intersections will be refined to improve safety and operations. The overall corridor management goal is to eliminate the need for CSAH 42 expansion by using access management and other intersection improvements.

Yes
The full-access intersections at Elm Dr and 147th St will be replaced with two $3 / 4$ intersections, enhancing access management. Again, this supports the overall corridor management goal of not expanding CSAH 42.

Yes
The project will comply with the latest standards to protect or enhance stormwater management. The project will add little or no impermeable surface to the area and, in fact, should add to net permeable surface area by expanding boulevards along the frontage roads.

Yes
Lighting upgrades will be integral with signal replacements and related technology improvements, with additional pedestrian-scale lighting also included in the preliminary plan and cost estimate. For example, the project will include lighting improvements in and around the new box culvert, in Redwood Park. The modernized signal and lighting elements will enhance safety and security for all travelers, both day and night.

Yes

The project will include the addition of trails or trail improvements along frontage roads. The overall project will significantly improve pedestrian, bicycle, and transit accommodations; it will also address ADA deficiencies and includes features which can improve aesthetics and livability throughout the project area (see more detail in Section 6B).
(Limit 700 characters; approximately 100 words)

## Measure A: Congestion Reduction/Air Quality

| Total Peak |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| Hour | Total Peak | Total Peak |  |  |
| Delay Per | Hour | Hour | Volume | Volume |
| Vehicle | Delay Per | Delay Per | without | with the |
| Without | Vehicle | Vehicle | with The | Reduced |
| the Project | Project |  |  |  |
| The | Project | by Project | (Vehicles | (Vehicles |
| Project | (Seconds/ | (Seconds/ | peur) | Per Hour): |
| (Seconds/ | Vehicle) | Vehicle) |  |  |
| Vehicle) |  |  |  |  |



110345

## Vehicle Delay Reduced

Total Peak Hour Delay Reduced
Total Peak Hour Delay Reduced

EXPLANA
TION of

| Total Peak | Total Peak | methodolo |  |
| :---: | :---: | :---: | :---: |
| Hour | Hour | gy used to | Synchro |
| Delay | Delay | calculate | Syn or |
| Reduced | Reduced | railroad | or |
| by the | by the | crossing <br> Reports |  |
| Project: | Project: | delay, if <br> applicable. |  |

NA re.
railroad crossing. NOTE, the attached Dists four intersection s ; values here are four.
110344.8
110344.8

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): \begin{tabular}{c}
Total (CO, NOX, and VOC) <br>
Peak Hour Emissions with <br>
the Project (Kilograms):

 

Total (CO, NOX, and VOC) <br>
Peak Hour Emissions <br>
Reduced by the Project <br>
(Kilograms):
\end{tabular}

## Total

Total Emissions Reduced:

Upload Synchro Report

1649182525868_CSAH 42 Gardenview Operations Summary Files 03282022.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 (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):

## Total Parallel Roadway

Emissions Reduced on Parallel Roadways
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):
EXPLANATION of methodology and assumptions used:(Limit 1,400 characters; approximately 200 words)

## 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 | 0 |
| Project (Kilograms): |  |
| EXPLANATION of methodology and assumptions used:(Limit |  |
| 1,400 characters; approximately 200 words) |  |

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

CMF 332 - Remove Unwarranted Signal

CMF 351 - Replace direct left with right-turn (3/4 access)

CMF 1414 - Add signal head in addition to primary head
Crash Modification Factor Used:
CMF 1485 - Install additional signal head over each lane

CMF 7684 - Permissive lefts to FYA Prot/Perm

CMF 7690 - Protected lefts to FYA Time-of-Day

| Rationale for Crash Modification Selected: | The CMFs listed above describe elements of the proposed project, including removal of the Elm Dr signal and replacing that full-access intersection, plus the intersection with 147th St, with restrictedaccess $3 / 4$ intersections. The CMFs also account for replacement of aged signal systems with modern signals providing enhanced left-turn controls and signal phases. |
| :---: | :---: |
| (Limit 1400 Characters; approximately 200 words) |  |
| Project Benefit (\$) from B/C Ratio | \$5,788,910.00 |
| Total Fatal (K) Crashes: | 0 |
| Total Serious Injury (A) Crashes: | 0 |
| Total Non-Motorized Fatal and Serious Injury Crashes: | 0 |
| Total Crashes: | 57 |
| Total Fatal (K) Crashes Reduced by Project: | 0 |
| Total Serious Injury (A) Crashes Reduced by Project: | 0 |
| Total Non-Motorized Fatal and Serious Injury Crashes Reduced by Project: | 0 |
| Total Crashes Reduced by Project: | 23 |
| Worksheet Attachment | 1649781220550_CSAH 42 Gardenview Crash Summary Files 04122022.pdf |

Please upload attachment in PDF form.

## Roadway projects that include railroad grade-separation elements:

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

0

0
0

## Measure A: 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) and does not provide safe and comfortable pedestrian facilities and No crossings.

Existing location lacks any pedestrian facilities (e.g., sidewalks, marked crossings, wide shoulders in rural contexts) and project does not add pedestrian elements (e.g., reconstruction of a

## 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 roadways 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:
Modernization of the traffic signals and intersections at Garden View Dr and Hayes Rd will ensure consistency with ADA standards, specifically by replacing aged signals and related elements (such as curb ramps and markings) which today are not ADA compliant. The overall project will thus improve the quality of CSAH 42 crossings, as well as local street crossings at intersections. The project also includes a box culvert for ped/bike crossings just west of the Elm Dr signal removal, in Redwood Park; the culvert will significantly improve CSAH 42 crossing safety for youth and other park users. Trail gaps, especially around Garden View Dr and along frontage roads, will be filled with multiuse bituminous trails. Design detailing along the frontage roads may also provide choices for parking or green boulevards next to trails, significantly improving the overall function and character of the segments, without roadway expansion. These design elements and others will fit the context and needs along this largely residential segment of CSAH 42 by providing safer traffic operations and safer and more coherent ped/bike and transit-stop infrastructure.

Improvements to access management, while primarily serving to streamline and channel traffic, will help maintain CSAH 42 as a 4-lane roadway with narrow shoulders (posted at 40 mph in the project area). The roadway will thus retain its compressed cross section and general character while project elements will significantly improve conditions for non-motorized travel, at transit stops, and along frontage road segments. In total, these changes will address a significant concentration of non-ADA-compliant design elements in an area that has a demonstrated demand for ped/bike movements, including the need to cross CSAH 42. As noted above (Requirements) the Dakota County ADA Transition plan is at this link and provides examples of compliance issues within Dakota

County, which are widely observed along this aged segment of CSAH 42:
www.co.dakota.mn.us/Transportation/Transportatio nStudies/Past/Documents/ADATransitionPlan.pdf.

Additional details in response to questions on ped/bike crossing safety and other functions are provided in the sections below.
(Limit 2,800 characters; approximately 400 words)
Is the distance in between signalized intersections increasing (e.g., removing a signal)?
Select one: Yes

If yes, describe what measures are being used to fill the gap between protected crossing opportunities for pedestrians (e.g., adding HighIntensity 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.).

The removal of the signal at Elm Dr will be integral with the new box culvert to serve ped/bike crossings of CSAH 42 near Elm Dr and in the Redwood Park/Pool area. This design element will address long-established concerns about safe crossings for pedestrians and bicyclists, particularly for the area's youth, and will link parkland both north and south of CSAH 42.

CSAH 42 is a recognized regional bicycle barrier in the project area (tier 1 and 2 in the 2019 update) and it is perceived by many residents as unsafe for crossing, while the context provides many reasons for residents to cross CSAH 42 (schools, parks, and retail). The overall project provides for improved traffic mobility and controls along CSAH 42, which are needed to address congestion and safety; still, the project design allows CSAH 42 to remain a constrained-width four-lane roadway. The box culvert in Redwood Park and crossing improvements at signals (Garden View Dr and Hayes Rd) will benefit from limiting the CSAH 42 width. But with more than 30,000 vehicles per day, it is not reasonable for peds/bikes to select gaps in traffic, nor to provide user-activated mid-block crossings. The project's combined design elements will feature best practices for safer ped/bike crossings, with improved safety along CSAH 42 as well, significantly improving facilities and safety for non-motorized travelers.
(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:

## No

If yes,
How many intersections will likely be affected?
Response:
Describe what measures are being used to reduce exposure and delay for pedestrians (e.g., median crossing islands, curb bulb-outs, etc.)

The project will create little to no increase in crossing distances. As noted above, managing CSAH 42 to serve future traffic without widening is a fundamental project objective.

The Garden View Dr intersection may introduce some design challenges for the crossing of the Garden View approach legs, if turn-lane improvements or other geometrics need more space. However, there are opportunities at this intersection to refine trail crossings on the minor legs and provide special design elements to maintain existing crossing distances. For example, the updated design could incorporate truck aprons to retain or reduce marked crossing distances while also accommodating larger-radius turns.
(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 doesnt require much elevation change instead of pedestrian bridge with numerous switchbacks).

The box culvert crossing will be a shallow tunnel and it will be located to connect the two sides of Redwood Park, north and south of CSAH 42. The preliminary design suggests limited change in elevation and routings that are desirable for the crossing. The Redwood Park/Pool amenities are expected to be the top objectives for those wishing to cross.
(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).

No physical restrictions are proposed along midblock areas. But crossings will not be marked at Response: locations other than at the two signalized intersections and at the new box culvert ped underpass.
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.).

The opportunity to enhance traffic operations along this lower-speed segment of CSAH 42 while not widening is fundamental to managing future vehicle speeds (see the attached Level of Congestion Map). The roadway through this area is constrained by narrow shoulders and urban design elements which can be retained in the design. Specifically, the project will provide opportunities to refine road edge treatments and add lateral clearance elements into the driver's visual field. For example:

> ** Possible vertical roadside elements in Redwood Park at the location of the box culvert

Response:

$$
\begin{aligned}
& \text { ** Truck aprons as noted above for the Garden } \\
& \text { View Dr intersection, and perhaps similar features } \\
& \text { at Hayes Rd, which may appear and function as } \\
& \text { bump outs even as they are actually drivable } \\
& \text { ** Enhanced signals and pavement markings at } \\
& \text { intersections, to fit the lower-speed residential } \\
& \text { context } \\
& \text { ** Road edge, median, and turn-lane designs that } \\
& \text { use pavement or walls to safely accommodate } \\
& \text { traffic while again reinforcing a lower-speed context }
\end{aligned}
$$

(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?
The current posted speed is 40 mph , and peakhour traffic typically operates at lower speeds. No change to the posted speed is proposed (other segments of CSAH 42 are posted higher).

## 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
Yes
Existing road has a design speed, posted speed limit, or speed study/data showing 85th percentile travel speeds in excess of 30 Yes MPH or more

Existing road has AADT of greater than 15,000 vehicles per day Yes

List the AADT
31000

## 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 (lf 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. If service was temporarily reduced for the pandemic but is expected to return to 2019 levels, consider 2019 service for this item.)

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 $9 a m$ to 6 pm Saturdays. If service frequency was temporarily reduced for the pandemic but is expected to return to 2019 levels, consider 2019 frequency for this item.)

Existing road is within 500 of $1+$ shopping, dining, or entertainment destinations (e.g., grocery store, restaurant)

## Yes

The Garden View Dr intersection includes several local shopping and service businesses at all four corners and nearby on the CSAH 42 frontage or along Garden View Dr to the south; this includes a small strip shopping center in the NE quadrant.

The NE corner of 147th St (at the east end of the project) is the location of Bachman's and is also at the west end of a major shopping, dining, and business district surrounding CSAH 23 (Cedar Avenue) $1 / 2$ mile to the east. That area includes dozens of businesses and community services.

Existing road is within 500 of other known pedestrian generators
(e.g., school, civic/community center, senior housing, multifamily Yes
housing, regulatorily-designated affordable housing)
The project area includes the following pedestrian generators within 500 feet:

** Redwood Park and Community Pool/Center<br>** Shopping and services around the Garden View<br>Dr intersection

If checked, please describe:
** Apple Valley Baptist Church south of CSAH 42 on Garden View Dr
** Shopping near 147th St and extending to east
** Apple Grove Pk and Apple Grove Court subsidized housing NE of 147th St

## Measure A: Multimodal Elements and Existing Connections

Response:
As in the responses above, the positive impacts of the project on the multimodal system are fundamental goals, with design elements to include the box culvert near Elm Dr, many intersection improvements for peds and bikes, and related benefits for transit stops. RBTN routes are not present in the project area. But again, CSAH 42 is a recognized regional bicycle barrier in the project area (tier 1 and 2 in the 2019 update).
Improvements to address this barrier issue are included in the project.

As detailed in Section 6B (Pedestrian Safety) the Dakota County ADA Transition plan provides examples of compliance issues that are widely observed along this aged segment of CSAH 42. These include non-compliant and obsolete signals and non-compliant curb ramps, pavement markings, and trail gaps. The project will address a significant concentration of non-ADA-compliant design elements in an area that has a demonstrated demand for ped/bike movements, including the need to cross CSAH 42.

As noted in Section 2A (with the Transit Connections map) the project location includes two bus transit routes, Minnesota Valley Transit Authority (MVTA) Routes 447 and 442. Both routes serve the CSAH 42 corridor, with Route 447 running along CSAH 42 and Route 442 crossing CSAH 42 or transitioning to crossing routes on segments of CSAH 42. Bus stop amenities and design elements are minimal for routes; however, Route 447 is a newer route (2021) which includes a number of fixed-stop locations through Burnsville and in Apple Valley west of Cedar Ave. Significant improvements to transit stops are not anticipated in the project design, with the multimodal elements described above providing improved ped/bike connections and therefore integral to any bus stop improvements. Dakota County and MVTA were
actively engaged in development of the 2040 Management Plan for CSAH 42 and will continue to coordinate on bus stop locations, as applicable. This is the typical approach for Dakota County roadway reconstruction projects, with no need at this time to provide special accounting for bus stop features or to request MVTA cost participation. Additional coordination will follow throughout design.

## 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.

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.

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.

The proposed project concepts were widely shared through public engagement steps linked with the 2040 Management Plan for CSAH 42 (the Highway 42 Visioning Study). The segment from Redwood Park to 147th St was also specifically targeted in anticipation of this project. As described in Section 3A (Equity and Affordable Housing), the efforts in 2021 included three rounds of online engagement, including scheduled Zoom meetings to focus on the project neighborhood/area in March 2021 and an outdoor in-person open house held July 15, 2021 in Redwood Park.

The key engagements and numbers for the project area included the following:
> ** February-March 2021. Direct US mail to 1,300+ in the project area; social media; emails; two Zoom meetings held on March 2, 2021, with each meeting attended by approximately 25 persons.
> ** June-July 2021. Direct US mail to 1,300+ in the project area; social media; emails; open-house public meeting held at Redwood Park on July 15, 2021, attended by approximately 50 persons.

Additional outreach has included subscriber emails, reaching approximately 500 participants and significant online engagement, including social media, online presentations, surveys, and wikimap comment tools (more than 300 comments received, with additional input through online and walk-up surveys). The online tools were used to share recent updates in 2022 and helped to create strong awareness of the proposed project. See Sections 3A and 3B for more on how public feedback helped shape the preliminary design, and see the attachment summarizing engagement activities and feedback received for the CSAH 42 Visioning Study. As noted in Section 3, the project vision has evolved since 2015 to be more publicly accepted,
when more restricted recommendations for CSAH 42 intersections were presented. The web page for the Visioning Study and Management Plan is: www.co.dakota.mn.us/Transportation/Transportatio nStudies/Current/Pages/county-highway-42-visioning-study.aspx.

Outreach to local residents and businesses will continue in 2022 and through completion of the project to further refine the project design and to manage construction, consistent with the Dakota County Capital Improvement Program and project work plan.
> **** NOTE: The project as shown in the attached layout significantly avoids the need for private right-of-way (permanent easements). For example, the frontage road segments are drawn to allow for new green space within the existing CSAH 42 right-ofway. The potential for adverse effect to any historic property, if present, is also negligible. Temporary easements will be needed because space is highly constrained.

(Copies of the attached layout and letter from Apple Valley are also included in the Other Attachments section.)

100\%
A layout does not apply (signal replacement/signal timing, standalone 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.
$75 \%$
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
1649878520265_CSAH 42 LAYOUT Redwood to 147th_04122022.pdf

Please upload attachment in PDF form.

Additional Attachments

1649880041754_CSAH 42 Support Letter Fr City-AV 3-2922.pdf

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

100\%
There are historical/archeological properties present but determination of no historic properties affected is anticipated. Yes

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.

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

25\%
Right-of-way, permanent or temporary easements, and/or MnDOT agreement/limited-use permit required - parcels not all identified Yes

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)
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): | $\$ 8,179,345.00$ |
| :--- | :--- |
| Enter Amount of the Noise Walls: | $\$ 0.00$ |
| Total Project Cost subtract the amount of the noise walls: | $\$ 8,179,345.00$ |
| Enter amount of any outside, competitive funding: | $\$ 0.00$ |
| Attach documentation of award: |  |
| Points Awarded in Previous Criteria | $\$ 0.00$ |

## Other Attachments

| File Name | Description | File Size |
| :---: | :---: | :---: |
| Attach1 CSAH 42 AppleValley RegSolic Summary 1-Pager04-2022.pdf | One-Page Project Summary - CSAH 42 in Apple Valley | 299 KB |
| Attach2 CSAH 42 Support Letter Fr CityAV 3-29-22.pdf | Letter of Support from City of Apple Valley (same as in Section 8A) | 81 KB |
| Attach3 Map-Level of Congestn 42 in AV.pdf | Met Council Level of Congestion Map (noted in Project Info Section and in Section 6B) | 2.6 MB |
| Attach4 CSAH 42 LAYOUT Redwood to 147th_04122022.pdf | Preliminary Project Layout - CSAH 42 in Apple Valley (same as in Section 8A) | 6.7 MB |
| Attach5 CSAH 42 -Public Engagement Summary.pdf | Public Engagement Summary (noted in Sections 3A and 8A) | 1.6 MB |

Regional Economy
Roadway Reconstruction/Modernization Project: CSAH 42 Roadway Modernization in Apple Valley from Redwood D |

Results
WITHIN ONE MI of project:
Postsecondary Students: 0
Totals by City:
Apple Valley
Population: 12758
Employment: 9077
Mfg and Dist Employment: 171
Burnsville
Population: 5676
Employment: 688
Mfg and Dist Employment: 45 Lakeville
Population: 1853
Employment: 164
Mfg and Dist Employment: 0
alumaik



Project Points $\square$ Manfacturing/Distribution Centers
Project $\square$ Job Concentration Centers

For complete disclaimer of accuracy, please visit For complete disclaimer of accuracy, please visit
tp://giswebsite.metc.state.mn.us/gissitenew/notice.asp
 Results

Total of publicly subsidized rental housing units in census tracts within $1 / 2$ mile: 559

Project located in census tract(s) that are ABOVE the regional average for population in poverty or population of color.
Apple Valley



Bellaptare
Paolz
Beller 2



## Fraser

## Subsidized Housing for People with Disabilities

Apple Grove Court
8005 147th St W, Apple Valley, MN, 55124
C. (612) 767-5180
(3) https://www.fraser.org/services/community-living


## DESCRIPTION

Privately owned building whose management contracts with either the U.S. Department of Housing and Urban Development (HUD) or the Minnesota Housing Finance Agency to receive rental subsidies

This type of property is sometimes referred to as "Project Based Section 8 Housing." Property owner/manager must follow HUD regulations. The government gives funds directly to the apartment owners, who lower the rents they charge tenants with low-income. This type of affordable housing requires at least one resident in the apartment to have a disability. The rental amount paid by the resident is determined based on the resident's income. Some units have a low, fixed rent amount.

HUD requires rental housing to provide Equal Housing Opportunity. HUD enforces the Fair Housing Act. More information available online.

## ADDITIONAL INFORMATION

Fraser Independent Living operates five apartment buildings designed for adults with developmental disabilities who can live independently with minimal support. Each building has a wait list.

## FEATURES

## Specialization

- Adults with disabilities
- Disabilities


## ELIGIBILITY

The resident must meet income guidelines set by the U.S. Department of Housing and Urban Development (HUD). Check with the property management for specific income limits.

This type of housing requires at least one resident in the apartment to have a disability. Individual properties may have additional eligibility requirements.

## APPLICATION INSTRUCTIONS

Contact CommunitySupports@fraser.org or 612-767-5180 for more information on the wait list for Fraser Independent Living.

## AREA SERVED

## Dakota County

## WEBSITES

https://www.fraser.org/services/community-living
http://www.fraser.org

PHONE NUMBERS

| Type | Number | Hours |
| :--- | :--- | :--- |
| Main | $(612) 767-5180$ |  |

## LAST UPDATE

3/29/2022

## Excelsior Court

5125 Porter Ave, Minnetonka, MN, 55345

## Fraser Hopkins Court

41 8th Ave N, Hopkins, MN, 55343

## Lyndale Court

10325 Lyndale Ave S, Bloomington, MN, 55420

## Sheridan Court

2500 W 66th St, Richfield, MN, 55423

## OTHER SERVICES OR RESOURCES

This provider does not offer other services or resources at this location.
> TAXONOMY TERMS USED

CSAH 42 at Gardenview Drive
PM Peak Hour

| ID \# | Intersection |
| :---: | :--- |
| $614^{*}$ | CSAH 42 at Elm Dr |
| 615 | CSAH 42 at Gardenview Dr |
| 616 | CSAH 42 at Hayes Rd |
| $211^{* *}$ | CSAH 42 at 147th St |
|  | *removed signal-convert to 3/4-access in Build Conditions <br>  <br>  <br> ${ }^{* *}$ convert to 3/4-access in Build Conditions |

Existing Conditions

| Intersection \# | 614 | 615 | 616 | 211 | Total |
| :--- | :---: | :---: | :---: | :---: | :---: |
| Volumes (vph) | 2,766 | 3,542 | 2,892 | 2,794 | $\mathbf{1 1 , 9 9 4}$ |
| Delay (sec/veh) | 4 | 32 | 7 | 36 | $\mathbf{2 0 . 4}$ |
| Total Delay (seconds) | 11,064 | 113,344 | 20,244 | 100,584 | 245,236 |


| Emissions |  |  |  |  |  |
| :--- | :---: | :---: | :---: | :---: | :---: |
| CO (kg) | 2.19 | 5.59 | 2.62 | 3.62 | 14.02 |
| NOx (kg) | 0.43 | 1.09 | 0.51 | 0.70 | 2.73 |
| VOC (kg) | 0.51 | 1.30 | 0.61 | 0.84 | 3.26 |
| Emissions Total |  |  |  |  |  |
| $\mathbf{n y y y y}$ | $\mathbf{2 0 . 0 1}$ |  |  |  |  |

Proposed Build Conditions

| Intersection \# | 614 | 615 | 616 | 211 | Total |
| :--- | :---: | :---: | :---: | :---: | :---: |
| Volumes (vph) | 2,766 | 3,542 | 2,892 | 2,794 | $\mathbf{1 1 , 9 9 4}$ |
| Delay (sec/veh) | 0 | 30 | 7 | 3 | $\mathbf{1 1 . 2}$ |
| Total Delay (seconds) | 0 | 106,260 | 20,244 | 8,382 | 134,886 |


| Emissions |  |  |  |  |  |
| :--- | :---: | :---: | :---: | :---: | :---: |
| CO $(\mathrm{kg})$ | 1.59 | 5.35 | 2.66 | 2.27 | 11.87 |
| NOx $(\mathrm{kg})$ | 0.31 | 1.04 | 0.52 | 0.44 | 2.31 |
| VOC $(\mathrm{kg})$ | 0.37 | 1.24 | 0.62 | 0.53 | 2.76 |
| Emissions Total |  |  |  |  |  |


|  | Existing |  | Build |  |
| :---: | :---: | :---: | :---: | :---: |
|  | Delay $(\mathrm{s} / \mathrm{v})$ | Volume | Delay $(\mathrm{s} / \mathrm{v})$ | Volume |
| Delay and Vehicles | 20.4 | 11,994 | 11.2 | 11,994 |


|  | Existing (kg) | Build (kg) |
| :---: | :---: | :---: |
| Emissions (Total kg) | 20.01 | 16.94 |

211: 147th St \& CSAH 42

| Direction | EB | WB | NB | SB | All |
| :--- | ---: | ---: | ---: | ---: | ---: |
| Future Volume (vph) | 1536 | 1021 | 14 | 223 | 2794 |
| Total Delay / Veh (s/v) | 2 | 0 | 348 | 421 | 36 |
| CO Emissions $(\mathrm{kg})$ | 1.34 | 0.68 | 0.08 | 1.52 | 3.62 |
| NOx Emissions $(\mathrm{kg})$ | 0.26 | 0.13 | 0.01 | 0.30 | 0.70 |
| VOC Emissions $(\mathrm{kg})$ | 0.31 | 0.16 | 0.02 | 0.35 | 0.84 |

614: Elm Dr \& CSAH 42

| Direction |  |  |  |  |  |
| :--- | ---: | ---: | ---: | ---: | ---: |
| Future Volume (vph) | 1643 | 1089 | 11 | 23 | 2766 |
| Total Delay /Veh (s/v) | 5 | 3 | 33 | 25 | 4 |
| CO Emissions $(\mathrm{kg})$ | 1.18 | 0.98 | 0.01 | 0.03 | 2.19 |
| NOx Emissions $(\mathrm{kg})$ | 0.23 | 0.19 | 0.00 | 0.00 | 0.43 |
| VOC Emissions $(\mathrm{kg})$ | 0.27 | 0.23 | 0.00 | 0.01 | 0.51 |

## 615: Garden View Dr \& CSAH 42

| Direction | EB | WB | NB | SB | All |
| :--- | ---: | ---: | ---: | ---: | ---: |
| Future Volume (vph) | 1609 | 1204 | 453 | 276 | 3542 |
| Total Delay / Veh (s/v) | 30 | 28 | 50 | 37 | 32 |
| CO Emissions $(\mathrm{kg})$ | 2.73 | 1.69 | 0.73 | 0.44 | 5.59 |
| NOx Emissions $(\mathrm{kg})$ | 0.53 | 0.33 | 0.14 | 0.08 | 1.09 |
| VOC Emissions $(\mathrm{kg})$ | 0.63 | 0.39 | 0.17 | 0.10 | 1.30 |

616: CSAH 42 \& Hayes Rd

|  |  |  |  |  |
| :--- | ---: | ---: | ---: | ---: |
| Direction | EB | WB | SB | All |
| Future Volume (vph) | 1550 | 1179 | 163 | 2892 |
| Total Delay / Veh (s/v) | 2 | 11 | 30 | 7 |
| CO Emissions $(\mathrm{kg})$ | 1.10 | 1.29 | 0.23 | 2.62 |
| NOx Emissions $(\mathrm{kg})$ | 0.21 | 0.25 | 0.05 | 0.51 |
| VOC Emissions $(\mathrm{kg})$ | 0.25 | 0.30 | 0.05 | 0.61 |


|  | 4 | $\rightarrow$ |  | $\checkmark$ | 4 | 4 | 4 | $\uparrow$ |  | $\downarrow$ | $\downarrow$ | $\downarrow$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | ${ }^{7}$ | 44 | 「 | \％ | 个4 | 「 |  | $\uparrow$ |  |  | ¢ |  |
| Traffic Volume（vph） | 27 | 1601 | 15 | 0 | 1080 | 9 | 6 | 1 | 4 | 5 | 2 | 16 |
| Future Volume（vph） | 27 | 1601 | 15 | 0 | 1080 | 9 | 6 | 1 | 4 | 5 | 2 | 16 |
| Ideal Flow（vphpl） | 1900 | 2000 | 1900 | 1900 | 2000 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Storage Length（ft） | 320 |  | 270 | 290 |  | 145 | 30 |  | 0 | 30 |  | 0 |
| Storage Lanes | 1 |  | 1 | 1 |  | 1 | 0 |  | 0 | 0 |  | 0 |
| Taper Length（ft） | 160 |  |  | 170 |  |  | 100 |  |  | 100 |  |  |
| Satd．Flow（prot） | 1770 | 3725 | 1583 | 1863 | 3725 | 1583 | 0 | 1725 | 0 | 0 | 1680 | 0 |
| Flt Permitted | 0.950 |  |  |  |  |  |  | 0.819 |  |  | 0.897 |  |
| Satd．Flow（perm） | 1770 | 3725 | 1583 | 1863 | 3725 | 1583 | 0 | 1448 | 0 | 0 | 1527 | 0 |
| Right Turn on Red |  |  | Yes |  |  | Yes |  |  | Yes |  |  | Yes |
| Satd．Flow（RTOR） |  |  | 82 |  |  | 87 |  | 12 |  |  | 28 |  |
| Link Speed（mph） |  | 40 |  |  | 40 |  |  | 30 |  |  | 30 |  |
| Link Distance（ft） |  | 898 |  |  | 1563 |  |  | 1021 |  |  | 1009 |  |
| Travel Time（s） |  | 15.3 |  |  | 26.6 |  |  | 23.2 |  |  | 22.9 |  |
| Lane Group Flow（vph） | 32 | 1759 | 16 | 0 | 1149 | 20 | 0 | 32 | 0 | 0 | 44 | 0 |
| Turn Type | Prot | NA | Perm | Prot | NA | Perm | Perm | NA |  | Perm | NA |  |
| Protected Phases | 5 | 2 |  | 1 | 6 |  |  | 4 |  |  | 4 |  |
| Permitted Phases |  |  | 2 |  |  | 6 | 4 |  |  | 4 |  |  |
| Total Split（s） | 11.0 | 32.5 | 32.5 | 31.0 | 52.5 | 52.5 | 36.5 | 36.5 |  | 36.5 | 36.5 |  |
| Total Lost Time（s） | 5.0 | 5.5 | 5.5 | 5.0 | 5.5 | 5.5 |  | 5.5 |  |  | 5.5 |  |
| Act Effict Green（s） | 5.6 | 83.2 | 83.2 |  | 76.6 | 76.6 |  | 10.0 |  |  | 10.0 |  |
| Actuated g／C Ratio | 0.06 | 0.83 | 0.83 |  | 0.77 | 0.77 |  | 0.10 |  |  | 0.10 |  |
| v／c Ratio | 0.32 | 0.57 | 0.01 |  | 0.40 | 0.02 |  | 0.21 |  |  | 0.25 |  |
| Control Delay | 54.0 | 4.5 | 0.0 |  | 2.5 | 0.0 |  | 33.2 |  |  | 25.5 |  |
| Queue Delay | 0.0 | 0.0 | 0.0 |  | 0.0 | 0.0 |  | 0.0 |  |  | 0.0 |  |
| Total Delay | 54.0 | 4.5 | 0.0 |  | 2.5 | 0.0 |  | 33.2 |  |  | 25.5 |  |
| LOS | D | A | A |  | A | A |  | C |  |  | C |  |
| Approach Delay |  | 5.3 |  |  | 2.5 |  |  | 33.2 |  |  | 25.5 |  |
| Approach LOS |  | A |  |  | A |  |  | C |  |  | C |  |

## Intersection Summary

## Area Type：

Other
Cycle Length： 100
Actuated Cycle Length： 100
Offset： 57 （57\％），Referenced to phase 2：EBT and 6：WBT，Start of 1st Green
Control Type：Actuated－Coordinated
Maximum v／c Ratio： 0.57
Intersection Signal Delay： 4.8
Intersection Capacity Utilization 59．5\％
Analysis Period（min） 15

Splits and Phases：614：Elm Dr \＆CSAH 42



Splits and Phases: 615: Garden View Dr \& CSAH 42


|  | 4 | $\rightarrow$ | $\leftrightarrow$ | 4 |  | $\downarrow$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Lane Group | EBL | EBT | WBT | WBR | SBL | SBR |
| Lane Configurations | \％ | 个个 | 个4 | 「 | ${ }^{7}$ | 「 |
| Traffic Volume（vph） | 79 | 1471 | 1109 | 70 | 65 | 98 |
| Future Volume（vph） | 79 | 1471 | 1109 | 70 | 65 | 98 |
| Ideal Flow（vphpl） | 1900 | 2000 | 2000 | 1900 | 1900 | 1900 |
| Storage Length（ft） | 300 |  |  | 275 | 0 | 200 |
| Storage Lanes | 1 |  |  | 1 | 1 | 1 |
| Taper Length（ft） | 100 |  |  |  | 100 |  |
| Satd．Flow（prot） | 1770 | 3725 | 3725 | 1583 | 1770 | 1583 |
| Flt Permitted | 0.950 |  |  |  | 0.950 |  |
| Satd．Flow（perm） | 1770 | 3725 | 3725 | 1583 | 1770 | 1583 |
| Right Turn on Red |  |  |  | Yes |  | Yes |
| Satd．Flow（RTOR） |  |  |  | 88 |  | 111 |
| Link Speed（mph） |  | 40 | 40 |  | 30 |  |
| Link Distance（ft） |  | 1334 | 1289 |  | 1522 |  |
| Travel Time（s） |  | 22.7 | 22.0 |  | 34.6 |  |
| Lane Group Flow（vph） | 111 | 1599 | 1155 | 88 | 80 | 111 |
| Turn Type | Prot | NA | NA | Perm | Prot | Perm |
| Protected Phases | 5 | 2 | 6 |  | 4 |  |
| Permitted Phases |  |  |  | ， |  | 4 |
| Total Split（s） | 17.0 | 68.0 | 51.0 | 51.0 | 32.0 | 32.0 |
| Total Lost Time（s） | 5.0 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 |
| Act Effct Green（s） | 12.0 | 79.9 | 62.9 | 62.9 | 9.1 | 9.1 |
| Actuated g／C Ratio | 0.12 | 0.80 | 0.63 | 0.63 | 0.09 | 0.09 |
| $\mathrm{V} / \mathrm{c}$ Ratio | 0.52 | 0.54 | 0.49 | 0.09 | 0.50 | 0.45 |
| Control Delay | 28.4 | 0.7 | 11.2 | 2.1 | 53.3 | 14.3 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 28.4 | 0.7 | 11.2 | 2.1 | 53.3 | 14.3 |
| LOS | C | A | B | A | D | B |
| Approach Delay |  | 2.5 | 10.6 |  | 30.6 |  |
| Approach LOS |  | A | B |  | C |  |
| Intersection Summary |  |  |  |  |  |  |
| Area Type：Other |  |  |  |  |  |  |
| Cycle Length： 100 |  |  |  |  |  |  |
| Actuated Cycle Length： 100 |  |  |  |  |  |  |
| Offset： $2(2 \%)$ ，Referenced to phase 2：EBT and 6：WBT，Start of 1st Green |  |  |  |  |  |  |
| Control Type：Actuated－Coordinated |  |  |  |  |  |  |
| Maximum v／c Ratio： 0.54 |  |  |  |  |  |  |
| Intersection Signal Delay： 7.4 |  |  |  |  | rsectio | LOS：A |
| Intersection Capacity Utilization 52．8\％ |  |  |  | ICU Level of Service A |  |  |
| Analysis Period（min） 15 |  |  |  |  |  |  |

Splits and Phases：616：CSAH 42 \＆Hayes Rd




211: 147th St \& CSAH 42

| Direction | EB | WB | NB | SB | All |
| :--- | ---: | ---: | ---: | ---: | ---: |
| Future Volume (vph) | 1536 | 1021 | 14 | 223 | 2794 |
| Total Delay /Veh (s/v) | 2 | 0 | 12 | 19 | 3 |
| CO Emissions $(\mathrm{kg})$ | 1.34 | 0.68 | 0.01 | 0.25 | 2.27 |
| NOx Emissions $(\mathrm{kg})$ | 0.26 | 0.13 | 0.00 | 0.05 | 0.44 |
| VOC Emissions $(\mathrm{kg})$ | 0.31 | 0.16 | 0.00 | 0.06 | 0.53 |

614: Elm Dr \& CSAH 42

| Direction |  |  |  |  | AB |
| :--- | ---: | ---: | ---: | ---: | ---: |
| Future Volume (vph) | 1643 | 1089 | 11 | 23 | 2766 |
| Total Delay / Veh (s/v) | 0 | 0 | 19 | 14 | 0 |
| CO Emissions $(\mathrm{kg})$ | 0.75 | 0.81 | 0.01 | 0.03 | 1.59 |
| NOx Emissions $(\mathrm{kg})$ | 0.15 | 0.16 | 0.00 | 0.01 | 0.31 |
| VOC Emissions $(\mathrm{kg})$ | 0.17 | 0.19 | 0.00 | 0.01 | 0.37 |

## 615: Garden View Dr \& CSAH 42

| Direction | EB | WB | NB | SB | All |
| :--- | ---: | ---: | ---: | ---: | ---: |
| Future Volume (vph) | 1609 | 1204 | 453 | 276 | 3542 |
| Total Delay / Veh (s/v) | 31 | 27 | 34 | 29 | 30 |
| CO Emissions $(\mathrm{kg})$ | 2.72 | 1.64 | 0.59 | 0.39 | 5.35 |
| NOx Emissions $(\mathrm{kg})$ | 0.53 | 0.32 | 0.12 | 0.08 | 1.04 |
| VOC Emissions $(\mathrm{kg})$ | 0.63 | 0.38 | 0.14 | 0.09 | 1.24 |

616: CSAH 42 \& Hayes Rd

| Direction | EB | WB | SB | All |
| :--- | ---: | ---: | ---: | ---: |
| Future Volume (vph) | 1550 | 1179 | 163 | 2892 |
| Total Delay / Veh (s/v) | 3 | 11 | 30 | 7 |
| CO Emissions $(\mathrm{kg})$ | 1.14 | 1.29 | 0.23 | 2.66 |
| NOx Emissions $(\mathrm{kg})$ | 0.22 | 0.25 | 0.05 | 0.52 |
| VOC Emissions $(\mathrm{kg})$ | 0.26 | 0.30 | 0.05 | 0.62 |




|  | $\stackrel{ }{ }$ | $\rightarrow$ |  | 7 |  |  |  | $\dagger$ |  |  | $\downarrow$ | $\checkmark$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | \％ | 个 $\uparrow$ | 「 | ＊ | 个个 | 7 | \％ | $\uparrow$ | F | \％ | $\uparrow$ | F |
| Traffic Volume（vph） | 54 | 1326 | 229 | 252 | 892 | 60 | 159 | 130 | 164 | 57 | 182 | 37 |
| Future Volume（vph） | 54 | 1326 | 229 | 252 | 892 | 60 | 159 | 130 | 164 | 57 | 182 | 37 |
| Ideal Flow（vphpl） | 1900 | 2000 | 1900 | 1900 | 2000 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Storage Length（ft） | 275 |  | 190 | 600 |  | 250 | 300 |  | 300 | 300 |  | 300 |
| Storage Lanes | 1 |  | 1 | 1 |  | 1 | 1 |  | 1 | 1 |  | 1 |
| Taper Length（ft） | 175 |  |  | 165 |  |  | 100 |  |  | 100 |  |  |
| Satd．Flow（prot） | 1770 | 3725 | 1583 | 1770 | 3725 | 1583 | 1770 | 1827 | 1583 | 1770 | 1863 | 1583 |
| Flt Permitted | 0.950 |  |  | 0.950 |  |  | 0.510 |  |  | 0.623 |  |  |
| Satd．Flow（perm） | 1770 | 3725 | 1583 | 1770 | 3725 | 1583 | 950 | 1827 | 1583 | 1160 | 1863 | 1583 |
| Right Turn on Red |  |  | Yes |  |  | Yes |  |  | Yes |  |  | Yes |
| Satd．Flow（RTOR） |  |  | 181 |  |  | 80 |  |  | 219 |  |  | 147 |
| Link Speed（mph） |  | 40 |  |  | 40 |  |  | 30 |  |  | 30 |  |
| Link Distance（ t ） |  | 1563 |  |  | 1334 |  |  | 1096 |  |  | 1368 |  |
| Travel Time（s） |  | 26.6 |  |  | 22.7 |  |  | 24.9 |  |  | 31.1 |  |
| Lane Group Flow（vph） | 72 | 1473 | 269 | 277 | 929 | 80 | 196 | 144 | 219 | 68 | 204 | 44 |
| Turn Type | Prot | NA | Perm | Prot | NA | Perm | Perm | NA | Perm | Perm | NA | Perm |
| Protected Phases | 5 | 2 |  | 1 | 6 |  |  | 4 |  |  | 4 |  |
| Permitted Phases |  |  | 2 |  |  | ． | 4 |  | 4 | 4 |  | 4 |
| Total Split（s） | 14.0 | 46.0 | 46.0 | 20.0 | 52.0 | 52.0 | 34.0 | 34.0 | 34.0 | 34.0 | 34.0 | 34.0 |
| Total Lost Time（s） | 5.0 | 5.5 | 5.5 | 5.0 | 6.0 | 6.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 |
| Act Effct Green（s） | 7.7 | 45.0 | 45.0 | 15.0 | 53.8 | 53.8 | 24.5 | 24.5 | 24.5 | 24.5 | 24.5 | 24.5 |
| Actuated g／C Ratio | 0.08 | 0.45 | 0.45 | 0.15 | 0.54 | 0.54 | 0.24 | 0.24 | 0.24 | 0.24 | 0.24 | 0.24 |
| $\mathrm{V} / \mathrm{c}$ Ratio | 0.53 | 0.88 | 0.33 | 1.05 | 0.46 | 0.09 | 0.84 | 0.32 | 0.40 | 0.24 | 0.45 | 0.09 |
| Control Delay | 58.5 | 33.9 | 8.0 | 100.2 | 8.7 | 0.6 | 65.2 | 31.5 | 6.1 | 30.4 | 34.1 | 0.4 |
| Queue Delay | 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 Delay | 58.5 | 33.9 | 8.0 | 100.2 | 8.7 | 0.6 | 65.2 | 31.5 | 6.1 | 30.4 | 34.1 | 0.4 |
| LOS | E | C | A | F | A | A | E | C | A | C | C | A |
| Approach Delay |  | 31.1 |  |  | 27.9 |  |  | 33.4 |  |  | 28.6 |  |
| Approach LOS |  | C |  |  | C |  |  | C |  |  | C |  |
| Intersection Summary |  |  |  |  |  |  |  |  |  |  |  |  |
| Area Type：Other |  |  |  |  |  |  |  |  |  |  |  |  |
| Cycle Length： 100 |  |  |  |  |  |  |  |  |  |  |  |  |
| Actuated Cycle Length： 100 |  |  |  |  |  |  |  |  |  |  |  |  |
| Offset： 97 （97\％），Referenced to phase 2：EBT and 6：WBT，Start of 1st Green |  |  |  |  |  |  |  |  |  |  |  |  |
| Control Type：Actuated－Coordinated |  |  |  |  |  |  |  |  |  |  |  |  |
| Maximum v／c Ratio： 1.05 |  |  |  |  |  |  |  |  |  |  |  |  |
| Intersection Signal Delay： 30.2 |  |  |  | Intersection LOS：C |  |  |  |  |  |  |  |  |
| Intersection Capacity Utilization 84．3\％ |  |  |  | ICU Level of Service E |  |  |  |  |  |  |  |  |
| Analysis Period（min） 15 |  |  |  |  |  |  |  |  |  |  |  |  |

Splits and Phases：615：Garden View Dr \＆CSAH 42


|  | 4 | $\rightarrow$ | $\leftarrow$ | 4 |  | $\downarrow$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Lane Group | EBL | EBT | WBT | WBR | SBL | SBR |
| Lane Configurations | \％ | 个个 | 个4 | 「 | ${ }^{7}$ | 「 |
| Traffic Volume（vph） | 79 | 1471 | 1109 | 70 | 65 | 98 |
| Future Volume（vph） | 79 | 1471 | 1109 | 70 | 65 | 98 |
| Ideal Flow（vphpl） | 1900 | 2000 | 2000 | 1900 | 1900 | 1900 |
| Storage Length（ft） | 300 |  |  | 275 | 0 | 200 |
| Storage Lanes | 1 |  |  | 1 | 1 | 1 |
| Taper Length（ft） | 100 |  |  |  | 100 |  |
| Satd．Flow（prot） | 1770 | 3725 | 3725 | 1583 | 1770 | 1583 |
| Flt Permitted | 0.950 |  |  |  | 0.950 |  |
| Satd．Flow（perm） | 1770 | 3725 | 3725 | 1583 | 1770 | 1583 |
| Right Turn on Red |  |  |  | Yes |  | Yes |
| Satd．Flow（RTOR） |  |  |  | 88 |  | 111 |
| Link Speed（mph） |  | 40 | 40 |  | 30 |  |
| Link Distance（ft） |  | 1334 | 1289 |  | 1522 |  |
| Travel Time（s） |  | 22.7 | 22.0 |  | 34.6 |  |
| Lane Group Flow（vph） | 111 | 1599 | 1155 | 88 | 80 | 111 |
| Turn Type | Prot | NA | NA | Perm | Prot | Perm |
| Protected Phases | 5 | 2 | 6 |  |  |  |
| Permitted Phases |  |  |  | ， |  | 4 |
| Total Split（s） | 17.0 | 68.0 | 51.0 | 51.0 | 32.0 | 32.0 |
| Total Lost Time（s） | 5.0 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 |
| Act Effct Green（s） | 12.0 | 79.9 | 62.9 | 62.9 | 9.1 | 9.1 |
| Actuated g／C Ratio | 0.12 | 0.80 | 0.63 | 0.63 | 0.09 | 0.09 |
| $\mathrm{V} / \mathrm{C}$ Ratio | 0.52 | 0.54 | 0.49 | 0.09 | 0.50 | 0.45 |
| Control Delay | 29.8 | 1.1 | 11.2 | 2.1 | 53.3 | 14.3 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 29.8 | 1.1 | 11.2 | 2.1 | 53.3 | 14.3 |
| LOS | C | A | B | A | D | B |
| Approach Delay |  | 3.0 | 10.6 |  | 30.6 |  |
| Approach LOS |  | A | B |  | C |  |
| Intersection Summary |  |  |  |  |  |  |
| Area Type：Other |  |  |  |  |  |  |
| Cycle Length： 100 |  |  |  |  |  |  |
| Actuated Cycle Length： 100 |  |  |  |  |  |  |
| Offset： $2(2 \%)$ ，Referenced to phase 2：EBT and 6：WBT，Start of 1st Green |  |  |  |  |  |  |
| Control Type：Actuated－Coordinated |  |  |  |  |  |  |
| Maximum v／c Ratio： 0.54 |  |  |  |  |  |  |
| Intersection Signal Delay： 7.7 |  |  |  |  | rsectio | LOS：A |
| Intersection Capacity Utilization 52．8\％ |  |  |  | ICU Level of Service A |  |  |
| Analysis Period（min） 15 |  |  |  |  |  |  |

Splits and Phases：616：CSAH 42 \＆Hayes Rd




CSAH 42 at Gardenview Drive
PM Peak Hour

| ID \# | Intersection |
| :---: | :--- |
| $614^{*}$ | CSAH 42 at Elm Dr |
| 615 | CSAH 42 at Gardenview Dr |
| 616 | CSAH 42 at Hayes Rd |
| $211^{* *}$ | CSAH 42 at 147th St |
|  | *removed signal-convert to 3/4-access in Build Conditions <br>  <br>  <br> ${ }^{* *}$ convert to 3/4-access in Build Conditions |

Existing Conditions

| Intersection \# | 614 | 615 | 616 | 211 | Total |
| :--- | :---: | :---: | :---: | :---: | :---: |
| Volumes (vph) | 2,766 | 3,542 | 2,892 | 2,794 | $\mathbf{1 1 , 9 9 4}$ |
| Delay (sec/veh) | 4 | 32 | 7 | 36 | $\mathbf{2 0 . 4}$ |
| Total Delay (seconds) | 11,064 | 113,344 | 20,244 | 100,584 | 245,236 |


| Emissions |  |  |  |  |  |
| :--- | :---: | :---: | :---: | :---: | :---: |
| CO (kg) | 2.19 | 5.59 | 2.62 | 3.62 | 14.02 |
| NOx (kg) | 0.43 | 1.09 | 0.51 | 0.70 | 2.73 |
| VOC (kg) | 0.51 | 1.30 | 0.61 | 0.84 | 3.26 |
| Emissions Total |  |  |  |  |  |
| $\mathbf{n y y y y}$ | $\mathbf{2 0 . 0 1}$ |  |  |  |  |

Proposed Build Conditions

| Intersection \# | 614 | 615 | 616 | 211 | Total |
| :--- | :---: | :---: | :---: | :---: | :---: |
| Volumes (vph) | 2,766 | 3,542 | 2,892 | 2,794 | $\mathbf{1 1 , 9 9 4}$ |
| Delay (sec/veh) | 0 | 30 | 7 | 3 | $\mathbf{1 1 . 2}$ |
| Total Delay (seconds) | 0 | 106,260 | 20,244 | 8,382 | 134,886 |


| Emissions |  |  |  |  |  |
| :--- | :---: | :---: | :---: | :---: | :---: |
| CO $(\mathrm{kg})$ | 1.59 | 5.35 | 2.66 | 2.27 | 11.87 |
| NOx $(\mathrm{kg})$ | 0.31 | 1.04 | 0.52 | 0.44 | 2.31 |
| VOC $(\mathrm{kg})$ | 0.37 | 1.24 | 0.62 | 0.53 | 2.76 |
| Emissions Total |  |  |  |  |  |


|  | Existing |  | Build |  |
| :---: | :---: | :---: | :---: | :---: |
|  | Delay $(\mathrm{s} / \mathrm{v})$ | Volume | Delay $(\mathrm{s} / \mathrm{v})$ | Volume |
| Delay and Vehicles | 20.4 | 11,994 | 11.2 | 11,994 |


|  | Existing (kg) | Build (kg) |
| :---: | :---: | :---: |
| Emissions (Total kg) | 20.01 | 16.94 |

211: 147th St \& CSAH 42

| Direction | EB | WB | NB | SB | All |
| :--- | ---: | ---: | ---: | ---: | ---: |
| Future Volume (vph) | 1536 | 1021 | 14 | 223 | 2794 |
| Total Delay / Veh (s/v) | 2 | 0 | 348 | 421 | 36 |
| CO Emissions $(\mathrm{kg})$ | 1.34 | 0.68 | 0.08 | 1.52 | 3.62 |
| NOx Emissions $(\mathrm{kg})$ | 0.26 | 0.13 | 0.01 | 0.30 | 0.70 |
| VOC Emissions $(\mathrm{kg})$ | 0.31 | 0.16 | 0.02 | 0.35 | 0.84 |

614: Elm Dr \& CSAH 42

| Direction |  |  |  |  |  |
| :--- | ---: | ---: | ---: | ---: | ---: |
| Future Volume (vph) | 1643 | 1089 | 11 | 23 | 2766 |
| Total Delay /Veh (s/v) | 5 | 3 | 33 | 25 | 4 |
| CO Emissions $(\mathrm{kg})$ | 1.18 | 0.98 | 0.01 | 0.03 | 2.19 |
| NOx Emissions $(\mathrm{kg})$ | 0.23 | 0.19 | 0.00 | 0.00 | 0.43 |
| VOC Emissions $(\mathrm{kg})$ | 0.27 | 0.23 | 0.00 | 0.01 | 0.51 |

## 615: Garden View Dr \& CSAH 42

| Direction | EB | WB | NB | SB | All |
| :--- | ---: | ---: | ---: | ---: | ---: |
| Future Volume (vph) | 1609 | 1204 | 453 | 276 | 3542 |
| Total Delay / Veh (s/v) | 30 | 28 | 50 | 37 | 32 |
| CO Emissions $(\mathrm{kg})$ | 2.73 | 1.69 | 0.73 | 0.44 | 5.59 |
| NOx Emissions $(\mathrm{kg})$ | 0.53 | 0.33 | 0.14 | 0.08 | 1.09 |
| VOC Emissions $(\mathrm{kg})$ | 0.63 | 0.39 | 0.17 | 0.10 | 1.30 |

616: CSAH 42 \& Hayes Rd

|  |  |  |  |  |
| :--- | ---: | ---: | ---: | ---: |
| Direction | EB | WB | SB | All |
| Future Volume (vph) | 1550 | 1179 | 163 | 2892 |
| Total Delay / Veh (s/v) | 2 | 11 | 30 | 7 |
| CO Emissions $(\mathrm{kg})$ | 1.10 | 1.29 | 0.23 | 2.62 |
| NOx Emissions $(\mathrm{kg})$ | 0.21 | 0.25 | 0.05 | 0.51 |
| VOC Emissions $(\mathrm{kg})$ | 0.25 | 0.30 | 0.05 | 0.61 |


|  | 4 | $\rightarrow$ |  | $\checkmark$ | 4 | 4 | 4 | $\uparrow$ |  | $\downarrow$ | $\downarrow$ | $\downarrow$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | ${ }^{7}$ | 44 | 「 | \％ | 个4 | 「 |  | $\uparrow$ |  |  | ¢ |  |
| Traffic Volume（vph） | 27 | 1601 | 15 | 0 | 1080 | 9 | 6 | 1 | 4 | 5 | 2 | 16 |
| Future Volume（vph） | 27 | 1601 | 15 | 0 | 1080 | 9 | 6 | 1 | 4 | 5 | 2 | 16 |
| Ideal Flow（vphpl） | 1900 | 2000 | 1900 | 1900 | 2000 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Storage Length（ft） | 320 |  | 270 | 290 |  | 145 | 30 |  | 0 | 30 |  | 0 |
| Storage Lanes | 1 |  | 1 | 1 |  | 1 | 0 |  | 0 | 0 |  | 0 |
| Taper Length（ft） | 160 |  |  | 170 |  |  | 100 |  |  | 100 |  |  |
| Satd．Flow（prot） | 1770 | 3725 | 1583 | 1863 | 3725 | 1583 | 0 | 1725 | 0 | 0 | 1680 | 0 |
| Flt Permitted | 0.950 |  |  |  |  |  |  | 0.819 |  |  | 0.897 |  |
| Satd．Flow（perm） | 1770 | 3725 | 1583 | 1863 | 3725 | 1583 | 0 | 1448 | 0 | 0 | 1527 | 0 |
| Right Turn on Red |  |  | Yes |  |  | Yes |  |  | Yes |  |  | Yes |
| Satd．Flow（RTOR） |  |  | 82 |  |  | 87 |  | 12 |  |  | 28 |  |
| Link Speed（mph） |  | 40 |  |  | 40 |  |  | 30 |  |  | 30 |  |
| Link Distance（ft） |  | 898 |  |  | 1563 |  |  | 1021 |  |  | 1009 |  |
| Travel Time（s） |  | 15.3 |  |  | 26.6 |  |  | 23.2 |  |  | 22.9 |  |
| Lane Group Flow（vph） | 32 | 1759 | 16 | 0 | 1149 | 20 | 0 | 32 | 0 | 0 | 44 | 0 |
| Turn Type | Prot | NA | Perm | Prot | NA | Perm | Perm | NA |  | Perm | NA |  |
| Protected Phases | 5 | 2 |  | 1 | 6 |  |  | 4 |  |  | 4 |  |
| Permitted Phases |  |  | 2 |  |  | 6 | 4 |  |  | 4 |  |  |
| Total Split（s） | 11.0 | 32.5 | 32.5 | 31.0 | 52.5 | 52.5 | 36.5 | 36.5 |  | 36.5 | 36.5 |  |
| Total Lost Time（s） | 5.0 | 5.5 | 5.5 | 5.0 | 5.5 | 5.5 |  | 5.5 |  |  | 5.5 |  |
| Act Effict Green（s） | 5.6 | 83.2 | 83.2 |  | 76.6 | 76.6 |  | 10.0 |  |  | 10.0 |  |
| Actuated g／C Ratio | 0.06 | 0.83 | 0.83 |  | 0.77 | 0.77 |  | 0.10 |  |  | 0.10 |  |
| v／c Ratio | 0.32 | 0.57 | 0.01 |  | 0.40 | 0.02 |  | 0.21 |  |  | 0.25 |  |
| Control Delay | 54.0 | 4.5 | 0.0 |  | 2.5 | 0.0 |  | 33.2 |  |  | 25.5 |  |
| Queue Delay | 0.0 | 0.0 | 0.0 |  | 0.0 | 0.0 |  | 0.0 |  |  | 0.0 |  |
| Total Delay | 54.0 | 4.5 | 0.0 |  | 2.5 | 0.0 |  | 33.2 |  |  | 25.5 |  |
| LOS | D | A | A |  | A | A |  | C |  |  | C |  |
| Approach Delay |  | 5.3 |  |  | 2.5 |  |  | 33.2 |  |  | 25.5 |  |
| Approach LOS |  | A |  |  | A |  |  | C |  |  | C |  |

## Intersection Summary

## Area Type：

Other
Cycle Length： 100
Actuated Cycle Length： 100
Offset： 57 （57\％），Referenced to phase 2：EBT and 6：WBT，Start of 1st Green
Control Type：Actuated－Coordinated
Maximum v／c Ratio： 0.57
Intersection Signal Delay： 4.8
Intersection Capacity Utilization 59．5\％
Analysis Period（min） 15

Splits and Phases：614：Elm Dr \＆CSAH 42



Splits and Phases: 615: Garden View Dr \& CSAH 42


|  | 4 | $\rightarrow$ | $\leftrightarrow$ | 4 |  | $\downarrow$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Lane Group | EBL | EBT | WBT | WBR | SBL | SBR |
| Lane Configurations | \％ | 个个 | 个4 | 「 | ${ }^{7}$ | 「 |
| Traffic Volume（vph） | 79 | 1471 | 1109 | 70 | 65 | 98 |
| Future Volume（vph） | 79 | 1471 | 1109 | 70 | 65 | 98 |
| Ideal Flow（vphpl） | 1900 | 2000 | 2000 | 1900 | 1900 | 1900 |
| Storage Length（ft） | 300 |  |  | 275 | 0 | 200 |
| Storage Lanes | 1 |  |  | 1 | 1 | 1 |
| Taper Length（ft） | 100 |  |  |  | 100 |  |
| Satd．Flow（prot） | 1770 | 3725 | 3725 | 1583 | 1770 | 1583 |
| Flt Permitted | 0.950 |  |  |  | 0.950 |  |
| Satd．Flow（perm） | 1770 | 3725 | 3725 | 1583 | 1770 | 1583 |
| Right Turn on Red |  |  |  | Yes |  | Yes |
| Satd．Flow（RTOR） |  |  |  | 88 |  | 111 |
| Link Speed（mph） |  | 40 | 40 |  | 30 |  |
| Link Distance（ft） |  | 1334 | 1289 |  | 1522 |  |
| Travel Time（s） |  | 22.7 | 22.0 |  | 34.6 |  |
| Lane Group Flow（vph） | 111 | 1599 | 1155 | 88 | 80 | 111 |
| Turn Type | Prot | NA | NA | Perm | Prot | Perm |
| Protected Phases | 5 | 2 | 6 |  | 4 |  |
| Permitted Phases |  |  |  | ， |  | 4 |
| Total Split（s） | 17.0 | 68.0 | 51.0 | 51.0 | 32.0 | 32.0 |
| Total Lost Time（s） | 5.0 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 |
| Act Effct Green（s） | 12.0 | 79.9 | 62.9 | 62.9 | 9.1 | 9.1 |
| Actuated g／C Ratio | 0.12 | 0.80 | 0.63 | 0.63 | 0.09 | 0.09 |
| $\mathrm{V} / \mathrm{c}$ Ratio | 0.52 | 0.54 | 0.49 | 0.09 | 0.50 | 0.45 |
| Control Delay | 28.4 | 0.7 | 11.2 | 2.1 | 53.3 | 14.3 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 28.4 | 0.7 | 11.2 | 2.1 | 53.3 | 14.3 |
| LOS | C | A | B | A | D | B |
| Approach Delay |  | 2.5 | 10.6 |  | 30.6 |  |
| Approach LOS |  | A | B |  | C |  |
| Intersection Summary |  |  |  |  |  |  |
| Area Type：Other |  |  |  |  |  |  |
| Cycle Length： 100 |  |  |  |  |  |  |
| Actuated Cycle Length： 100 |  |  |  |  |  |  |
| Offset： $2(2 \%)$ ，Referenced to phase 2：EBT and 6：WBT，Start of 1st Green |  |  |  |  |  |  |
| Control Type：Actuated－Coordinated |  |  |  |  |  |  |
| Maximum v／c Ratio： 0.54 |  |  |  |  |  |  |
| Intersection Signal Delay： 7.4 |  |  |  |  | rsectio | LOS：A |
| Intersection Capacity Utilization 52．8\％ |  |  |  | ICU Level of Service A |  |  |
| Analysis Period（min） 15 |  |  |  |  |  |  |

Splits and Phases：616：CSAH 42 \＆Hayes Rd




211: 147th St \& CSAH 42

| Direction | EB | WB | NB | SB | All |
| :--- | ---: | ---: | ---: | ---: | ---: |
| Future Volume (vph) | 1536 | 1021 | 14 | 223 | 2794 |
| Total Delay /Veh (s/v) | 2 | 0 | 12 | 19 | 3 |
| CO Emissions $(\mathrm{kg})$ | 1.34 | 0.68 | 0.01 | 0.25 | 2.27 |
| NOx Emissions $(\mathrm{kg})$ | 0.26 | 0.13 | 0.00 | 0.05 | 0.44 |
| VOC Emissions $(\mathrm{kg})$ | 0.31 | 0.16 | 0.00 | 0.06 | 0.53 |

614: Elm Dr \& CSAH 42

| Direction |  |  |  |  | AB |
| :--- | ---: | ---: | ---: | ---: | ---: |
| Future Volume (vph) | 1643 | 1089 | 11 | 23 | 2766 |
| Total Delay / Veh (s/v) | 0 | 0 | 19 | 14 | 0 |
| CO Emissions $(\mathrm{kg})$ | 0.75 | 0.81 | 0.01 | 0.03 | 1.59 |
| NOx Emissions $(\mathrm{kg})$ | 0.15 | 0.16 | 0.00 | 0.01 | 0.31 |
| VOC Emissions $(\mathrm{kg})$ | 0.17 | 0.19 | 0.00 | 0.01 | 0.37 |

## 615: Garden View Dr \& CSAH 42

| Direction | EB | WB | NB | SB | All |
| :--- | ---: | ---: | ---: | ---: | ---: |
| Future Volume (vph) | 1609 | 1204 | 453 | 276 | 3542 |
| Total Delay / Veh (s/v) | 31 | 27 | 34 | 29 | 30 |
| CO Emissions $(\mathrm{kg})$ | 2.72 | 1.64 | 0.59 | 0.39 | 5.35 |
| NOx Emissions $(\mathrm{kg})$ | 0.53 | 0.32 | 0.12 | 0.08 | 1.04 |
| VOC Emissions $(\mathrm{kg})$ | 0.63 | 0.38 | 0.14 | 0.09 | 1.24 |

616: CSAH 42 \& Hayes Rd

| Direction | EB | WB | SB | All |
| :--- | ---: | ---: | ---: | ---: |
| Future Volume (vph) | 1550 | 1179 | 163 | 2892 |
| Total Delay / Veh (s/v) | 3 | 11 | 30 | 7 |
| CO Emissions $(\mathrm{kg})$ | 1.14 | 1.29 | 0.23 | 2.66 |
| NOx Emissions $(\mathrm{kg})$ | 0.22 | 0.25 | 0.05 | 0.52 |
| VOC Emissions $(\mathrm{kg})$ | 0.26 | 0.30 | 0.05 | 0.62 |




|  | $\stackrel{ }{ }$ | $\rightarrow$ |  | 7 |  |  |  | $\dagger$ |  |  | $\downarrow$ | $\checkmark$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | \％ | 个 $\uparrow$ | 「 | ＊ | 个个 | 7 | \％ | $\uparrow$ | F | \％ | $\uparrow$ | F |
| Traffic Volume（vph） | 54 | 1326 | 229 | 252 | 892 | 60 | 159 | 130 | 164 | 57 | 182 | 37 |
| Future Volume（vph） | 54 | 1326 | 229 | 252 | 892 | 60 | 159 | 130 | 164 | 57 | 182 | 37 |
| Ideal Flow（vphpl） | 1900 | 2000 | 1900 | 1900 | 2000 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Storage Length（ft） | 275 |  | 190 | 600 |  | 250 | 300 |  | 300 | 300 |  | 300 |
| Storage Lanes | 1 |  | 1 | 1 |  | 1 | 1 |  | 1 | 1 |  | 1 |
| Taper Length（ft） | 175 |  |  | 165 |  |  | 100 |  |  | 100 |  |  |
| Satd．Flow（prot） | 1770 | 3725 | 1583 | 1770 | 3725 | 1583 | 1770 | 1827 | 1583 | 1770 | 1863 | 1583 |
| Flt Permitted | 0.950 |  |  | 0.950 |  |  | 0.510 |  |  | 0.623 |  |  |
| Satd．Flow（perm） | 1770 | 3725 | 1583 | 1770 | 3725 | 1583 | 950 | 1827 | 1583 | 1160 | 1863 | 1583 |
| Right Turn on Red |  |  | Yes |  |  | Yes |  |  | Yes |  |  | Yes |
| Satd．Flow（RTOR） |  |  | 181 |  |  | 80 |  |  | 219 |  |  | 147 |
| Link Speed（mph） |  | 40 |  |  | 40 |  |  | 30 |  |  | 30 |  |
| Link Distance（ t ） |  | 1563 |  |  | 1334 |  |  | 1096 |  |  | 1368 |  |
| Travel Time（s） |  | 26.6 |  |  | 22.7 |  |  | 24.9 |  |  | 31.1 |  |
| Lane Group Flow（vph） | 72 | 1473 | 269 | 277 | 929 | 80 | 196 | 144 | 219 | 68 | 204 | 44 |
| Turn Type | Prot | NA | Perm | Prot | NA | Perm | Perm | NA | Perm | Perm | NA | Perm |
| Protected Phases | 5 | 2 |  | 1 | 6 |  |  | 4 |  |  | 4 |  |
| Permitted Phases |  |  | 2 |  |  | ． | 4 |  | 4 | 4 |  | 4 |
| Total Split（s） | 14.0 | 46.0 | 46.0 | 20.0 | 52.0 | 52.0 | 34.0 | 34.0 | 34.0 | 34.0 | 34.0 | 34.0 |
| Total Lost Time（s） | 5.0 | 5.5 | 5.5 | 5.0 | 6.0 | 6.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 |
| Act Effct Green（s） | 7.7 | 45.0 | 45.0 | 15.0 | 53.8 | 53.8 | 24.5 | 24.5 | 24.5 | 24.5 | 24.5 | 24.5 |
| Actuated g／C Ratio | 0.08 | 0.45 | 0.45 | 0.15 | 0.54 | 0.54 | 0.24 | 0.24 | 0.24 | 0.24 | 0.24 | 0.24 |
| $\mathrm{V} / \mathrm{c}$ Ratio | 0.53 | 0.88 | 0.33 | 1.05 | 0.46 | 0.09 | 0.84 | 0.32 | 0.40 | 0.24 | 0.45 | 0.09 |
| Control Delay | 58.5 | 33.9 | 8.0 | 100.2 | 8.7 | 0.6 | 65.2 | 31.5 | 6.1 | 30.4 | 34.1 | 0.4 |
| Queue Delay | 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 Delay | 58.5 | 33.9 | 8.0 | 100.2 | 8.7 | 0.6 | 65.2 | 31.5 | 6.1 | 30.4 | 34.1 | 0.4 |
| LOS | E | C | A | F | A | A | E | C | A | C | C | A |
| Approach Delay |  | 31.1 |  |  | 27.9 |  |  | 33.4 |  |  | 28.6 |  |
| Approach LOS |  | C |  |  | C |  |  | C |  |  | C |  |
| Intersection Summary |  |  |  |  |  |  |  |  |  |  |  |  |
| Area Type：Other |  |  |  |  |  |  |  |  |  |  |  |  |
| Cycle Length： 100 |  |  |  |  |  |  |  |  |  |  |  |  |
| Actuated Cycle Length： 100 |  |  |  |  |  |  |  |  |  |  |  |  |
| Offset： 97 （97\％），Referenced to phase 2：EBT and 6：WBT，Start of 1st Green |  |  |  |  |  |  |  |  |  |  |  |  |
| Control Type：Actuated－Coordinated |  |  |  |  |  |  |  |  |  |  |  |  |
| Maximum v／c Ratio： 1.05 |  |  |  |  |  |  |  |  |  |  |  |  |
| Intersection Signal Delay： 30.2 |  |  |  | Intersection LOS：C |  |  |  |  |  |  |  |  |
| Intersection Capacity Utilization 84．3\％ |  |  |  | ICU Level of Service E |  |  |  |  |  |  |  |  |
| Analysis Period（min） 15 |  |  |  |  |  |  |  |  |  |  |  |  |

Splits and Phases：615：Garden View Dr \＆CSAH 42


|  | 4 | $\rightarrow$ | $\leftarrow$ | 4 |  | $\downarrow$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Lane Group | EBL | EBT | WBT | WBR | SBL | SBR |
| Lane Configurations | \％ | 个个 | 个4 | 「 | ${ }^{7}$ | 「 |
| Traffic Volume（vph） | 79 | 1471 | 1109 | 70 | 65 | 98 |
| Future Volume（vph） | 79 | 1471 | 1109 | 70 | 65 | 98 |
| Ideal Flow（vphpl） | 1900 | 2000 | 2000 | 1900 | 1900 | 1900 |
| Storage Length（ft） | 300 |  |  | 275 | 0 | 200 |
| Storage Lanes | 1 |  |  | 1 | 1 | 1 |
| Taper Length（ft） | 100 |  |  |  | 100 |  |
| Satd．Flow（prot） | 1770 | 3725 | 3725 | 1583 | 1770 | 1583 |
| Flt Permitted | 0.950 |  |  |  | 0.950 |  |
| Satd．Flow（perm） | 1770 | 3725 | 3725 | 1583 | 1770 | 1583 |
| Right Turn on Red |  |  |  | Yes |  | Yes |
| Satd．Flow（RTOR） |  |  |  | 88 |  | 111 |
| Link Speed（mph） |  | 40 | 40 |  | 30 |  |
| Link Distance（ft） |  | 1334 | 1289 |  | 1522 |  |
| Travel Time（s） |  | 22.7 | 22.0 |  | 34.6 |  |
| Lane Group Flow（vph） | 111 | 1599 | 1155 | 88 | 80 | 111 |
| Turn Type | Prot | NA | NA | Perm | Prot | Perm |
| Protected Phases | 5 | 2 | 6 |  |  |  |
| Permitted Phases |  |  |  | ， |  | 4 |
| Total Split（s） | 17.0 | 68.0 | 51.0 | 51.0 | 32.0 | 32.0 |
| Total Lost Time（s） | 5.0 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 |
| Act Effct Green（s） | 12.0 | 79.9 | 62.9 | 62.9 | 9.1 | 9.1 |
| Actuated g／C Ratio | 0.12 | 0.80 | 0.63 | 0.63 | 0.09 | 0.09 |
| $\mathrm{V} / \mathrm{C}$ Ratio | 0.52 | 0.54 | 0.49 | 0.09 | 0.50 | 0.45 |
| Control Delay | 29.8 | 1.1 | 11.2 | 2.1 | 53.3 | 14.3 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 29.8 | 1.1 | 11.2 | 2.1 | 53.3 | 14.3 |
| LOS | C | A | B | A | D | B |
| Approach Delay |  | 3.0 | 10.6 |  | 30.6 |  |
| Approach LOS |  | A | B |  | C |  |
| Intersection Summary |  |  |  |  |  |  |
| Area Type：Other |  |  |  |  |  |  |
| Cycle Length： 100 |  |  |  |  |  |  |
| Actuated Cycle Length： 100 |  |  |  |  |  |  |
| Offset： $2(2 \%)$ ，Referenced to phase 2：EBT and 6：WBT，Start of 1st Green |  |  |  |  |  |  |
| Control Type：Actuated－Coordinated |  |  |  |  |  |  |
| Maximum v／c Ratio： 0.54 |  |  |  |  |  |  |
| Intersection Signal Delay： 7.7 |  |  |  |  | rsectio | LOS：A |
| Intersection Capacity Utilization 52．8\％ |  |  |  | ICU Level of Service A |  |  |
| Analysis Period（min） 15 |  |  |  |  |  |  |

Splits and Phases：616：CSAH 42 \＆Hayes Rd




Traffic Safety Benefit-Cost Calculation
Highway Safety Improvement Program (HSIP) Reactive Project

| A. Roadway Description |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Route | CSAH 42 | District | Metro | County | Dakota County |
| Begin RP | 00 + 00.00 | End RP | $48+64.50$ | Miles | 0.921 |
| Location | CSAH 42 Improvements between Elm Drive and 147th Street |  |  |  |  |
|  | Total calculations from four separate intersection reductions. |  |  |  |  |


| B. Project Description |  |  |  |
| :---: | :---: | :---: | :---: |
| Proposed Work Remove traffic signal, reduce access (3/4-access), replace signals, etc. |  |  |  |
| Project Cost* | \$8,179,345 | Installation Year | 2025 |
| Project Service Life | 20 years | Traffic Growth Factor | 1.15\% |
| * exclude Right of Way | rom Project Cost |  | 40 Dakota |

C. Total Benefit-Cost Calculation


## All Crash Modification Factors Used (All Intersections)

CMF 332 - Remove Unwarranted Signal
CMF 351 - Replace direct left with right-turn (3/4 access)
CMF 1414 - Add signal head in addition to primary head
CMF 1485 - Install additinoal signal head over each lane
CMF 7684 - Permissive lefts to FYA Prot/Perm
CMF 7690 - Protected lefts to FYA Time-of-Day

## Traffic Safety Benefit-Cost Calculation

Highway Safety Improvement Program (HSIP) Reactive Project

| A. Roadway Description |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Route | CSAH 42 | District | Metro | County | Dakota County |
| Begin RP | $00+00.00$ | End RP | $48+64.50$ | Miles | 0.921 |
| Location CSAH 42 at Elm Drive Intersection | CSAH 42 at Elm Drive Intersection |  |  |  |  |

## B. Project Description

| Proposed Work Remove traffic s | Remove traffic signal, convert to 3/4-access |  |
| :---: | :---: | :---: |
| Project Cost* \$8,179,345 | Installation Year | 2025 |
| Project Service Life 20 years | Traffic Growth Factor | 1.15\% |
| * exclude Right of Way from Project Cost |  |  |


| C. Crash Modification Factor |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| 0.608 | Fatal (K) Crashes | Reference | Multiple CMFs (332, \& 351) - See Page 3 |  |
| 0.608 | Serious Injury (A) Crashes |  |  |  |
| 0.608 | Moderate Injury (B) Crashes | Crash Type |  |  |
| 0.608 | Possible Injury (C) Crashes |  |  |  |
| 0.608 | Property Damage Only Crashes |  |  | www.CMF |



F. Analysis Assumptions

| Crash Severity | Crash Cost |
| :--- | ---: |
| K crashes | $\$ 1,500,000$ |
| A crashes | $\$ 750,000$ |
| B crashes | $\$ 230,000$ |
| C crashes | $\$ 120,000$ |
| PDO crashes | $\$ 13,000$ |

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

| Real Discount Rate: | $0.7 \%$ | Default |
| :--- | :--- | :--- |
| Traffic Growth Rate: | $1.2 \%$ | Revised |
| Project Service Life: | 20 years | Revised |

G. Annual Beneff

| Crash Severity | Crash Reduction | Annual Reduction |  |
| :--- | :---: | :---: | :---: |
| K crashes | 0.00 | 0.00 | Annual Benefit |
| A crashes | 0.00 | 0.00 | $\$ 0$ |
| B crashes | 0.39 | 0.13 | $\$ 0$ |
| C crashes | 0.00 | 0.00 | $\$ 30,053$ |
| PDO crashes | 1.57 | 0.52 | $\$ 0$ |


| H. Amortized Benefit |  |  |  |
| :---: | :---: | :---: | :---: |
| Year | Crash Benefits | Present Value |  |
| 2025 | \$36,848 | \$36,848 | Total $=$ \$769,102 |
| 2026 | \$37,272 | \$37,013 |  |
| 2027 | \$37,700 | \$37,178 |  |
| 2028 | \$38,134 | \$37,344 |  |
| 2029 | \$38,572 | \$37,511 |  |
| 2030 | \$39,016 | \$37,679 |  |
| 2031 | \$39,465 | \$37,847 |  |
| 2032 | \$39,919 | \$38,016 |  |
| 2033 | \$40,378 | \$38,186 |  |
| 2034 | \$40,842 | \$38,357 |  |
| 2035 | \$41,312 | \$38,528 |  |
| 2036 | \$41,787 | \$38,700 |  |
| 2037 | \$42,267 | \$38,873 |  |
| 2038 | \$42,753 | \$39,047 |  |
| 2039 | \$43,245 | \$39,221 |  |
| 2040 | \$43,742 | \$39,397 |  |
| 2041 | \$44,245 | \$39,573 |  |
| 2042 | \$44,754 | \$39,750 |  |
| 2043 | \$45,269 | \$39,927 |  |
| 2044 | \$45,789 | \$40,106 |  |
| 0 | \$0 | \$0 |  |
| 0 | \$0 | \$0 |  |
| 0 | \$0 | \$0 |  |
| 0 | \$0 | \$0 |  |
| 0 | \$0 | \$0 |  |
| 0 | \$0 | \$0 |  |
| 0 | \$0 | \$0 |  |
| 0 | \$0 | \$0 | NOTE: |
| 0 | \$0 | \$0 | This calculation relies on the real discount rate, which accounts |
| 0 | \$0 | \$0 | for inflation. No further discounting is necessary. |
| 0 | \$0 | \$0 |  |


| Crash Modification Factor - Remove unwarranted signal |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| 0.760 | Fatal (K) Crashes | Reference | CMF 332 |  |
| 0.760 | Serious Injury (A) Crashes |  |  |  |
| 0.760 | Moderate Injury (B) Crashes | Crash Type | All |  |
| 0.760 | Possible Injury (C) Crashes |  |  |  |
| 0.760 | Property Damage Only Crashes |  |  | www.CMFclearinghouse.org |


| Crash Modification Factor - Replace direct left with right-turn |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| 0.80 | Fatal (K) Crashes | Reference | CMFs 351 |  |
| 0.80 | Serious Injury (A) Crashes |  |  |  |
| 0.80 | Moderate Injury (B) Crashes | Crash Type | All |  |
| 0.80 | Possible Injury (C) Crashes |  |  |  |
| 0.80 | Property Damage Only Crashes |  |  | www.CMFclearinghouse.org |

## Multiple CMF Calculation

| CMF (K) = CMF $1 * *$ CMF $2=0.76 * 0.80=0.608$ | 0.608 | Fatal (K) Crashes |
| :---: | :---: | :---: |
| CMF (A) = CMF $1 *$ CMF $2=0.76 * 0.80=0.608$ | 0.608 | Serious Injury (A) Crashes |
| CMF (B) $=$ CMF $1 *$ CMF $2=0.76 * 0.80=0.608$ | 0.608 | Moderate Injury (B) Crashes |
| CMF (C) = CMF $1 *$ CMF $2=0.76 * 0.80=0.608$ | 0.608 | Possible Injury (C) Crashes |
| CMF (PDO) $=$ CMF $1 *$ CMF $2=0.76 * 0.80=0.608$ | 0.608 | Property Damage Only Crashes |

Traffic Safety Benefit-Cost Calculation
Highway Safety Improvement Program (HSIP) Reactive Project

| A. Roadway Description |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Route | CSAH 42 | District | Metro | County | Dakota County |
| Begin RP | $00+00.00$ | End RP | $48+64.50$ | Miles | 0.921 |
| Location | CSAH 42 at Garden View Drive Intersection |  |  |  |  |

## B. Project Description

| Proposed Work <br> Project Cost* | Replace signal system; add signal head over each lane and FYA |  |  |
| :---: | :---: | :---: | :---: |
|  | \$8,179,345 | Installation Year | 2025 |
| Project Service Life | 20 years | Traffic Growth Factor | 1.15\% |
| * exclude Right of Way from Project Cost |  |  |  |


| C. Crash Modification Factor |  |  |  |
| :---: | :---: | :---: | :---: |
| 0.324 | Fatal (K) Crashes | Reference | Multiple CMFs (1485, \& 7684) - See Page 3 |
| 0.324 | Serious Injury (A) Crashes |  |  |
| 0.324 | Moderate Injury (B) Crashes | Crash Type | Angle Crashes (minor approach) |
| 0.324 | Possible Injury (C) Crashes |  |  |
| 0.324 | Property Damage Only Crashes |  | www.CMFclearinghouse.org |

D. Crash Modification Factor (optional second CMF)

| 0.648 | Fatal (K) Crashes | Reference |  |
| :--- | :--- | :--- | :--- |
| 0.648 | Serious Injury (A) Crashes |  |  |
| 0.648 | Moderate Injury (B) Crashes | Crash Type |  |
| 0.648 | All (remaining) |  |  |
| 0.648 | Prossible Injury (C) Crashes (7690, \& 1414) - See Page 3 |  |  |


| E. Crash Data |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| Begin Date <br> Data Source | 1/1/201 | End Date | 12/31/2021 | 3 years |
|  | MnCM |  |  |  |
|  | Crash Severity | Angle Crashes (minor approach) | All (remaining) |  |
|  | K crashes | 0 | 0 |  |
|  | A crashes | 0 | 0 |  |
|  | B crashes | 0 | 1 |  |
|  | C crashes | 0 | 3 |  |
|  | PDO crashes | 10 | 15 |  |

F. Benefit-Cost Calculation

| $\$ 2,533,893$ | Benefit (present value) | Cost |
| :--- | :--- | :--- |$\quad$ B/C Ratio $=\mathbf{0 . 3 1}$

F. Analysis Assumptions

| Crash Severity | Crash Cost |
| :--- | :---: |
| K crashes | $\$ 1,500,000$ |
| A crashes | $\$ 750,000$ |
| B crashes | $\$ 230,000$ |
| C crashes | $\$ 120,000$ |
| PDO crashes | $\$ 13,000$ |

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

| Real Discount Rate: | $0.7 \%$ | Default |
| :--- | :--- | :--- |
| Traffic Growth Rate: | $1.2 \%$ | Revised |
| Project Service Life: | 20 years | Revised |


| 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 | 0.35 | 0.12 | \$26,987 |
|  | C crashes | 1.06 | 0.35 | \$42,240 |
|  | PDO crashes | 12.04 | 4.01 | \$52,173 |
|  |  |  | \$121,400 |  |
| H. Amortized Benefit |  |  |  |  |
| Year | Crash Benefits | Present Value | Total $=$ \$2,533,893 |  |
| 2025 | \$121,400 | \$121,400 |  |  |
| 2026 | \$122,796 | \$121,943 | Total $=$ |  |
| 2027 | \$124,208 | \$122,487 |  |  |
| 2028 | \$125,637 | \$123,035 |  |  |
| 2029 | \$127,081 | \$123,585 |  |  |
| 2030 | \$128,543 | \$124,137 |  |  |
| 2031 | \$130,021 | \$124,692 |  |  |
| 2032 | \$131,516 | \$125,249 |  |  |
| 2033 | \$133,029 | \$125,809 |  |  |
| 2034 | \$134,559 | \$126,371 |  |  |
| 2035 | \$136,106 | \$126,935 |  |  |
| 2036 | \$137,671 | \$127,503 |  |  |
| 2037 | \$139,255 | \$128,072 |  |  |
| 2038 | \$140,856 | \$128,645 |  |  |
| 2039 | \$142,476 | \$129,220 |  |  |
| 2040 | \$144,114 | \$129,797 |  |  |
| 2041 | \$145,772 | \$130,377 |  |  |
| 2042 | \$147,448 | \$130,960 |  |  |
| 2043 | \$149,144 | \$131,545 |  |  |
| 2044 | \$150,859 | \$132,133 |  |  |
| 0 | \$0 | \$0 |  |  |
| 0 | \$0 | \$0 |  |  |
| 0 | \$0 | \$0 |  |  |
| 0 | \$0 | \$0 |  |  |
| 0 | \$0 | \$0 |  |  |
| 0 | \$0 | \$0 |  |  |
| 0 | \$0 | \$0 |  |  |
| 0 | \$0 | \$0 | NOTE: |  |
| 0 | \$0 | \$0 | This calculation relies on the real discount rate, which accounts for inflation. No further discounting is necessary. |  |
| 0 | \$0 | \$0 |  |  |
| 0 | \$0 | \$0 |  |  |

I. Multiple CMF Calculation - Signal heads and FYA

Crash Modification Factor - Install additional signal head over each lane

| 0.540 | Fatal (K) Crashes | Reference |  |
| :--- | :--- | :--- | :--- |
| 0.540 | SMF 1485 |  |  |
| 0.540 | Serious Injury (A) Crashes |  |  |
| 0.540 | Possible Injury (C) Crashes | Crash Type Angle |  |
| 0.540 | Property Damage Only Crashes |  |  |
| Wrww.CMFclearinghouse.org |  |  |  |


| Crash Modification Factor - Permissive lefts to FYA Prot/Perm (minor approaches) |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| 0.60 | Fatal (K) Crashes | Reference | CMFs 7684 |  |
| 0.60 | Serious Injury (A) Crashes |  |  |  |
| 0.60 | Moderate Injury (B) Crashes | Crash Type | Left Turn (Angle) |  |
| 0.60 | Possible Injury (C) Crashes |  |  |  |
| 0.60 | Property Damage Only Crashes |  |  | www.CMFclearinghouse.org |


| Multiple CMF Calculation |  |  |
| :---: | :---: | :---: |
| CMF (K) = CMF $1 *$ CMF $2=0.54 * 0.60=0.324$ | 0.324 | Fatal (K) Crashes |
| CMF (A) = CMF $1 *$ CMF $2=0.54 * 0.60=0.324$ | 0.324 | Serious Injury (A) Crashes |
| CMF (B) = CMF $1 *$ CMF $2=0.54 * 0.60=0.324$ | 0.324 | Moderate Injury (B) Crashes |
| CMF (C) = CMF $1 *$ CMF $2=0.54 * 0.60=0.324$ | 0.324 | Possible Injury (C) Crashes |
| CMF (PDO) $=$ CMF $1 *$ CMF $2=0.54 * 0.60=0.324$ | 0.324 | Property Damage Only Crashes |

## J. Multiple CMF Calculation - Signal heads and FYA

Crash Modification Factor - Protected lefts to FYA Time-of-Day

| 0.901 | Fatal (K) Crashes | Reference CMF 7690 |  |
| :--- | :--- | :--- | :--- |
| 0.901 | Serious Injury (A) Crashes |  |  |
| 0.901 | Moderate Injury (B) Crashes | Crash Type All |  |
| 0.901 | Possible Injury (C) Crashes |  |  |
| 0.901 | Property Damage Only Crashes |  | www.CMFclearinghouse.org |

Crash Modification Factor - Add signal head in addition to primary head

| 0.72 | Fatal (K) Crashes | Reference CMFs 1414 |  |  |
| :---: | :---: | :---: | :---: | :---: |
| 0.72 | Serious Injury (A) Crashes | Crash Type | All |  |
| 0.72 | Moderate Injury (B) Crashes |  |  |  |
| 0.72 | Possible Injury (C) Crashes |  |  |  |
| 0.72 | Property Damage Only Crashes |  |  | www.CMFclearinghouse.org |

## Multiple CMF Calculation

CMF (K) $=$ CMF $1 *$ CMF $2=0.901 * 0.72=0.648$
CMF (A) $=$ CMF $1 *$ CMF $2=0.901 * 0.72=0.648$
CMF (B) $=$ CMF $1 *$ CMF $2=0.901 * 0.72=0.648$
CMF (C) $=$ CMF $1 *$ CMF $2=0.901 * 0.72=0.648$
CMF (PDO) $=$ CMF $1 *$ CMF $2=0.901 * 0.72=0.648$

| 0.648 | Fatal (K) Crashes |
| :--- | :--- |
| 0.648 | Serious Injury (A) Crashes |
| 0.648 | Moderate Injury (B) Crashes |
| 0.648 | Possible Injury (C) Crashes |
| 0.648 | Property Damage Only Crashes |

## Traffic Safety Benefit-Cost Calculation

Highway Safety Improvement Program (HSIP) Reactive Project

| A. Roadway Description |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Route | CSAH 42 | District | Metro | County | Dakota County |
| Begin RP | 00+00.00 | End RP | $48+64.50$ | Miles | 0.921 |
| Location CSAH 42 at Hayes Road Intersection | CSAH 42 at Hayes Road Intersection |  |  |  |  |

## B. Project Description

| Proposed Work Remove traffic s | Remove traffic signal, reduce access (3/4-access), replace signals, etc. |
| :---: | :---: |
| Project Cost* \$8,179,345 | Installation Year 2025 |
| Project Service Life 20 years | Traffic Growth Factor 1.15\% |
| * exclude Right of Way from Project Cost |  |


| C. Crash Modification Factor |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| 0.648 | Fatal (K) Crashes | Reference | Multiple CMFs (1414, \& 7690) - See Page 3 |  |
| 0.648 | Serious Injury (A) Crashes |  |  |  |
| 0.648 | Moderate Injury (B) Crashes | Crash Type |  |  |
| 0.648 | Possible Injury (C) Crashes |  |  |  |
| 0.648 | Property Damage Only Crashes |  |  | www.CMFclea |



| E. Crash Data |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| Begin Date <br> Data Source | 1/1/2 | End Date | 12/31/2021 | 3 years |
|  | MnC |  |  |  |
|  | Crash Severity |  | < opt |  |
|  | K crashes | 0 |  |  |
|  | A crashes | 0 |  |  |
|  | B crashes | 1 |  |  |
|  | C crashes | 4 |  |  |
|  | PDO crashes | 9 |  |  |
| F. Benefit-Cost Calculation |  |  |  |  |
| \$2,025,333 |  | Benefit (present value) Cost |  |  |
| \$8,179,345 |  |  |  |  |

F. Analysis Assumptions

| Crash Severity |  |
| :--- | ---: |
| K crashes | Crash Cost |
| A crashes | $\$ 1,500,000$ |
| B crashes | $\$ 750,000$ |
| C crashes | $\$ 230,000$ |
| PDO crashes | $\$ 120,000$ |

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

| Real Discount Rate: | $0.7 \%$ | Default |
| :--- | :--- | :--- |
| Traffic Growth Rate: | $1.2 \%$ | Revised |
| Project Service Life: | 20 years | Revised |


| 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 | 0.35 | 0.12 | \$26,987 |
|  | C crashes | 1.41 | 0.47 | \$56,320 |
|  | PDO crashes | 3.17 | 1.06 | \$13,728 |
|  |  | \$97,035 |  |  |
| H. Amortized Benefit |  |  |  |  |
| Year | Crash Benefits | Present Value | Total $=\$ 2,025,333$ |  |
| 2025 | \$97,035 | \$97,035 |  |  |
| 2026 | \$98,151 | \$97,468 |  |  |
| 2027 | \$99,279 | \$97,904 |  |  |
| 2028 | \$100,421 | \$98,341 |  |  |
| 2029 | \$101,576 | \$98,781 |  |  |
| 2030 | \$102,744 | \$99,222 |  |  |
| 2031 | \$103,926 | \$99,666 |  |  |
| 2032 | \$105,121 | \$100,111 |  |  |
| 2033 | \$106,330 | \$100,558 |  |  |
| 2034 | \$107,552 | \$101,008 |  |  |
| 2035 | \$108,789 | \$101,459 |  |  |
| 2036 | \$110,040 | \$101,913 |  |  |
| 2037 | \$111,306 | \$102,368 |  |  |
| 2038 | \$112,586 | \$102,825 |  |  |
| 2039 | \$113,880 | \$103,285 |  |  |
| 2040 | \$115,190 | \$103,746 |  |  |
| 2041 | \$116,515 | \$104,210 |  |  |
| 2042 | \$117,855 | \$104,676 |  |  |
| 2043 | \$119,210 | \$105,143 |  |  |
| 2044 | \$120,581 | \$105,613 |  |  |
| 0 | \$0 | \$0 |  |  |
| 0 | \$0 | \$0 |  |  |
| 0 | \$0 | \$0 |  |  |
| 0 | \$0 | \$0 |  |  |
| 0 | \$0 | \$0 |  |  |
| 0 | \$0 | \$0 |  |  |
| 0 | \$0 | \$0 |  |  |
| 0 | \$0 | \$0 | NOTE: |  |
| 0 | \$0 | \$0 | This calculatio | relies on the real discount rate, which accounts |
| 0 | \$0 | \$0 | for inflation. | o further discounting is necessary. |
| 0 | \$0 | \$0 |  |  |


| Crash Modification Factor - Install FYA Time-of-Day (from Protected Only Left) |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| 0.901 | Fatal (K) Crashes | Reference | CMF 7690 |  |
| 0.901 | Serious Injury (A) Crashes |  |  |  |
| 0.901 | Moderate Injury (B) Crashes | Crash Type |  |  |
| 0.901 | Possible Injury (C) Crashes |  |  |  |
| 0.901 | Property Damage Only Crashes |  |  | www.CMFclearinghouse.org |


| Crash Modification Factor - Add additinoal primary signal heads |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| 0.72 | Fatal (K) Crashes | Reference | CMFs 1414 |  |
| 0.72 | Serious Injury (A) Crashes |  |  |  |
| 0.72 | Moderate Injury (B) Crashes | Crash Type |  |  |
| 0.72 | Possible Injury (C) Crashes |  |  |  |
| 0.72 | Property Damage Only Crashes |  |  | www.CMFclearinghouse.org |


| CMF (K) = CMF $1 *$ CMF $2=0.90 * 0.72=0.648$ | 0.648 | Fatal (K) Crashes |
| :---: | :---: | :---: |
| CMF (A) = CMF $1 *$ CMF $2=0.90 * 0.72=0.648$ | 0.648 | Serious Injury (A) Crashes |
| CMF (B) = CMF $1{ }^{*}$ CMF $2=0.90 * 0.72=0.648$ | 0.648 | Moderate Injury (B) Crashes |
| CMF (C) = CMF $1{ }^{*} \mathrm{CMF} 2=0.90 * 0.72=0.648$ | 0.648 | Possible Injury (C) Crashes |
| CMF (PDO) $=$ CMF $1 *$ CMF $2=0.90 * 0.72=0.648$ | 0.648 | Property Damage Only Crashes |

## Traffic Safety Benefit-Cost Calculation

Highway Safety Improvement Program (HSIP) Reactive Project

| A. Roadway Description |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Route | CSAH 42 | District | Metro | County | Dakota County |
| Begin RP | 00 + 00.00 | End RP | $48+64.50$ | Miles | 0.921 |
| Location CSAH 42 at 147th Street Intersection | CSAH 42 at 147th Street Intersection |  |  |  |  |

## B. Project Description

| Proposed Work <br> Project Cost* | Convert full access to 3/4-access |  |  |
| :---: | :---: | :---: | :---: |
|  | \$8,179,345 | Installation Year | 2025 |
| Project Service Life | 20 years | Traffic Growth Factor | 1.15\% |
| * exclude Right of Way from Project Cost |  |  |  |


| C. Crash Modification Factor |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| 0.800 | Fatal (K) Crashes | Reference | CMF 351 - Replace direct left with right-turn |  |
| 0.800 | Serious Injury (A) Crashes |  |  |  |
| 0.800 | Moderate Injury (B) Crashes | Crash Type |  |  |
| 0.800 | Possible Injury (C) Crashes |  |  |  |
| 0.800 | Property Damage Only Crashes |  |  | www.CMFclear |


| D. Crash Modification Factor (optional second CMF) |  |  |
| :---: | :---: | :---: |
| Fatal (K) Crashes | Reference |  |
| Serious Injury (A) Crashes |  |  |
| Moderate Injury (B) Crashes | Crash Type |  |
| Possible Injury (C) Crashes |  |  |
| Property Damage Only Crashes |  | www.CMFclearinghouse.org |


F. Analysis Assumptions

| Crash Severity | Crash Cost |
| :--- | ---: |
| K crashes | $\$ 1,500,000$ |
| A crashes | $\$ 750,000$ |
| B crashes | $\$ 230,000$ |
| C crashes | $\$ 120,000$ |
| PDO crashes | $\$ 13,000$ |

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

| Real Discount Rate: | $0.7 \%$ | Default |
| :--- | :--- | :--- |
| Traffic Growth Rate: | $1.2 \%$ | Revised |
| Project Service Life: | 20 years | Revised |


| 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 | 0.40 | 0.13 | \$16,000 |
|  | PDO crashes | 1.40 | 0.47 | \$6,067 |
|  |  |  |  | \$22,067 |
| H. Amortized Benefit |  |  |  |  |
| Year | Crash Benefits | Present Value | Total $=\mathbf{\$ 4 6 0 , 5 8 2}$ |  |
| 2025 | \$22,067 | \$22,067 |  |  |
| 2026 | \$22,320 | \$22,165 |  |  |
| 2027 | \$22,577 | \$22,264 |  |  |
| 2028 | \$22,837 | \$22,364 |  |  |
| 2029 | \$23,099 | \$22,464 |  |  |
| 2030 | \$23,365 | \$22,564 |  |  |
| 2031 | \$23,634 | \$22,665 |  |  |
| 2032 | \$23,906 | \$22,766 |  |  |
| 2033 | \$24,180 | \$22,868 |  |  |
| 2034 | \$24,458 | \$22,970 |  |  |
| 2035 | \$24,740 | \$23,073 |  |  |
| 2036 | \$25,024 | \$23,176 |  |  |
| 2037 | \$25,312 | \$23,280 |  |  |
| 2038 | \$25,603 | \$23,384 |  |  |
| 2039 | \$25,898 | \$23,488 |  |  |
| 2040 | \$26,195 | \$23,593 |  |  |
| 2041 | \$26,497 | \$23,698 |  |  |
| 2042 | \$26,801 | \$23,804 |  |  |
| 2043 | \$27,110 | \$23,911 |  |  |
| 2044 | \$27,421 | \$24,018 |  |  |
| 0 | \$0 | \$0 |  |  |
| 0 | \$0 | \$0 |  |  |
| 0 | \$0 | \$0 |  |  |
| 0 | \$0 | \$0 |  |  |
| 0 | \$0 | \$0 |  |  |
| 0 | \$0 | \$0 |  |  |
| 0 | \$0 | \$0 |  |  |
| 0 | \$0 | \$0 | NOTE: |  |
| 0 | \$0 | \$0 | This calculatio | on the real discount rate, which accounts |
| 0 | \$0 | \$0 | for inflation. N | er discounting is necessary. |
| 0 | \$0 | \$0 |  |  |

Crash Case Listing

| Route System | Route Number | Measure | Co | City |  | Incident Number | Date | Time | Day of Week | Basic Type | Num <br> Veh | Sev |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Redwood D |  |  |  | Pple | 1 | 0076892 | 12/07/19 | 2035 | SAI | Head |  | B |
| Redwood D |  |  |  | Apple | valley | 00915174 | 06/28/21 | 1540 | MOIN | Angle | 2 | B |
| -Redwood D |  |  |  | Apple | valley | 00720687 | $05 / 17 / 19$ | 1120 | FRI | Redl End |  | N |
| 04-CSAH | 42 | 4.454 | 19 | Apple | Valley | 00748865 | 09/20/19 | 1601 | FRI | Rear End | 2 | N |
| 04-CSAH | 42 | 4.455 | 19 | Apple | Valley | 00774570 | 12/27/19 | 1600 | FRI | Rear End | 2 | N |
| 04-CSAH | 42 | 4.459 | 19 | Apple | Valley | 00847372 | 10/19/20 | 1700 | MON | Rear End | 3 | N |
| 04-CSAH | 42 | 4.525 | 19 | Apple | Valley | 00772455 | 12/17/19 | 1122 | TUE | Rear End | 4 | B |
| 04-CSAH | 42 | 4.573 | 19 | Apple | Valley | 00975520 | 11/24/21 | 0910 | WED | Rear End | 2 | N |
| 04-CSAH | 42 | 4.590 | 19 | Apple | Valley | 00929636 | 07/21/21 | 1230 | WED | Rear End | 2 | N |
| 04-CSAH | 42 | 4.601 | 19 | Apple | Valley | 00983918 | 12/27/21 | 1435 | MON | SSS | 2 | N |
| 04-CSAH | 42 | 4.621 | 19 | Apple | Valley | 00863323 | 11/13/20 | 1533 | FRI | Rear End | 4 | C |
| 04-CSAH | 42 | 4.691 | 19 | Apple | Valley | 00686002 | 02/08/19 | 1601 | FRI | SSS | 2 | N |
| 04-CSAH | 42 | 4.702 | 19 | Apple | Valley | 00751671 | 10/02/19 | 1616 | WED | Rear End | 2 | N |
| 04-CSAH | 42 | 4.719 | 19 | Apple | Valley | 00910823 | 06/08/21 | 2020 | TUE | Rear End | 3 | C |
| 04-CSAH | 42 | 4.736 | 19 | Apple | Valley | 00888311 | 02/04/21 | 1519 | THU | Angle | 2 | N |
| 04-CSAH | 42 | 4.738 | 19 | Apple | Valley | 00941692 | 09/20/21 | 0704 | MON | Angle | 2 | N |
| 04-CSAH | 42 | 4.738 | 19 | Apple | Valley | 00760339 | 11/06/19 | 1651 | WED | Angle | 3 | N |
| 04-CSAH | 42 | 4.739 | 19 | Apple | Valley | 00936282 | 08/24/21 | 1810 | TUE | Angle | 2 | N |
| 04-CSAH | 42 | 4.741 | 19 | Apple | Valley | 00861286 | 11/04/20 | 1745 | WED | Rear End | 2 | N |
| 04-CSAH | 42 | 4.748 | 19 | Apple | Valley | 00941486 | 09/18/21 | 1107 | SAT | Rear End | 2 | N |
| 04-CSAH | 42 | 4.796 | 19 | Apple | Valley | 00691083 | 02/23/19 | 1210 | SAT | Rear End | 2 | B |
| 04-CSAH | 42 | 4.940 | 19 | Apple | Valley | 00780850 | 01/18/20 | 1755 | SAT | Angle | 2 | N |
| 04-CSAH | 42 | 4.989 | 19 | Apple | Valley | 00699405 | 03/22/19 | 0720 | FRI | Rear End | 2 | C |
| 04-CSAH | 42 | 4.989 | 19 | Apple | Valley | 00849425 | 10/26/20 | 0740 | MON | Rear End | 2 | N |
| 04-CSAH | 42 | 4.993 | 19 | Apple | Valley | 00970819 | 11/02/21 | 0729 | TUE | Rear End | 2 | C |
| 04-CSAH | 42 | 4.994 | 19 | Apple | Valley | 00871026 | 12/27/20 | 1630 | SUN | SSS | 2 | N |
| 04-CSAH | 42 | 5.003 | 19 | Apple | Valley | 00817105 | 06/29/20 | 1838 | MON | Rear End | 3 | C |
| 04-CSAH | 42 | 5.005 | 19 | Apple | Valley | 00897578 | 03/25/21 | 0728 | THU | Rear End | 4 | B |
| 04-CSAH | 42 | 5.005 | 19 | Apple | Valley | 00936885 | 08/27/21 | 1607 | FRI | Rear End | 2 | N |
| 04-CSAH | 42 | 5.007 | 19 | Apple | Valley | 00785721 | 01/31/20 | 1328 | FRI | Rear End | 2 | N |
| 04-CSAH | 42 | 5.013 | 19 | Apple | Valley | 00685446 | 02/08/19 | 1600 | FRI | Rear End | 2 | N |

Crash Case Listing

| Route System | Route Number | Measure | Co | City |  | Incident Number | Date | Time | Day of Week | Basic Type | $\begin{aligned} & \text { Num } \\ & \text { Veh } \end{aligned}$ | Sev |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 04-CSAH | 42 | 5.042 | 19 | Apple | Valley | 00750719 | 09/25/19 | 1640 | WED | SSS | 2 | N |
| 04-CSAH | 42 | 5.079 | 19 | Apple | Valley | 00676767 | 01/17/19 | 1910 | THU | Rear End | 2 | N |
| 04-CSAH | 42 | 5.177 | 19 | Apple | Valley | 00703040 | 04/10/19 | 1450 | WED | Rear End | 3 | N |
| 04-CSAH | 42 | 5.218 | 19 | Apple | Valley | 00867682 | 12/12/20 | 1745 | SAT | Angle | 2 | N |
| 04-CSAH | 42 | 5.223 | 19 | Apple | Valley | 00683301 | 02/04/19 | 1932 | MON | Rear End | 2 | C |
| 04-CSAH | 42 | 5.239 | 19 | Apple | Valley | 00809048 | 05/02/20 | 2102 | SAT | Angle | 2 | N |
| Eastbound | ock Ave Qu | ue $\cdot .239$ | 19 | Apple | valley | 00683224 | 02/04/19 | 1622 | 1101N | Rear End | 2 | N |
| 04-CSAH | 42 | 5.247 | 19 | Apple | Valley | 00760650 | 11/06/19 | 1725 | WED | SSS | 3 | N |
| 04-CSAH | 42 | 5.252 | 19 | Apple | Valley | 00732561 | 07/09/19 | 1443 | TUE | SVROR | 1 | N |
| * Eastbound | nock Ave Q | 1. 25. |  | Apple | Valloy | 00762031 | 11/12/19 | 1413 | TU | Down End |  | N |
| 04-CSAH | 42 | 5.255 | 19 | Apple | Valley | 00782407 | 01/22/20 | 1750 | WED | Rear End | 2 | N |
| 04-CSAH | 42 | 5.256 | 19 | Apple | Valley | 00800114 | 02/22/20 | 0923 | SAT | SVROR | 1 | N |
| 04-CSAH | 42 | 5.268 | 19 | Apple | Valley | 00942997 | 09/26/21 | 1110 | SUN | Rear End | 2 | N |
| 05-MSAS | 108 | 0.002 | 19 | Apple | Valley | 00757329 | 10/26/19 | 0937 | SAT | Bike | 1 | C |
| 05-MSAS | 108 | 0.022 | 19 | Apple | Valley | 00674795 | 01/08/19 | 1830 | TUE | Rear End | 2 | N |
| 05-MSAS | 111 | 0.008 | 19 | Apple | Valley | 00812333 | 06/01/20 | 1335 | MON | Bike | 1 | C |
| 05-MSAS | 115 | 1.126 | 19 | Apple | Valley | 00966653 | 10/13/21 | 1621 | WED | Head On | 2 | N |
| 05-MSAS | 115 | 1.130 | 19 | Apple | Valley | 00837672 | 08/28/20 | 1322 | FRI | Angle | 2 | N |
| 05-MSAS | 115 | 1.154 | 19 | Apple | Valley | 00936490 | 08/25/21 | 1750 | WED | Left Turn | 2 | C |
| 05-MSAS | 115 | 1.154 | 19 | Apple | Valley | 00868587 | 12/16/20 | 1647 | WED | SSS | 2 | N |
| 05-MSAS | 115 | 1.156 | 19 | Apple | Valley | 00939777 | 09/10/21 | 1500 | FRI | Angle | 2 | N |
| 05-MSAS | 115 | 1.159 | 19 | Apple | Valley | 00724633 | 06/05/19 | 1312 | WED | Angle | 2 | N |
| 05-MSAS | 115 | 1.161 | 19 | Apple | Valley | 00909796 | 06/04/21 | 1243 | FRI | Rear End | 2 | N |
| 05-MSAS | 115 | 1.163 | 19 | Apple | Valley | 00937301 | 08/29/21 | 1738 | SUN | Angle | 2 | N |
| 05-MSAS | 115 | 1.168 | 19 | Apple | Valley | 00840520 | 09/13/20 | 1045 | SUN | SSS | 2 | N |
| \% Redwood D |  | . 487 | 9 | Apple | Valley | 00863090 | 11/12/20 | 1523 | THU | Angle |  | N- |
| 10-MUN | 63 | 0.012 | 19 | Apple | Valley | 00783031 | 01/24/20 | 0634 | FRI | Rear End | 2 | N |
| 10-MUN | 63 | 0.128 | 19 | Apple | Valley | 00915473 | 06/30/21 | 1755 | WED | Rear End | 2 | N |
| Frontage R | $\text { rash } 63$ | 0.130 | 19 | Apple | Valley | 00861640 | 11/06/20 | 1945 | FRI | SSS |  | ${ }^{\text {N }}$ |
| 10-MUN | 63 | 0.264 | 19 | Apple | Valley | 00837657 | 08/28/20 | 1258 | FRI | Angle | 2 | N |
| 10-MUN | 67 | 0.214 | 19 | Apple | Valley | 00743900 | 08/30/19 | 1138 | FRI | Rear End | 2 | N |

Crash Case Listing
CH 42 (Redwood Dr to 147th St)

| Route System | Route Number | Measure | Co | City | Incident Number | Date | Time | Day of Week | Basic Type | Num <br> Veh | Sev |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 10-MUN | 67 | 0.220 | 19 | Apple Valley | 00682020 | 02/01/19 | 1510 | FRI | Rear End | 2 | N |
| $10-\mathrm{MUN}$ | 67 | 0.226 | 19 | Apple Valley | 00980922 | 12/14/21 | 2246 | TUE | SVROR | 1 | N |
| $10-\mathrm{MUN}$ | 67 | 0.266 | 19 | Apple Valley | 00937574 | 08/30/21 | 1507 | MON | Angle | 2 | N |
| 10-MUN | 67 | 0.467 | 19 | Apple Valley | 00847902 | 10/20/20 | 1857 | TUE | SSS | 2 | N |
| 10-MUN | 67 | 0.561 | 19 | Apple Valley | 00773421 | 12/21/19 | 1330 | SAT | Rear End | 4 | N |

Selection Filter:
WORK AREA: State - FILTER: Year('2019','2020','2021') - SPATIAL FILTER APPLIED

Analyst:
Notes:
Justin Anibas

## CRASH MODIFICATION FACTORS CLEARINGHOUSE

## CMF / CRF Details

CMF ID: 332

Remove unwarranted signal (one-lane, one-way streets, excluding major arterials)

Description:
Prior Condition: No Prior Condition(s)
Category: Intersection traffic control
Study: Crash Reductions Related to Traffic Signal Removal in Philadelphia, Persaud et al., 1997

| Star Quality Rating: |  |
| :---: | :---: | :---: |
| $\qquad$ Crash Modification Factor (CMF) |  |
| Value: | 0.76 |
| Adjusted Standard Error: | 0.09 |
| Unadjusted Standard Error: | 0.07 |

## Crash Reduction Factor (CRF)

Value: 24 (This value indicates a decrease in crashes)

## Applicability

| Crash Type: | All |
| :---: | :---: |
| Crash Severity: | All |
| Roadway Types: | Not specified |
| Number of Lanes: |  |
| Road Division Type: |  |
| Speed Limit: |  |
| Area Type: | Not specified |
| Traffic Volume: |  |
| Time of Day: |  |

## If countermeasure is intersection-based

Intersection Type:

Intersection Geometry:

Traffic Control:

Major Road Traffic Volume:

Minor Road Traffic Volume:

Roadway/roadway (not interchange related)

Not specified

Signalized

Development Details

Date Range of Data Used:

Municipality:

State:

| Country: |  |  |
| ---: | :--- | :--- |
| Type of Methodology Used: | 3 |  |
| Sample Size Used: |  |  |
|  |  |  |
|  |  |  |

## Other Details

## Included in Highway Safety

 Manual?
## Date Added to Clearinghouse:

## Comments:

Yes. HSM lists this CMF in bold font to indicate that it has the highest reliability since it has an adjusted standard error of 0.1 or less.

Dec-01-2009

Countermeasure name has been slightly modified for consistency across Clearinghouse

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## CMF / CRF Details

CMF ID: 351

## Replace direct left-turn with right-turn/U-turn

Description:
Prior Condition: No Prior Condition(s)
Category: Access management
Study: Right Turns Followed by U-Turns Versus Direct Left Turns: A Comparison of Safety Issues, Xu, 2001

Star Quality Rating:


Crash Modification Factor (CMF)
Value: 0.8

Adjusted Standard Error: 0.13
Unadjusted Standard Error: 0.03

| Crash Reduction Factor (CRF) |  |
| ---: | :--- |
| Value: | 20 (This value indicates a decrease in crashes) |
| Adjusted Standard Error: | 13 |

## Applicability

| Crash Type: | All |
| :---: | :---: |
| Crash Severity: | All |
| Roadway Types: | Principal Arterial Other |
| Number of Lanes: | 4 to 8 |
| Road Division Type: |  |
| Speed Limit: |  |
| Area Type: | Not Specified |
| Traffic Volume: |  |
| Time of Day: |  |

## If countermeasure is intersection-based

Intersection Type:

Intersection Geometry:

Traffic Control:

Major Road Traffic Volume:

Minor Road Traffic Volume:

Roadway/roadway (not interchange related)

Not Specified

Stop-controlled

0 to 34000 Annual Average Daily Traffic (AADT)

Development Details


| Country: |  |
| :---: | :---: | :---: |
| Type of Methodology Used: | 6 |
| Sample Size Used: |  |
|  |  |

## Other Details

Included in Highway Safety Manual?

## Date Added to Clearinghouse:

## Comments:

Yes. HSM lists this CMF in bold font to indicate that it has the highest reliability since it has an adjusted standard error of 0.1 or less.

Dec-01-2009

## CMF / CRF Details

CMF ID: 1414

Add signal (additional primary head)
Description:
Prior Condition: Intersection has one primary signal head per approach
Category: Intersection traffic control
Study: Safety Benefits of Additional Primary Signal Heads, Felipe et al., 1998

Star Quality Rating:

## Crash Modification Factor (CMF)

Value: 0.72

Adjusted Standard Error:

Unadjusted Standard Error:

Crash Reduction Factor (CRF)

Value: 28 (This value indicates a decrease in crashes)

Adjusted Standard Error:

Unadjusted Standard Error:

|  | Applicability |
| :---: | :---: |
| Crash Type: | All |
| Crash Severity: | All |
| Roadway Types: | Not specified |
| Number of Lanes: |  |
| Road Division Type: |  |
| Speed Limit: |  |
| Area Type: | Urban |
| Traffic Volume: |  |
| Time of Day: |  |
| I | untermeasure is intersection-based |
| Intersection Type: | Roadway/roadway (not interchange related) |
| Intersection Geometry: | 4-leg |
| Traffic Control: | Signalized |
| Major Road Traffic Volume: |  |
| Minor Road Traffic Volume: |  |

## Development Details

| Date Range of Data Used: |  |
| ---: | :--- | :--- |
| Municipality: | Richmond, British Columbia |
| State: |  |
| Country: | Canada |


| Type of Methodology Used: | 2 |
| ---: | :--- | :--- |
| Sample Size Used: |  |
| Before Sample Size Used: | 8 |
| After Sample Size Used: | 8 |

## Other Details

## Included in Highway Safety <br> Manual?

## Date Added to Clearinghouse:

## Comments:

No

Dec-01-2009

The authors state that "three year of data were used for this analysis" (p. 7). This statement does not indicate if the before period was 3 years, the after period was 3 years, both were 3 years, or the total time period was 3 years (i.e. 1.5 years for before period and 1.5 years for after period).

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## CMF / CRF Details

CMF ID: 1485

Install additional signal head (to have one over each approach lane)
Description:
Prior Condition: No Prior Condition(s)
Category: Intersection traffic control
Study: Making Intersections Safer: A Toolbox of Engineering Countermeasures to Reduce Red-Light Running, McGee et al., 2002

```
Star Quality Rating:
```

| Crash Modification Factor (CMF) |  |
| :---: | :--- |
| Value: | 0.54 |
| Adjusted Standard Error: |  |
| Unadjusted Standard Error: | 0.098 |

## Crash Reduction Factor (CRF)

Value: 46 (This value indicates a decrease in crashes)

Adjusted Standard Error:

## Applicability

| Crash Type: | Angle |
| :---: | :--- | :--- |
| Crash Severity: | All |
| Roadway Types: | Not specified |
| Number of Lanes: |  |
| Road Division Type: |  |
| Speed Limit: |  |
| Area Type: | Urban |
| Traffic Volume: |  |

If countermeasure is intersection-based

Intersection Type:

Intersection Geometry:

Traffic Control:

Major Road Traffic Volume:

Minor Road Traffic Volume:

Roadway/roadway (not interchange related)

Signalized

Development Details

Date Range of Data Used:

Municipality:

State:
NC

| Country: | usa |
| ---: | :--- | :--- |
| Type of Methodology Used: | 3 |
| Sample Size Used: | Crashes |
| Before Sample Size Used: | 87 Crashes |
| After Sample Size Used: | 44 Crashes |


|  |  |
| :---: | :---: |
| Included in Highway Safety |  |
| Manual? |  | No | Other Details |
| :--- |
| Date Added to Clearinghouse: |
| Dec-01-2009 |
| Comments: |
| Author indicated that sites were selected based on locations where <br> improvement is likely to be effective, and not on high crash experience. <br> In this case, regression-to-the-mean is not accounted for in the <br> evaluation, but likely to be minor. |

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## CMF / CRF Details

CMF ID: 7684

Change from permissive only to flashing yellow arrow protected/permissive left turn

Description: Change from permissive only to FYA - protected/permissive left turn

## Prior Condition: Permissive phasing

Category: Intersection traffic control
Study: Safety Effectiveness of Flashing Yellow Arrow: Evaluation of 222 Signalized Intersections in North Carolina, Simpson and Troy, 2015

|  | Crash Modification Factor (CMF) |
| :---: | :--- | :--- |
| Value: | 0.598 |
| Adjusted Standard Error: |  |
| Unadjusted Standard Error: | 0.105 |

Crash Reduction Factor (CRF)

Value:

$$
40.2 \text { (This value indicates a decrease in crashes) }
$$

Adjusted Standard Error:

## Unadjusted Standard Error:

10.5

## Applicability

| Crash Type: | Left turn |
| ---: | :--- | :--- |
| Crash Severity: | All |
| Roadway Types: | Not specified |
| Number of Lanes: |  |
| Road Division Type: |  |
| Speed Limit: | $35-55$ |
| Area Type: | Not specified |
| Traffic Volume: |  |
| Time of Day: |  |

If countermeasure is intersection-based

| Intersection Type: | Roadway/roadway (not interchange related) |
| ---: | :--- |
| Intersection Geometry: | 3-leg,4-leg |
| Traffic Control: | Signalized |
| Major Road Traffic Volume: | 7000 to 49000 Annual Average Daily Traffic (AADT) |
| Minor Road Traffic Volume: | 600 to 17000 Annual Average Daily Traffic (AADT) |

## Development Details

| Date Range of Data Used: | 2003 to 2013 |  |
| ---: | :--- | :--- |
| Municipality: |  |  |
| State: | NC |  |
|  |  |  |
|  |  |  |


| Country: |  |
| :---: | :---: |
| Type of Methodology Used: | 4 |
| Sample Size Used: |  |
| Other Details |  |
| Included in Highway Safety Manual? | No |
| Date Added to Clearinghouse: | Nov-01-2015 |
| Comments: | Target crashes are defined as "left-turn same roadway crashes with the left-turner on an approach treated with FYA and occurring during the time of day when FYA is in operation". |

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

The information contained in the Crash Modification Factors (CMF) Clearinghouse is disseminated under the sponsorship of the U.S. Department of Transportation in the interest of information exchange. The U.S. Government assumes no liability for the use of the information contained in the CMF Clearinghouse. The information contained in the CMF Clearinghouse does not constitute a standard, specification, or regulation, nor is it a substitute for sound engineering judgment. CRASH MODIFICATION FACTORS CLEARINGHOUSE

## CMF / CRF Details

CMF ID: 7690

Change from protected only to flashing yellow arrow protected/permissive left turn with time of day operation

Description: Change from protected only to FYA - protected/permissive left turn with time of day operation

Prior Condition: Protected phasing
Category: Intersection traffic control
Study: Safety Effectiveness of Flashing Yellow Arrow: Evaluation of 222 Signalized Intersections in North Carolina, Simpson and Troy, 2015

```
Star Quality Rating:
```

[View score details]

| Crash Modification Factor (CMF) |  |
| :---: | :--- |
| Value: | 0.901 |
| Adjusted Standard Error: |  |
| Unadjusted Standard Error: | 0.048 |

## Crash Reduction Factor (CRF)

Value: $\quad 9.9$ (This value indicates a decrease in crashes)

| Adjusted Standard Error: |  |
| :---: | :---: |
| Unadjusted Standard Error: | 4.8 |
| Applicability |  |
| Crash Type: | All |
| Crash Severity: | All |
| Roadway Types: | Not specified |
| Number of Lanes: |  |
| Road Division Type: |  |
| Speed Limit: | 35-45 |
| Area Type: | Not specified |
| Traffic Volume: |  |
| Time of Day: | All |
| If countermeasure is intersection-based |  |
| Intersection Type: | Roadway/roadway (not interchange related) |
| Intersection Geometry: | 4-leg |
| Traffic Control: | Signalized |
| Major Road Traffic Volume: | 19000 to 41000 Annual Average Daily Traffic (AADT) |
| Minor Road Traffic Volume: | 3000 to 32000 Annual Average Daily Traffic (AADT) |


|  | Development Details |
| ---: | :--- |
| Date Range of Data Used: | 2003 to 2013 |
| Municipality: |  |
|  |  |


| State: | NC |  |
| ---: | ---: | :--- |
| Country: |  |  |
| Type of Methodology Used: | 4 |  |
| Sample Size Used: |  |  |
|  |  |  |

# Other Details 

| Included in Highway Safety |
| ---: | :--- |
| Manual? |$\quad$ No | Date Added to Clearinghouse: | Nov-01-2015 |
| ---: | :--- | :--- |
| Comments: |  |
|  |  |

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March 29, 2022

Metropolitan Council Transportation Advisory Board (TAB)
Attn: Elaine Koutsoukos,
TAB Coordinator 390
Robert Street North
Saint Paul, MN 55101

Re: Support for Dakota County's Regional Solicitation Application for CSAH 42 Roadway Modernization

Dear Ms. Koutsoukos:

The City of Apple Valley is writing to express our support for Dakota County's grant application for Federal funding to modernize and improve CSAH 42 in Apple Valley from Redwood Drive to $147^{\text {th }}$ Street.

This one-mile segment of CSAH 42 serves more than 30,000 vehicles per day and requires reconstruction of aging infrastructure and improvements to conform with plans to manage safety and operations. The segment includes three traffic signals installed 33-34 years ago, now at the end of their useful service lives. CSAH 42 in the area serves residential, park, and local businesses; but it has poor pavement quality and outdated accommodations for pedestrians, bicyclists, and transit riders. The time has come to implement long-planned improvements to serve all modes, while managing CSAH 42 to remain at four through lanes.

Dakota County has prepared a draft layout which the City of Apple Valley supports. The main elements of the proposed project include: (1) removal of the Elm Drive signal with construction of a trail underpass nearby in Redwood Park to resolve pedestrian/bike crossing barrier issues; (2) intersection improvements at Garden View Drive and Hayes Road, including signal replacements; and (3) partial reconstruction of CSAH 42, including frontage road segments to fill trail gaps and improve the buffer for residents. County and City staff shared project options and concepts with residents through public meetings in 2021 and will continue to engage with all stakeholders throughout design and construction. In this way, the City of Apple Valley is an active partner in its support of the CSAH 42 safety and modernization project.

This project is included in both County and City Capital Improvement Programs, and Apple Valley will participate in its share of the costs pursuant to Dakota County's Cost Share Policy.

We are pleased to offer our support to Dakota County for this Regional Solicitation application.

Let me know if you have any questions or need anything further.
Sincerely,

## CITY OF APPLE VALLEY



Matt Saam, P.E.
Public Works Director

C: Doug Abere, Dakota County Sr. Project Manager
county
April 2022

## Summary - Regional Solicitation Funding Application for CSAH 42 Roadway Modernization from Redwood Drive to $147^{\text {th }}$ Street

The main elements of the proposed project include: (1) removal of the signal at Elm Dr concurrent with construction of a trail underpass nearby in Redwood Park to resolve ped/bike crossing barrier issues; (2) intersection improvements at Garden View Dr and Hayes Rd, including signal replacements; (3) partial reconstruction of CSAH 42, including new pavement and reconstruction along frontage road segments to fill trail gaps and improve the buffer for residents; and (4) median and roadway reconstruction with various design elements to address aging infrastructure, manage access, and best serve pedestrians, bicyclists, transit riders, and motorists. The intersections at both Elm Dr and 147th St will be reconstructed as non-signalized 3/4-access intersections, allowing left turns only exiting from CSAH 42 (signal to be removed at Elm Dr and full-access stopcontrolled intersection at 147th St to be reconstructed to reduce conflicts and ensure no future signalization).

Background and Primary Need for the Proposed Project. The project segment is a principal arterial which exhibits poor average speed performance at 31,000 vehicles per day currently. With a 2040 forecast of 38,000 vehicles per day, design changes must be considered to provide for reasonable traffic operations and safety for all users. The segment also includes three traffic signals installed 33-34 years ago and thus at the end of their useful service lives. CSAH 42 in the area serves residential, park, community, and local business uses; but it has poor pavement quality and outdated accommodations for pedestrians, bicyclists, and transit riders. The time has come to implement long-needed improvements to serve all modes, while managing CSAH 42 to remain at four through lanes.

Project Setting and Context. The elements of the project will address a historic lack of investment in this mostly residential segment of CSAH 42, which includes Regional Environmental Justice Areas. The benefits will be integral with the many improved functions along this roadway segment. The combination of the accessmanagement elements and other updated traffic controls will improve safety and mobility along CSAH 42 for all users. The enhanced management of access and turns will also ensure that CSAH 42 will continue to operate acceptably with four through lanes and thus eliminate any foreseeable need for roadway expansion. The concurrent trail underpass at the Redwood Park/Pool and Community Center site will address long-established concerns about safe crossings for pedestrians and bicyclists, particularly for the area's youth. It will also link parkland both north and south of CSAH 42. Other design elements will improve safety and livability for nearby residents by better managing functions along the frontage roads and by improving the use of limited space.


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Saint Paul, MN 55101

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Dakota County has prepared a draft layout which the City of Apple Valley supports. The main elements of the proposed project include: (1) removal of the Elm Drive signal with construction of a trail underpass nearby in Redwood Park to resolve pedestrian/bike crossing barrier issues; (2) intersection improvements at Garden View Drive and Hayes Road, including signal replacements; and (3) partial reconstruction of CSAH 42, including frontage road segments to fill trail gaps and improve the buffer for residents. County and City staff shared project options and concepts with residents through public meetings in 2021 and will continue to engage with all stakeholders throughout design and construction. In this way, the City of Apple Valley is an active partner in its support of the CSAH 42 safety and modernization project.

This project is included in both County and City Capital Improvement Programs, and Apple Valley will participate in its share of the costs pursuant to Dakota County's Cost Share Policy.

We are pleased to offer our support to Dakota County for this Regional Solicitation application.

Let me know if you have any questions or need anything further.
Sincerely,

## CITY OF APPLE VALLEY



Matt Saam, P.E.
Public Works Director

C: Doug Abere, Dakota County Sr. Project Manager



## THANK YOU FOR YOUR FEEDBACK!

Thank you to everyone who provided feedback in the first phase of this study. We had hoped we could meet with you in person, but due to ongoing public health concerns related to COVID-19, we focused on using online tools, including:

- Listening sessions with diverse groups of residents, cities and transit agencies
- Interactive Wikimap and online survey
- Social media posts, multilingual fliers, and coordination with county public health officials to target underrepresented populations
- Project website and email updates to provide project information and advertise outreach opportunities


## WHO WE HEARD FROM

During the Spring and Summer of 2020, we got feedback from over 300 corridor users and community leaders. This included discussions with local engineers and planners, focus groups with diverse residents, and feedback from people who use the corridor to get to work, school and recreational activities.
We also made a special effort to reach corridor stakeholders that are traditionally underrepresented in the planning process, including people of color and those with lower incomes.

During this first phase of outreach, approximately 14\% of participants were from communities of color and 5\% have a yearly income of less than \$40,000*.

Annual Income of Wikimap Participants*


[^0]
## WHAT DID WE HEAR?

Of all the comments we received, the top 5 topics focused on:

1. Safety concerns
2. Bicycle facility needs
3. Pedestrian facility needs
4. Roadway design
5. Congestion for drivers

See page 2 for more details about what we heard.

NEXT STEP - EVALUATE POTENTIAL IMPROVEMENTS


In Phase 2, our team is looking at wide range of possible improvements to address the issues identified in Phase 1. Potential improvements range from smaller and short-term projects such as better signage and striping, to long-term investments such as pedestrian bridges, traffic signal upgrades and full intersection and roadway reconstruction.

Phase 2 engagement will focus on getting your feedback on the range of improvements being considered, and to help prioritize where the needs are greatest.
To get project updates and to hear about upcoming engagement opportunities, visit the project website to sign up for email notifications:

## www.co.dakota.mn.us

Search for: County Highway 42 (CH 42) Visioning Study

## 2040 Visioning Study - County Highway 42

## WHAT DID YOU SHARE WITH US?

Below is a sampling of the comments we received, along with maps showing where comments were posted on our online map.

## Pedestrian and Transit Comments



Lac Lavon Dr. "We need a transit center on the west side of Cedar."

Newton Ave.
"A second transit station should be added even further west on 42, closer to Savage."

I-35W Exit Ramp
"Right-on-red turns block crosswalk here."

## Garden View

"Garden view and 42 does not feel like a safe intersection for pedestrians or bicyclists."

East of Hwy 3
"...right now it feels very dangerous to walk on 42 with cars going by at 60 mph . A sidewalk would be appreciated."

Places of Interest and Other Comments

## Pilot Knob Rd. to Diamond Path

"Side of the road is dedicated to "wild flowers," however, is a huge weed area throughout the summer."


145th St.
"Popular area for snowmobiles in the winter months, visibility difficulties."

Garrett Ave.
"If you're on northbound Garrett, waiting at a red light takes a long time."

Hwy 42
"Good, just risky..."

West County Line
"Why [is the study] stopping [at the county border]."

## Bike Comments



## Embry Path

"Crossing 42 by bike here is difficult. There are very bike friendly roads N and S from this intersection so crossing seems natural."

Shannon Pkwy. to Hwy 3
"[It] would be nice to have a bike/ pedestrian path on the north side so that it can connect to walks along Hwy 3."

Portland Ave.
"Popular bike crossing - keep this intersection safe and efficient for people crossing 42 on bicycles."

Lac Lavon Dr.
"Very hard for bikes to make it north and south through this intersection."

## Portland Ave.

"This is where one lane ends on the eastbound side. Many people don't see the signage and it can be dangerous."

Cedar Ave.
"This intersection is incredibly busy. The light indicating no right turn at certain times [is confusing]."

## Redwood Dr.

"Multiple drivers continually perform U-turns at unsafe speeds after missing their turn."

## Automobile Comments



Hwy 3
"Trains frequently stop on the tracks. Add a tunnel for the trains to allow traffic to continuously flow."

I-35E
"The exit ramp heading east on 42 is very dangerous."

Garden View "Always clogged at school start and end times."

## County Highway 42 Visioning Study

## Engagement Summary Phase 2 - Winter 2020 to Spring 2021

## PHASE 2 OUTREACH ACTIVITIES INCLUDED:

- 12/9/2020 - Pedestrian and Bicycle Focus Group
- 1/20/2021 - Education and School Bus Operators Focus Group
- 1/29/2021 - Corridor Businesses and Freight Operators Focus Group
- 3/2/2021 - Southcross to Hayes Neighborhood Listening Sessions
- Interactive Wikimap and survey to give corridor users the opportunity to provide feedback on issues and needs as well as gather demographics information
- Project mailings and email updates
- Project website to provide project information and advertise outreach opportunities

COVID-19 ACCOMMODATIONS
Due to ongoing COVID-19 social distancing requirements in effect from the beginning of the CH 42 Visioning Study, online tools continue to be emphasized while in-person meetings were postponed to accommodate public health concerns




SUMMER - FALL 2021

## WHO WE HEARD FROM

During winter 2020 through Spring of 2021, we got feedback from 100's of corridor users, residents, business representatives and educators. This included focus groups and listening sessions with diverse residents, and feedback from people who walk, roll, bike, and drive in the corridor to get to work, school and recreational activities.

The County and partnering cities strive for an equitable planning process to meet the needs of all corridor users. Targeted outreach was conducted to reach those traditionally underrepresented in the planning process.


Project display boards placed in the Dakota County Service Center; and Rosemount, Apple Valley, and Burnsville City Halls.

## TOP 5 COMMENT MENTIONS

1. Pedestrian facility needs
2. Safety concerns
3. Bicycle facility needs
4. Roadway design
5. Congestion for drivers

## TOP LOCATIONS

While the comments received were spread through the study area, there were a few locations that stood out based on the number of comments received at each location. These areas include:

- Lac Lavon Drive in Burnsville
- Redwood Drive, Elm Drive and Hayes Road in Apple Valley
- S Robert Trail (Hwy 3) in Rosemount

2040 Visioning Study
County Highway 42

## Pedestrian and Bicycle Focus Group


$\checkmark \quad$ The group shared the needs for improvements for bicyclists trying to cross Hwy 42 at multiple locations along the corridor.
$\checkmark \quad$ Discussed how current issues vary depending on the type of bicylist with needs differing between cycling groups versus recreational riders.
$\checkmark \quad$ Identified locations that are of interest but difficult to access by bicyclists where updated pedestrian and bicycle facilities would help.

## Business and Freight Focus Group


$\checkmark$ Concerns with future access changes and impacts to business access.
$\checkmark$ Discussion on construction impacts when projects are implemented.
$\checkmark \quad$ Sharing of potential future development locations for the study to take into consideration of future needs.

Education Focus Group
(20)
$\checkmark$ Identified locations with higher number of student pedestrians crossing Hwy 42.
$\checkmark$ Discussed locations with school-related congestion and school bus routes that use Hwy 42.
$\checkmark \quad$ Voiced safety concerns of locations where buses have to cross Hwy 42 or bus pick-up locations on the corridor.
$\checkmark$ Focused discussion in the Redwood Drive to 147th Street segment due to multiple schools on both sides of Hwy 42.

Southcross to Hayes Neighborhood Listening Session

$\checkmark$ Safety and operation concerns at Southcross, Redwood and Garden View for both automobile and pedestrians.
$\checkmark$ Confirmed the importance of connecting across Hwy 42 for pedestrians throughout the segment, particularly near Redwood Park for park users and at Hayes intersection for students.
$\checkmark$ Discussions on potential alternatives for traffic control and access types for the existing intersections. Also discussed potential improvements to the frontage roads.

## 2040 Visioning Study

County Highway 42

## County Highway 42 <br> Visioning Study

## Engagement Summary <br> Phase 3 - Summer 2021 -

 Fall 2021PHASE 3 OUTREACH ACTIVITIES INCLUDED:

- 4/22/2021 - Apple Valley Home \& Garden Expo
- 6/12/2021Burnsville Back to the 80s Car Show
- 7/15/2021 Public Open House
- 7/24/2021 Rosemount Leprechaun Days
- Interactive Wikimap and survey to give corridor users the opportunity to provide feedback on issues and needs as well as gather demographics information
- Project mailings and email updates
- Door hangers for residents on frontage roads in Apple Valley
- Project website to provide project information and advertise outreach opportunities

COVID-19 ACCOMMODATIONS
Due to ongoing COVID-19 social distancing requirements in effect from the beginning of the CH 42 Visioning Study, online tools continue to be emphasized while in-person meetings were postponed to accommodate public health concerns.


SPRING - SUMMER 2020

## PHASE 2



WINTER 2020-SPRING 2021

PHASE 3


SUMMER - FALL 2021

## WHO WE HEARD FROM

During Spring of 2021 through Winter of 2021, we got feedback from 100's of corridor users, residents, business representatives, and educators. This included pop-up meetings at local events to reach a diverse group of residents and corridor users.

The County and partnering cities strive for an equitable planning process to meet the needs of all corridor users. Targeted outreach was conducted to reach those traditionally underrepresented in the planning process.


## INFORMATION SHARED

Information shared at the pop-up meetings and Public Open House included the results of the evaluation of alternatives and the corridor recommendations. Participants were asked to provide their priority for improvements through a voting exercise using puff balls and vases. Feedback included support for many of the recommendations and further questions on others.


## 2040 Visioning Study County Highway 42


[^0]:    *Excluded participants under 18 years old

