Application

17070-2022 Roadway System Management
17633 - Traffic Signal Technologies and ITS Corridor Enhancements
Regional Solicitation - Roadways Including Multimodal Elements
Status: Submitted
Submitted Date:
04/13/2022 9:50 PM

## Primary Contact



## Organization Information

Name:

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

Address: | PUBLIC WORKS |  |
| :--- | :--- |
|  | $11360 \mathrm{HWY} 212 \mathrm{~W} \# 1$ |

| $*$ | COLOGNE | Minnesota | State/Province |
| :--- | :--- | :--- | :--- |

Phone:*
Ext.

Fax:

PeopleSoft Vendor Number
0000026790A12

## 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):

Carver County Traffic Signal Technologies and ITS Corridor
Enhancements
Carver
Chanhassen, Chaska, Waconia

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

The proposed project will add new and upgrade existing obsolete traffic management and intelligent transportation systems (ITS) throughout Carver County, with a focus on CSAH 18-Lyman Boulevard (Chanhassen/Chaska), CSAH 14Pioneer Trail (Chanhassen/Chaska), CSAH 59Main Street (Waconia), and other intersections. The project will include: a new Advanced Traffic Management System (ATMS); central signal system software with expanded remote access and operations; upgraded traffic signal controllers and cabinets including conflict monitors; updated timing and coordination plans; video detection systems; ITS devices including CCTV cameras; communications upgrades including connections to the existing trunk fiber optic cable at all traffic signal locations; APS and count-down timers at multiple locations; and upgraded signals to accommodate transit signal priority, creating opportunities to support future transit signal priority for South West Transit.
(Limit 2,800 characters; approximately 400 words)
TRANSPORTATION IMPROVEMENT PROGRAM (TIP)
DESCRIPTION - will be used in TIP if the project is selected for Traffic signal and communication upgrades funding. See MnDOT's TIP description guidance.

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)
7.0
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 \$2,000,000.00
Match Amount \$500,000.00
Minimum of $20 \%$ of project total
Project Total \$2,500,000.00
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
County
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:
2026, 2027
Select 2024 or 2025 for TDM and Unique projects only. For all other applications, select 2026 or 2027.
Additional Program Years:
2025
Select all years that are feasible if funding in an earlier year becomes available.

## Project Information: Roadway Projects

| County, City, or Lead Agency | Carver County |
| :---: | :---: |
| Functional Class of Road | A-Minor Arterial |
| Road System | CSAH |
| TH, CSAH, MSAS, CO. RD., TWP. RD., CITY STREET |  |
| Road/Route No. | 18 |
| i.e., 53 for CSAH 53 |  |
| Name of Road | Lyman Blvd. (CSAH 18), Pioneer Trail (CSAH 14), Main St. (CSAH 59) |
| Example; 1st ST., MAIN AVE |  |
| Zip Code where Majority of Work is Being Performed | 55317 |
| (Approximate) Begin Construction Date | 03/15/2026 |
| (Approximate) End Construction Date | 11/15/2026 |
| TERMINI:(Termini listed must be within 0.3 miles of any work) |  |
| From: <br> (Intersection or Address) | Galpin Blvd(CSAH 18-Lyman Blvd), Village Rd (CSAH 14Pioneer Trail), TH 5 (CSAH 59-Main St) |
| To: <br> (Intersection or Address) | CSAH 101 (CSAH 18-Lyman Blvd), CSAH 101(CSAH 14Pioneer Trail), CSAH 10-Engler Blvd(CSAH 59-Main St) |
| DO NOT INCLUDE LEGAL DESCRIPTION |  |
| Or At |  |
| Miles of Sidewalk (nearest 0.1 miles) | 0 |
| Miles of Trail (nearest 0.1 miles) | 0 |
| Miles of Trail on the Regional Bicycle Transportation Network (nearest 0.1 miles) | 0 |
| Primary Types of Work | ITS and traffic signal systems improvements including hardware and software, ATMS, communications, and signal timing and coordination. |

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.:
Structure is Over/Under
(Bridge or culvert name):

## 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:
a. Goal: Transportation System Stewardship;

Objectives: A. Efficiently preserve and maintain the regional transportation system and a state of good repair, B. Operate...to efficiently and cost-effectively connect people and freight to destinations;
Strategies: A1. Prioritize resources to operating, maintaining, and rebuilding what already exists, A2. Identify cost-effective opportunity to incorporate improvements. (Pages 2.2-2.4)
b. Goal: Safety and Security; Objectives: A. Reduce fatal and serious injury crashes and improve safety and security, B. Reduce transportation system's vulnerability to natural and human-caused incidents; Strategies: B1. Focus on safety in all areas of transportation investments, B2. Protect and strengthen the role of the transportation system in providing effective emergency response. (Pages 2.5-2.6)
c. Goal: Access to Destinations; Objectives: B. Increase reliability and predictability for travel; Strategies: C7: Manage and optimize the performance of the principal arterial system as measured by person throughput, C9: Support investments in A-minor arterials that build, manage, or improve the system, C10: Manage access to Principal and A-minor arterials to preserve and enhance their safety and capacity. (Pages 2.102.20)
d. Goal: Competitive Economy, Objectives: A. Improve multimodal access to regional job concentrations, C. Support the region's economic competitiveness through the efficient movement of freight; Strategies: D1: Identify and pursue funding needed to create a system that is safe, well maintained...manages and eases congestion,

> provides reliable access to jobs and opportunities..., D4: Invest in a transportation system that provides travel conditions that compete well with peer metropolitan regions, D5: Identify the impacts of highway congestion on freight and identify cost-effective mitigation. (Pages 2.26-2.28)

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.
a. 2040 Carver County Highway System Plan:

County Goals: Develop, manage and maintain a roadway network that supports and promotes modern infrastructure conditions and standards;

Develop a roadway network that promotes traffic safety and healthy livable communities; Strive to ensure that the roadway network promotes the efficient movement of people and goods and regional mobility. County Strategies: Maintain infrastructure in a state of good repair; Reduce roadway and intersection crashes and fatalities in the County; Make judicious roadway and intersection capacity improvements to meet current traffic needs. (Pages 4.3, 4.4)

## b. County Roadway Safety Plan (Carver County):

 Potential Strategies: Improve availability of gaps in traffic; Choose appropriate intersection traffic control to minimize crash frequency and severity; Reduce frequency and severity of intersection conflicts through traffic control and operational improvements; Improve driver awareness of intersections and signal control. (Pages 3-3, 3-4)c. County Roadway Safety Plan (Carver County): Several intersections recommended for signal retiming, additional signals, flashing yellow arrows (Pages 2-26, 4-22), and pedestrian and bicycle. (Pages 4-7, 4-8)

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:
02/18/2014

Link to plan:
https://www.co.carver.mn.us/home/showdocument?
id=1164
The applicant is a public agency that employs fewer than 50 people and has a completed ADA self-evaluation that covers the public right of way/transportation.

Date self-evaluation completed:
Link to plan:
Upload plan or self-evaluation if there is no link
Upload as PDF
10.The project must be accessible and open to the general public.

Check the box to indicate that the project meets this requirement. Yes
11.The owner/operator of the facility must operate and maintain the project year-round for the useful life of the improvement, 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.
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.

## Requirements - Roadways Including Multimodal Elements

Specific Roadway ElementsCONSTRUCTION PROJECT ELEMENTS/COSTESTIMATESCost
Mobilization (approx. 5\% of total cost) ..... \$110,000.00
Removals (approx. 5\% of total cost) ..... \$110,000.00
Roadway (grading, borrow, etc.) ..... $\$ 0.00$
Roadway (aggregates and paving) ..... $\$ 0.00$
Subgrade Correction (muck) ..... $\$ 0.00$
Storm Sewer ..... $\$ 0.00$
Ponds ..... $\$ 0.00$
Concrete Items (curb \& gutter, sidewalks, median barriers) ..... $\$ 0.00$
Traffic Control ..... \$33,000.00
Striping ..... \$11,000.00
Signing ..... \$11,000.00
Lighting ..... $\$ 0.00$
Turf - Erosion \& Landscaping ..... $\$ 0.00$
Bridge ..... $\$ 0.00$
Retaining Walls ..... $\$ 0.00$
Noise Wall (not calculated in cost effectiveness measure) ..... $\$ 0.00$
Traffic Signals ..... \$1,950,000.00
Wetland Mitigation ..... $\$ 0.00$
Other Natural and Cultural Resource Protection ..... $\$ 0.00$
RR Crossing ..... $\$ 0.00$
Roadway Contingencies ..... \$110,000.00
Other Roadway Elements ..... \$27,500.00
Totals ..... \$2,362,500.00
Specific Bicycle and Pedestrian Elements
CONSTRUCTION PROJECT ELEMENTS/COST ESTIMATES ..... Cost
Path/Trail Construction ..... $\$ 0.00$
Sidewalk Construction ..... $\$ 0.00$
On-Street Bicycle Facility Construction ..... $\$ 0.00$
Right-of-Way ..... $\$ 0.00$
Pedestrian Curb Ramps (ADA) ..... \$27,500.00
Crossing Aids (e.g., Audible Pedestrian Signals, HAWK) ..... \$82,500.00
Pedestrian-scale Lighting ..... $\$ 0.00$
Streetscaping ..... $\$ 0.00$
Wayfinding ..... $\$ 0.00$
Bicycle and Pedestrian Contingencies ..... \$27,500.00
Other Bicycle and Pedestrian Elements ..... $\$ 0.00$
Totals ..... \$137,500.00
Specific Transit and TDM Elements
CONSTRUCTION PROJECT ELEMENTS/COST ESTIMATES
Cost
Fixed Guideway Elements ..... $\$ 0.00$
Stations, Stops, and Terminals ..... $\$ 0.00$
Support Facilities ..... $\$ 0.00$
Transit Systems (e.g. communications, signals, controls, ..... $\$ 0.00$
fare collection, etc.)
Vehicles ..... $\$ 0.00$
Contingencies ..... $\$ 0.00$
Right-of-Way ..... $\$ 0.00$
Other Transit and TDM Elements ..... $\$ 0.00$
Totals ..... \$0.00
Transit Operating Costs

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

## Totals

Total Cost

## Measure A: Functional Classification of Project

The majority of the project funds will be invested on the principal arterial system:
(50 points)
The majority of the project funds will be invested on the A-minor arterial system:
(25 points)
The majority of the project funds will be invested on the collector or local system with some investment either on the principal arterial or A-minor arterial system:
(0 points)

## Measure 1B: Regional Truck Corridor Tiers

RESPONSE (Select one for your project, based on the updated 2021 Regional Truck Corridors):
The majority of the project funds will be invested on either a Tier 1, Tier 2, or Tier 3 corridor:
(50 Points)
Miles (to the nearest 0.1 miles):
5.1

If box above is checked, fill in length.
A majority of the project funds will NOT be invested on a Tier 1, Tier 2, or Tier 3 corridor, but at least 10 percent of the funds will be invested on these corridors:
(25 Points)
Miles (to the nearest 0.1 miles): 0
If box above is checked, fill in length.
No project funds will be invested on a Tier 1, Tier 2, or Tier 3 corridor:
(0 Points)

Measure C: Integration within existing traffic management systems

Carver County has invested in a countywide trunk fiber optic backbone with fiber optic splice vaults at all existing traffic signals. The county will continue to build on this framework by completing the connection between the fiber optic backbone, new central traffic management center, IT/ethernet systems, and signal cabinets. This project would allow for a cost-effective connection of all countyowned traffic signals to the fiber backbone. This project will also build on past improvements by completing the fiber optic traffic signal interconnect for all traffic signal systems in the county, replacing several existing signal systems currently interconnected with copper. The obsolete legacy master controllers and copper interconnect would be upgraded to new controllers and fiber, greatly expanding communication and performance capabilities.

Response:
The county will reinvest in parts of its existing traffic management system, and enhance the system, improving information sharing and coordination among county departments and with stakeholder partners. The project will upgrade existing, obsolete traffic signal communication equipment by replacing existing signal cabinets, converting from loop detection to video detection, adding communications and ethernet switches, upgrading Emergency Vehicle Preemption, Accessible Pedestrian Signal upgrades, and installing Pan Tilt Zoom (PTZ) cameras. This new central traffic management center, traffic signal software, communications, and upgraded equipment will allow Carver County to access and manage remotely, retime, and coordinate corridors through the County's Advanced Traffic Management System (ATMS), which is also part of this project. At several locations, left-turn phasing will be modified to flashing yellow arrow phasing further improving operations.

## Measure D: Coordination with other agencies

The project will improve safety, mobility, and increase efficiency by establishing a more responsive, future-minded, and smart traffic control system at county-owned intersections and locations in Carver County. The improvements will enhance coordination and inter-operability among local, county, MnDOT, and transit operations and management systems. The project will allow Carver County signals to communicate and integrate with each other and with MnDOT-operated traffic signals throughout the county, enabling a new level of operational coordination between the county, its cities, and neighboring communities that own and operate the roadway, bicycle, pedestrian, transit, freight, and emergency networks.

Carver County is working with the Carver County Sheriff's Department and local police departments to share resources and increase the number of video cameras that provide video that is shared throughout the county. The cameras installed as part of this project would be a part of that effort.

This project would allow the county to create an Advanced Traffic Management System (ATMS), providing greater monitoring and control capabilities, improving response times to signal malfunctions, providing better data, and improving the county's ability to control traffic operations in coordination with MnDOT and Hennepin County.

The installation of modern traffic signal cabinets and controllers prepares the county for future requests for transit signal priority from transit agencies, including on-demand services provided by SmartLink Transit, SW Prime and SouthWest Transit.

## Measure A: Current Daily Person Throughput

| Location | Lyman Blvd west of Powers Blvd |
| :--- | :--- |
| Current AADT Volume | 20000.0 |
| Existing transit routes at the location noted above | $600,695,698,699$ |
| Select all transit routes that apply. |  |
| Upload "Transit Connections" map | 1649638538499_Attachment_MetCouncilMaps_TransitMaps.p <br> df |

Please upload attachment in PDF form.

## Response - Daily Person Throughput

| Average Annual Daily Transit Ridership | 0 |
| :--- | :--- |
| Current Daily Person Throughput | 26000.0 |

## Measure B: 2040 Forecast ADT

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

Carver County 2040 Comprehensive Plan Model Figure 4.8

20000

## 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:

Response:
The proposed project will provide multiple benefits to the County's low-income populations, BIPOC, children, people with disabilities, and elderly. (See attached map.)

Based on American Community Survey 2019 data, with in $1 / 2$ mile of CSAH 18-Lyman Boulevard 25.4 percent of the population is under age 18, 11.6 percent of the population is over age 65, and 18 percent of the population identify as BIPOC. Within $1 / 2$ mile of CSAH 14-Pioneer Trail 25.8 percent of the population is under age 18, 9.1 percent of the population is over age 65, and 14.3 percent of the population identify as BIPOC. Within $1 / 2$ mile of CSAH 59-Main Street 5.7 percent of the population identify as BIPOC and 50 percent of the households have children under age 18. The project will improve vital north-south and east-west corridors that links to employment, schools, health care and services for people living in these adjacent areas.

Elders, youth, people with disabilities, of color, and with low incomes live and work in Carver County. Attachment "Map B_Carver_County_Issues.pdf" shows the largest populations for each people group. The map also shows that most signal improvements will be within census tracts with populations of people of color, and nearly all improvements are located within one half mile of a census tract home to at least one additional traditionally underrepresented people group.

Through engagement, the County identified that populations of traditionally underrepresented groups work in the project area. Project engagement included website and online questionnaire shared with and promoted by
educational and social service agencies, as well as in-person meetings. The questionnaire was sent to $2,500+$ contacts on 12 project email lists. Public Works staff also provided information presented at the April 2020 Carver County Community Development Authority meeting.

The project scope, specific elements, and construction approach were identified based on community values prioritized by traditionally underrepresented residents and employees as well as the general public. The public also provided input on which intersections to improve. Values ranked in order of priority are: Pedestrian or bicycle access; Vehicle access; Travel time; and Safety.

## 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 proposed project will provide multiple benefits to low-income populations, BIPOC, children, people with disabilities, and elderly. (See map.)

Within 1/2 mile of CSAH 18-Lyman Boulevard the population consists of 25.4 percent under age 18, 11.6 percent over age 65, and 18 percent as BIPOC. Within $1 / 2$ mile of CSAH 14-Pioneer Trail the population consists of 25.8 percent under age 18, 9.1 percent over age 65, and 14.3 percent identify as BIPOC. Within $1 / 2$ mile of CSAH 59Main Street the population consists of 5.7 percent that identify as BIPOC and 50 percent of the households have children under age 18.

The project will provide benefits along major Carver County commuter and local access routes. These corridors include major commuter and local access routes for traditionally underrepresented people traveling into and out of the County. The project will reduce traffic-related crashes, improve travel times, reduce congestion, and improve traffic flow and air quality, which currently disproportionately and negatively affect low-income populations in the Greater MSP region.

The project will also improve bicycle and pedestrian access and safety for people of all ages and abilities by creating a more efficient route to recreational destinations and improving crossings at intersections. The project will add accessible pedestrian signals (APS) and count-down timers at multiple locations along the corridors. This will have a direct safety benefit to pedestrians and bicycles including those traveling to/from schools (see attached map).
fixed route and on-demand transit service, and infrastructure reinvestment priorities affecting safe travel have historically disproportionately negatively affected residents in the project areas within the County. These proposed improvements increase safety and reduce transit travel delays, which disproportionately affect people who rely on transit in and around Carver County. Providing better traffic flow results in more reliable arrival times and transit connections, enhancing the strength of the regional transit system. Actively managing congestion provides a direct benefit to public health.

Improved inter-agency coordination also benefits residents across the County. Better collaboration between traffic management staff and emergency responders means faster response times.

While infrastructure is being reconstructed, the County and partners will ensure that fully accessible alternative routes are provided for residents and workers connecting to local and regional destinations. Any lane restrictions will be during off-peak hours. Staff will monitor traffic operations and make signal timing adjustments as needed to avoid or minimize impacts on travelers.

## 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.

The project will also provide a key link between the existing income-restricted communities and schools and childcare centers in the area (see attached map). Residents living at affordable housing complexes are more likely to rely on biking and walking for critical mobility needs and improvements in bicycle and pedestrian safety will benefit these populations.

Emissions, traffic congestion affecting transit, and infrastructure reinvestment priorities affecting safe travel have historically disproportionately negatively affected residents in low-income areas within the County. The proposed project will reduce traffic crashes, minimize travel time, and improve traffic flow and air quality for low-income populations in the project area. Providing better traffic flow results in more reliable arrival times and the ability to access transit connections (e.g., Southwest Transit Park and Rides), enhancing the strength of the regional transit system. Improved traffic flow also improves access and safety for bicyclists and pedestrians which will positively impact low-income households which are less likely to own a vehicle.

Numerous subsidized affordable housing developments exist near the project corridors (see attached maps). These are summarized below.

CSAH 18-Lyman Boulevard:

- Gateway Place Apartments has 48 units, 47 are affordable. One, two, and three-bedroom units are available at 60 percent of the AMI. Affordability is guaranteed through the LIHTC, LHIA and LMIR programs.
- Barbary Knoll Apartments has 60 units, all affordable. One and two-bedroom units are available at 60 percent of the AMI. Affordability is guaranteed through the LIHTC program.
- Waybury Apartments has 114 units, all affordable.

One and two-bedroom units are available at 30 percent of the AMI. Affordability is guaranteed through the LIHTC, LMIR and ARIF programs.

- Lake Grace Apartments has 91 units, five affordable. One, two and three-bedroom units are available at 30 percent of the AMI. Affordability is guaranteed through the Section 811 Project Rental Assistance Demonstration Program.
- Windstone Townhomes has 50 townhome units with 1, 2, and 3-bedroom options.

CSAH 59-Main Street:

- Interlaken Place Apartments has 48 units, all affordable. Two and three-bedroom units are available at 50 percent of the AMI. Affordability is guaranteed through the LIHTC, LMIR, LHIA and EDHC programs.
> - Spruce Apartments, located just outside the $1 / 2-$ mile boundary, has 31 units, all affordable. One, two three and four-bedroom units are available at 80 percent of the AMI. Affordability is guaranteed through the POHP program.

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 Environmental Justice Area):

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

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

1649640000209_Attachment_MetCouncilMaps_SocioEconomi cMaps.pdf

Measure A: Upgrades to obsolete equipment

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

Carver County lacks a central traffic management system, communications system, or software to manage its traffic signal/ITS systems. This project has been developed largely with the intention of replacing or upgrading equipment that has reached the end of its useful life to meet current standards and best practices for safety, interconnectivity, and efficiency. Within the project area obsolete cabinets/controllers will be replaced with updated models that provide better performance and functionality. The average age of the cabinets and controllers being replaced is approximately 20 years; these components have obsolete operating systems with firmware that is no longer supported with software updates. Most of the signals are not yet interconnected and the few that are utilize copper traffic signal interconnect. Carver County has installed a county-wide trunk fiber optic backbone which will enable the implementation of an Advanced Traffic Management System (ATMS) and interconnection of all County traffic signals. New technologies relying on video detection and deployment of Pan Tilt Zoom (PTZ) cameras makes upgrading to fiber very important to attain the necessary bandwidth. In addition to replacing cabinets and upgrading controllers, video detection at signalized intersections will replace existing inductive loop detection. Video detection requires less downtime when replacement is needed and provides for flexibility in adjusting detection zones to further optimize signal timing and coordination without additional infrastructure costs.

## Measure A: Congested Roadway

RESPONSE:

| Start Point: | TH 5 |
| :---: | :---: |
| End Point: | Airport Rd. |
| Free-Flow Travel Speed: | 32 |
| Free-Flow Travel Speed is black number. |  |
| Peak Hour Travel Speed: | 20.0 |
| Peak Hour Travel Speed is red number. |  |
| Percentage Decrease in Travel Speed in Peak Hour Compared to Free-Flow (online calculation): | 37.5\% |
| Upload the "Level of Congestion" map used for this measure. | 1649640760288_Attachment_MetCouncilMaps_CongestionMa ps.pdf |

Improved traffic management technologies and traffic signal timing plans will reduce congestion and related emissions (CO, NOX, and VOC) largely through the ability to coordinate and monitor traffic signals along three arterial roadways: CSAH 18Lyman Boulevard (Chanhassen/Chaska), CSAH 14-Pioneer Trail (Chanhassen/Chaska), and CSAH 59-Main Street (Waconia). This project will allow Carver County, MnDOT, and Hennepin County to better work together and reduce congestion and emissions in the ways described below.

Establishing a Carver County Advanced Traffic Management System (ATMS) and communications and ITS connections to fiber-optic interconnect will allow the County to:

- Monitor the signals using the County's central signal system software and ATMS, automatically sending alerts when signals are in flash, are using battery backup power, or have faulted detection.


#### Abstract

- Use the County's central signal system software and ATMS to alter traffic operations remotely, providing the ability to quickly respond to changes in traffic patterns and events, including crashes or other incidents.


- Provide coordination between traffic signals where no coordination is possible today, yielding more fuel-efficient travel speeds and directly reducing stops, accelerations, and emissions.

With the addition of the central signal system software and modern traffic signal cabinets and controllers, the Country will be able to:

- Monitor traffic signal performance.
- Monitor traffic volumes.
- Reduce maintenance issues resulting from legacy traffic signal controller malfunctions.
- Prepare for future implementation of Transit Signal Priority and other enhancements.

The addition of the central signal system software and traffic cameras will allow the County to improve signal operations performance, monitor the traffic signal network in real time, and make adjustments as needed when issues arise.

CSAH 18-Lyman Boulevard (A-Minor Expander) and CSAH 14-Pioneer Trail (A-Minor Reliever) supplement and relieve US 212 as it approaches I494 by supporting east-west movement between Chanhassen, Chaska, Eden Prairie, and points beyond. The MnDOT Metro Freeway 2018 Congestion Report shows 1 to 2 hours of congestion on US 212 between CSAH 18-Lyman Boulevard and CSAH 14-Pioneer Trail (p.20). This project will improve travel times and reliability on CSAH 18-Lyman Boulevard and CSAH 14-Pioneer Trail, maintaining their attractiveness for medium-to-short trips and keeping local traffic off US 212, and providing congestion relief on US 212, CSAH 18-Lyman Boulevard, and CSAH 14-Pioneer Trail which provide important access to regional manufacturing and distribution centers (see attached Project Context maps in Other Attachments section).

## Measure A: Benefit of Crash Reduction

A Crash Modification Factor (CMF) of 0.79 for property damage crashes and 0.42 for injury crashes was used. This is CMF 9868 from the CMF Clearinghouse.

Crash Modification Factor Used:
CMF 7684 was used from the CMF Clearinghouse with a Crash Modification Factor (CMF) of 0.60 for left turn only angle crashes at Audubon and Lyman Boulevard intersection.

Rationale for Crash Modification Selected:
(Limit 1400 Characters; approximately 200 words)
Project Benefit (\$) from B/C Ratio
Total Fatal (K) Crashes:
Total Serious Injury (A) Crashes:
Total Non-Motorized Fatal and Serious Injury Crashes:
Total Crashes:
Total Fatal (K) Crashes Reduced by Project:

A Crash Modification Factor (CMF) of 0.79 for property damage crashes and 0.42 for injury crashes was implemented at signals because this project includes the re-timing of all traffic signals and the addition of communications hardware, software, and fiber optic interconnect to coordinate all traffic signal corridors and connect them to the proposed Carver County Advanced Traffic Management System (ATMS). This is CMF 9868 from the CMF Clearinghouse.

A Crash Modification Factor (CMF) of 0.60 for left turn only angle crashes at Audubon and Lyman Boulevard intersection because this project is changing from permissive only to flashing yellow arrow protected/permissive left turn phasing. This is CMF 7684 from the CMF Clearinghouse.
\$35,399,260.00

0

4
0
92
0

Total Non-Motorized Fatal and Serious Injury Crashes Reduced by
Project: Project:

Total Crashes Reduced by Project: 32
Worksheet Attachment
1649641550071_Carver ITS Safety Analysis.pdf
Upload Crash Modification Factors and B/C Worksheet in PDF form.

Measure 6B: Safety issues in project area

Some project area intersections experience left turn crash problems. The project will address the left turn problems by updating signal timing, improving signal visibility by adding flashing yellow arrows, and other signal timing and phasing measures as appropriate. The project also includes the addition of fiber optic ethernet interconnect to coordinate all traffic signal corridors and connect them to the proposed Carver County Advanced Traffic Management System (ATMS), allowing the County and emergency responders to address crashes more quickly.

This project will implement multiple strategies identified in the Carver County Roadway Safety Plan:

Response:

- The project will implement signal coordination along a corridor (Objective 17.2 A).
- The project will improve visibility of signals at the intersection by adding flashing yellow arrows, as identified to improve driver awareness of intersections and signal control (Objective 17.2 B).
- The project will add APS and count-down timers at multiple locations and add video detection for bicyclists to improve safety and mobility, as identified to reduce pedestrian exposure to vehicular traffic (Objective 9.1 A).

The project area includes bicycle and pedestrian infrastructure and transit connections. Existing bicycle and pedestrian infrastructure include multiuse trails or sidewalks along all minor arterials in developed areas. In addition, Engler Blvd/County Road 10 is a Tier 2 Regional Bicycle Transportation Network (RBTN) alignment (see attached Project Context maps). Lyman Boulevard, Pioneer Trail, and Main Street also connect into multiple RBTN Tier 1 and 2 alignments.

Existing transit connections near CSAH 59-Main Street include on-demand service provided by SmartLink (all of Carver County) and Metro Mobility. Existing transit connections near CAH 18Lyman Boulevard and CSAH 14-Pioneer Trail include on-demand services provided by SW Prime and Metro Mobility. The corridors are also served by Metro Transit?s SouthWest Transit express bus routes 600, 695, 698 and 699 which provide express service to Downtown Minneapolis. There are two park and ride facilities located at US 212 and TH-41 (East Creek Station) and at US-212 and Lyman (Southwest Village Station).

The project will enhance bicycle, pedestrian, and transit connections. Existing inductive loops typically cannot detect bicyclists; the project's video detection elements will detect bicyclists. The project's new controllers will have additional features to assist bicycle- and pedestrian supportive traffic signal programming. The CCTV cameras will improve safety for all modes by integrating bicycle and pedestrian monitoring capabilities with improved general traffic flow. Improvements will target key intersections used by pedestrians (transit or not-transit related), bicyclists (transit or not-transit related), and motorists, improving safety at high-traffic crossings.

The project's new controllers will also be capable of transit signal priority, creating opportunities to support future transit signal priority for SouthWest Transit. Transit express bus service and ondemand services provided by SmartLink and SouthWest Transit. Transit Signal Priority improves the performance of specific bus routes, the overall regional transit system, and reduces delay for individuals using transit.

The project will improve ADA compliance in response to issues identified in the County's ADA Transition Plan. The project will add APS and count-down timers at multiple locations, such as Main Street in Waconia, and improve ADA redundancies at intersections along Lyman Blvd and Pioneer Trail where three of four legs have accommodations.

Finally, the project will result in better coordination among Public Works, Police, and Public Safety, resulting in improved security for pedestrians, cyclists, and people using transit.

## 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.
$0 \%$
Describe the type(s) of outreach selected for this project (i.e., online or in-person meetings, surveys, demonstration projects), the method(s) used to announce outreach opportunities, and how many people participated. Include any public website links to outreach opportunities.

Project engagement includes a website and online questionnaire shared with and promoted by educational and social service agencies, as well as in-person meetings. County Board briefings were held in February and March 2020, and Public Works staff also provided information presented at the April 2020 Carver County Community Development Authority meeting.

Response:
The questionnaire was sent to over 2,500 recipients using the following 12 project email lists (\# of recipients per email list): Highway 41/18 Project (409 recipients), Highway 11 Study - West Carver Area (189 recipients), Arboretum Area Transportation Plan (559 recipients), Highway 10 Study - Victoria/Chaska Area (238 recipients), School Transportation Group (56 recipients), Highway 10/Waconia Parkway Intersection Project (157 recipients), Fire/EMS Group (35 recipients), Transportation Agency Group (18 recipients), Highway 212/44 Interchange Project (220 recipients), Highway 10 Project - Waconia School (186 recipients), Highway Closure (433 recipients), Law Enforcement Agency Group (3 recipients). There were 415 responses to the online questionnaire.

The questionnaire sought input on priorities from the community regarding where signal improvements should be focused, where particular traffic signals require improvements, and input on where there are particular traffic signals or corridors related to traffic congestion, crashes, and multimodal needs. Demographic information was also requested for those that would provide it.

This information obtained through questionnaire input was used to refine the elements included in

> the project. For example, due to multimodal concerns expressed in the questionnaire, an emphasis was placed on additional accessible pedestrian signals for both pedestrians and bicyclists. Traffic congestion and delay will all be improved through the addition of the proposed Advanced Traffic Management System (ATMS), fiber optic interconnect, signal re-timing, and CCTV cameras. The addition of flashing left turn arrows and re-timing of the signals will result in a reduction in crashes.
(Limit 2,800 characters; approximately 400 words)

## 2.Layout (25 Percent of Points)

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

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

## 100\%

A layout does not apply (signal replacement/signal timing, standalone streetscaping, minor intersection improvements). Applicants that are not certain whether a layout is required Yes 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.

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
Please upload attachment in PDF form.
Additional Attachments
Please upload attachment in PDF form.

## 3.Review of Section 106 Historic Resources (15 Percent of Points)

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

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

100\%
Historic/archeological property impacted; determination of no adverse effect anticipated

80\%
Historic/archeological property impacted; determination of adverse effect anticipated

40\%
Unsure if there are any historic/archaeological properties in the project area.

0\%
Project is located on an identified historic bridge
4.Right-of-Way ( 25 Percent of Points)

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

0\%
5.Railroad Involvement (15 Percent of Points)

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

100\%
Signature Page

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): | $\$ 2,500,000.00$ |
| :--- | :--- |
| Enter Amount of the Noise Walls: | $\$ 0.00$ |
| Total Project Cost subtract the amount of the noise walls: | $\$ 2,500,000.00$ |
| Enter amount of any outside, competitive funding: | $\$ 0.00$ |
| Attach documentation of award: | $\$ 0.00$ |

## Other Attachments

| File Name | Description | File Size |
| :---: | :---: | :---: |
| 20220324 LOS from ChanhassenITS.pdf | City of Chanhassen Letter of Support - <br> Traffic Technologies \& ITS | 742 KB |
| Attachment_Project Context Maps.pdf | Project Context Maps - Traffic Technologies \& ITS | 657 KB |
| Attachment_TrafficSignalComPlan.pdf | Carver County Traffic Signal Communication Plan | 2.8 MB |
| Carver County Resolution 23-22 signed.pdf | Carver County Resolution - Traffic Technologies \& ITS | 368 KB |
| Carver_ITS_ExistingPhoto.pdf | Existing Condition Photo - Traffic Technology \& ITS | 962 KB |
| Carver_ITS_ProjectSummary_Photos.pd f | Project Summary \& Existing Conditions Pictures - Traffic Technologies \& ITS | 1.3 MB |
| Chaska LOS- <br> ITS_20220405111140359.pdf | City of Chaska Letter of Support - Traffic Technologies \& ITS | 472 KB |
| Executed Suport Letter City of Waconia Traffic Signal Technologies.pdf | City of Waconia Letter of Support Traffic Technologies \& ITS | 59 KB |





## Socio-Economic Conditions



Points
Area of Concentrated Poverty
Lines

For complete disclaimer of accuracy, please visit

## Socio-Economic Conditions

Traffic Management Technologies Project: CSAH 14 (Pioneer Trail) ITS | Map ID: 1647314649945 Results

Total of publicly subsidized rental housing units in census
tracts within 1/2 mile: 204
Project located in census tracts that are BELOW the regional average for population in poverty or population of color.


Area of Concentrated Poverty
Regional Environmental J ustice Area


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

## Socio-Economic Conditions <br> Traffic Management Technologies Project: CSAH 59 (Main St) ITS | Map ID: 1647313411927

Results
Total of publicly subsidized rental housing units in census
tracts within 1/2 mile: 301
Project located in census tracts that are BELOW the regional average for population in poverty or population of color.


Area of Concentrated Poverty
Lines

For complete disclaimer of accuracy, please visit




Level of Congestion
Traffic Management Technologies Project: CSAH 14 (Pioneer Trail) ITS | Map ID: 1647314649945


- Project Points


## Project

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


## Traffic Safety Benefit-Cost Calculation

Highway Safety Improvement Program (HSIP) Reactive Project

DEPARTMENT OF TRANSPORTATION

## A. Roadway Description

| Route | Misc | District | County | Carver |
| :---: | :---: | :---: | :---: | :---: |
| Begin RP |  | End RP | Miles |  |
| Location | 3 Corridors through Carver County - Main St, Lyman Blvd, and Pioneer Trail |  |  |  |

## B. Project Description

| Proposed Work <br> Project Cost* | Communication/equipment upgrades for corridor signal retiming thoguh County ATMS |  |  |
| :---: | :---: | :---: | :---: |
|  | \$2,172,500 | Installation Year | 2026 |
| Project Service Life | 20 years | Traffic Growth Factor | 2.0\% |
| * exclude Right of Way from Project Cost |  |  |  |

## C. Crash Modification Factor

| 0.79 | Fatal (K) Crashes | Reference CMF: Coordination of Signal Timing Upgrades |  |
| :--- | :--- | :--- | :--- |
| 0.42 | Serious Injury (A) Crashes |  |  |
| 0.42 | Moderate Injury (B) Crashes | Crash Type All |  |
| 0.42 | Possible Injury (C) Crashes |  |  |
| 0.79 | Property Damage Only Crashes |  |  |
| Www.CMFclearinghouse.org |  |  |  |

D. Crash Modification Factor (optional second CMF)

| 0.60 | Fatal (K) Crashes | Reference CMF: Left-turn Perm to FYA Prot/Perm |  |
| :--- | :--- | :--- | :--- |
| 0.60 | Serious Injury (A) Crashes |  |  |
| 0.60 | Moderate Injury (B) Crashes | Crash Type Left-turn Angle at Audubon/Lyman |  |
| Possible Injury (C) Crashes |  |  |  |
| 0.60 | Property Damage Only Crashes |  |  |
| 0.60 | Www.CMFclearinghouse.org |  |  |


| E. Crash Data |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| Begin Date <br> Data Source | 1/1/ | End Date | 12/31/2021 | 3 years |
|  |  |  |  |  |
|  | Crash Severity |  | Left-turn Angle at Audubon/Lyman |  |
|  | K crashes | 0 | 0 |  |
|  | A crashes | 3 | 1 |  |
|  | B crashes | 12 | 2 |  |
|  | C crashes | 15 | 2 |  |
|  | PDO crashes | 56 | 1 |  |
| F. Benefit-Cost Calculation |  |  |  |  |
| \$35,399,260 |  | Benefit (present value) | $B / C$ Ratio $=16.30$ |  |
| \$2,172,500 |  | Cost |  |  |
|  |  | Proposed project expected to reduce 11 crashes annually, 1 of which involving fatality or serious injury. |  |  |

F. Analysis Assumptions

| Crash Severity |  |
| :--- | ---: |
| 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\%
Traffic Growth Rate 2.0\%
Project Service Life 20 years
G. Annual Benefit

| Crash Severity | Crash Reduction | Annual Reduction | Annual Benefit |
| :--- | :---: | :---: | :---: |
| K crashes | 0.00 | 0.00 | $\$ 0$ |
| A crashes | 2.14 | 0.71 | $\$ 535,000$ |
| B crashes | 7.76 | 2.59 | $\$ 594,933$ |
| C crashes | 9.50 | 3.17 | $\$ 380,000$ |
| PDO crashes | 12.16 | 4.05 | $\$ 52,693$ |


| H. Amortized Benefit |  |  |  |
| :---: | :---: | :---: | :---: |
| Year | Crash Benefits | Present Value |  |
| 2026 | \$1,562,627 | \$1,562,627 | Total = \$35,399,260 |
| 2027 | \$1,593,879 | \$1,582,800 |  |
| 2028 | \$1,625,757 | \$1,603,233 |  |
| 2029 | \$1,658,272 | \$1,623,930 |  |
| 2030 | \$1,691,437 | \$1,644,894 |  |
| 2031 | \$1,725,266 | \$1,666,129 |  |
| 2032 | \$1,759,771 | \$1,687,639 |  |
| 2033 | \$1,794,967 | \$1,709,425 |  |
| 2034 | \$1,830,866 | \$1,731,493 |  |
| 2035 | \$1,867,484 | \$1,753,846 |  |
| 2036 | \$1,904,833 | \$1,776,488 |  |
| 2037 | \$1,942,930 | \$1,799,422 |  |
| 2038 | \$1,981,788 | \$1,822,652 |  |
| 2039 | \$2,021,424 | \$1,846,181 |  |
| 2040 | \$2,061,853 | \$1,870,015 |  |
| 2041 | \$2,103,090 | \$1,894,156 |  |
| 2042 | \$2,145,152 | \$1,918,609 |  |
| 2043 | \$2,188,055 | \$1,943,377 |  |
| 2044 | \$2,231,816 | \$1,968,466 |  |
| 2045 | \$2,276,452 | \$1,993,878 |  |
| 0 | \$0 | \$0 |  |
| 0 | \$0 | \$0 |  |
| 0 | \$0 | \$0 |  |
| 0 | \$0 | \$0 |  |
| 0 | \$0 | \$0 |  |
| 0 | \$0 | \$0 |  |
| 0 | \$0 | \$0 |  |
| 0 | \$0 | \$0 |  |
| 0 | \$0 | \$0 |  |
| 0 | \$0 | \$0 |  |
| 0 | \$0 | \$0 |  |

## पCMIF

## CMF / CRF DETAILS

## CMF ID: 1684 <br> CHANGE FROM PERMISSIVE ONLY TO FLASHING YELLOW ARROW PROTECTED/PERMISSIVE LEFT TURN <br> DESCRIPTION: CHANGE FROM PERMISSIVE ONLYTO FYA - PROTECTED/PERMISSIVE LEFT TURN <br> PRIORCONDITION: PERMISSIVE PHASING <br> Category: intersection traffic control <br> STUDY: SAFETY EFFECTIVENESS OF FLASHING YELLOW ARROW: EVALUATION OF 222 SIGNALIZED INTERSECTIONS IN NORTH CAROLINA, SIMPSON AND TROY, 2015

| Star Quality Rating: | 5 [VIEW SCORE DETAILS] |
| :---: | :---: |
| Rating Points Total: | 75 |
|  | Crash Modification Factor (CMF) |
| Value: | 0.598 |
| Adjusted Standard Error: |  |
| Unadjusted Standard Error: | 0.105 |
|  | Crash Reduction Factor (CRF) |
| Value: | 40.2 (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: | Area Type: <br> Ar-55 <br> Traffic Volume: | Not specified  <br> Average Traffic Volume:  <br> Time of Day:  |


| Intersection Type: | Roadway/roadway (not interchange related) |
| :---: | :---: |
| Intersection Geometry: | 3-leg,4-leg |
| Traffic Control: | Signalized |
| Major Road Traffic Volume: | Minimum of 7000 to Maximum of 49000 Annual Average Daily Traffic (AADT) |
| Minor Road Traffic Volume: | Minimum of 600 to Maximum of 17000 Annual Average Daily Traffic (AADT) |
| Average Major Road Volume : |  |
| Average Minor Road Volume : |  |
|  | Development Details |
| Date Range of Data Used: | 2003 to 2013 |
| Municipality: |  |
| State: | NC |
| Country: |  |
| Type of Methodology Used: | 4 |
| Sample Size (crashes): | 31 crashes before, 23 crashes after |
| Sample Size (sites): | 30 sites before, 30 sites after |

## 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 occurring during the time of day when FYA is in operation".

[^0]* Countermeasure: Coordinate arterial signals


| INCIDENTI[ | COL | MBE | SURE | S CITY_NAMIT |  |  | OCALID | ACCIDENT_ | MC |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Main Steet | lage |  |  |  |  |  |  |  |  |
| 898602 | 4 | 59 | 0.216 | 10 Waconia | M | 25 | 21008648 | $2.11 \mathrm{E}+08$ | 4 |
| 863182 | 4 | 59 | 0.22 | 10 Waconia | M | 25 | 20033893 | $2.03 \mathrm{E}+08$ | 11 |
| 749271 | 4 | 59 | 0.227 | 10 Waconia | M | 25 | 19028607 | $1.93 \mathrm{E}+08$ | 9 |
| 804830 | 4 | 59 | 0.237 | 10 Waconia | M | 25 | 20008129 | $2.01 \mathrm{E}+08$ | 3 |
| 728532 | 4 | 59 | 0.24 | 10 Waconia | M | 25 | 19017806 | $1.92 \mathrm{E}+08$ | 6 |
| 904573 | 21 | 274 | 0.213 | 10 Waconia | M | 25 | 21012342 | $2.11 \mathrm{E}+08$ | 5 |
| Main St and | Rd |  |  |  |  |  |  |  |  |
| 975123 | 10 | 223 | 0.012 | 102397159 |  | 25 | 21031524 | $2.13 \mathrm{E}+08$ | 11 |
| Main Stree | gler |  |  |  |  |  |  |  |  |
| 898756 | 4 | 59 | 0.7 | 10 Waconia | M | 25 | 21008742 | $2.11 E+08$ | 4 |
| 725808 | 5 | 117 | 1.919 | 102397159 |  | 25 | 19016437 | $1.92 \mathrm{E}+08$ | 6 |
| 807158 | 4 | 59 | 0.478 | 10 Waconia | M | 25 | 20010098 | $2.01 \mathrm{E}+08$ | 4 |
| Lyman and | ain |  |  |  |  |  |  |  |  |
| 868283 | 4 | 18 | 6.521 | 10 Chanhassen | M | 25 | 20037033 | $2.04 \mathrm{E}+08$ | 12 |
| Lyman and | Blvd |  |  |  |  |  |  |  |  |
| 983944 | 4 | 18 | 4.112 | 10 Chanhassen | M | 25 | 21034683 | $2.14 \mathrm{E}+08$ | 12 |
| Lyman and | R |  |  |  |  |  |  |  |  |
| 747118 | 4 | 15 | 2.865 | 10 Chanhassen | M | 25 | 19027510 | $1.93 \mathrm{E}+08$ | 9 |
| 933160 | 4 | 15 | 2.868 | 102393799 |  | 25 | 21021635 | $2.12 \mathrm{E}+08$ | 8 |
| 764252 | 4 | 15 | 2.869 | 10 Chanhassen | M | 25 | 19034880 | $1.93 \mathrm{E}+08$ | 11 |
| 868601 | 4 | 15 | 2.869 | 10 Chanhassen | M | 25 | 20037216 | $2.04 \mathrm{E}+08$ | 12 |
| 691442 | 4 | 15 | 2.87 | 10 Chanhassen | M | 25 | 19005549 | $1.91 \mathrm{E}+08$ | 2 |
| 696940 | 4 | 15 | 2.872 | 10 Chanhassen | M | 25 | 19006901 | $1.91 \mathrm{E}+08$ | 3 |
| 750080 | 4 | 15 | 2.872 | 10 Chanhassen | M | 25 | 19028991 | $1.93 \mathrm{E}+08$ | 9 |
| 786803 | 4 | 15 | 2.876 | 10 Chanhassen | M | 25 | 20004061 | 2E+08 | 2 |
| 756429 | 4 | 15 | 2.878 | 10 Chanhassen | M | 25 | 19031645 | $1.93 \mathrm{E}+08$ | 10 |
| 797681 | 4 | 15 | 2.88 | 10 Chanhassen | M | 25 | 20004438 | 2E+08 | 2 |


| 914088 | 4 | 15 | 2.881 | 10 Chanhassen | M | 25 | 21016988 | $2.12 \mathrm{E}+08$ | 6 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 897558 | 4 | 18 | 4.862 | 10 Chanhassen | M | 25 | 21007849 | $2.11 \mathrm{E}+08$ | 3 |
| 846267 | 4 | 18 | 4.869 | 10 Chanhassen | M | 25 | 20030250 | $2.03 \mathrm{E}+08$ | 10 |
| 681260 | 4 | 18 | 4.87 | 10 Chanhassen | M | 25 | 19002954 | $1.9 \mathrm{E}+08$ | 1 |
| 727935 | 4 | 18 | 4.869 | 10 Chanhassen | M | 25 | 19017531 | $1.92 \mathrm{E}+08$ | 6 |
| 802183 | 4 | 18 | 4.87 | 10 Chanhassen | M | 25 | 20006375 | $2.01 \mathrm{E}+08$ | 3 |
| 780485 | 4 | 18 | 4.87 | 10 Chanhassen | M | 25 | 20001622 | $2 \mathrm{E}+08$ | 1 |
| 814917 | 4 | 18 | 4.871 | 10 Chanhassen | M | 25 | 20016615 | $2.02 \mathrm{E}+08$ | 6 |
| 905556 | 4 | 18 | 4.87 | 10 Chanhassen | M | 25 | 21012829 | $2.11 \mathrm{E}+08$ | 5 |
| 741572 | 4 | 18 | 4.872 | 10 Chanhassen | M | 25 | 19024628 | $1.92 \mathrm{E}+08$ | 8 |
| 690509 | 4 | 18 | 4.874 | 10 Chanhassen | M | 25 | 19005221 | $1.91 \mathrm{E}+08$ | 2 |
| 740075 | 4 | 18 | 4.876 | 10 Chanhassen | M | 25 | 19024015 | $1.92 \mathrm{E}+08$ | 8 |
| 797857 | 4 | 18 | 4.876 | 10 Chanhassen | M | 25 | 20004544 | $2 \mathrm{E}+08$ | 2 |
| 900828 | 4 | 18 | 4.886 | 10 Chanhassen | M | 25 | 21009934 | $2.11 \mathrm{E}+08$ | 4 |
| 720176 | 4 | 18 | 4.895 | 10 Chanhassen | M | 25 | 19013549 | $1.91 \mathrm{E}+08$ | 5 |
| Lyman and Lake Hazeltine Dr |  |  |  |  |  |  |  |  |  |
| 694501 | 4 | 18 | 4.679 | 10 Chanhassen | M | 25 | 19006234 | $1.91 \mathrm{E}+08$ | 3 |
| Lyman and Powers Blvd |  |  |  |  |  |  |  |  |  |
| 739873 | 4 | 17 | 0.945 | 10 Chanhassen | M | 25 | 19023923 | $1.92 \mathrm{E}+08$ | 8 |
| 785757 | 4 | 17 | 0.95 | 10 Chanhassen | M | 25 | 20003599 | $2 \mathrm{E}+08$ | 2 |
| 674882 | 4 | 17 | 0.952 | 10 Chanhassen | M | 25 | 19000738 | $1.9 \mathrm{E}+08$ | 1 |
| 940129 | 4 | 17 | 0.955 | 10 Chanhassen | M | 25 | 21024589 | $2.13 \mathrm{E}+08$ | 9 |
| 886534 | 4 | 17 | 0.961 | 10 Chanhassen | M | 25 | 21002267 | $2.1 \mathrm{E}+08$ | 1 |
| 726171 | 4 | 18 | 5.783 | 10 Chanhassen | M | 25 | 19016585 | $1.92 \mathrm{E}+08$ | 6 |
| 699619 | 4 | 18 | 5.798 | 10 Chanhassen | M | 25 | 19007622 | $1.91 \mathrm{E}+08$ | 3 |
| 820952 | 4 | 18 | 5.807 | 10 Chanhassen | M | 25 | 20021055 | $2.02 \mathrm{E}+08$ | 7 |
| 943948 | 4 | 18 | 5.818 | 10 Chanhassen | M | 25 | 21026793 | $2.13 \mathrm{E}+08$ | 9 |
| Pioneer and Village Rd |  |  |  |  |  |  |  |  |  |
| 688908 | 4 | 14 | 2.476 | 10 Chaska | M | 25 | 19001668 | $1.9 \mathrm{E}+08$ | 2 |
| 940968 | 5 | 127 | 0.611 | 10 Chaska | M | 25 | $2.02 \mathrm{E}+11$ | $2.13 \mathrm{E}+08$ | 9 |
| 758006 | 5 | 127 | 0.622 | 10 Chaska | M | 25 | 19010814 | $1.93 \mathrm{E}+08$ | 10 |

## Pioneer and Target

| 871190 | 4 | 14 | 2.909 | $10 \quad 2393809$ |  | 25 |
| :--- | ---: | ---: | ---: | :--- | :--- | :--- |
| 675508 | 4 | 14 | 2.942 | 10 Chaska | M | 25 |
| 981797 | 21 | 193 | 0.012 | 10 Chaska | M |  |
| 836499 | 4 | 14 | 3.057 | 10 Chaska | M | 25 |
| 812945 | 4 | 14 | 3.062 | 10 Chaska | $M$ | 25 |

Pioneer and Hundermark Rd

| 682015 | 4 | 14 | 3.076 | 10 Chaska |
| :--- | :--- | ---: | ---: | :--- |
| 812324 | 4 | 14 | 3.184 | 10 Chaska |
| 848882 | 4 | 14 | 3.191 | 10 Chaska |
| 820709 | 4 | 14 | 3.192 | 10 Chaska |
| 811293 | 5 | 108 | 2.348 | 10 Chaska |
| 814768 | 5 | 108 | 2.368 | 10 Chaska |
| 821272 | 5 | 108 | 2.374 | 10 Chaska |


| 19001052 | $1.9 \mathrm{E}+08$ | 2 |
| ---: | ---: | ---: |
| 20004583 | $2.02 \mathrm{E}+08$ | 6 |
| 20009287 | $2.03 \mathrm{E}+08$ | 10 |
| 20006239 | $2.02 \mathrm{E}+08$ | 7 |
| 30004226 | $2.01 \mathrm{E}+08$ | 5 |
| 20005093 | $2.02 \mathrm{E}+08$ | 6 |
| 20505948 | $2.02 \mathrm{E}+08$ | 7 |

Pioneer and Great Plains Blvd

| 695376 | 3 | 101 | 10.306 |
| :--- | :--- | ---: | ---: |
| 786513 | 4 | 14 | 6.299 |
| 874490 | 4 | 101 | 2.049 |

Pioneer and Chaska High School

| 969250 | 4 | 14 | 3.272 |
| :--- | :--- | :--- | :--- |
| 718500 | 4 | 14 | 3.545 |
| 942334 | 4 | 14 | 3.581 |

102393809
10 Chaska
M

| $2.02 \mathrm{E}+11$ | $2.13 \mathrm{E}+08$ | 10 |
| ---: | ---: | ---: |
| 19004537 | $1.91 \mathrm{E}+08$ | 5 |
| $2.02 \mathrm{E}+11$ | $2.13 \mathrm{E}+08$ | 9 |

Pioneer and Bluff Creek Dr

| 839121 | 4 | 14 | 4.82 |
| :--- | :--- | ---: | ---: |
| 677055 | 4 | 14 | 4.851 |
| 865589 | 4 | 14 | 4.911 |
| 700963 | 4 | 14 | 4.915 |
| 775139 | 4 | 14 | 4.92 |
| 677272 | 5 | 104 | 0.32 |

$10 \quad 2393799$
10 Chanhassen
10 Chanhassen
10 Chanhassen
10 Chanhassen
10 Chanhassen

| 20026451 | $2.02 \mathrm{E}+08$ | 9 |
| ---: | ---: | ---: |
| 19001794 | $1.9 \mathrm{E}+08$ | 1 |
| 20035358 | $2.03 \mathrm{E}+08$ | 11 |
| 19008333 | $1.91 \mathrm{E}+08$ | 3 |
| 19038507 | $1.94 \mathrm{E}+08$ | 12 |
| 19001792 | $1.9 \mathrm{E}+08$ | 1 |


| 20011339 | $2.04 \mathrm{E}+08$ | 12 |
| ---: | ---: | ---: |
| 19000354 | $1.9 \mathrm{E}+08$ | 1 |
| $2.02 \mathrm{E}+11$ | $2.14 \mathrm{E}+08$ | 12 |
| 20007214 | $2.02 \mathrm{E}+08$ | 8 |
| 20004732 | $2.02 \mathrm{E}+08$ | 6 |


| 19006440 | $1.91 \mathrm{E}+08$ | 3 |
| ---: | ---: | ---: |
| 20003938 | $2 \mathrm{E}+08$ | 2 |
| 21001283 | $2.1 \mathrm{E}+08$ | 1 |

## Pioneer and Audubon Rd

| 742811 | 4 | 14 | 4.415 | 10 Chaska | M | 25 | 19008529 | $1.92 \mathrm{E}+08$ | 8 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 737705 | 4 | 14 | 4.423 | 10 Chaska | M | 25 | 19007697 | $1.92 \mathrm{E}+08$ | 8 |
| 809509 | 4 | 14 | 4.424 | 10 Chaska | M | 25 | 20003850 | $2.01 \mathrm{E}+08$ | 5 |
| 890066 | 4 | 14 | 4.434 | 10 Chaska | M | 25 | 21001222 | $2.1 \mathrm{E}+08$ | 2 |
| 746786 | 4 | 15 | 1.6 | 10 Chaska | M | 25 | 19009124 | $1.93 \mathrm{E}+08$ | 9 |
| 701266 | 4 | 15 | 1.606 | 10 Chaska | M | 25 | 19003166 | $1.91 \mathrm{E}+08$ | 4 |
| 807340 | 4 | 15 | 1.605 | 10 Chaska | M | 25 | 20003201 | $2.01 \mathrm{E}+08$ | 4 |
| 847522 | 4 | 15 | 1.607 | 10 Chaska | M | 25 | 20009128 | $2.03 \mathrm{E}+08$ | 10 |
| 808300 | 4 | 15 | 1.61 | 10 Chaska | M | 25 | 20003483 | $2.01 \mathrm{E}+08$ | 4 |
| 740228 | 4 | 15 | 1.614 | 10 Chaska | M | 25 | 19008097 | $1.92 \mathrm{E}+08$ | 8 |
| 720485 | 4 | 15 | 1.626 | 10 Chaska | M | 25 | 19004878 | $1.91 \mathrm{E}+08$ | 5 |
| Pioneer and Acorn |  |  |  |  |  |  |  |  |  |
| 899754 | 10 | 237 | 0.001 | 10 Chaska | M | 25 | 21002816 | $2.11 \mathrm{E}+08$ | 4 |

CRASH_DA CRASH_YE/ CRASH_DA CRASH_HO DIVIDEDRD CRASHSEVI NUMBERKI NUMBERO MANNERO FIRSTHARN RELATIONT LIGHTCONI WEATHERF

| 1 | 2021 Thu | 11 S |  | 5 | 0 | 2 | 11 | 10 | 4 | 1 | 1 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 12 | 2020 Thu | 18 | 98 | 5 | 0 | 2 | 12 | 10 | 4 | 4 | 1 |
| 22 | 2019 Sun | 19 | 98 | 5 | 0 | 2 | 12 | 10 | 3 | 3 | 1 |
| 21 | 2020 Sat | 13 |  | 4 | 0 | 3 | 5 | 10 | 4 | 1 | 2 |
| 21 | 2019 Fri | 20 S |  | 4 | 0 | 1 |  | 8 | 3 | 3 | 1 |
| 8 | 2021 Sat | 13 | 98 | 5 | 0 | 2 | 10 | 10 | 4 | 1 | 2 |
| 21 | 2021 Sun | 13 | 98 | 5 | 0 | 2 | 5 | 10 | 3 | 1 | 1 |
| 2 | 2021 Fri | 11 |  | 3 | 0 | 2 | 13 | 10 | 3 | 1 | 1 |
| 10 | 2019 Mon | 10 |  | 2 | 0 | 2 | 5 | 10 | 3 | 1 | 1 |
| 15 | 2020 Wed | 14 |  | 5 | 0 | 2 | 12 | 10 | 3 | 1 | 2 |
| 15 | 2020 Tue | 15 |  | 4 | 0 | 3 | 5 | 10 | 3 | 1 | 2 |
| 28 | 2021 Tue | 10 S |  | 5 | 0 | 2 | 15 | 10 | 3 | 1 | 4 |
| 13 | 2019 Fri | 15 |  | 5 | 0 | 2 | 12 | 10 | 10 | 1 | 2 |
| 9 | 2021 Mon | 12 | 98 | 5 | 0 | 2 | 12 | 10 | 3 | 1 | 1 |
| 21 | 2019 Thu | 17 |  | 5 | 0 | 2 | 12 | 10 | 3 | 4 | 1 |
| 17 | 2020 Thu | 16 | 98 | 4 | 0 | 2 | 5 | 10 | 3 | 7 | 2 |
| 24 | 2019 Sun | 20 | 98 | 5 | 0 | 1 |  | 32 | 3 | 4 | 7 |
| 11 | 2019 Mon | 12 |  | 5 | 0 | 3 | 11 | 10 | 3 | 1 | 1 |
| 26 | 2019 Thu | 6 E |  | 3 | 0 | 2 | 13 | 10 | 3 | 2 | 1 |
| 10 | 2020 Mon | 18 | 98 | 4 | 0 | 2 | 12 | 10 | 3 | 4 | 1 |
| 21 | 2019 Mon | 16 | 98 | 3 | 0 | 2 | 13 | 10 | 3 | 1 | 2 |
| 14 | 2020 Fri | 7 W |  | 5 | 0 | 2 | 12 | 10 | 3 | 1 | 1 |


| 24 | 2021 Thu | 10 E |  | 3 | 0 | 2 | 13 | 10 | 3 | 1 | 1 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 24 | 2021 Wed | 16 E |  | 3 | 0 | 2 | 5 | 10 | 3 | 1 | 1 |
| 9 | 2020 Fri | 18 W |  | 5 | 0 | 2 | 13 | 10 | 3 | 1 | 1 |
| 30 | 2019 Wed | 16 |  | 5 | 0 | 2 | 5 | 10 | 3 | 1 | 1 |
| 19 | 2019 Wed | 16 |  | 5 | 0 | 2 | 11 | 10 | 3 | 1 | 1 |
| 4 | 2020 Wed | 8 |  | 3 | 0 | 2 | 13 | 10 | 3 | 1 | 1 |
| 17 | 2020 Fri | 18 | 98 | 4 | 0 | 2 | 13 | 10 | 3 | 4 | 4 |
| 17 | 2020 Wed | 7 E |  | 5 | 0 | 2 | 90 | 10 | 3 | 1 | 1 |
| 13 | 2021 Thu | 15 W |  | 2 | 0 | 2 | 5 | 10 | 3 | 1 | 1 |
| 19 | 2019 Mon | 15 | 98 | 5 | 0 | 2 | 90 | 10 | 3 | 1 | 1 |
| 21 | 2019 Thu | 16 |  | 4 | 0 | 2 | 5 | 10 | 3 | 1 | 1 |
| 13 | 2019 Tue | 16 |  | 5 | 0 | 2 | 13 | 10 | 3 | 1 | 3 |
| 14 | 2020 Fri | 22 E |  | 5 | 0 | 2 | 10 | 10 | 3 | 4 | 1 |
| 15 | 2021 Thu | 7 N |  | 5 | 0 | 2 | 12 | 10 | 3 | 1 | 2 |
| 16 | 2019 Thu | 6 W |  | 5 | 0 | 2 | 12 | 10 | 3 | 1 | 1 |
| 4 | 2019 Mon | 5 |  | 4 | 0 | 2 | 13 | 10 | 3 | 4 | 1 |
| 12 | 2019 Mon | 18 E |  | 3 | 0 | 2 | 12 | 10 | 3 | 1 | 2 |
| 6 | 2020 Thu | 5 N |  | 5 | 0 | 2 | 12 | 10 | 3 | 4 | 1 |
| 9 | 2019 Wed | 6 N |  | 5 | 0 | 2 | 13 | 10 | 3 | 4 | 1 |
| 7 | 2021 Tue | 15 S |  | 5 | 0 | 2 | 12 | 10 | 3 | 1 | 1 |
| 25 | 2021 Mon | 16 E |  | 4 | 0 | 2 | 5 | 10 | 3 | 3 | 1 |
| 11 | 2019 Tue | 17 |  | 4 | 0 | 2 | 12 | 10 | 3 | 1 | 1 |
| 18 | 2019 Mon | 7 S |  | 5 | 0 | 2 | 12 | 10 | 3 | 1 | 1 |
| 21 | 2020 Tue | 22 N |  | 5 | 0 | 2 | 5 | 10 | 3 | 4 | 1 |
| 30 | 2021 Thu | 16 |  | 5 | 0 | 2 | 12 | 10 | 3 | 1 | 2 |
| 16 | 2019 Sat | 12 W |  | 5 | 0 | 2 | 12 | 10 | 3 | 1 | 2 |
| 16 | 2021 Thu | 15 E |  | 5 | 0 | 2 | 12 | 10 | 3 | 1 | 1 |
| 29 | 2019 Tue | 11 N |  | 5 | 0 | 2 | 5 | 10 | 10 | 1 | 1 |


| 28 | 2020 Mon | 10 S |  | 5 | 0 | 2 | 12 | 10 | 4 | 1 | 1 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 12 | 2019 Sat | 0 E |  | 5 | 0 | 1 |  | 47 | 3 | 4 | 1 |
| 19 | 2021 Sun | 12 |  | 5 | 0 | 2 | 13 | 10 | 3 | 1 | 1 |
| 21 | 2020 Fri | 13 | 98 | 5 | 0 | 2 | 10 | 10 | 10 | 1 | 1 |
| 5 | 2020 Fri | 12 W |  | 5 | 0 | 2 | 5 | 10 | 3 | 1 | 1 |
| 1 | 2019 Fri | 15 W |  | 5 | 0 | 2 | 12 | 10 | 3 | 1 | 1 |
| 1 | 2020 Mon | 12 E |  | 2 | 0 | 2 | 5 | 10 | 3 | 1 | 1 |
| 23 | 2020 Fri | 18 N |  | 5 | 0 | 2 | 11 | 10 | 3 | 1 | 1 |
| 20 | 2020 Mon | 19 W |  | 3 | 0 | 1 |  | 9 | 3 | 1 | 1 |
| 21 | 2020 Thu | 11 |  | 3 | 0 | 1 |  | 8 | 3 | 1 | 1 |
| 16 | 2020 Tue | 12 |  | 5 | 0 | 2 | 12 | 10 | 3 | 1 | 1 |
| 23 | 2020 Thu | 12 S |  | 5 | 0 | 2 | 11 | 10 | 3 | 1 | 1 |
| 6 | 2019 Wed | 7 | 98 | 5 | 0 | 2 | 13 | 10 | 3 | 2 | 1 |
| 9 | 2020 Sun | 13 |  | 4 | 0 | 2 | 5 | 10 | 3 | 1 | 1 |
| 14 | 2021 Thu | 22 N |  | 5 | 0 | 1 |  | 30 | 3 | 4 | 4 |
| 26 | 2021 Tue | 7 | 98 | 3 | 0 | 3 | 12 | 10 | 2 | 2 | 1 |
| 8 | 2019 Wed | 7 E |  | 5 | 0 | 2 | 12 | 10 | 2 | 1 | 2 |
| 23 | 2021 Thu | 7 | 98 | 5 | 0 | 2 | 5 | 10 | 4 | 2 | 1 |
| 5 | 2020 Sat | 13 |  | 4 | 0 | 2 | 5 | 10 | 3 | 1 | 1 |
| 18 | 2019 Fri | 18 |  | 5 | 0 | 2 | 12 | 10 | 3 | 4 | 4 |
| 27 | 2020 Fri | 16 | 98 | 5 | 0 | 2 | 12 | 10 | 3 | 1 | 1 |
| 25 | 2019 Mon | 15 | 98 | 5 | 0 | 2 | 90 | 10 | 3 | 1 | 1 |
| 29 | 2019 Sun | 10 |  | 4 | 0 | 2 | 11 | 10 | 3 | 1 | 6 |
| 18 | 2019 Fri | 17 |  | 5 | 0 | 2 | 12 | 10 | 3 | 4 | 4 |


| 26 | 2019 Mon | 6 S |  | 5 | 0 | 2 | 11 | 10 | 3 | 4 | 1 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 2 | 2019 Fri | 7 |  | 5 | 0 | 3 | 12 | 10 | 3 | 2 | 1 |
| 7 | 2020 Thu | 15 |  | 5 | 0 | 3 | 12 | 10 | 3 | 1 | 1 |
| 12 | 2021 Fri | 14 | 98 | 5 | 0 | 2 | 13 | 10 | 10 | 1 | 1 |
| 12 | 2019 Thu | 12 | 98 | 5 | 0 | 2 | 5 | 10 | 3 | 1 | 2 |
| 2 | 2019 Tue | 9 N |  | 3 | 0 | 2 | 5 | 10 | 3 | 1 | 2 |
| 17 | 2020 Fri | 10 | 98 | 4 | 0 | 2 | 5 | 10 | 3 | 1 | 1 |
| 20 | 2020 Tue | 13 |  | 3 | 0 | 2 | 5 | 10 | 3 | 1 | 4 |
| 27 | 2020 Mon | 10 S |  | 4 | 0 | 2 | 5 | 10 | 3 | 1 | 1 |
| 14 | 2019 Wed | 7 S |  | 5 | 0 | 3 | 13 | 10 | 4 | 1 | 2 |
| 17 | 2019 Fri | 12 W |  | 5 | 0 | 2 | 12 | 10 | 3 | 1 | 1 |
| 8 | 2021 Thu | 15 | 98 | 5 | 0 | 3 | 12 | 10 | 3 | 1 | 1 |

WEATHERSRDWYSURF WORKZON ROADWAY.INTERSECT ROUTE_ID BASIC_TYPIUNITTYPEL VEHICLETYIDIRECTION PRECRASHIAGEU1
SEXU1


| 1 | 98 AUDUBON LYMAN BLI | 040000659 | 9 | 2 | 4 | 3 | 21 | 40 F |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1 | 98 LYMAN BL\AUDUBON 0 | 040000659 | 10 | 2 | 4 | 3 | 21 | 37 M |
| 1 | 98 LYMAN BLVD | 040000659 | 8 | 2 | 2 | 4 | 24 | 17 F |
| 1 | 98 LYMAN BL\AUDUBON | 040000659 | 9 | 2 | 2 | 3 | 21 | 38 M |
| 1 | 98 LYMAN BLVD | 040000659 | 6 | 2 | 4 | 4 | 24 | 66 M |
| 1 | 98 LYMAN BLVD | 040000659 | 8 | 2 | 4 | 3 | 21 | 25 F |
| 3 | 98 LYMAN BLVD | 040000659 | 8 | 2 | 2 | 4 | 24 | 33 F |
| 1 | 98 LYMAN BLVD | 040000659 | 90 | 2 | 3 | 4 | 24 | 60 M |
| 1 | 98 LYMAN BL\AUDUBON 0 | 040000659 | 9 | 2 | 2 | 4 | 24 | 55 M |
| 1 | 98 LYMAN BLVD | 040000659 | 90 | 2 | 2 | 2 | 24 | 68 M |
| 1 | 98 LYMAN BL\AUDUBON 0 | 040000659 | 9 | 2 | 2 | 3 | 21 | 30 M |
| 2 | 98 LYMAN BLI 150 | 040000659 | 8 | 2 | 2 | 3 | 21 | 32 M |
| 1 | 98 LYMAN BLVD | 040000659 | 5 | 2 | 2 | 3 | 23 | 16 F |
| 1 | 98 LYMAN BLVD | 040000659 | 7 | 2 | 4 | 1 | 23 | 38 F |
| 2 | 98 LYMAN BLVD | 040000659 | 7 | 2 | 2 | 4 | 34 | 52 M |
| 1 | 98 LYMAN BLVD | 040000659 | 8 | 2 | 2 | 4 | 24 | 30 M |
| 1 | 98 POWERS BILYMAN BLI 0 | 040000659 | 7 | 2 | 2 | 3 | 21 | 29 M |
| 1 | 98 POWERS BILYMAN BLI 0 | 040000659 | 7 | 2 | 2 | 1 | 28 | 27 M |
| 1 | 98 POWERS BILYMAN BLI 0 | 040000659 | 8 | 2 | 4 | 2 | 24 | 39 F |
| 1 | 98 POWERS BILYMAN BLI 0 | 040000659 | 7 | 2 | 2 | 2 | 34 | 56 M |
| 1 | 98 POWERS BLVD | 040000659 | 10 | 2 | 5 | 3 | 21 | 35 F |
| 1 | 98 LYMAN BLVD 0 | 040000659 | 7 | 2 | 2 | 3 | 23 | 39 F |
| 5 | 98 LYMAN BLVD 0 | 040000659 | 7 | 2 | 2 | 2 | 23 | 51 F |
| 1 | 98 LYMAN BLVD 0 | 040000659 | 9 | 2 | 2 | 2 | 24 | 20 M |
| 1 | 98 LYMAN BLIPOWERS BIO | 040000659 | 7 | 2 | 4 | 4 | 34 | 58 F |
| 1 | 90 PIONEER TRL 040 | 040000659 | 7 | 2 | 4 | 4 | 26 | 42 F |
| 1 | 98 VILLAGE RD 0 | 050002393 | 7 | 2 | 2 | 3 | 21 | 17 F |
| 1 | 98 VILLAGE R[PIONEER TIO | 050002393 | 10 | 2 | 4 | 1 | 21 | 42 F |



|  | 1 | 98 PIONEER TRL | 040000659 | 6 | 2 | 2 | 1 | 24 | 22 M |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | 1 | 98 PIONEER TIAU | 040000659 | 7 | 2 | 4 | 3 | 21 | 38 M |
|  | 1 | 98 PIONEER TIAU | 040000659 | 7 | 2 | 4 | 4 | 21 | 70 F |
|  | 1 | 98 PIONEER TIAU | 040000659 | 9 | 2 | 4 | 4 | 21 | 74 F |
|  | 1 | 98 AUDUBON PIO | 040000659 | 10 | 2 | 4 | 1 | 24 | 17 M |
|  | 1 | 98 AUDUBON PIO | 040000659 | 9 | 2 | 2 | 2 | 21 | 43 F |
|  | 1 | 98 AUDUBON PIO | 1040000659 | 10 | 2 | 3 | 1 | 21 | 33 M |
| 5 | 3 | 98 AUDUBON PIO | 040000659 | 10 | 2 | 2 | 1 | 21 | 25 F |
|  | 1 | 98 AUDUBON RD | 040000659 | 10 | 2 | 4 | 2 | 28 | 39 F |
|  | 1 | 98 AUDUBON RD | 040000659 | 7 | 2 | 2 | 2 | 24 | 32 M |
|  | 1 | 98 AUDUBON RD | 040000659 | 7 | 2 | 2 | 4 | 21 | 16 F |
|  | 2 | 98 ACORN RD PIO | 100002393 | 7 | 2 | 2 | 3 | 21 | 17 M |

PHYSICALC CONTRIBFA CONTRIBF/ NONMOTC NONMOTC RDWYDESI'TRAFFICCO SPEEDLIMI' ALIGNMEN GRADEU1 UNITTYPEL VEHICLETY| DIRECTION


| 9 | 63 |  | 15 | 20 | 45 | 12 | 21 | 2 | 2 | 2 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 5 | 1 |  | 15 | 20 | 45 | 11 | 21 | 2 | 2 | 2 |
| 5 | 99 |  | 14 | 20 | 45 | 11 | 21 | 2 | 4 | 3 |
| 5 | 1 |  | 15 | 20 | 45 | 11 | 21 | 2 | 2 | 4 |
| 5 | 2 |  | 14 | 20 |  | 11 | 21 | 2 | 4 | 3 |
| 5 | 1 |  | 15 | 20 | 45 | 11 | 21 | 2 | 90 | 4 |
| 5 | 2 |  | 14 | 20 | 50 | 11 | 21 | 2 | 2 | 3 |
| 5 | 10 |  | 15 | 20 | 50 | 11 | 21 | 2 | 48 | 3 |
| 5 | 2 |  | 15 | 20 | 50 | 11 | 21 | 2 | 2 | 3 |
| 5 | 2 |  | 15 | 20 | 45 | 11 | 21 | 2 | 2 | 3 |
| 5 | 1 |  | 14 | 20 | 45 | 11 | 21 | 2 | 4 | 4 |
| 5 | 1 |  | 14 | 20 | 45 | 11 | 21 | 2 | 2 | 4 |
| 5 | 1 |  | 14 | 22 | 50 | 11 | 21 | 2 | 2 | 3 |
| 5 | 4 | 10 | 15 | 20 | 50 | 11 | 24 | 2 | 4 | 1 |
| 5 | 1 |  | 15 | 20 | 45 | 11 | 21 | 2 | 2 | 4 |
| 5 | 10 |  | 12 | 20 | 45 | 11 | 21 | 2 | 2 | 3 |
| 5 | 4 |  | 15 | 20 | 50 | 11 | 21 | 2 | 2 | 3 |
| 5 | 10 |  | 15 | 20 | 45 | 11 | 21 | 2 | 49 | 1 |
| 5 | 70 |  | 14 | 20 | 50 | 11 | 21 | 2 | 5 | 1 |
| 5 | 1 |  | 15 | 20 | 40 | 11 | 21 | 1 |  |  |
| 5 | 90 |  | 15 | 20 | 45 | 11 | 21 | 2 | 4 | 1 |
| 5 | 1 |  | 15 | 20 | 50 | 11 | 21 | 2 | 2 | 3 |
| 5 | 1 |  | 14 | 20 | 45 | 13 | 21 | 2 | 2 | 2 |
| 5 | 2 |  | 15 | 20 | 45 | 11 | 21 | 2 | 5 | 1 |
| 5 | 1 |  | 15 | 20 | 50 | 11 | 21 | 2 | 2 | 4 |
| 5 | 74 |  | 15 | 20 | 40 | 13 | 21 | 2 | 4 | 4 |
| 5 | 99 |  | 12 | 20 | 45 | 11 | 21 | 2 | 4 | 3 |
| 5 | 1 |  | 12 | 20 | 40 | 11 | 21 | 2 | 4 | 4 |


| 5 | 1 |  | 15 | 20 | 45 | 11 | 21 | 2 | 2 | 2 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 5 | 66 |  | 15 | 20 | 45 | 11 | 21 |  |  |  |
| 5 | 2 |  | 15 | 20 | 45 | 11 | 21 | 2 | 2 | 4 |
| 5 | 90 |  | 14 | 20 | 30 | 11 | 21 | 2 | 4 | 1 |
| 5 | 2 |  | 15 | 20 | 40 | 11 | 21 | 2 | 4 | 1 |
| 5 | 1 |  | 15 | 20 | 45 | 11 | 21 | 2 | 4 | 4 |
| 5 | 1 |  | 14 | 20 | 40 | 11 | 21 | 2 | 31 | 3 |
| 5 | 2 |  | 14 | 20 | 45 | 11 | 21 | 2 | 2 | 4 |
| 5 | 1 |  | 13 | 20 | 45 | 11 | 21 | 6 |  |  |
| 5 | 2 |  | 12 | 20 | 45 | 11 | 21 | 5 |  |  |
| 5 | 74 |  | 12 | 20 | 30 | 13 | 21 | 2 | 4 | 2 |
| 5 | 68 |  | 12 | 20 | 30 | 11 | 21 | 2 | 2 | 2 |
| 5 | 1 |  | 12 | 20 | 40 | 11 | 21 | 2 | 5 | 1 |
| 5 | 90 |  | 12 | 20 | 50 | 11 | 21 | 2 | 2 | 1 |
| 5 | 1 |  | 14 | 20 | 40 | 11 | 24 |  |  |  |
| 5 | 74 |  | 12 | 9 | 45 | 11 | 21 | 2 | 4 | 3 |
| 5 | 74 | 4 | 12 | 9 | 45 | 11 | 21 | 2 | 2 | 3 |
| 5 | 63 |  | 12 | 20 | 45 | 11 | 21 | 2 | 2 | 4 |
| 5 | 74 |  | 12 | 20 | 50 | 11 | 25 | 2 | 2 | 1 |
| 5 | 2 |  | 12 | 20 | 50 | 11 | 21 | 2 | 2 | 2 |
| 5 | 1 |  | 12 | 20 | 50 | 11 | 21 | 2 | 2 | 3 |
| 5 | 2 |  | 12 | 20 | 35 | 11 | 21 | 2 | 2 | 2 |
| 5 | 1 |  | 12 | 20 | 30 | 11 | 21 | 2 | 4 | 3 |
| 5 | 2 |  | 12 | 20 | 50 | 11 | 21 | 2 | 2 | 3 |


| 5 | 2 |  | 12 | 20 |  | 11 | 23 | 2 | 3 | 1 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 5 | 4 |  | 12 | 20 | 45 | 13 | 21 | 2 | 4 | 3 |
| 5 | 65 |  | 12 | 20 | 45 | 11 | 21 | 2 | 4 | 4 |
| 5 | 68 | 67 | 12 | 20 | 45 | 11 | 21 | 2 | 4 | 2 |
| 5 | 2 |  | 13 | 20 | 45 | 12 | 21 | 2 | 3 | 1 |
| 5 | 1 |  | 12 | 20 |  | 13 | 21 | 2 | 2 | 1 |
| 5 | 1 |  | 12 | 20 | 45 | 11 | 21 | 2 | 2 | 4 |
| 5 | 63 |  | 13 | 20 | 45 | 11 | 21 | 2 | 2 | 1 |
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| 5 | 99 |  | 14 | 20 | 45 | 11 | 23 | 2 | 4 | 2 |
| 5 | 4 |  | 12 | 20 | 45 | 11 | 21 | 2 | 2 | 4 |
| 5 | 74 |  | 12 | 20 | 45 | 11 | 21 | 2 | 2 | 3 |

PRECRASHIAGEU2 SEXU2 PHYSICALC CONTRIBFf CONTRIBFf NONMOTC NONMOTC RDWYDESIITRAFFICCO SPEEDLIMI ALIGNMEN GRADEU2

| 21 | 21 F | 5 | 1 | 14 | 20 | 40 | 13 | 23 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 21 | 16 M | 5 | 1 | 15 | 20 | 30 | 11 | 21 |
| 21 | 44 M | 5 | 1 | 14 | 20 | 30 | 11 | 24 |
| 24 | 39 F | 5 | 1 | 14 | 20 | 40 | 11 | 21 |
| 21 |  |  |  | 15 | 20 | 40 | 11 | 23 |
| 24 | 30 F | 5 | 1 | 12 | 20 | 40 | 11 | 23 |
| 24 | 28 F | 5 | 1 | 12 | 20 |  | 11 | 21 |
| 21 | 24 M | 5 | 63 | 12 | 20 | 40 | 11 | 21 |
| 21 | 17 F | 5 | 1 | 13 | 20 | 40 | 11 | 21 |
| 21 | 50 F | 5 | 1 | 12 | 20 | 30 | 11 | 21 |
| 21 | 20 M | 5 | 99 | 14 | 20 | 40 | 11 | 21 |
| 21 | 50 M | 5 | 1 | 15 | 20 | 40 | 11 | 21 |
| 21 | 51 M | 5 | 1 | 90 | 20 |  | 11 | 21 |
| 23 | 27 F | 5 | 1 | 12 | 20 | 50 | 13 | 24 |
| 34 | 39 F | 5 | 1 | 15 | 22 |  | 13 | 24 |
| 21 | 42 F | 5 | 1 | 15 | 20 | 50 | 11 | 21 |
| 34 | 33 M | 5 | 1 | 12 | 20 | 50 | 11 | 21 |
| 21 | 19 M | 5 | 1 | 14 | 20 | 45 | 11 | 21 |
| 34 | 54 F | 5 | 70 | 14 | 20 | 45 | 11 | 21 |
| 21 | 54 F | 5 | 1 | 12 | 20 | 45 | 11 | 21 |
| 21 | 17 M | 5 | 70 | 12 | 20 | 45 | 11 | 21 |


| 24 | 55 M | 5 | 1 |  | 15 | 20 | 45 | 13 | 21 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 24 | 45 M | 5 | 2 |  | 15 | 20 | 45 | 11 | 21 |
| 21 | 17 F | 5 | 1 |  | 14 | 20 | 45 | 11 | 21 |
| 24 | 54 F | 5 | 1 |  | 15 | 20 | 45 | 11 | 21 |
| 21 | 32 M | 5 | 1 |  | 14 | 20 | 50 | 11 | 21 |
| 24 | 38 M | 5 | 65 | 2 | 15 | 20 | 45 | 11 | 21 |
| 21 | 28 M | 5 | 1 |  | 14 | 20 | 50 | 11 | 21 |
| 21 | 68 M | 5 | 1 |  | 15 | 20 | 50 | 11 | 21 |
| 21 | 50 M | 5 | 1 |  | 15 | 20 | 50 | 11 | 21 |
| 21 | 29 M | 5 | 1 |  | 15 | 20 | 45 | 11 | 21 |
| 24 | 26 F | 5 | 2 |  | 14 | 20 | 45 | 11 | 21 |
| 24 | 57 F | 5 | 2 |  | 14 | 20 | 45 | 11 | 21 |
| 21 | 41 M | 5 | 1 |  | 14 | 22 | 50 | 11 | 21 |
| 23 | 71 M | 5 | 1 |  | 15 | 20 | 50 | 11 | 24 |
| 21 | 31 F | 5 | 4 |  | 15 | 20 | 45 | 11 | 21 |
| 21 | 50 F | 5 | 1 |  | 12 | 20 | 45 | 11 | 21 |
| 23 | 60 M | 5 | 1 |  | 15 | 20 | 50 | 11 | 21 |
| 21 | 44 M | 5 | 1 |  | 15 | 20 | 45 | 11 | 21 |
| 21 | 33 F | 5 | 1 |  | 14 | 20 | 50 | 11 | 21 |
| 21 | 42 M | 5 | 1 |  | 15 | 20 | 45 | 11 | 21 |
| 21 | 49 M | 99 | 99 |  | 15 | 20 | 50 | 11 | 21 |
| 23 | 36 F | 5 | 1 |  | 14 | 20 | 45 | 13 | 21 |
| 23 | 57 M | 5 | 10 |  | 14 | 20 | 45 | 11 | 21 |
| 21 | 18 M | 5 | 74 |  | 15 | 20 | 50 | 11 | 21 |
| 34 | 82 M | 5 | 1 |  | 15 | 20 | 40 | 13 | 21 |
| 34 | 66 F | 5 | 1 |  | 12 | 20 | 45 | 11 | 21 |
| 21 | 71 F | 5 | 63 |  | 15 | 20 |  | 11 | 21 |



| 21 | 48 M | 5 | 1 | 12 | 20 | 45 | 11 | 24 |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| 34 | 50 F | 5 | 1 | 12 | 20 | 45 | 13 | 21 |
| 34 | 57 M | 5 | 1 | 12 | 20 | 45 | 11 | 21 |
| 24 | 24 M | 5 | 1 | 12 | 20 | 50 | 11 | 21 |
| 21 | 27 M | 5 | 1 | 13 | 20 | 45 | 12 | 21 |
| 24 | 26 F | 5 | 1 | 12 | 20 |  | 13 | 21 |
| 21 | 35 F | 18 M | 5 | 65 | 12 | 20 | 45 | 11 |
| 21 | 58 F | 5 | 1 | 13 | 20 | 45 | 11 | 21 |
| 21 | 54 F | 5 | 1 | 12 | 20 | 50 | 11 | 21 |
| 21 | 66 M | 5 | 1 | 14 | 20 | 45 | 11 | 23 |
| 21 |  |  | 12 | 20 | 45 | 11 | 21 |  |
|  |  | 5 | 1 |  |  |  |  |  |
| 34 | 16 M |  |  | 12 | 20 | 45 | 11 | 21 |

2

1
24
80 M
5
2
15

12

| 2 | 2 | 3 | 34 | 42 F | 5 | 1 | 12 | 20 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 2 | 2 | 4 | 34 | 36 M | 5 | 1 | 12 | 20 |
|  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
| 2 | 6 | 2 | 34 | 47 M | 5 | 1 | 14 | 20 |
|  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
| 2 | 4 | 3 | 34 | 16 F | 5 | 1 | 12 | 20 |


| 45 | 13 | 21 |
| :--- | :--- | :--- |
| 45 | 11 | 21 |
|  |  |  |
|  |  |  |
| 45 | 11 | 23 |
|  |  | 21 |


| 438996.9 | 4965821 | 44.8432 | -93.7719 | \#\#\#\#\#\#\#\# Accepted | Reportable |
| :---: | :---: | :---: | :---: | :---: | :---: |
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| ---: | ---: | ---: | ---: | ---: | ---: | Reportable

MN010000 Sheriff MN010000 Sheriff MN010000 Sheriff MN010000 Sheriff MN010000 Sheriff MN010000 Sheriff

On 04/01/2021 at 1146 hours deputies were dispatched to a PI crash at Main St E and Village Way, in Waconia, MN. I arrived a UNIT 1 was facing westbound on Target Entrance to turn south onto Main Street was stopped waiting to turn. UNIT 2 was trav Unit 1 and Unit 2 were facing westbound on the entrance road to the Target store (Waconia, MN) at the intersection of Mains Unit 1 was northbound on Main St. in the right through lane approaching the intersection with Target Entrance. Unit 2 was so Unit 1 (Pedestrian) was waiting to cross over Main Street from Target Entrance near Plowshare Drive in Waconia. Unit 1 was g At 1322

Unit 1 was driving northbound main street approaching the intersection of airport road. Unit 2 was driving on airport road att $\epsilon$

MN010000 Sheriff MN010000 Sheriff MN010000 Sheriff

On 04/02/2021 at 1108 hours deputies were dispatched to a PI crash at County RD 10 and Main St. I arrived and saw a Unit 1, Valentin was driving a Mazda CX-3 eastbound on County Road 10. Valentin approached the intersection of County Road 10 anc V1 and V2 were driving north on sparrow rd just crossing the intersection at County Rd 10. A vehicle turning south onto Sparrc

MN010000 Sheriff
On December 15, 2020 at 1513 hours, deputies were dispatch to Lyman Blvd/Great Plains Blvd for a three vehicle injury crash.l

MN010000 Sheriff
P1 in V1 slowing down for a stop light at the intersection of Galpin and Lyman in Chanhassen. P1 in V1 locked up the brakes of

MN010000 Sheriff
MN010000 Sheriff MN010000 Sheriff MN010000 Sheriff MN010000 Sheriff MN010000 Sheriff MN010000 Sheriff MN010000 Sheriff MN010000 Sheriff MN010000 Sheriff

Driver of Unit \#2 was approaching intersection at Audubon and Lyman northbound. Driver of Unit \#2 had to yield to oncoming On 08/09/2021 at approximately 1248 hours I, Deputy Kane-Zafke \#885, responded to a property damage crash that occurred Driver of Unit \#1 was approaching the intersection of Audubon Rd and Lyman Blvd. Driver of Unit \#2 was going to make a rightUnit 1 was WB on Lyman Blvd and was turning SB on Audubon Road on a flashing yellow light and did not see unit 2, which EB Unit 1 was located unoccupied in the intersection of Audubon Road and Lyman Boulevard. It appeared Unit 1 had been involve On March 11, 2019 at 1246 hours, I responded to the intersection of Audubon Road and Lyman Boulevard for a property dama On 09/26/2019, there was a two vehicle personal injury crash on Lyman Blvd. at Audubon Rd. in the city of Chanhassen. Unit 1 On 02/10/2020, there was a two vehicle property damage crash on Audubon Rd. at Lyman Blvd. Vehicle 1 was northbound on On 10/21/2019 at 1607 hours, V/1 was westbound on Lyman Blvd approaching Audubon Rd. in the southbound turn lane to Al Both Unit \#1 and Unit \#2 were traveling westbound on Lyman Blvd. approaching the intersection with Audubon Rd in the city o

MN010000 Sheriff MN010000 Sheriff MN010000 Sheriff MN010000 Sheriff MN010000 Sheriff MN010000 Sheriff MN010000 Sheriff MN010000 Sheriff MN010000 Sheriff MN010000 Sheriff MN010000 Sheriff MN010000 Sheriff MN010000 Sheriff MN010000 Sheriff MN010000 Sheriff

Unit 1 was traveling eastbound on Lyman Blvd at the intersection of Audubon Road in the city of Chanhassen. Unit 2 was facing Unit 1 was traveling eastbound on Lyman Blvd approaching Audubon Road in the city of Chanhassen. Unit 2 was facing westbol Unit 1 was travelling westbound on Lyman Blvd turning southbound on Audubon Road. Unit 1 drive stated she believed she hi Unit 1 was traveling eastbound on Lyman Blvd, passing through the intersection with Audubon Rd. Unit 1 had a solid green ligh Unit 1 was traveling westbound on Lyman Boulevard and had a flashing yellow traffic light to turn left. Unit 2 was traveling eas Unit 1 was EB on Lyman Blvd coming through the intersection of Audubon Road (South) and had the green light. Unit 2 was W On 01/17/2020 at 1823 hours, I was dispatched to a crash at the intersection of Lyman Boulevard and Audubon Road in the cit Vehicle 1 was travelling West on Lyman Blvd and entered turn lane to go south on Audubon Road. Vehicle 1 had a flashing yell Unit 1 was traveling westbound on Lyman Blvd and was going to turn south on Audubon Rd. Driver 1 originally stated that he $h$ On 08/19/2019 at 1538 hours, V/1 was attempting to complete a southbound turn from Lyman Blvd onto Audubon Rd on a flas Unit 1 was traveling eastbound on Lyman Blvd, approaching Audubon Rd. Unit 1 had a green light and was continuing eastbour Unit 1 was traveling eastbound on Lyman Blvd, proceeding through the intersection with County Rd 15 (Audubon Rd to the sou On 02/14/2020 at 2212 hours, I was dispatched to a motor vehicle accident at 2200 Lyman Boulevard in the city of Chanhasser Both vehicles were northbound on Audubon Road and came to the intersection with Lyman Blvd. Both vehicles entered the rig On 05/16/2019 at 0627 hours, I was dispatched to a two vehicle PD crash at Lyman Blvd, and Audubon Rd S. Upon arrival, I loc

On March 4, 2019 at 0549 hours, the driver of vehicle 1 was traveling west bound on Lyman Blvd. The driver of vehicle 2 was $t$

MN010000 Sheriff MN010000 Sheriff MN010000 Sheriff MN010000 Sheriff MN010000 Sheriff MN010000 Sheriff MN010000 Sheriff MN010000 Sheriff MN010000 Sheriff

Unit 2 was
Unit \#1
On
Unit 1 was
Driver of Unit 1 advises her breaks went out while she was driving eastbound on Lyman Blvd through the intersection of Powe On June

On
Vehicle \#1
Vehicle \#1

MN010020 Police MN010020 Police MN010020 Police

Driver \#1 stated:- She was traveling westbound on Pioneer Tail just before the crash occurred. - She did see the vehicle (vehicle Vehicle number one was traveling behind vehicle number 2 EB Pioneer trl. at the intersection of Village Rd.lts believed the veh V1 was NB on Village Road within the intersection of Pioneer Trail. V2 was WB on Pioneer Trail within the intersection of Villa

MN010020 Police MN010020 Police MN010020 Police MN010020 Police MN010020 Police

Vehicle \#1 collided into the rear of vehicle \#2 as it was attempting to make a right hand turn from the area of the Chaska Comı Single vehicle property damage crash. Vehicle was SB exiting the Chaska Commons area, turning left onto EB Pioneer Trail. Dri Driver\#1 was eastbound Pioneer Trail attempting to make a left turn (on a flashing yellow arrow) into the Chaska Commons al Two vehicle property damage crash. Vehicle 1 (semi tractor/trailer combination) was attempting to take a right turn from the Vehicle \#2 had a green arrow semaphore light and was making a left hand turn to go west on Pioneer Trail from Target exit. V

MN010020 Police MN010020 Police MN010020 Police MN010020 Police MN010020 Police MN010020 Police MNMHP04 State Patro The driver of the Impala reported being stopped at the light on southbound Hundertmark to cross Pioneer trail when the Dodg

MN010000 Sheriff MN010000 Sheriff MN010000 Sheriff

On 03/06/2019, there was a two vehicle property damage crash on MNTH 101 and Pioneer Trail. Unit 1 was southbound on M Unit 2 north traveling northbound Great Plains Blvd approaching the intersection with Pioneer Trl. Unit 2 was traveling down a On 01/14/2021 at approximately 2209 hours I, Deputy Kane-Zafke \#885, responded to a report of a crash at the intersection o

MN010020 Police MN010020 Police MN010020 Police

3 vehicle crash. V1 was EB Pioneer Trl approaching the West entrance to the Chaska High School. Vehicles 2 and 3 were stoppei Driver \#1 stated he was distracted and did not see that vehicle \#2 was slowing to a stop in the roadway. The traffic in the area v Two vehicle property damage crash. V1 was EB on Pioneer Trl attempting to turn right into the West parking lot of the Chaska +

Vehicle \#1 was stopped at the red light on WB Pioneer Trl at Hundertmark Rd. Vehicle \#2 ran into the back of vehicle \#1 causii Unit \#1 was making a southbound turn from westbound Pioneer Trail onto Hundertmark Road. Unit \#2 was traveling eastbour Driver \#1 was stopped at a traffic light attempting to make a left turn from Pioneer Trail to northbound Hundertmark Rd. Driv Unit 1 was traveling west on Pioneer Trl and had a green light at the intersection with Hundertmark Rd. Cyclist was crossing sc Driver of vehicle 1 stated she did not see the pedestrian prior to striking him with her vehicle. Pedestrian stated he was crossi Vehicle 1 was SB on Hundertmark Rd approaching the semaphore with Pioneer Trl. Driver of V1 stated he came around the cor

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Unit \#1 was traveling westbound on Pioneer Trail approaching the intersection with Bluff Creek Blvd. Unit \#2 was traveling nor Vehicle \#1 was going west on Pioneer Trl and was going to turn south onto Bluff Creek Dr. Vehicle \#2 was going east on Pioneє Unit 1 was the third veh from the intersection of EB Pioneer Trail and Bluff Creek Drive in Chanhassen waiting for the red light $t$ On 03/25/2019 at 1537 hours, V/1 was traveling westbound Pioneer Trl from Bluff Creek and struck V/2 which was traveling sol On December 29, 2019 at 1026 hours, I was dispatched to an injury crash at Pioneer Trail and Bluff Creek Drive in the city of Ch Vehicle \#1 was going west on Pioneer Trl and about to turn south onto Bluff Creek Dr. Vehicle \#1 had a flashing yellow arrow. '

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Driver \#1 was N/B Audobon Rd., attempting to make a left turn onto Pioneer trail. Driver \#1 had a flashing yellow turn arrow. Three vehicle minor PD crash. All three vehicles were traveling NB Audubon Rd, then entered the right turn lane for EB Pionee Vehicles 1, 2, and 3 were stationary at the red light in the WB lane of Pioneer Trail waiting to continue WB across Audubon Rd ( Unit \#1 was traveling westbound on Pioneer Trail in the eastbound lane entering the Audubon Road intersection. Unit \#2 was Vehicle 2 traveling south on Audubon Rd crossing the intersection of Pioneer Trail. Vehicle 1 traveling north on Audubon Roac Vehicle \#1 was traveling southbound on Audubon Road at the intersection of Pioneer Trail. Vehicle \#2 was traveling northbour Driver \#1 was driving NB on Audubon Road and when approaching Pioneer Trail Driver \#2 ran the red light. Vehicles collided in Vehicle 1 was unable to stop for red light as it traveled north on Audubon Road. Vehicle 1 struck vehicle 2 crossing the interse Veh\#1 stated that she was distracted due to road construction and was trying to get to MNTH41. Was not sure where she was : Driver \#1 stated he was southbound on Audubon Rd just before the crash occurred. He was attempting to make a left hand turi Veh\#1 stated she was traveling SB Audubon and was making a right hand turn onto WB Pioneer Trl. Both vehicles entered the y

Ind saw Vehicle 1 laying on its top in the right south bound lane of Main St E. I saw vehicle 2 on the right shoulder of Village Way. I meet with Driver 2 elling westbound on Target Entrance to turn south onto Main Street and attempted to brake. The front of UNIT 2 struck the rear of UNIT 1. Driver of I it and the entrance road (No official name). Unit 2 was executing a right hand turn to travel northbound on Main St when Unit 2 stopped abruptly for uthbound on Main St. and was turning left into Target Entrance from the left turn lane. Unit 3 was stopped in the left turn lane of Target Entrance, av iven the clear to cross signal from the semaphore. Unit 1 initially did not cross the intersection due to a different vehicle was waiting to turn to go sou
mpting to make a left hand turn onto Main street. witness of the accident advised unit 1 ran a red light and struck unit 2 while the vehicle was attem
which was also pulling a trailer, with front end damage. I saw Unit 2 on the shoulder, parallel to the roadway, just east of Unit 1 . Driver 1 said he was d Sparrow Road and had a green light to continue through the intersection. Trittabaugh was driving a Ford DRW truck southbound on Sparrow Road. 1 ıw Rd made an illegal left turn causing V2 to slam on her brakes. V1 rear ended V2 because of this. V1 had minor damage to the rear bumper and V2 h

Jpon arrival, I observed a white Ford F250 (MN registration ETV521), unit 1, facing eastbound on Lyman Blvd in the right turn lane to travel southboun
the vehicle slid sideways and collided rear to rear with P2 in V2 who was slowing down at the stop light.
; traffic. Driver of Unit \#1 was following too close and rear-ended Unit \#2. Drive of Unit \#1 is at fault.No injuries to report.Both units sustained moderē at the intersection of Audubon Road and Lyman Boulevard in the city of Chanhassen. The driver of UNIT 1 advised they were entering the right hand 1 -hand turn onto Lyman Blvd but had to stop due to oncoming traffic. Driver of Unit \#1 was following to close and crashed into the rear of Unit \#2. Driv on Lyman Blvd and had the right of way. Unit 1 moved into the intersection to go SB on Audubon and was struck in the right front by the front of unit : 2d in a crash. The weather outside was blizzard like conditions with blowing snow and slippery snow/ice covered roadways. Tire tracks indicate that U। ge crash involving three vehicles. The driver of vehicle 1 advised that she was traveling east bound on Lyman Boulevard in the right hand lane of traffic. was westbound on Lyman Blvd. and was in the left turn lane for southbound Audubon Rd. Driver 1 stated she could not remember but believed she 1 Audubon Rd. and was in the turn lane for eastbound Lyman Blvd. Driver 1 stated she had stopped for traffic. Driver 1 stated that she thought she was ıdubon Rd. V/1 continued southbound through a flashing yellow semaphore and struck V/2 who was eastbound Lyman Blvd at Audubon Rd. V/1 and V, if Chanhassen. Unit \#1 stated the stop light at the intersection changed to yellow and she was slowing down to a stop. Unit \#2 was following behind L
; eastbound on Lyman Blvd in the left turn lane to go southbound on Audubon Road. The independent witness was behind Unit 2 in the left turn lane. I and on Lyman Blvd attempting to turn left and go south on Audubon Road. The driver of Unit 2 failed to yield the right away to Unit 1 and turned right ョd a solid green arrow to go southbound on Audubon Road. Unit 2 was travelling eastbound on Lyman Blvd to continue east. The driver of Unit 2 advi t. Unit 2 was traveling westbound on Lyman Blvd, turning southbound onto Audubon Rd. Unit 2 had a flashing yellow turn arrow. Unit 2 turned in front tbound on Lyman Boulevard and had a green traffic light going straight. Driver 1 stated that he did not see Unit 2 when he made a left hand turn on th 'B on Lyman and was turning left onto Audubon Road (South) and had a flashing yellow turn arrow - indicating all turning vehicles must yield to any or y of Chanhassen. Vehicle 1 (481XEX)was travelling westbound on Lyman Boulevard attempting to make a left hand turn to travel south on Audubon F ow arrow. Vehicle 2 was East on Lyman Blvd. Driver 1 stated he did not see Vehicle 2 until he entered intersection, and by then, it was too late to cha ad a flashing yellow left turn arrow, indicating that he would need to yield to oncoming traffic before turning. Driver 1 was advised of this. Driver 1 the ;hing yellow arrow semaphore. In the process of completing the southbound turn V/1 struck V/2 who was eastbound on Lyman Blvd at Audubon Rd. D id through the intersection. Unit 2 was traveling westbound on Lyman Blvd, turning southbound onto Audubon Rd. Unit 2 had a flashing yellow arrow : ith) when Unit 2 crashed into him. Unit 2 was traveling westbound on Lyman Blvd, turning southbound onto County Rd 15 . The driver of Unit 2 stated $\leqslant$ า. Vehicle 1 (430RTD)was driving north on Audubon Rd attempting to turn right in order to travel east on Lyman Boulevard. Driver 1 had a yield sign. ;ht turn lane. Vehicle 2 was the front car and V1 was the second car. V2 came to a stop (there is a partial merge lane for right-turning traffic and they $r$ ated both vehicles pulled just north of the intersection. I spoke to D1, who advised that they were both WB Lyman Blvd., and were preparing to turn si
raveling east bound on Lyman Blvd.The driver of vehicle 1 entered the left turn lane to turn onto Lake Hazeltine Dr. The driver of vehicle 1 had a blinkii
rs Blvd. Unit one then collided with Unit 2 causing Unit 2 to roll and end up on the NE corner of the intersection of Lyman Blvd and Powers Blvd. Unit :
\#2) stopped at the red flashing stop light as she approached.- She did see the driver of vehicle \#2 release the brake and move forward. - Anticipated tl icles had to stop for a red light and when the light turned green vehicle number on began moving forward and crashed into vehicle number two. Minı se Road. V1 and V2 collided at a right angle. V1 stated she was stopped at a red light and proceeded into the intersection when the light turned gree
nons onto Pioneer Trail in the city of Chaska, MN. Driver from vehicle \#1 stated that due to the road conditions she was unable to stop and caused th ver admitted he was traveling too fast during the turn, overcorrected, and struck the center median/curb causing significant damage to the driver's sic nd struck Driver \#2 who was westbound Pioneer trail and had a solid green light.
Target entrance onto EB Pioneer Trail. Vehicle 2 was stopped at the red light in the right of two left hand turn lanes for Target entrance to turn left on ehicle 1 was attempting to make a right hand turn facing a red light onto pioneer trail from Chaska Commons. Vehicle 1 drove directly into the side o
ng the rear bumper to crack/break. Driver \#2 stated he was not paying attention and hit the other car. No injuries were reported. nd on Pioneer Trail. Per the witnesses, Unit \#2 disobeyed a red traffic light and collided into the passenger side door of Unit \#1.
er \#1 had a yellow flashing arrow. Driver \#1 started to make the turn, Driver \#2 was westbound Pioneer Trail and traveling in a lane that can eith zuth on Hundertmark Rd across Pioneer Trl and entered the intersection when he was struck by unit 1.
ng Pioneer Trail, in the crosswalk, when he was struck by vehicle 1. He sustained bruising/scrapes to his elbow and he has pain in his lower back. He I ner and had to suddenly slam on the brakes to avoid V2 which was stopped at the light (The area of the crash has a slight curve to the right, but stoppt ;e truck and trailer made a right turn next to her. When the truck and trailer turned right the back end of the trailer swung out and scratched the rear 1

NTH 101 and was in the turn lane to go east on Pioneer Trail. Driver 1 stated the light turned yellow and he saw the vehicle across from him stopping I hill when he observed the stop light was green for his lane of traffic. Unit 2 entered the intersection and observed a westbound vehicle on Pioneer T I f Pioneer Trail and Great Plains Boulevard in the city of Chanhassen. It was reported UNIT 1 had gone off the roadway, on to the sidewalk and had stri
d in congested traffic on Pioneer Trl in front of V1. V1 rear-ended V2, which then rear-ended V3.Driver of V1 admitted she was taking a picture of the s vas heavy and moving slowly. Driver \#2 stated she observed the vehicles in front of her had been slowing to a stop. she slowed to a near stop when sh tigh School. V2 was WB on Pioneer Trl attempting to turn left into the same parking lot.Driver of V1 admitted she had a red light, ran the light, entered
thbound on Bluff Creek Blvd. through the intersection with Pioneer Trail. Unit \#2 had a green light and continued to travel northbound on Bluff Creek $!$ Trl approaching the intersection of Bluff Creek Dr./Pioneer Trl. Driver of Vehicle \#1 believed she could make the turn and had a yellow flashing arrov o turn green. There were two passengers in this vehicle, front right seat and right rear seat.Unit 2 was behind unit 1 and the driver, and only occupant uthbound Bluff Creek Dr. crossing Pioneer Trl. The Driver of V/1 advised that she had the flashing yellow arrow and failed to yield to V/2. V/2 corrobora anhassen. Upon arrival, I observed unit 1 (Minnesota registration 868UDW) facing southbound on Bluff Creek Drive, and unit 2 (Minnesota registratio Vehicle \#2 was going east on Pioneer Trl with a green light approaching the intersection. Vehicle \#1 tried to make the turn before Vehicle \#2 passed. V

Driver \#2 was S/B Audobon Rd. and had a solid green light. Driver \#1 stated he didn't see Driver \#2 until it was too late and struck the driver's door a $r$ Trail. V2 and V3 came to a stop in the right turn lane, yielding to EB Pioneer Trail traffic. V1 did not see V2 stopped in time and bumped into rear of $\backslash$ straight lane). Vehicle 1 was in the rear, vehicle 2 was in front of vehicle 1, and vehicle 3 was in front of vehicle 2. Driver of vehicle 1 stated she saw the making a left turn from southbound Audubon Road to eastbound Pioneer trail. Due to Unit \#1 being in the wrong lane the vehicles collided front to f 1 attempted to make a left hand turn onto Pioneer Trail. Vehicle 2 had green light. Vehicle 1 had flashing yellow arrow. Vehicle 1 failed to yield. No i רd Audubon Road at the intersection of Pioneer Trail, attempting to make a left hand turn to go westbound on Pioneer Trail. The two vehicles collided I the intersection. Vehicle \#1 has moderate damages to the front passenger side and vehicle \#2 has moderate disabling damages to the front drivers s ction of Audubon Road traveling west on Pioneer Trail. Driver of vehicle 1 claimed possible injury. Both vehicles towed. Icy, slippery, snowy conditor at until she saw the Pioneer Ridge Middle School on her right. Didn't see any cars and went to make a change in course and was struck by Veh \#2. Veh\# $n$ onto Pioneer Trail East. He slowed to make the turn and, entering into the intersection, struck the front of the northbound vehicle being driven by Dr ield/merge section of the turn lane but had a red light. They were clear to merge due to no on coming traffic so she honked at the vehicle in front of $h$

Road facing east. Vehicle 3 and 2 were stopped for red light. Vehicle 1 began moving forward striking vehicle 2, driver of vehicle 1 stated he was distr
and the witness who told me they were in the left turn lane, turning east onto Village Way from northbound Main St E. Driver 2 said the turn light on JNIT 2 advised icy road conditions did not allow him to brake without striking UNIT 1. No injuries were reported. No vehicles towed from scene. approaching traffic. Due to the abrupt stop, Unit 1 struck Unit 2 front-to-rear in the intersection causing minor damage to Unit 2 . No injuries were rer vaiting to turn on to Main St. Per the witness, who was northbound on Main St. in the left through lane, both he and Unit 1 were reaching the interse thbound on Main Street from Target Entrance. While Unit 1 was crossing the intersection in the crosswalk, Unit 2 (Unknown Vehicle Make/Model or s
pting to make a left hand turn. Both vehicles towed due to disabling damage. No one reported any injuries.
driving North on Main St E, the semaphore turned green and he proceeded into the intersection. As Unit 1 entered the intersection Unit 2 also entere「rittabaugh approached the intersection of County Road 10 and Sparrow Road and had a red light. Trittabaugh ran the redlight and continued southbc iad damage to front fender/driver side headlight. Both vehicles were drive able, no injuries and information was exchanged.
d on Great Plains Blvd.Unit 1 had moderate damage to the driver's side rear passenger door area and rear tire area, but appeared drivable.A gray Merc
ste damage and were able to drive from scene.
turn lane to turn eastbound onto Lyman Boulevard from Audubon Boulevard when they observed another vehicle approaching eastbound from the w 'er of Unit \#1 is at fault.No injuries to report.Both Units drove from the scene with minor damage.
2. Driver of unit 2 sustained minor injuries, was evaluated by medics and refused transport. Passenger of unit 1 advised he was sore but declined any nit 1 was northbound on Audubon Road and in the right turn lane to attempt to go eastbound on Lyman Boulevard. Northbound Audubon Road is tra' The driver of vehicle 1 advised that she had a green light at the intersection of Lyman Boulevard and Audubon Road. The driver of vehicle 1 stated th nad the flashing yellow yield light to turn left. Driver 1 stated she thought it was clear to turn left and entered the intersection. Driver 1 stated she did ; clear to go and began to pull out into the lane of traffic, but observed a vehicle approaching so she stopped. Driver 1 stated that when she stopped sl 12 sustained heavy front end damage. There were no injuries reported in $\mathrm{V} / 1$ however the driver of $\mathrm{V} / 2$ was transported to the hospital for treatment. Init \#1 and did not stop in time and rear ended Unit \#1. Unit \#2 was towed by Shakopee Towing due to disabling front end damage. The driver of Unit

Jnit 1 ran the red light at the intersection and collided with Unit 2 who was attempting to turn left. The driver of Unit 1 told the Chaska Officer that she in front of him according to the driver of Unit 1 and an independent witness. Both vehicles suffered severe damage and were towed from the scene b) ised she had a solid green light. Unit 1 entered the intersection and the front passenger side struck the front of Unit 2 . Both parties declined medical ; t of unit 1, causing the crash. Unit 1 had the right of way.The driver of unit 2 was issued a citation for failure to yield. Both vehicles were towed from th e flashing yellow light. He struck unit 2 who was passing through the intersection on a green light. There was moderate damage to both vehicles and coming vehicles. Driver of unit 2 (US Mail Truck) admitted he did not see unit 1 and both vehicles collided in the intersection causing moderate dama zoad. Vehicle 2 ( 043 KFH ) was travelling eastbound on Lyman Boulevard and had a green light. Vehicle 2 was struck by vehicle 1 while vehicle 1 was a nge course. Vehicles collided as Vehicle 2 was travelling through intersection and vehicle 1 was making left hand turn. driver 1 cited for failure to yielc n changed his story and stated that he instead had a sold green left turn arrow. Unit 1 turned and was struck by Unit 2. Moderate disabling damage cai ue to the collision, $\mathrm{V} / 2$ reportedly rolled three times before coming to rest on the south side of Lyman Blvd, east of Audubon Rd. Both the driver of V/: and turned in front of Unit 1, causing a crash. Both vehicles had severe front end damage, requiring to be towed from the scene. The driver of Unit 1 re ;he had a yellow flashing arrow and thought she saw Unit 1 signaling to turn southbound, so she began turning. The driver of Unit 2 stated she realized Vehicle 2 ( 967 WUD) was travelling east on Lyman Boulevard and had a green light. Vehicle 1 struck vehicle 2 while attempting to merge onto Lyman ave a yield sign) prior to turning onto Lyman Blvd. V1 driver stated she saw V2 brake, however, she could not brake in time and crashed into the rear ( outh on Audubon RdS, in the left turn lane. D1 advised that he had to stop, in order to yield to oncoming traffic, and that he was rear ended by D2/V2
ng yellow arrow. The driver of vehicle 2 had a green light and was continuing east bound on Lyman Blvd. The driver of vehicle 1 turned left and failed ts

1 sustained heavy frontend damage causing the vehicle to be completely disabled. Unit 2 sustained heavy driver side damage cause the vehicle to be (

าe vehicle would move out of the way. Instead, Vehicle \#2 stopped again at the intersection.- Crashed into the rear of the vehicle as it was stopped at t or damage. No injuries. Neither vehicle towed from the scene.
n. V2 stated she thought her light was green but wasnt sure.
e crash to occur. No one involved in the crash reported any injuries. Driver from vehicle \#2 stated she was attempting to make a right hand turn from de front tire. Tow requested due to disabling damage. No injuries. State accident report completed.
to WB Pioneer Trail. While V1 was taking a sharp right turn, the driver's side rear of the trailer swung into V2's lane striking the $\mathrm{p} / \mathrm{s}$ rear. Accident excl $f$ vehicle 2 in the inside lane of pioneer trail. No injuries. Driver of veh. 1 cited.
er turn right for northbound Hundertmark Rd or continue westbound Pioneer Trail. Driver \#1 thought Driver \#2 was going to make the turn so proce
has a previously scheduled doctor appointment later today and will have his injuries assessed at that time. The witness stated he observed the crash 1 きd traffic is clearly visible from a long distance on approach allowing vehicles proper time to brake). Driver of V1 stated he was not paying attention. Dr quarter pane of the Impala.No injuries reportedNo tows needed
so he entered into the intersection. Driver 1 stated as he entered the intersection, he saw Unit 2 enter the intersection and could not stop to avoid the rl. also entering the intersection. Unit 2 attempted to avoid Unit 1 but was not successful. Unit 2 was struck in the front right corner and then along th ıck the cross walk activation post. I arrived on scene and observed UNIT 1 on the northeast corner of the intersection with moderate damage to the fr
unrise with her phone when the crash occurred. Two passengers in the vehicle also stated driver of V1 was on her phone taking a picture when the cra e was struck from behind by vehicle \#2. Photos of the crash were taken. No citations were issued.
the intersection and struck V2.Driver of V2 stated she was turning left on a green left turn arrow when V1 suddenly entered the intersection and struc

Blvd. Unit \#1 had a red light and was traveling the full speed limit of 50mph when it entered the intersection of Bluff Creek Blvd /Pioneer Trail. The dr , while Vehicle \#2 had a green light. Driver of Vehicle \#1 turned and Vehicle \#2 could not avoid hitting Vehicle \#1 due to the weather conditions and । :, advised she thought the light turned green and then her foot slipped off the brake causing the front of her vehicle to strike the rear of unit 1 . Both vi ited this statement and advised she had a green semaphore. $\mathrm{V} / 1$ sustained minor front-end damage and did not need to be towed from the area. $\mathrm{V} / 2 \mathrm{~s}$ n 805 MWC ) up on the curb in the eastbound lane of traffic on Pioneer Trail.l spoke to the driver and front seat passenger of unit 1 . The driver and pas 'ehicle \#2 hit Vehicle \#1 on the rear passenger side causing damage to the front passenger side of Vehicle \#2. Vehicle \#1 did not stop and left the scen
rea of Driver \#2's vehicle. Driver \#1 was cited for Fail to Yield Right of Way.
12. V2 then bumped into V3. No injuries. Minor damage to front of V1. Minor damage to front and rear of V2. Very minor damage to rear of V3. State left turn arrow for WB to SB traffic turn green, so she thought she the straight lane also turned green (the light for WB traffic in the straight lane was s ront.
njuries. Both towed.
I as vehicle \#1 was going southbound on Audubon and vehicle \#2 was attempting to turn left onto Pioneer Trail from Audubon Road. Both drives state ide and air bag deployment. Driver \#2 stated that she wasn't able to stop in time for the red light and that her brakes weren't functioning. Witness sta 1 s .
t2 stated was traveling SB Aububon Rd headed to the Chaska Dog park. Observed veh \#1 was in the left hand turn lane for Pioneer Trl. Veh \#1 then sud -iver \#2. Driver \#1 stated he did have the right of way as the semaphore indicated a green arrow for his lane of traffic.Driver \#2 stated she was traveling er to go. The vehicle started moving and she looked at EB traffic again to make sure she was clear. As she started to go she rear ended veh\#2.Veh\#2 we
acted with balloons and didn't see the other vehicles were still stopped. No injuries claimed.
the semaphore was green and she proceeded to turn into the intersection, when she saw Driver 1 entering the intersection and Driver 2's left front m Jorted in this incident.
:ction and had a red stop light. Unit 1 continued into the intersection, striking Unit 2 as it turned left in front of Unit 1. The Unit 2 driver advised she $r$ driver information) did not see Unit 1 and struck Unit 1 by running over her foot. Unit 2 stopped and asked Unit 1 if she had any injuries. Unit 1 stated
:d the intersection, from the west and Unit 1 and Unit 2 collided in the intersection. Unit 1 complained of upper body pain and I requested Ridgeview und hitting Valentin's vehicle on the front passenger side. Trittanbaugh stated that he was not on his phone but had a lot on his mind and was zoning
zedes-Benz (MN registration 033XPJ), unit 2, was crashed into unit 1 with airbags deployed.A gray Chevrolet Traverse (MN registration DSJ210), unit 3,
'estbound side of the intersection. The driver of UNIT 1 advised they stopped because they believed the other vehicle had a green light. The driver of 1
medical attention. The driver of unit 1 was cited for failing to yield while turning left on a flashing yellow light. Both vehs were towed due to disabling d veled at a downhill angle. It appears Unit 1 was unable to stop and struck a snow embankment that was on a concrete island. Unit 1 traveled through at the driver of vehicle 3 made a left turn from Lyman Boulevard onto Audubon Road. The driver of vehicle 1 advised that she could not stop her vehir not see the other car until it was too late. Unit 2 was eastbound on Lyman Blvd. Driver 2 stated he had the green light to proceed through the inters าe was struck by Vehicle 2. Driver 2 stated she was pulling into the turn lane for eastbound Lyman Blvd. on northbound Audubon Rd. Driver 2 stated s Both vehicles were towed by Shakopee towing due to the damage. Both drivers received a business card with the ICR on it. A information exchange is \#2 stated he was unable to stop in time and rear ended Unit \#1. Neither driver was able to provide an estimated speed that Unit \#2 was traveling wh
$\geq$ was not sure what color the light was when she crossed into the interseciton. The driver of Unit 1 also told the Chaska Officer on scene that she , Shakopee Towing. The driver of Unit 2 was transported by ambulance to a hospital in New Prague. The driver of Unit 1 reported he was really stiff/so attention at scene. Both vehicles were towed by Shakopee Towing. No citations were issued
e scene by Shakopee Towing. Neither driver reported any injuries.
were driven from the scene. No citations or injuries reported for this incident.
age to both. Driver of unit 1 was transported by ambulance for possible injuries and the driver of unit 2 advised he was sore but declined medical atte ttempting to make a left turn. Both drivers were offered to be seen by Ridgeview paramedics. Driver 1 was seen by paramedics and cleared by paran $\downarrow$ while making a left turn. Driver 2 was cited for expired POI (2018).
used to the passenger side of Unit 1, which was towed from the scene. Driver 1 reported no injuries. Driver 1 was issued and mailed a citation for failu $L$ and driver of $V / 2$ were assessed by Ridgeview paramedics and found to be ok. No injuries were sustained. $V / 1$ sustained heavy front end damage and ported possible injuries to his head and shoulder. The driver was examined by paramedics on scene and refused transport.A citation as issued to the $d$ I too late that Unit 1 was driving straight.The driver of Unit 1 denied having his turn signal on. The driver stated he was driving home, so he was not col Blvd. No injuries to either drivers. Moderate damage to vehicle 1 and minor damage to vehicle 2. Driver of vehicle 1 given a citation for failure to yir of his vehicle. V1 had substantial damage, however, she lived close and opted to try and drive her vehicle to her address. No citations were issued as a . I then spoke to D2, who reiterated the above information. I observed that there was minor rear end damage to V1, and very minor front end damage

כ yield the right of way to the driver of vehicle 2. Vehicle 2 struck vehicle 1 head on as vehicle 1 turned into oncoming traffic on Lyman Blvd.The driver
zompletely disabled. Both vehicles were towed by Shakopee towing. No drivers were transported for medical care.
:he intersection.Driver \#2 stated:- Was stopped at the intersection just before the crash occurred. - Was struck from behind as he was stopped.
a stopped position. when she began to move her vehicle was stuck from behind. she was not injured in the crash.

רange form and state accident report completed.
?ded through the intersection and struck Driver \#2's driver side door area. Both driver's statement's were consistent.
from the Wing's Financial parking lot. He could see the driver of vehicle 1 look to her left as she was turning, he did not see her look to her right. Veh iver of V1 stated he was adamant the light for SB traffic was green. Driver of V1 stated he was going 35-40MPH before the crash, but braked and strucl

2 crash. Driver 2 stated that he was northbound on MNTH 101 and saw the vehicle in front of him stop quickly for the yellow/red light and he could nc e right side. Unit 2 ended up in the ditch on the southeast corner of the intersection. Unit 1 was westbound Pioneer Trl. and the driver did not think sl ont bumper, front quarter panels on the driver and passenger sides. I observed the front driver side tire to be flat. I observed the cross walk activatiol
ish occurred. Driver of V2 stated he was stopped on EB Pioneer Trl in the line of traffic. In the rearview mirror he observed V1 was not slowing down o। :k her vehicle.No injuries reported at the crash scene.
-iver of Unit \#2 and the passenger in Unit \#2 stated they noticed Unit \#1 enter the intersection at the last second and did not have a chance to react. F road conditions. Vehicle \#2 hit Vehicle \#1 on the passenger side rear. Vehicle \#2 had damage to front passenger side. Both driver's denied medical att ehicles sustained minor, mainly cosmetic, damage. No injuries to any of the occupants of either vehicle.
;ustained moderate drivers side damage and was towed from the area due to the lack of insurance of the vehicle. The driver of $\mathrm{V} / 2$ admitted to not ha' senger of unit 1 both advised that they had been traveling southbound on Bluff Creek Drive. The driver and passenger of unit 1 stated that the traffic । e of the accident. Vehicle \#1 was located by Shakopee PD and driver was identified. Vehicle \#2 had a private tow on the way and no injuries to both d
accident report completed.
till red). She started moving and struck the rear of vehicle 2, which then struck the rear of vehicle 3. Driver of V1 admitted fault in the crash.No injuries
d they had green lights. Unable to determine any contributing factors. Both drivers complained of minor injuries due to the seatbelts. ited that driver \#1 had the green light
denly pulled out in front of her and she was unable to stop before hitting vehicle. All happened so fas.
〕 northbound on Audubon Rd just before the crash occurred. She was entering into the intersection when she realized a vehicle, in the opposing lane o as attempting to make a right turn onto WB Pioneer Trl. Is from Illinos and unfamiliar with the area/intersection. Was stopped as he could see oncomin
reet the rear left wheel of Driver 1's vehicle. Driver 1's vehicle then flipped over on its top. The witness stated Driver 1 was approaching the intersectic
iad a green turn signal. After the initial crash between Units 1 and 2, Unit 2 veered into the front of Unit 3, causing minor damages to it that she did not and Unit 2 left the area. Later, Unit 1 felt injury to her foot and was transported by her parents to the 212 Medical Center in Chaska.

EMS be dispatched to the scene. I then spoke to Driver 2 who told me he was driving east on County RD 10, and was mind was on other thoughts thar ; out and admitted to running the red light. The passenger (Pena-Romero) in Valentin's car was transported by ambulance to Ridgeview. Trittanbaugh
was facing eastbound on Lyman Blvd with airbags deployed and heavy front end damage. The driver of unit 1 advised he was stopped at the red light a.

JNIT 1 stated they were then rear-ended by UNIT 2. The driver of UNIT 2 stated the driver of UNIT 1 "slammed" on their brakes and the driver of UNIT amage.
the snowbank and in the process ran over two signs ( 9 dot sign and marker sign). The vehicle was ultimately located on the north side of the intersect cle in time, and the front end of vehicle 1 struck the passenger side of vehicle 3 . The driver of vehicle 2 advised that he was stopped at the red light faci sction and entered into the intersection. Driver 2 stated at the last second Unit 1 turned in front of him and he could not avoid the crash. Unit 1 and 2 he never saw the other vehicle until she was too close to avoid the crash. Vehicle 2 struck Vehicle 1 in the rear causing moderate damage to both vehi being mailed out to them due to technological issues during the crash.
en it struck Unit \#1. Both drivers stated they had no injuries and did not need to be checked by paramedics. No citations were issued to either driver. I is
jeen working all night and she appeared to be sleepy/drowsy. The impact of the crash caused severe damage to both vehicles and they were towed frc re due to the accident and would possibly see medical care at a later time. The driver of Unit 2 will be mailed a citation for failure to yield the right aw:
!ntion. Driver of unit 2 was cited for failing to yield right of way to unit 1
nedics with no transport. Driver 2 was seen and transported to a hospital by Ridgeview. Both vehicles were towed due to disabling damage. Driver 2
re to yield. Unit 2 as traveling eastbound on Lyman Blvd approaching Audubon Road. Driver 2 advised that he had a green light indicating he could driv I V/1 was a total loss with damage over the entirety of the vehicle. Both vehicles were towed by Shakopee Towing. An citation was mailed to the driver river of Unit 2 for failure to yield right of way.
nfused about where he was going and did not enter the turn lane, then decide to continue straight.Both parties refused medical treatment on scene al eld.
result of this crash and there were no injuries.
to V2. Both drivers received info exchange and then drove from the scene.
of vehicle 1 was cited for failure to yield right of way (Ecite 100019000797). The driver of vehicle 1 was seen by Ridgeview paramedics at the scene of
icle 1 was traveling approximately 10 mph when it struck the pedestrian, causing him to roll onto and then off the hood of the vehicle. I observed har < V2 at approximately 15MPH (the area speed limit is 30MPH). Driver of V1 denied being distracted by anything inside the vehicle, only saying he wasn
st stop to avoid the crash. Driver 2 stated he moved into the turn lane to avoid the crash and proceeded through the intersection. Driver 2 stated he e he had a red light. Driver of Unit 1 stated Unit 2 struck her vehicle in the intersection. A witness that was stopped at the intersection was contacted ak n post was struck and was on the ground, inoperable. Driver of UNIT 1 advised he was travelling northbound on Great Plains Boulevard when he begal
$r$ attempting to stop. V1 struck the rear of his vehicle, which caused him to rear end V3 in front of him.Driver of V3 stated he was stopped on EB Pioner
ront and side airbags deployed in Unit \#2. The driver of Unit \#1 stated he "was lost in thought" while driving and did not notice the red light until the I ention and vehicles were driven away from the scene. Information was exchanged prior to Deputy arriving on scene.
ving any insurance on the vehicle. Driver of $\mathrm{V} / 1$ was cited for fail to yield and Driver of $\mathrm{V} . / 2$ was cited for No insurance.
control signal for southbound Bluff Creek Drive traffic was green, so the driver of unit 1 stated that she proceeded through the intersection. The driver rivers.
; and all vehicles were able to be driven from the scene.

If traffic, was turning directly in front of her. She served to the right to avoid the collision but still struck the on-coming vehicle. the collision forced her g traffic coming from the east. Was then hit from behind while stopped.

כn and looked to be going fast. The witness saw the left turn semaphore turn green and Driver 2 proceed into the intersection. The witness said Drivel

No wrongdoing by either party in accident.

1 his driving. Driver 2 said he did not notice the semaphore had turned red prior to entering the intersection. Unit 2 then collided with Unit 1 . The witr was cited for failure to stop at stoplight. Both vehicles towed by Colony Plaza
t Lyman Blvd/Great Plains Blvd waiting to make a right turn onto southbound Great Plains Blvd. The driver of unit 1 stated northbound and southboun

- 2 did not have enough time to react to the abrupt braking. The rear of UNIT 1 was struck by the front of UNIT 2. Damage was minor to both UNIT 1 a
:ion blocking northbound traffic on Audubon Road
ing north bound in the left turn lane to turn onto Lyman Boulevard from Audubon Road. The driver of vehicle 2 advised that the driver of vehicle 3 tur both sustained severe damage to the fronts of the vehicles and were towed by Shakopee Towing. Driver 1 was transported to St. Francis by Ridgeviev icles. Vehicle 1 was driven from the scene with damage to the rear and driver's side rear panel. Vehicle 2 was towed by Shakopee Towing with damag
ssued a verbal warning to the Driver of Unit \#2 for failure to drive with due care.

כm the scene by Shakopee Towing. The driver of Unit 1 was transported to Methodist Hospital by Ridgeview Ambulance. The driver of Unit 2 had mino ョy to oncoming traffic when turning left.
was cited for failure to yield 169.20.2.
e through the intersection. Driver 2 stated that Unit 1 turned in front of him and he was unable to stop. Moderate damaged caused to the front of Uni - of $\mathrm{V} / 1$ for failure to yield right of way.
nd advised no injuries. Unit 1 was towed by Shakopee Towing due to severe front end damage, while Unit 2 was driven from the scene.A County road i
the crash and was released. The driver of vehicle 2 was not injured.Vehicle 1 and vehicle 2 were towed by Shakopee Towing due to moderate disabling
idprints on the front hood area of the vehicle. I photographed the vehicle and right elbow of the pedestrian, those photos were later uploaded into $R$ 't paying attention. Driver of V 2 stated he was stopped at the red light for SB traffic. There was another vehicle stopped in front of him. The light was rt
:ntered into the intersection and saw the other vehicle and could not avoid the crash. Witness is the driver that slowed/stopped for the yellow/red ligl jout what she saw. The witness stated east and west bound traffic on Pioneer Trl. had a red light and that she saw the northbound light change to gre n to slide on the snowy roadway and was unable to control UNIT 1. Driver advised he slid onto the sidewalk and struck the cross walk activation post.
r Trl in the line of traffic. He stated he heard a bang, then felt V2 hit his car. V1 towed due to disabling damage. Driver of V1 transported via ambulanc
last second. The driver of Unit \#1 stated he was traveling the full posted speed limit of 50 mph when he entered the intersection. Front airbags in Unit

- of unit 1 stated that this is when unit 2 proceeded through the intersection traveling eastbound on Pioneer Trail. Unit 1 and unit 2 collided, and unit 1
vehicle into the front of vehicle/ driver \#3. Vehicle/ driver \#3 was stopped at the red light in the westbound lane of Pioneer Trail. The driver of the ver
$r 2$ then collided with Driver 1 in the intersection. I then spoke to Driver 1 who told me he was transporting a passenger for fare. Driver 1 said
less corroborated the Driver 1's statement of events. Driver 1 was transported to Ridgeview Medical Center for evaluation, Run \#3717. Both vehicle $n$

Id traffic on Great Plains Blvd had a green light, and unit 2 was traveling southbound on Great Plains Blvd when unit 3 made a left turn from northb
nd UNIT 2. The drivers of both UNITS did not report any injury and declined medical attention. The front seat passenger of UNIT 1 reported not feeling
ned in front of the driver of vehicle 1. The driver of vehicle 2 stated that when vehicle 1 hit vehicle 3 , vehicle 3 struck vehicle 2 on th $v$ Ambulance. Driver 1 cited with failure to yield right of way. Road conditions were dry with clear skies.
e to the passenger side front. Driver 2 stated she had knee pain from the crash but refused ambulance. Driver 2 was cited for Failure to Drive with
ir red marks/abrasions to his knees from the impact of the airbag but was not transported to the hospital. I issued a citation to the driver of Unit 1
t 2 , which was towed from the scene. Driver 2 reported neck/back pain, along with numbing sensation in his arm. Driver 2 was transported to the ndicator sign was damaged during this crash.
front end damage. The front airbags of vehicle 2 did deploy.

## MS

ed and had been red for several seconds. Suddenly he was struck by V1 from behind. Driver of V1 cited for inattentive driving. Both vehicle

七t. Witness stated that he saw Unit 2 go around him and enter into the intersection in the right turn lane. Both vehicles towed by Shakopee To en when Unit 1 entered the intersection from the east. Unit 1 suffered damage to the left front corner and along the left side. Both vehicls Driver of UNIT 1 did not show any signs of impairment and contributed the crash to the road conditions. Driver of UNIT 1 did not report any injuries al
e to the hospital for evaluation.
\#1 were deployed.The passenger in Unit \#2 had minor cuts/scratches to her right arm from the side airbags being deployed. T
sustained heavy front end damage which caused the front airbags to deploy. The passenger of unit 1 complained of back and chest $p$
ıicle \#3 stated he had enough time at the intersection to see that the northbound lane of Audubon Rd did have a green light at the
s well and that their hea
nd ha

Chanhassen is a Community for Life - Providing for Today and Planning for Tomorrow

March 24, 2022
Lyndon Robjent, PE
Public Works Director, County Engineer
Carver County Public Works
11360 Highway 212, Suite 1
Cologne, MN 55322
Dear Mr. Robjent,
The City of Chanhassen is pleased to support Carver County's application for the Traffic Signal Technologies and ITS Corridor Enhancements project to the Metropolitan Council's 2022 Regional Solicitation for federal transportation funding. The project will improve signal technologies at County-owned intersections and locations along three primary corridors including County State Aid Highway (CSAH) 18 (Lyman Blvd.) in the City of Chanhassen.

The grant application is to upgrade obsolete and add to existing traffic management and intelligent transportation systems (ITS) throughout Carver County, with a focus on three corridors: CSAH 18 (Lyman Blvd.), CSAH 14 (Pioneer Trail), and CSAH 59 (Main St.). The proposed project scope includes: a new Advanced Traffic Management System (ATMS); central signal system software with expanded remote access and operations; upgraded traffic signal controllers and cabinets; conflict monitors; upgraded timing plans, coordination, and video detection systems; ITS devices including CCTV cameras; and communications and fiber optic cable upgrades and connections.

Project benefits include creating a more responsive, efficient, future-minded, and smart traffic control system. The project will link and improve coordination, operation, and interoperability of County-owned signals and with other jurisdictions, reduce traffic-related crashes, minimize travel time, and better support incident management and special events.

The proposed project is endorsed by the City of Chanhassen, and we are supportive of the County's application for the Traffic Signal Technologies and ITS Corridor Enhancements project to the Metropolitan Council's 2022 Regional Solicitation funding program.


Charlie Howley, PE, LEED AP
Public Works Director/City Engineer


RBTN Alignments
Tier 1
Tier 2
Planned Transitway Alignments

Designated Truck Routes
——Designated Truck Routes Signalized Intersections (Carver County Jurisdiction)

$\square$ Population 65 and older (top 5 census tracts by \#) Population younger than 18 (top 5 census tracts by \#)


Non-white population (top 5 census tracts by \#) Households with income
$\square$ less than $\$ 25,000$ (top 5 census tracts by \#)
$\square$ Cities
Signalized IntersectionsISignalized Intersections (Carver County Jurisdiction) Project Corridors
$\square$

## Functional

 ClassificationOther
Population with a disability

ENGINEERS
Planners
Designers

# Memorandum 

To: Kate Miner, Carver County
From: Nick Erpelding, P.E., PTOE
Mark Gallagher AICP
Date: April 29,2015
Subject: Carver County Traffic Signal Communication Plan

## Introduction

In 2012, Carver County was nearing completion of a large-scale fiber-optic infrastructure deployment to connect county administrative facilities, libraries and a number of other users with a robust, high capacity network. The network deployment brought fiber lines close to a number of existing signalized intersections. The County approached SRF for help in determining how to take advantage of the fiber to improve the monitoring and management capabilities of the existing county signal system, and to take a larger look at how the initial buildout could be expanded in the future to connect all existing and anticipated County signals and roundabouts.

This memo includes:

- A description of Carver County's existing traffic signal system.
- Background on the reasons for moving toward use of an Advanced Traffic Management System for traffic signal management and operations.
- Discussion on the method used to determine which future intersections to include in the communications plan.
- Vision for a completed signal network with detailed recommendations and cost estimates.


## Carver County Traffic Signal System Overview

Carver County's traffic signal system consists of roughly 25 intersections, mostly located in the eastern half of the County, as shown in Figure 1. The locations of adjacent signalized intersections owned/operated by MnDOT are also noted.


The overall system includes a mix of grouped and standalone intersections, as depicted in Figure 1.
The local signal controllers within the Waconia (Main Street) group are interconnected to each other with twisted pair copper to form what are known as a closed-loop system, with basic intersection operations handled by the local signal controllers and coordinated operation carried out via an onstreet master. No connection has yet been established from the County's Traffic Operations Center (TOC) at the Public Works facility in Cologne to the on-street masters for management (uploading and downloading) of timing plans and viewing of system and intersection status.

The local signal controllers within the CSAH 14 and CSAH 18 groups are not currently interconnected, though fiber optic cable has been installed to each of the cabinets. Coordinated signal operations for these intersections are carried out via time-based coordination.

## Need for Advanced Traffic Management System

Due to the availability of affordable industrial networking hardware and the poor reliability of dialup and serial-based communications, the closed loop / on-street master architecture is nearing the end of its useful service life. Many agencies in positions similar to the County are converting from a series of connected closed-loop systems to a single centralized network connecting all of their signals.

A system used to centrally manage various components of transportation infrastructure is referred to as an Advanced Traffic Management System, or ATMS. Management and operation of traffic signals is one of many functions that an ATMS can provide for an agency.

## Identification of Future Traffic Control Locations

Constructing the underlying network of communications links needed to support an ATMS is often the most difficult, if not costly, part of deploying a new ATMS installation. In order to costeffectively provide long term benefit, planning for which intersections to include is an important first step in the deployment of an ATMS system.

To determine which existing and future intersections to include in Carver County's network, an assessment of the transportation system was completed based on the Carver County Capital Improvement Plan, input from County staff, forecast volumes and anticipated roadway reconstructions or alignments. This approach allowed objective measures, such as traffic volumes and programmed construction to be considered along with measures that required engineering judgment, such as likely land use patterns and roadway changes that are anticipated but not yet programmed.

Each intersection was assigned a type (signal, roundabout, or TBD) and a priority value. The intersections were then entered into a database that allowed for a systematic approach to planning interconnections according to the process described in the following section.

Existing uncontrolled and anticipated future intersections were subjectively given a priority score of Low, Medium, or High for each of these measures. The intent was to identify intersections which would likely require a higher traffic control device (roundabout or traffic signal) to manage traffic. Intersections meeting the High Priority conditions for a given measure are more likely to need a traffic control device sooner. Intersections matching the Low Priority categories would require a significant increase in traffic or significant roadway improvements before meeting warrants for a signal or roundabout. Table 2, below, summarizes the measures used in the analysis and the criteria used to prioritize each intersection for each measure.

Table 1. Priority Criteria

| Measure | Low Priority | Medium Priority | High Priority |
| :--- | :---: | :---: | :---: |
| Existing Volumes | Low Volumes | Moderate volumes near, but <br> not likely meeting warrants | Volumes nearly or <br> already meeting traffic <br> control warrant |
| Forecast Volumes | Those just meeting <br> thresholds | Solidly within thresholds for <br> traffic control device | Those significantly above <br> thresholds |
| Roadway Network | Requires new roadway <br> or significant upgrade; <br> not planned | Roadway network upgrades <br> being planned | Roadway network already <br> exists |
| Surrounding Land Use | No immediate <br> development pending | Near developing or <br> developed areas | Within or on the edge of <br> developing or developed <br> areas |
| Previous, Existing, or <br> Pending Project | No project currently <br> planned in area | Projects being considered <br> or needed in future | Area has already been <br> studied with roadway / <br> traffic control upgrades |

## Communication Plan Development

Once the set of intersections to include in the network had been determined, the following process was used to determine how best to connect each intersection. This process used Geographic Information System (GIS) data processing to ensure that results were repeatable, and that different assumptions about the devices to be connected could be tested and the effect on overall costs determined. Based on feedback from County staff, fiber optic connections are assumed to all traffic control devices. During final system design, other media (such as copper twisted pair, co-axial or wireless connections) may be evaluated to optimize the cost/performance tradeoffs.

The plan development process proceeded in a stepwise fashion as follows:

1. Identify and map all existing signals, interconnect and fiber optic infrastructure (see Figure 2).
2. Identify and map possible future traffic control devices.
3. Assign priorities based on the method described in the previous section.
4. Select only the medium- and high-priority traffic control locations.
5. Identify County rights-of-way, assuming that new fiber installations will follow these paths.
6. Calculate the shortest distance from each traffic control device, following County right-ofway, to the nearest available fiber connection point.
7. For each segment identified in the previous step, calculate the distance and associate it with the appropriate traffic control device.
8. Using a planning estimate for cost per foot, calculate the cost for each segment of planned fiber.
9. Map all of the new segments and review network geography for consistency.
10. Create simple overview schematic plan showing the connections between traffic control devices and the fiber optic infrastructure.
11. Create detailed (near design level) schematics. Include detail on type of interconnect media, which fibers used, handholes, splice vaults.

The results of steps 9 and 10 (overview map and overview schematic) are shown in Figures 3 and 4 below. A detailed, full-size overview map is provided in Appendix A. The results of step 11 (detailed schematics) are provided in Appendix B.


Existing Traffic Signals and Fiber Optic Network
Traffic Signal Communication Plan
Figure 2


1. Assumes splicing to trunk fiber line only at existing splice vaults.
2. Assumes midway splicing on laterals is permitted.




## Cost Estimate

## Communications Links

A planning level estimate of the cost to add each intersection to the overall communications network was completed. This estimate includes hardware installation costs related to communication lines (in general, fiber optic cable), Ethernet switches, and design and integration costs. A detailed estimate of the cost to connect a typical intersection is provided in Table 2.

Table 2. Site Equipment Cost Estimate Assumptions

| Item | Unit | Qty. per <br> Site | Cost per <br> Unit | Cost per Site |
| :--- | ---: | ---: | ---: | ---: |
| Fiber optic splice | Each | 4 | $\$ 45$ | $\$ 180$ |
| Fiber optic splice closure | Each | 1 | $\$ 510$ | $\$ 510$ |
| Fiber optic termination panel | Each | 1 | $\$ 500$ | $\$ 500$ |
| Splice Vault | Each | 1 | $\$ 1,500$ | $\$ 1,500$ |
| Pull Box | Each | Varies | $\$ 950$ | Varies |
| Ethernet switches | Each | 1 | $\$ 1,600$ | $\$ 1600$ (incl. w/ new cabinets) |
| Ethernet switch power supply | Each | 1 | $\$ 195$ | $\$ 195$ |
| Fiber optic interfaces for switch | Each | 2 | $\$ 650$ | $\$ 1,300$ |

These costs were aggregated with the cost per foot of fiber optic cable ( $\$ 4.10$ per foot for 2-inch conduit and $\$ 2.35$ per foot for 96 -strand fiber optic cable) to produce and overall planning estimate of $\$ 11.50$ per foot for fiber optics, including all splicing, hardware, electronics and installation. This $\$ 11.50$ per foot price was used to generate a planning level cost estimate for each segment, discussed in Signal Group Estimates section below.

Prior to procuring hardware based on the following recommendations, a detailed investigation of intended operations and the capabilities of specific products should be performed.

## Signal Group Estimates

For purposes of presentation, traffic control devices were logically grouped into "chains" of devices that connect to a single point on the fiber optic backbone. This allows for more detailed cost estimates, and groups signals that are likely to be deployed within a similar time frame. In total there were 21 groups in the county, as shown in Figure 4. (Note: existing signals shown in bold.)

Table 3. Interconnect Cost Estimates

| Group Name | Group <br> Number | Intersection Numbers | Fiber Length (feet) | Cost Per Group |
| :---: | :---: | :---: | :---: | :---: |
| Highway 25 Watertown | 1 | 145, 148, 149 | 7,600 | \$88,000 |
| Territorial St E | 2 | 191, 190 | 1,000 | \$12,000 |
| County Road 20 | 3 | 188, 159, 160 | 9,000 | \$104,000 |
| County Road 10 Watertown | 4 | 146, 157, 158 | 6,400 | \$73,000 |
| County Road 10 Waconia | 5 | 155, 156, 162, 127 | 12,800 | \$147,000 |
| Highway 284 | 6 | 121, 122, 123, 124, 125 | 13,400 | \$154,000 |
| Main St - Waconia | 7 | $53,54,55,56,114,163,111,113,115$ | 14,400 | \$165,000 |
| County Road 10 Laketown | 8 | 105, 106, 107, 108, 166 | 21,900 | \$252,000 |
| County Road 11 Victoria | 9 | 79, 84, 165, 164, 78, 77, 82, 83 | 40,500 | \$466,000 |
| W 82nd St and McKnight Rd | 10 | 76 | 5,500 | \$63,000 |
| County Road 16 | 11 | 173, 184, 185 | 19,200 | \$221,000 |
| County Road 18 | 12 | $4,5,6,7,73,74,66,67,68,75,37,49,50,171$ | 22,900 | \$264,000 |
| County Road 14 | 13 | 44, 1, 3, 43, 42, 41, 40, 39, 38, 193, 192 | 8,800 | \$101,000 |
| County Road 10 Chaska | 14 | $\begin{aligned} & 170,2,48,167,169,87,70,69,168,86,85 \\ & 88,89 \end{aligned}$ | 26,400 | \$303,000 |
| County Road 140 | 15 | 172, 90, 91, 92, 93, 94 | 11,500 | \$ 132,000 |
| County Road 11 Carver | 16 | 95, 98, 97, 71, 72, 96, 99, 100, 110, 109 | 21,000 | \$242,000 |
| County Road 43 | 17 | 101, 102, 103, 174, 104 | 19,900 | \$229,000 |
| County Road 36 | 18 | 181, 120, 117, 118, 119, 116 | 15,800 | \$182,000 |
| County Road 33 | 19 | 137, 161 | 23,500 | \$270,000 |
| County Road 50 | 20 | 134 | 26,200 | \$301,000 |
| Highway 25 Mayer | 21 | 142, 141 | 4,000 | \$ 46,000 |
| TOTAL - ALL SIGNALS, EXISTING AND FUTURE |  |  | 331,700 | \$3.8 M |

## Centracs

While several ATMS software packages could be used to perform signal management and monitoring functions desired by the County, in practice the software provided by the manufacturer of the traffic signal controllers to be managed provides the highest level of compatibility and functionality. For Carver County, this means that Centracs, Econolite's ATMS solution, is the first option to consider.

Numerous other agencies in Minnesota and nearby states have moved from Econolite closed loop systems to a Centracs ATMS system with success, including:

- City of St. Paul
- City of St. Cloud/Stearns County/MnDOT District 3 St. Cloud
- City of Grand Forks, North Dakota
- City of Duluth (installation underway)
- WisDOT

The primary disadvantage of conversion to an ATMS system (Centracs or other), is cost. Initial cost for ATMS hardware and software can range from $\$ 100,000$ to more than $\$ 300,000$. Ongoing yearly software management costs can exceed $\$ 20,000$. Both initial and ongoing costs can vary widely. Carver County should work directly with Econolite's local vendor's representative, Traffic Control Corporation, to confirm deployment needs and costs.

## Prioritization and General Recommendations

The following should be considered in prioritizing when to add each intersection.

- Resources should be focused on connecting the grouped intersections in Waconia, on CSAH 18, and on CSAH 14 first. These are contained in Signal Groups 7, 12 and 13.
- Once the grouped intersections have been connected to the communications network, the County's next focus should be on procuring Centracs (or another ATMS platform) and making it operational.
- After the County's ATMS is up and running, the remaining existing standalone intersections should be brought online as funding becomes available.
- After all existing intersections are online, the County should plan for building out the remaining linkages in geographical groups. Where possible, the addition of these links should be tied to other construction work to minimize cost.
- As the County reconstructs and adds new roadway, fiber optic cable (or, at a minimum, conduit for future fiber optic cable installation) should be provided along the entire length of the roadway in the locations shown in the Communications Plan.


## Appendix A

Full Size Overview Map - Future Traffic Signals and Fiber Optic Network

## Appendix B

Detailed Fiber Schematics

## Carver County



CARVER
COUNTY



Carver County photograph showing the existing conditions within the project area.
956 KB

## Project Summary

## Project Overview

Carver County uses traffic signals to support safe and efficient multimodal transportation for County residents, businesses, employees, and visitors. The County is requesting a federal grant to upgrade obsolete and add to existing traffic management and intelligent transportation systems (ITS) throughout Carver County, with a focus on CSAH 18-Lyman Boulevard (Chanhassen/Chaska), CSAH 14-Pioneer Trail (Chanhassen/Chaska), CSAH 59-Main Street (Waconia), and other intersections. The project scope will include:

- A new Advanced Traffic Management System (ATMS)
- Central signal system software with expanded remote access and operations
- Upgraded traffic signal controllers and cabinets
- Conflict monitors
- Upgraded timing plans, coordination, and video detection systems
- ITS devices including CCTV cameras
- Communications and fiber optic cable upgrades \& connections


## Project Benefits

The roadway system management project will provide a more responsive, efficient, future-minded, and smart traffic control system. The project will:

- Link and improve coordination, operation, and interoperability of County-owned signals and with other jurisdictions
- Reduce traffic-related crashes, minimize travel time, and better support incident management and special events
- Support environmental sustainability and air quality by improving traffic flow
- Include innovative treatments such as flashing yellow arrows and vehicle detection at traffic signals consistent with Regional ITS Architecture and best practices
- Improve bicycle and pedestrian access and safety by installing accessible pedestrian signals


## Project Schedule

- Design: Summer 2022-Summer 2025
- Right-of-way: Not anticipated
- Bidding: Fall 2025-Winter 2025
- Construction: Spring-Fall 2026


## Requested Federal Amount

\$2,000,000

## Total Project Cost

\$2,500,000


Project Area


Existing Carver County Traffic Signal

## CONTACT:

Angie Stenson, Sr. Transportation Planner
Carver County Public Works
952.466.5273
astenson@co.carver.mn.us
https://www.co.carver.mn.us/departments/public-works/ projects-studies/traffic-signal-technologies-project-plan

## Project Summary

## Traffic Signal Technologies and ITS Corridor Enhancements Applicant: Carver County



Existing Carver County Signal Cabinets

## CONTACT:

Angie Stenson, Sr. Transportation Planner
Carver County Public Works
952.466.5273
astenson@co.carver.mn.us
https://www.co.carver.mn.us/departments/public-works/ projects-studies/traffic-signal-technologies-project-plan


CITY OF CHASKA<br>ONE CITY HALL PLAZA / CHASKA MN 55318-1962

April 5, 2022
Lyndon Robjent, PE
Public Works Director, County Engineer
Carver County Public Works
11360 Highway 212, Suite 1
Cologne, MN 55322
Dear Mr. Robjent,
The City of Chaska is pleased to support Carver County's application for the Traffic Signal Technologies and ITS Corridor Enhancements project to the Metropolitan Council's 2022 Regional Solicitation for federal transportation funding. The project will improve signal technologies at County-owned intersections and locations along three primary corridors including County State Aid Highway (CSAH) 14 (Pioneer Trail) in the City of Chaska.

The grant application is to upgrade obsolete and add to existing traffic management and intelligent transportation systems (ITS) throughout Carver County, with a focus on three corridors: CSAH 18 (Lyman Blvd.), CSAH 14 (Pioneer Trail), and CSAH 59 (Main St.). The proposed project scope includes: a new Advanced Traffic Management System (ATMS); central signal system software with expanded remote access and operations; upgraded traffic signal controllers and cabinets; conflict monitors; upgraded timing plans, coordination, and video detection systems; ITS devices including CCTV cameras; and communications and fiber optic cable upgrades and connections.

Project benefits include creating a more responsive, efficient, future-minded, and smart traffic control system. The project will link and improve coordination, operation, and interoperability of County-owned signals and with other jurisdictions, reduce traffic-related crashes, minimize travel time, and better support incident management and special events.

The proposed project is endorsed by the City of Chaska, and we are supportive of the County's application for the Traffic Signal Technologies and ITS Corridor Enhancements project to the Metropolitan Council's 2022 Regional Solicitation funding program.

Sincerely,


Mark Windschitl, Mayor
City of Chaska


April 4th, 2022
Lyndon Robjent, PE
Public Works Director, County Engineer
Carver County Public Works
11360 Highway 212, Suite 1
Cologne, MN 55322
Dear Mr. Robjent,
The City of Waconia is pleased to support Carver County's application for the Traffic Signal Technologies and ITS Corridor Enhancements project to the Metropolitan Council's 2022 Regional Solicitation for federal transportation funding. The project will improve signal technologies at County-owned intersections and locations along three primary corridors including County State Aid Highway (CSAH) 59 (Main St.) in the City of Waconia.

The grant application is to upgrade obsolete and add to existing traffic management and intelligent transportation systems (ITS) throughout Carver County, with a focus on three corridors: CSAH 18 (Lyman Blvd.), CSAH 14 (Pioneer Trail), and CSAH 59 (Main St.). The proposed project scope includes: a new Advanced Traffic Management System (ATMS); central signal system software with expanded remote access and operations; upgraded traffic signal controllers and cabinets; conflict monitors; upgraded timing plans, coordination, and video detection systems; ITS devices including CCTV cameras; and communications and fiber optic cable upgrades and connections.

Project benefits include creating a more responsive, efficient, future-minded, and smart traffic control system. The project will link and improve coordination, operation, and interoperability of County-owned signals and with other jurisdictions, reduce traffic-related crashes, minimize travel time, and better support incident management and special events.

The proposed project is endorsed by the City of Waconia, and we are supportive of the County's application for the Traffic Signal Technologies and ITS Corridor Enhancements project to the Metropolitan Council's 2022 Regional Solicitation funding program.


Signature
Kent Bloudek
Mayor of Waconia


[^0]:    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.

