Application

19838 - 2024 Roadway Modernization
20033 - CSAH 23 (Marshall St NE) Phase 2 Reconstruction Project
Regional Solicitation - Roadways Including Multimodal Elements

Status: Submitted
Submitted Date: 12/12/2023 5:27 PM

## Primary Contact

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

## Organization Information

**Name:** HENNEPIN COUNTY
**Jurisdictional Agency (if different):**
**Organization Type:** County Government
**Organization Website:**
**Address:** DPT OF PUBLIC WORKS
1600 PRAIRIE DR

* MEDINA (City) | Minnesota (State/Province) | 55340 (Postal Code/Zip)

**County:** Hennepin
**Phone:*** 763-745-7600 Ext.

**Fax:**
**PeopleSoft Vendor Number** 0000028004A9

## Project Information

**Project Name** CSAH 23 (Marshall St NE) Phase 2 Reconstruction Project
**Primary County where the Project is Located** Hennepin
**Cities or Townships where the Project is Located:** Minneapolis
**Jurisdictional Agency (If Different than the Applicant):**

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

The proposed project includes the reconstruction of the CSAH 23 (Marshall St NE) corridor from CSAH 153 (Lowry Ave NE) to St. Anthony Pkwy in the City of Minneapolis. CSAH 23 (Marshall St NE) is currently classified as an A-Minor Reliever. Attachment 02 provides an illustration of the project location.

The project objectives are to improve the accessibility, mobility, and safety for people who walk, roll, bike and drive along the corridor. Photos depicting the roadway's existing condition are included in Attachment 03.

Extensive community engagement has occurred over the last 20 years through various planning efforts. In 2018, the City of Minneapolis and Hennepin County partnered on the "Marshall Street NE Transportation Feasibility Study" (url: hennepin.us/residents/transportation/marshallstne) to review efforts for enhancing walking and biking facilities. Most recently, county staff have conducted public engagement along the corridor as well as a review of safety data ahead of a 2023 preservation project that will convert the 4-lane undivided roadway to a new reconfiguration and provide dedicated on-street facilities for people biking. A potential typical section (Attachment 04) and potential concept (Attachment 05) incorporate feedback that was heard during prior engagement efforts for this CSAH 23 (Marshall St NE) Phase 2 Reconstruction Project.

This project will include, but is not limited to the following elements. The specific types of improvements and locations will be determined as part of the design process and based on additional community input, data analysis, and environmental review.

- Roadway improvements: including the replacement of deteriorated pavement, pavement substructure, curb and gutter, and storm sewer structures.

- Safety improvements: including dedicated left turn lanes at signalized intersections, pedestrian crossing enhancements, and dedicated off-street bicycle facilities to separate people biking from people driving.

- Pedestrian improvements such as ADA compliant ramps, upgraded sidewalks (free of obstructions), high visibility crosswalk markings, curb extensions, and raised medians.

- Bicycle improvements, such as the introduction of a dedicated off-street facility for people biking (contingent on the design process).

- Streetscaping improvements: such as the introduction of boulevard space and lighting.

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

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

CSAH 23 (Marshall St NE) from CSAH 153 (Lowry Ave NE) to St. Anthony Pkwy in Minneapolis.

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

**Project Length (Miles)**

1.03

*to the nearest one-tenth of a mile*

## Project Funding

| | |
|---|---|
| **Are you applying for competitive funds from another source(s) to implement this project?** | No |
| **If yes, please identify the source(s)** | Not Applicable |
| **Federal Amount** | $7,000,000.00 |
| **Match Amount**<br>*Minimum of 20% of project total* | $4,280,000.00 |
| **Project Total**<br>*For transit projects, the total cost for the application is total cost minus fare revenues.* | $11,280,000.00 |
| **Match Percentage**<br>*Minimum of 20%*<br>*Compute the match percentage by dividing the match amount by the project total* | 37.94% |
| **Source of Match Funds**<br>*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* | Hennepin County |
| **Preferred Program Year** | |
| **Select one:**<br>*Select 2026 or 2027 for TDM and Unique projects only. For all other applications, select 2028 or 2029.* | 2029 |
| **Additional Program Years:**<br>*Select all years that are feasible if funding in an earlier year becomes available.* | |

## Project Information-Roadways

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

**SAP#:**

| | |
|---|---|
| **County, City, or Lead Agency** | Hennepin County |
| **Functional Class of Road** | A-Minor Reliever |
| **Road System**<br>*TH, CSAH, MSAS, CO. RD., TWP. RD., CITY STREET* | CSAH |
| **Road/Route No.**<br>*i.e., 53 for CSAH 53* | 23 |
| **Name of Road**<br>*Example; 1st ST., MAIN AVE* | Marshall St NE |
| **TERMINI:(Termini listed must be within 0.3 miles of any work)** | |
| **From:**<br>**Road System** | CSAH |
| **Road/Route No.**<br>*i.e., 53 for CSAH 53* | 153 |
| **Name of Road**<br>*Example; 1st ST., MAIN AVE* | Lowry Ave NE |
| **To:**<br>**Road System**<br>*DO NOT INCLUDE LEGAL DESCRIPTION* | MSAS |
| **Road/Route No.**<br>*i.e., 53 for CSAH 53* | 14008 |
| **Name of Road**<br>*Example; 1st ST., MAIN AVE* | St. Anthony Pkwy |
| **In the City/Cities of:**<br>*(List all cities within project limits)* | Minneapolis |
| **OR:** | |
| **At:**<br>**Road System**<br>*(TH, CSAH, MSAS, CO. RD., TWP. RD., City Street)* | |
| **Road/Route No.**<br>*i.e., 53 for CSAH 53* | |
| **Name of Road**<br>*Example; 1st ST., MAIN AVE* | |
| **In the City/Cities of:**<br>*(List all cities within project limits)* | |
| **PROJECT LENGTH** | |
| **Miles**<br>*(nearest 0.1 miles)* | 1.0 |
| **Primary Types of Work (check all the apply)** | |
| **New Construction** | |

| | |
|---|---|
| **Reconstruction** | Yes |
| **Resurfacing** | |
| **Bituminous Pavement** | Yes |
| **Concrete Pavement** | |
| **Roundabout** | |
| **New Bridge** | |
| **Bridge Replacement** | |
| **Bridge Rehab** | |
| **New Signal** | |
| **Signal Replacement/Revision** | Yes |
| **Bike Trail** | Yes |
| **Other (do not include incidental items)** | GRADING, AGG BASE, BIT BASE & SURFACE, STORM SEWER, BIKEWAY (IF FEASIBLE), SIDEWALK, ADA, SIGNALS, STREETSCAPING, LIGHTING, AND CURB/GUTTER |

**BRIDGE/CULVERT PROJECTS (IF APPLICABLE)**

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

**OTHER INFORMATION:**

| | |
|---|---|
| **Zip Code where Majority of Work is Being Performed** | 55418 |
| **Approximate Begin Construction Date** | 05/01/2029 |
| **Approximate End Construction Date** | 10/31/2030 |
| **Miles of Trail (nearest 0.1 miles)** | 1.0 |
| **Miles of Sidewalk (nearest 0.1 miles)** | 2.0 |
| **Miles of trail on the Regional Bicycle Transportation Network (nearest 0.1 miles):** | 1.0 |
| **Is this a new trail?** | No |

## 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)Transportation System Stewardship (p 2.2-2.4)

Objectives A & B; Strategies A1 & A2

The project will reconstruct the roadway to update assets to a state of good repair. The project is anticipated to include a separated bikeway facility which will encourage people to make local trips via bicycle, which can reduce traffic and extend the useful life of the roadway.

B)Safety and security (p 2.5-2.9)

Objectives A & B; Strategies B1, B3, B4 & B6

The project improvements align with a Safe System Approach. The project reduces the number of travel lanes. The bikeway and sidewalk are separated from vehicle traffic with boulevards. People biking on CSAH 23 (Marshall St NE) will not cross any intersection within the project area. Curb extensions will increase visibility to pedestrians at promote traffic calming.

C)Access to destinations (p 2.10-2.25)

Objectives A, B, C, D & E; Strategies C1, C2, C3, C4, C8, C9, C15, C16 & C17

Marshall St is an A-minor Reliever that serves as a key north-south multimodal connection for residential, recreational, and commercial destinations. The addition of the separated bikeway will close a gap in the county's bicycle network and pedestrian facility improvements will enhance multimodal access along the corridor.

D)Competitive economy (p 2.26-2.29)

Objectives A, B & C; Strategies D1, D3, D4 & D5

The project improves access to recreation, industrial and commercial destinations in northeast Minneapolis. This segment of Marshall Street is a Tier 1 freight corridor and there are several regional freight facilities just north of the project. The project is imperative to reduce conflicts between freight users and people walking, rolling and biking.

E)Healthy and equitable communities (p 2.30-2.34)

Objectives A, B, C & D; Strategies E1, E2, E3, E4, E5, E6 & E7

The project will apply the outreach completed during the Marshall Street NE Feasibility Study, which hosted events to solicit input from key stakeholders. Hennepin County also engaged with the community for the 2023 repaving project, including meeting with neighborhoods and businesses. The project will add boulevards on both sides of the roadway to enhance green space.

F)Leveraging transportation investments to guide land use (p 2.35-2.41)

Objectives A & C; Strategies F1, F2, F3, F5, F6, F8

The project meets the needs of industrial, recreational and residential users. The project prioritizes multimodal safety and supports safe integration between people driving, biking, walking, rolling, and hauling freight along the corridor and through intersections

*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.**

1)Marshall Street NE Feasibility Study

URL: hennepin.us/-/media/hennepinus/residents/transportation/marshall/marshall-street-2018-design-study.pdf

2)Hennepin County 2040 Transportation Plan (pages 2-11 - 2-18)

URL: hennepin.us/-/media/hennepinus/your-government/projects-initiatives/2040-comprehensive-plan/2040-comprehensive-plan-full.pdf

3)Hennepin County Climate Action Plan (pages 50-54)

URL: hennepin.us/climate-action/-/media/climate-action/hennepin-county-climate-action-plan-final.pdf

4)Hennepin County Complete and Green Streets Policy (pages 10-11)

URL: hennepin.us/-/media/hennepinus/your-government/projects-initiatives/complete-streets/Complete-and-Green-Streets-Policy_Oct2023.pdf

5)Hennepin County Bike Plan (page 36)

URL: hennepin.us/-/media/hennepinus/residents/transportation/biking/bicycle-transportation-plan.pdf

6)Hennepin County Pedestrian Plan (page 8)

URL: hennepin.us/-/media/hennepinus/residents/transportation/documents/pedestrian-plan.pdf

7)Hennepin County Enhanced Bikeway Network Study Map (Attachment 06)

8)City of Minneapolis Vision Zero Action Plan (pages 16-35)

URL: lims.minneapolismn.gov/Download/RCAV2/31027/18-Vision-Zero-Action-Plan-2023-2025.pdf

9)City of Minneapolis Transportation Action Plan (page 180)

URL: go.minneapolismn.gov/application/files/9316/0753/2013/MPLSTAP_Final_v8.pdf

10)Minneapolis All Ages and Abilities Bicycle Network (See Attachment 07)

*Limit 2,800 characters, approximately 400 words*

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

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

*5. Applicant is a public agency (e.g., county, city, tribal government, transit provider, etc.) or non-profit organization (TDM and Unique Projects applicants only). Applicants that are not State Aid cities or counties in the seven-county metro area with populations over 5,000 must contact the MnDOT Metro State Aid Office prior to submitting their application to determine if a public agency sponsor is required.*

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

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

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

*7. The requested funding amount must be more than or equal to the minimum award and less than or equal to the maximum award. The cost of preparing a project for funding authorization can be substantial. For that reason, minimum federal amounts apply. Other federal funds may be combined with the requested funds for projects exceeding the maximum award, but the source(s) must be identified in the application. Funding amounts by application category are listed below in Table 1. For unique projects, the minimum award is $500,000 and the maximum award is the total amount available each funding cycle (approximately $4,000,000 for the 2024 funding cycle).*

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

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

*8. The project must comply with the Americans with Disabilities Act (ADA).*

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

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

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

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

**Date plan completed:** 08/31/2015

**Link to plan:** hennepin.us/-/media/hennepinus/residents/transportation/documents/ada-sidewalk-transition-plan.pdf

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

**Date self-evaluation completed:**

**Link to plan:**

**Upload plan or self-evaluation if there is no link**

*Upload as PDF*

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

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

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

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

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

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

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

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

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

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

## Roadways Including Multimodal Elements

*1. All roadway projects must be identified as a principal arterial (non-freeway facilities only) or A-minor arterial as shown on the latest TAB approved roadway functional classification map. Bridge Rehabilitation/Replacement projects must be located on a minor collector and above functionally classified roadway in the urban areas or a major collector and above in the rural areas.*

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

**Roadway Strategic Capacity and Reconstruction/Modernization and Spot Mobility projects only:**

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

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

**Bridge Rehabilitation/Replacement and Strategic Capacity projects only:**

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

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

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

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

**Bridge Rehabilitation/Replacement projects only:**

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

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

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

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

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

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

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

## Requirements - Roadways Including Multimodal Elements

### Specific Roadway Elements

| CONSTRUCTION PROJECT ELEMENTS/COST ESTIMATES | Cost |
|---|---|
| Mobilization (approx. 5% of total cost) | $445,000.00 |
| Removals (approx. 5% of total cost) | $371,000.00 |
| Roadway (grading, borrow, etc.) | $616,720.00 |
| Roadway (aggregates and paving) | $1,269,800.00 |
| Subgrade Correction (muck) | $0.00 |
| Storm Sewer | $1,119,000.00 |
| Ponds | $0.00 |
| Concrete Items (curb & gutter, sidewalks, median barriers) | $478,800.00 |
| Traffic Control | $445,000.00 |
| Striping | $71,050.00 |
| Signing | $46,540.00 |
| Lighting | $0.00 |
| Turf - Erosion & Landscaping | $560,000.00 |
| Bridge | $0.00 |
| Retaining Walls | $0.00 |
| Noise Wall (not calculated in cost effectiveness measure) | $0.00 |
| Traffic Signals | $510,000.00 |
| Wetland Mitigation | $0.00 |
| Other Natural and Cultural Resource Protection | $0.00 |
| RR Crossing | $0.00 |
| Roadway Contingencies | $1,840,000.00 |
| Other Roadway Elements | $206,000.00 |
| **Totals** | **$7,978,910.00** |

### Specific Bicycle and Pedestrian Elements

| CONSTRUCTION PROJECT ELEMENTS/COST ESTIMATES | Cost |
|---|---|
| Path/Trail Construction | $638,250.00 |
| Sidewalk Construction | $577,160.00 |
| On-Street Bicycle Facility Construction | $0.00 |
| Right-of-Way | $0.00 |
| Pedestrian Curb Ramps (ADA) | $150,000.00 |
| Crossing Aids (e.g., Audible Pedestrian Signals, HAWK) | $107,000.00 |
| Pedestrian-scale Lighting | $412,000.00 |
| Streetscaping | $560,000.00 |
| Wayfinding | $0.00 |
| Bicycle and Pedestrian Contingencies | $761,790.00 |
| Other Bicycle and Pedestrian Elements | $94,890.00 |
| **Totals** | **$3,301,090.00** |

### Specific Transit and TDM Elements

| CONSTRUCTION PROJECT ELEMENTS/COST ESTIMATES | Cost |
|---|---|
| Fixed Guideway Elements | $0.00 |
| Stations, Stops, and Terminals | $0.00 |
| Support Facilities | $0.00 |

| | |
|---|---|
| Transit Systems (e.g. communications, signals, controls, fare collection, etc.) | $0.00 |
| Vehicles | $0.00 |
| Contingencies | $0.00 |
| Right-of-Way | $0.00 |
| Other Transit and TDM Elements | $0.00 |
| **Totals** | **$0.00** |

## Transit Operating Costs

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

## PROTECT Funds Eligibility

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

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

**Response:** Based on a planning level review of the proposed scope of work, the following project elements appear to be eligible for the PROTECT Program: Storm Sewer, Landscaping, and Streetscaping (within the Bicycle and Pedestrian Elements)

## Totals

| | |
|---|---|
| **Total Cost** | $11,280,000.00 |
| **Construction Cost Total** | $11,280,000.00 |
| **Transit Operating Cost Total** | $0.00 |

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

| | |
|---|---|
| **Existing Employment within 1 Mile:** | 10153 |
| **Existing Manufacturing/Distribution-Related Employment within 1 Mile:** | 4004 |
| **Existing Post-Secondary Students within 1 Mile:** | 0 |
| **Upload Map** | 1698424186713_2024 RS Map 02 - CSAH 023 (Marshall St NE) Phase 2 - Regional Economy.pdf |

*Please upload attachment in PDF form*

## Measure C: Current Heavy Commercial Traffic

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

| | |
|---|---|
| **Along Tier 1:** | Yes |
| **Miles:** | 1.0 |
| *(to the nearest 0.1 miles)* | |
| **Along Tier 2:** | |
| **Miles:** | 0 |
| *(to the nearest 0.1 miles)* | |
| **Along Tier 3:** | |
| **Miles:** | 0 |
| *(to the nearest 0.1 miles)* | |
| **The project provides a direct and immediate connection (i.e., intersects) with either a Tier 1, Tier 2, or Tier 3 corridor:** | |
| **None of the tiers:** | |

## Measure A: Current Daily Person Throughput

| | |
|---|---|
| **Location** | CSAH 23 between CSAH 153 and St. Anthony Pkwy (Sequence # 61958) |
| **Current AADT Volume** | 5700 |
| **Existing Transit Routes on the Project** | 11, 32 |

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

| | |
|---|---|
| **Upload Transit Connections Map** | 1698424848073_2024 RS Map 04 - CSAH 023 (Marshall St NE) Phase 2 - Transit Connections.pdf |

*Please upload attachment in PDF form*

## Response: Current Daily Person Throughput

| | |
|---|---|
| **Average Annual Daily Transit Ridership** | 0 |
| **Current Daily Person Throughput** | 7410.0 |

## Measure B: 2040 Forecast ADT

| | |
|---|---|
| **Use Metropolitan Council model to determine forecast (2040) ADT volume** | Yes |
| **If checked, METC Staff will provide Forecast (2040) ADT volume** | |
| **OR** | |
| **Identify the approved county or city travel demand model to determine forecast (2040) ADT volume** | |
| **Forecast (2040) ADT volume** | |

## Measure A: Engagement

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

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

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

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

**Response:**

Within 0.5 miles of the project corridor, 41% of the population are Black, Indigenous or people of color (BIPOC) and 14% of the population are those with a disability of any kind. In addition, 20% of the population is under 18 years old and 15% of the population is over 65. 36% of the population within 0.5 miles of the project area has a household income under 200% of the federal poverty level. These demographic profiles are from the 2017 - 2027 5-year ACS estimates.

Public engagement for the project was conducted as part of the 2018 Marshall Street NE Transportation Feasibility Study via in-person study group meetings, an open house, neighborhood association meetings, and online communication (described in Attachment 08). The study group met 5 times and consisted of neighborhood association, corridor business, and agency representatives. The intent of forming a study group was to thoroughly engage a small group of individuals who represented a broad spectrum of the surrounding community. Study group representatives shared the views of their constituents and also brought back information, serving as a two-way conduit for information.

Additional engagement was conducted prior to a 2023 mill and overlay along the corridor. These efforts included coordination with Xcel Energy, who owns two facilities along the corridor, a re-engagement of the 2018 study group via an email update, a meeting with the Bottineau and Marshall Terrace neighborhood organizations, mailed flyers to residents and businesses along the corridor, and direct calls to businesses along CSAH 23 (Marshall St NE).

Future engagement activities will target BIPOC residents, low-income residents, disabled people, youth and older adults. Strategies are anticipated to include convening a study group, direct meetings with prominent corridor institutions and organizations, meetings with neighborhood associations, public events, and virtual engagement. Project engagement will also follow the model and lessons learned from the first phase the project from 3rd Ave NE to CSAH 153 (Lowry Ave).

Project purpose and need were identified through an evaluation of roadway age, growth of entertainment and dining along the corridor, connection to the river, lack of multimodal accommodations, user safety, and accessibility deficiencies. Project goals were developed as a direct result of public engagement and include the the balance of all modes of travel, improved connections along and across the Mississippi River, create safe and accessible spaces for people walking and biking, strengthen businesses with improved access, improve connections to transit services, and increase greening along the corridor.

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

## Measure B: Disadvantaged Communities Benefits and Impacts

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

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

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

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

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

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

**Response:**

The CSAH 23 (Marshall St NE) reconstruction project will benefit BIPOC populations, low-income populations, people with disabilities, children, youth, and older adults. Attachment 09 provides an overview of key community resources as well as census tracts with high scores of the CDC Social Vulnerability Index (SVI), a resource that uses a range of census variables to measure resilience to natural or human-caused disasters. The entire project corridor is identified as having a high SVI score, indicating that the community is more vulnerable than others based on factors such as socioeconomic status or household characteristics. Often, this indicates a higher population of those who are more likely to walk, roll, cycle, or use transit who are not well served by the current auto-centric design of CSAH 23 (Marshall St NE).

The proposed project will redistribute the existing right of way to ensure that all modes of travel will have safe and comfortable connections to destinations throughout the corridor and beyond. As part of the project development process, bicycle facilities for all ages and abilities will be considered which would provide connections to North Minneapolis via the Lowry Avenue bridge, as well as to the Grand Rounds Scenic Byway System. This would ensure that all users would have safe connections to schools such as the Spero Academy, community centers, and employers such as Siewek Lumber Corporation well beyond the project area. This will also promote safety for all users, as the project area is listed as Tier 1 regional freight corridor under the 2021 Regional Truck Corridor Study update and the existing on-street facilities create multiple conflict points between freight users and people biking.

In addition, the project will use best practices and proven safety measures such as medians, curb extensions, and high visibility crosswalks to improve the pedestrian realm for those walking and rolling along CSAH 23 (Marshall St NE). Currently, pedestrian crossings along the corridor are approximately 45 feet from curb to curb with limited vertical elements to control vehicle speeds. The county's self-evaluation identifies a number of sidewalk obstructions and defects such as utility poles and fire hydrants which will be addressed through reconstruction of sidewalk facilities.

Increased noise and impacts to the roadway and sidewalks are anticipated during construction. The contractor will be required to follow temporary traffic control plans which provide instructions on detour routes for all people traveling through the corridor. Access to adjacent buildings will be critical, and staff will seek out opportunities to ensure that nearby businesses and services are not negatively impacted during construction.

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

## Measure C: Affordable Housing Access

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

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

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

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

**Response:**

A total of 12 affordable, subsidized housing developments are located within 0.5 miles of the project area. Attachment 10 provides a map and full detail summary of these locations, including unit sizes and affordability limits based on area median incomes. These include developments for families those with disabilities, and seniors. As identified in the Met Council generated Socio-Economic Conditions map, 1,654 subsidized units exist in census tracts within 0.5 miles of the project. A notable development within the project area is the Catholic Eldercare at St Hedwig's, a multi-building, mixed income development with 142-units of designated for those with disabilities and seniors which represents a significant population of those who would significantly benefit from multimodal improvements along the corridor. A map illustrating key community resources throughout the project area such as several community centers, Spero Academy, and a multitude of parks is shown in Attachment 09.

The project will promote community cohesion for residents of affordable housing through the reconstruction and improvement of accommodations for all modes, particularly those walking, biking and taking transit. Improved facilities will create a new connection along CSAH 23 (Marshall St NE) to the Grand Rounds scenic byway, a critical component of the City of Minneapolis' All Ages and Abilities bicycle network. Within Northeast Minneapolis, the proposed protected bikeway will provide residents of affordable housing multimodal access to a number of employers as well as key places of community gathering such as the Dar Al-Qalam Islamic Center. Multimodal facilities that are comfortable for those of all ages and abilities will also promote greater cohesion between the neighborhood and recreational opportunities along the Mississippi River, encouraging active transportation and recreation opportunities for residents of affordable housing throughout the project area. Finally, the proposed project will provide residents of affordable housing safe connections to other planned multimodal investments such as future bikeway facilities along CSAH 153 (Lowry Ave), the future F Line BRT along Central Ave (TH 65) as well as improved first and last mile connections to existing transit service including Metro Transit routes 11 and 32.

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

## Measure D: BONUS POINTS

| | |
|---|---|
| **Project is located in an Area of Concentrated Poverty:** | |
| **Project?s census tracts are above the regional average for population in poverty or population of color (Regional Environmental Justice Area):** | Yes |
| **Project located in a census tract that is below the regional average for population in poverty or populations of color (Regional Environmental Justice Area):** | |
| **Upload the ?Socio-Economic Conditions? map used for this measure.** | 1700601037330_2024 RS Map 03 - CSAH 023 (Marshall St NE) Phase 2 - Socio Economic Conditions.pdf |

## Measure A: Year of Roadway Construction

| Year of Original Roadway Construction or Most Recent Reconstruction | Segment Length | Calculation | Calculation 2 |
|---|---|---|---|
| 2012 | 0.01 | 20.12 | 19.534 |
| 1960 | 1.02 | 1999.2 | 1940.971 |
| | **1** | **2019** | **1961** |

## Total Project Length

| | |
|---|---|
| **Total Project Length (as entered in "Project Information" form)** | 1.03 |

## Average Construction Year

| | |
|---|---|
| **Weighted Year** | 1960 |

## Total Segment Length (Miles)

**Total Segment Length** 1.03

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

**Improved roadway to better accommodate freight movements:** Yes

**Response:**

Marshall St NE experiences significant truck activity due to the surrounding industrial land uses - a StreetLight analysis estimates 3,350 daily commercial vehicles (Attachment 11).

Anticipated freight betterments include:

- Corrections to the roadway's subgrade and surface through a reconstruction as pavement overlays are no longer cost effective in preserving the roadway

- Improved travel time and reliability through the anticipated removal of two unwarranted traffic signals (27th Ave NE and 31st Ave NE)

- Replacement of deficient curb, stormwater utilities, and driveway aprons to re-establish the roadway environment

- Improved separation from multimodal users via a protected bikeway

*(Limit 700 characters; approximately 100 words)*

**Improved clear zones or sight lines:** Yes

**Response:**

This project is anticipated to improve clear zones and sight lines through the following:

- Narrowing of roadway width (supplemented with curb extensions, medians, and/or crossing beacons) to improve sight distance at intersections, including for crossing pedestrians

- Removal of on-street parking along one side and introduction of curb extensions to discourage on-street parking within intersection areas

- Replacement of settled curb, relocation of overhead utilities, and improved boulevard areas to better define the roadway edge

- Introduction of a protected bikeway along the west side of Marshall St NE that involves minimal conflict points due to its proximity to the Mississippi River

*(Limit 700 characters; approximately 100 words)*

**Improved roadway geometrics:** Yes

**Response:**

This project is anticipated to improve roadway geometrics through the following:

- Curb extensions to better define intersection areas, reduce crossing distances, and slow turning vehicles

- Boulevard areas to provide space for snow storage, signs, and overhead utilities

- Promoting safe and reasonable speeds by people driving through curb narrowing, right-sizing of vehicle lane widths, and introduction of a protected bikeway

- Replacement of deteriorated curb to better define the roadway edge - highlighting the segment north of 29th Ave NE that has experienced significant settlement over the years

*(Limit 700 characters; approximately 100 words)*

**Access management enhancements:** Yes

**Response:**

Approximately 36 access points (18 private driveways, 11 commercial driveways, and 7 local streets) exist along this segment of Marshall St NE where all turning movements are permitted - presenting a high potential for rear-end, left-turn, and right-angle crashes. This project is anticipated to manage access through the following:

- Introduction of a protected bikeway to reduce conflicts with people driving

- Construction of curb extensions to reduce vehicle speeds at intersections

- Any driveways impacted will be replaced and upgraded to current design standards - minimizing transitions experienced by people walking and biking along Marshall St NE

*(Limit 700 characters; approximately 100 words)*

**Vertical/horizontal alignment improvements:** Yes

**Response:**

This project is anticipated to improve roadway alignments through the following:

- Redesign of the St. Anthony Pkwy intersection to promote traffic calming involving southbound vehicles who are transitioning from the 4-lane rural design that is present north of the project area

- Introduction of curb extensions to discourage high turning speeds involving westbound right-turning vehicles along east/west local streets

- The design of the 30th Ave NE and Columbia Ave NE approaches will be evaluated during project development for an improved design to promote user predictability

*(Limit 700 characters; approximately 100 words)*

**Improved stormwater mitigation:** Yes

**Response:**

Minimal greenspace currently exists along Marshall St NE for a majority of the project area (south of 30th Ave NE) - solely relying on stormwater infrastructure to manage water in the area. In addition, MetCouncil's Localized Flood Map identifies the area near 26th Ave NE as being susceptible for flooding. This project is anticipated to improve stormwater management through the following:

- Replacement and upgrades to curb and stormwater elements

- Narrowing of roadway surface, supplemented with boulevards, to reduce impervious surfaces

- Collaboration with the city, park board, and Mississippi River WMO to explore BMPs to improve water quality and withstand the desired flood events

*(Limit 700 characters; approximately 100 words)*

**Signals/lighting upgrades:** Yes

**Response:**

This project is anticipated to improve signals and lighting through the following:

- Removal of two unwarranted signalized intersections at 27th Ave NE and 31st Ave NE (contingent on the project development process)

- Upgrading the existing traffic signal system at St. Anthony Pkwy; including a mastarm for eastbound vehicles, vehicle detection, and APS

- Upgrading wood pole streetlights to a design that properly illuminates the sidewalk, bikeway, and roadway facilities to ensure nighttime visibility

- Installing conduit and communications that meet requirements of the city's Traffic Management Center to recognize the city's role in signal operations and maintenance

*(Limit 700 characters; approximately 100 words)*

**Other Improvements** Yes

**Response:**

This project is anticipated to include the following improvements of note:

- Removal of traffic signal infrastructure currently obstructing the pedestrian facilities at the 27th Ave NE and 31st Ave NE intersections

- Introduction of a protected bikeway along the west side of Marshall St NE to take advantage of the limited access present due to the roadway's proximity to the Mississippi River

- Redesign of the 31st Ave NE intersection that previously included a railroad crossing (removed as part of a utility project)

- Reallocation of approximately 50% of the space currently dedicated for on-street parking to improve experiences for people walking, biking, and driving along Marshall St NE

*(Limit 700 characters; approximately 100 words)*

## Measure A: Congestion Reduction/Air Quality

| Total Peak Hour Delay Per Vehicle Without The Project (Seconds/Vehicle) | Total Peak Hour Delay Per Vehicle With The Project (Seconds/Vehicle) | Total Peak Hour Delay Per Vehicle Reduced by Project (Seconds/Vehicle) | Volume without the Project (Vehicles per hour) | Volume with the Project (Vehicles Per Hour): | Total Peak Hour Delay without the Project: | Total Peak Hour Delay by the Project: | Total Peak hour Delay Reduced by project | EXPLANATION of methodology used to calculate railroad crossing delay, if applicable. | Synchro or HCM Reports |
|---|---|---|---|---|---|---|---|---|---|
| 30.0 | 30.0 | 0 | 2022 | 2022 | 0 | 0 | 0 | N/A | 1702056521952_CSAH 23 Marshall St NE - Synchro Report for Congestion Reduction.pdf |
| 6.0 | 3.0 | 3.0 | 723 | 723 | 2169.0 | 2169.0 | 0 | N/A | 1702056542696_CSAH 23 Marshall St NE - Synchro Report for Congestion Reduction.pdf |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 2.0 | 1.0 | 1.0 | 557 | 557 | 557.0 | 557.0 | 0 | N/A | 1702056562919_CSAH 23 Marshall St NE - Synchro Report for Congestion Reduction.pdf |
| 13.0 | 13.0 | 0 | 886 | 886 | 0 | 0 | 0 | N/A | 1702056609562_CSAH 23 Marshall St NE - Synchro Report for Congestion Reduction.pdf |
| | | | | | | **2726** | | | |

## Vehicle Delay Reduced

| Total Peak Hour Delay Reduced | Total Peak Hour Delay Reduced | Delay Reduced Total |
|---|---|---|
| 2726.0 | 2726.0 | 0 |

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

| Total (CO, NOX, and VOC) Peak Hour Emissions without the Project (Kilograms): | Total (CO, NOX, and VOC) Peak Hour Emissions with the Project (Kilograms): | Total (CO, NOX, and VOC) Peak Hour Emissions Reduced by the Project (Kilograms): |
|---|---|---|
| 3.74 | 3.75 | -0.01 |
| 1.29 | 1.13 | 0.16 |
| 0.97 | 0.87 | 0.1 |
| 1.55 | 1.47 | 0.08 |
| **8** | **7** | **0** |

## Total

**Total Emissions Reduced:** 0.33

**Upload Synchro Report** 1702056745677_CSAH 23 Marshall St NE - Synchro Report for Emission Reduction.pdf

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

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

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

## Total Parallel Roadway

**Emissions Reduced on Parallel Roadways** 0

**Upload Synchro Report**

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

## New Roadway Portion:

**Cruise speed in miles per hour with the project:** 0

**Vehicle miles traveled with the project:** 0

**Total delay in hours with the project:** 0

**Total stops in vehicles per hour with the project:** 0

**Fuel consumption in gallons:** 0

**Total (CO, NOX, and VOC) Peak Hour Emissions Reduced or Produced on New Roadway (Kilograms):** 0

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

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

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

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

**Crash Modification Factor Used:**

Attachment 12 includes a listing of the reported crashes along the project corridor during the 2020-2022 timeframe. Attachment 13 includes CMFs referenced as part of the B/C Analysis.

XX) Countermeasure: Crashes targeted (CMF ID, % reduction)

01) Add primary signal heads: All Crashes (CMF 01414, 28%)

02) Install signal mastarms: RA (CMF 01428, 74%)

03) Introduce protected bikeway facility: RE, SS, LT, RA, OR, & HO (CMF 08279, 17.2%)

04) Resurface pavement: RE, SS, LT, RA, OR, & HO (CMF 09300, 14.7%)

05) Prohibit on-street parking along west side: Parked vehicles (CMF N/A, 100%)

*(Limit 700 Characters; approximately 100 words)*

**Rationale for Crash Modification Selected:**

The Benefit/Cost Analysis evaluated the project corridor in seven different sections (comprised of major intersections and segments) to target crash themes. Up to two (of the five selected) CMFs were applied to each crash based on the reported crash type, along with the anticipated benefit provided by each safety countermeasure. A maximum of three CMFs were applied to each individual intersection or segment since the project corridor experiences diverse crash types among people walking, biking, and driving.

The expected service life for each improvement was entered as 20 years in the Benefit/Cost Worksheets based on service life information included in the 2024 Highway Safety Improvement Program guidelines.

The overall crash reduction expected from the project is 17% (based on a 83% crash modification factor). Approximately 17% (3 crashes) of the total number of reported crashes from the years 2020 to 2022 will be reduced annually through the implementation of proven safety countermeasures as part of this project

*(Limit 1400 Characters; approximately 200 words)*

| | |
|---|---|
| **Project Benefit ($) from B/C Ratio** | $7,550,170.00 |
| **Total Fatal (K) Crashes:** | 1 |
| **Total Serious Injury (A) Crashes:** | 3 |
| **Total Non-Motorized Fatal and Serious Injury Crashes:** | 0 |
| **Total Crashes:** | 51 |
| **Total Fatal (K) Crashes Reduced by Project:** | 0 |
| **Total Serious Injury (A) Crashes Reduced by Project:** | 1 |
| **Total Non-Motorized Fatal and Serious Injury Crashes Reduced by Project:** | 0 |
| **Total Crashes Reduced by Project:** | 9 |
| **Worksheet Attachment** | 1701187147346_023_Benefit_Cost_Worksheets.pdf |

*Please upload attachment in PDF form*

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

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

## Measure B: Pedestrian Safety

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

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

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

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

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

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

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

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

**Response:**

CSAH 23 (Marshall St NE) is generally a 2-lane undivided roadway. Earlier in 2023, the county completed a repaving project that provided an opportunity to introduce on-road bike lanes to provide dedicated space for people biking. However, the existing conditions along CSAH 23 (Marshall St NE) remain relatively uncomfortable as there are few design elements along the corridor to promote traffic calming. Therefore, this reconstruction project is desired to introduce complete streets best practices for people walking along and across CSAH 23 (Marshall St NE).

Signalized intersections

The project is anticipated to replace 1 of the 3 existing signalized intersections (at St. Anthony Pkwy). In recognition of the significant changes to land use north of the project, the St. Anthony Pkwy intersection will be further evaluated as part of the project development process for potential gateway treatments to influence user behaviors as they enter the project area from the north. At this time of application submittal, it's anticipated that the use of protected/permissive left-turn phasing, countdown timers, and APS will promote safe and comfortable crossings. In addition, the use of ITS strategies, such as signal communications, video detection, and ATMS will allow staff to maintain a reasonable balance of mobility and delay. Furthermore, the proposed signal design will consider how to accommodate the proposed protected bikeway facility that is anticipated to include two-way operation.

Unsignalized intersections

The project is anticipate to redesign each of 6 unsignalized intersections to advance complete streets best practices. Although contingent on the project development process, the planning level concept (Attachment 05) identifies approximately 11 curb extensions, 2 crossing beacons (such as RRFBs), and 3 high-visibility crosswalk markings that may be feasible at unsignalized intersections. In addition, crossing distances are anticipated to be reduced by approximately 18' (from 44' to 26') at these intersections. In addition, lighting conditions will be upgraded from antiquated wood utility poles to the city's standards to ensure user safety and security.

Roundabout intersections

Although contingent on the project development process, no roundabouts are anticipated.

Midblock locations

The proposed project will aim to encourage pedestrian crossings at intersections; however, mid-block crossings are not anticipated to be prohibited via the installation of barriers. In addition, the presence of the Mississippi River immediately west of the project area presents a unique condition where few destinations exist along the west side of CSAH 23 (Marshall St NE).

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

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

**Select one:** Yes

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

**Response:**

Although contingent on the project development process, it's anticipated that alternative intersection control devices may be selected at the following 2 intersections (27th Ave NE and 31st Ave NE).

27th Ave NE - If the existing traffic signal system is removed as part of the project, one or more proven safety countermeasure (curb extensions, raised medians, and/or crossing beacons) will be implemented to facilitate a Safe Systems approach. The introduction of a protected bikeway is anticipated to highlight CSAH 23 (Marshall St NE) as a multimodal corridor and encourage reasonable vehicle speeds. The planning level concept (Attachment 05) reveals that the crossing distance at 27th Ave NE is anticipated to be reduced by approximately 18' - decreasing pedestrian exposure by 5 seconds (based on a 3.5 feet per second walking speed).

31st Ave NE - This traffic signal system was originally installed to facilitate crossing movements at an intersection that included an at-grade railroad crossing. These railroad tracks have since been removed and freight operations have been retired. Therefore, a traffic signal system is no longer necessary to eliminate the potential conflicts involving the railroad. In addition, the planning level concept illustrates the potential introduction of curb extensions to promote safe pedestrian crossings in lieu of the controlled signalized crossing.

*(Limit 1,400 characters; approximately 200 words)*

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

**Select one:** No

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

**Response:** 0

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

**Response:**

Although contingent on the project development process, the planning level concept (Attachment 05) suggests the following changes to pedestrian crossing distances along the project corridor:

Signalized intersections (St. Anthony Pkwy) - Crossing distances are anticipated to be reduced slightly (reduction of approximately 6' from 44' to 36'). This reduction is possible due to the upgrade of the bikeway design from an on-road condition to a protected facility.

Non-signalized intersections (26th Ave NE, 27th Ave NE, 28th Ave NE, 29th Ave NE, 30th Ave NE, and 31st Ave NE) - Crossing distances are anticipated to be reduced by approximately 18' from 44' to 26'. This reduction is possible through the introduction of curb extensions to assume space that was previously assigned to on-street parking, as well, as the upgrade in the bikeway design from an on-road condition to a protected facility.

Overall, the planning level concept identifies approximately 11 curb extensions and 2 crossing beacons (such as RRFBs) that may be feasible as part of the CSAH 23 (Marshall St NE) Phase 2 Reconstruction Project.

*(Limit 1,400 characters; approximately 200 words)*

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

**Response:**

Although contingent on the project development process, no new grade separated pedestrian crossings are anticipated to be introduced as part of the CSAH 23 (Marshall St NE) Phase 2 Reconstruction Project.

*(Limit 1,400 characters; approximately 200 words)*

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

**Response:**

Although contingent on the project development process, no mid-block pedestrian crossings are anticipated to be prohibited as part of the CSAH 23 (Marshall St NE) Phase 2 Reconstruction Project.

In addition, mid-block pedestrian crossing demand is anticipated to be minimal as the Mississippi River extends north/south adjacent to the project area - resulting in few destinations along the west side of the project corridor.

*(Limit 1,400 characters; approximately 200 words)*

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

**Response:**

The CSAH 23 (Marshall St NE) Phase 2 Reconstruction Project will introduce several proven strategies to promote uniform, safe, and reasonable speeds by people driving along the corridor.

Roadway operation changes

It's anticipated that on-street parking will be evaluated as part of the project development process to confirm the recommendations from the 2018 Marshall St NE Transportation Feasibility Study that proposed removing parking along the west side of the roadway to provide the necessary space for a protected bikeway along the west side (url: hennepin.us/-/media/hennepinus/residents/transportation/marshall/marshall-street-2018-design-study.pdf).

Roadway design changes

The project development process will determine the recommended roadway configuration along CSAH 23 (Marshall St NE) - which is anticipated to be a 2-lane roadway based on findings from the 2018 Marshall St NE Transportation Feasibility Study. It's anticipated that dedicated left-turn lanes will be retained at key intersections on either end of the project area to minimize weaving maneuvers whenever vehicle queues are encountered. In addition, the anticipated upgrade in bicycle accommodations from an on-road to protected facility design offer a crash reduction involving all modes as reported within FHWA's proven safety countermeasure resource library (url: highways.dot.gov/sites/fhwa.dot.gov/files/Bicycle%20Lanes_508.pdf). Furthermore, the strategic placement of curb extensions will not only provide traffic calming by also reduce crossing distances by approximately 18' at unsignalized intersections (reduction from 44' to 26').

Multimodal facility and green streets changes

Minimal green space currently exists within the roadway right-of-way as the sidewalk facilities are located immediately adjacent to the curb. It's anticipated that the narrowing of curbs will both allow for the introduction of a protected bikeway, but also provide space for boulevards. In addition, curb extensions will be leveraged for additional green space to further promote traffic calming at unsignalized intersections.

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

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

**Response:**

The existing posted speed limit along CSAH 23 (Marshall St NE) is as follows:

From CSAH 153 (Lowry Ave NE) to 28th Ave NE: 30 mph

From 28th Ave NE to St. Anthony Pkwy: 35 mph

The proposed design speed limit(s) will be determined as part of the project development process based on data analysis, stakeholder input, and environmental review. At this time, an increase in the existing speed limit is not anticipated based on the surrounding land uses. Project elements such as curb extensions, streetscaping, and protected bikeway facility are anticipated to support the proposed design speed limit(s).

*(Limit 1,400 characters; approximately 200 words)*

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

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

| | |
|---|---|
| **Existing road configuration is a One-way, 3+ through lanes** | |
| **or** | |
| **Existing road configuration is a Two-way, 4+ through lanes** | |
| **Existing road has a design speed, posted speed limit, or speed study/data showing 85th percentile travel speeds in excess of 30 MPH or more** | Yes |
| **Existing road has AADT of greater than 15,000 vehicles per day** | |
| **List the AADT** | 5700 |

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

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

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

**If checked, please describe:**

Metro Transit Route 32 operates runs along CSAH 153 (Lowry Ave NE) and includes one stop within the project area at the northeast corner of the CSAH 23 (Marshall St NE) intersection. Route 32 provides east/west transit service from Robbinsdale to Rosedale Shopping Center and will provide a future transfer to the F Line service proposed along TH 65 (Central Ave NE).

While the corridor is home to many employers and industrial uses, CSAH 23 (Marshall St NE) also serves a diversity of commercial uses that serve residents in the Marshall Terrace and Bottineau neighborhoods. Below is a summary of destinations within 500 feet of CSAH 23 (Marshall St NE) which generate pedestrian activity:

-The Buttered Tin (Dining)

-56 Brewing (Entertainment)

-Tony Jaros River Garden (Bar)

-Violet Wine (Wine Store)

-We Are Nuts (Specialty Grocery)

-Conduit Sound (Recording Studio)

*(Limit 1,400 characters; approximately 200 words)*

| | |
|---|---|
| **Existing road is within 500? of other known pedestrian generators (e.g., school, civic/community center, senior housing, multifamily housing, regulatorily-designated affordable housing)** | Yes |

**If checked, please describe:**

The CSAH 23 (Marshall St NE) corridor also provides access to a variety of recreational and community destinations as well as a mix of housing types and density. Below is an overview of key community resources within 500' of the proposed project:

-Gateway Northeast (129 Units of Multifamily Housing, 77 of which are subsidized)

-Saint Hedwig Catholic Church (Place of Worship)

-RiverVillage (Senior Housing)

-River Terrace Apartments (Market Rate Multifamily Housing)

-Marshall Terrace Park (Recreation)

-Marshall Terrace Community Garden (Community Resource)

-Xcel Field Park (Recreation)

-Edgewater Park (Recreation)

CSAH 23 (Marshall St NE) serves as a critical connection to the Mississippi River for residents of Northeast Minneapolis, and connects to the Grand Rounds Scenic Byway system, both key destinations for pedestrians of all ages and abilities.

*(Limit 1,400 characters; approximately 200 words)*

## Measure A: Multimodal Elements and Existing Connections

**Response:**

The CSAH 23 (Marshall St NE) Reconstruction Project will include numerous benefits for multimodal users through the construction of a dedicated off-street bikeway, upgrades to the sidewalk and ADA ramps, and crossing improvements as feasible.

For people rolling and walking, the following improvements are anticipated to be completed as part of this project:

- Sidewalk free of obstructions to be constructed on both sides of the roadway

- Boulevard space to introduce complete and green streets elements to the corridor and separate people walking from people driving

- Pedestrian-scale lighting to improve nighttime visibility

- Narrow curb lines to shorten crossing distances (on-street parking removal and right-sizing lane widths)

- ADA compliant pedestrian ramps (per Hennepin County's ADA Transition Plan)

- Bumpouts to shorten crossing distances (where feasible)

- Enhanced pedestrian crossings (where feasible as determined during the design phase)

For people biking, the following improvements are anticipated to be completed as part of this project:

- Dedicated off-street bikeway to separate people biking from people walking and people driving

- Continuous north/south connection as illustrated in Attachment 14 - The Multimodal Connections Map

For people taking transit, this project will offer multimodal first and last mile connections to Metro Transit Route 32, which includes a stop at the CSAH 23 (Marshall St NE) and CSAH 153 (Lowry Ave NE) intersection.

The CSAH 23 (Marshall St NE) corridor is a Tier 1 alignment on the Regional Bicycle Transportation Network (RBTN). South of the project corridor, CSAH 23 (Marshall St NE) also connects to a Tier 2 alignment near 18th Ave NE. CSAH 23 (Marshall St NE) falls within a Rail Barrier Crossing Area as identified by the Regional Bicycle Barrier Crossing update. Given the rail barrier that runs north/south east of California St NE, CSAH 23 (Marshall St NE) falls within a Rail Barrier Crossing Area and will address this barrier by providing a consistent north/south connection when the next closest on-street north/south connection is nearly half a mile to the east.

This corridor was identified as a future enhanced bikeway within the county's 2017 Enhanced Bikeway Network Study (Attachment 06). This project will connect people walking and biking to the Grand Rounds Trail at St. Anthony Boulevard and a future off-street bikeway along CSAH 23 (Marshall St NE) to the south, which will provide a direct route to the St. Anthony neighborhood and Downtown Minneapolis.

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

**Transit Projects Not Requiring Construction**

*If the applicant is completing a transit application that is operations only, check the box and do not complete the remainder of the form. These projects will receive full points for the Risk Assessment.*

*Park-and-Ride and other transit construction projects require completion of the Risk Assessment below.*

**Check Here if Your Transit Project Does Not Require Construction**

## Measure A: Risk Assessment - Construction Projects

### 1. Public Involvement (20 Percent of Points)

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

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

*100%*

Yes

**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.*

**Response:**

The proposed improvements have been directly informed by community engagement over the last 20 years through various planning efforts, including the 2018 Marshall Street NE Transportation Feasibility Study. Recommendations from the feasibility study were sourced from a study work group comprised of neighborhood organizations (Bottineau, Sheridan, and Marshall Terrace), businesses, employers, and other agency stakeholders to engage a broad cross section of communities along the corridor. Study group representatives met in-person and communicated the views of their constituents and shared information about the planning process, serving as a two-way conduit for information. A summary of community engagement efforts can be found in Attachment 08.

The Marshall St NE website (hennepin.us/residents/transportation/marshallstne) provides a history of previous planning efforts, including the 2018 design study, and serves as a key resource for communicating changes to the public.

Additional engagement was conducted prior to a 2023 mill and overlay along the corridor. These efforts included coordination with Xcel Energy, who owns two facilities along the corridor, a re-engagement of the 2018 study group via an email update, a meeting with the Bottineau and Marshall Terrace neighborhood organizations, mailed flyers to residents and businesses along the corridor, and direct calls to businesses along CSAH 23 (Marshall St NE).

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

### 2. Layout (25 Percent of Points)

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

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

*100%*

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

*100%*

| | |
|---|---|
| **For projects where MnDOT trunk highways are impacted and a MnDOT Staff Approved layout is required. Layout approved by the applicant and all impacted local jurisdictions (i.e., cities/counties), and layout review and approval by MnDOT is pending. A PDF of the layout must be attached along with letters from each jurisdiction to receive points.** | |
| *75%* | |
| **Layout completed but not approved by all jurisdictions. A PDF of the layout must be attached to receive points.** | Yes |
| *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** | 1701727671080_Attachment 05 - Potential Concept.pdf |
| *Please upload attachment in PDF form* | |
| **Additional Attachments** | |
| *Please upload attachment in PDF form* | |
| **3. Review of Section 106 Historic Resources (15 Percent of Points)** | |
| **No known historic properties eligible for or listed in the National Register of Historic Places are located in the project area, and project is not located on an identified historic bridge** | Yes |
| *100%* | |
| **There are historical/archeological properties present but determination of ?no historic properties affected? is anticipated.** | |
| *100%* | |
| **Historic/archeological property impacted; determination of ?no adverse effect? anticipated** | |
| *80%* | |
| **Historic/archeological property impacted; determination of ?adverse effect? anticipated** | |
| *40%* | |
| **Unsure if there are any historic/archaeological properties in the project area.** | |
| *0%* | |
| **Project is located on an identified historic bridge** | |
| **4. Right-of-Way (25 Percent of Points)** | |
| **Right-of-way, permanent or temporary easements, and MnDOT agreement/limited-use permit either not required or all have been acquired** | |
| *100%* | |
| **Right-of-way, permanent or temporary easements, and/or MnDOT agreement/limited-use permit required - plat, legal descriptions, or official map complete** | |
| *50%* | |
| **Right-of-way, permanent or temporary easements, and/or MnDOT agreement/limited-use permit required - parcels identified** | Yes |
| *25%* | |
| **Right-of-way, permanent or temporary easements, and/or MnDOT agreement/limited-use permit required - parcels not all identified** | |
| *0%* | |
| **5. Railroad Involvement (15 Percent of Points)** | |
| **No railroad involvement on project or railroad Right-of-Way agreement is executed (include signature page, if applicable)** | Yes |
| *100%* | |
| **Signature Page** | |
| *Please upload attachment in PDF form* | |
| **Railroad Right-of-Way Agreement required; negotiations have begun** | |
| *50%* | |
| **Railroad Right-of-Way Agreement required; negotiations have not begun.** | |
| *0%* | |

## Measure A: Cost Effectiveness

| | |
|---|---|
| **Total Project Cost (entered in Project Cost Form):** | $11,280,000.00 |
| **Enter Amount of the Noise Walls:** | $0.00 |
| **Total Project Cost subtract the amount of the noise walls:** | $11,280,000.00 |
| **Enter amount of any outside, competitive funding:** | $0.00 |

**Attach documentation of award:**

**Points Awarded in Previous Criteria**

| | |
|---|---|
| **Cost Effectiveness** | $0.00 |

## Other Attachments

| File Name | Description | File Size |
|---|---|---|
| Attachment 00 - List of Attachments.pdf | Attachment 00 - List of Attachments | 77 KB |
| Attachment 01 - Project Narrative.pdf | Attachment 01 - Project Narrative | 100 KB |
| Attachment 02 - Project Location Map.pdf | Attachment 02 - Project Location Map | 1.4 MB |
| Attachment 03 - Existing Conditions Photos.pdf | Attachment 03 - Existing Conditions Photos | 208 KB |
| Attachment 04 - Potential Typical Section.pdf | Attachment 04 - Potential Typical Section | 127 KB |
| Attachment 05 - Potential Concept.pdf | Attachment 05 - Potential Concept | 766 KB |
| Attachment 06 - Hennepin County Enhanced Bikeway Study Maps.pdf | Attachment 06 - Hennepin County Enhanced Bikeway Study Maps | 4.0 MB |
| Attachment 07 - City of Minneapolis All Ages and Abilities Map.pdf | Attachment 07 - City of Minneapolis All Ages and Abilities Map | 147 KB |
| Attachment 08 - Marshall St NE Transportation Study Engagement.pdf | Attachment 08 - Marshall St NE Transportation Study Engagement | 1.4 MB |
| Attachment 09 - Disadvantaged Communities and Resources Map.pdf | Attachment 09 - Disadvantaged Communities and Resources Map | 1.1 MB |
| Attachment 10 - Affordable Housing Access Map & Detail Summary.pdf | Attachment 10 - Affordable Housing Access Map & Detail Summary | 318 KB |
| Attachment 11 - Hennepin County Streetlight Analysis.pdf | Attachment 11 - Hennepin County Streetlight Analysis | 65 KB |
| Attachment 12 - Crash Map and Detail Listing.pdf | Attachment 12 - Crash Map and Detail Listing | 584 KB |
| Attachment 13 - Crash Modification Factors.pdf | Attachment 13 - Crash Modification Factors | 818 KB |
| Attachment 14 - Multimodal Connections Map.pdf | Attachment 14 - Multimodal Connections Map | 1.5 MB |
| Attachment 15 - Notice of Application Submittal to City of Minneapolis.pdf | Attachment 15 - Notice of Application Submittal to City of Minneapolis | 207 KB |
| Attachment 16 - Hennepin County and City of Minneapolis Maintenance Agreement.pdf | Attachment 16 - Hennepin County and City of Minneapolis Maintenance Agreement | 4.5 MB |
| Attachment 17 - MPRB Support Letter.pdf | Attachment 17 - MPRB Support Letter | 275 KB |

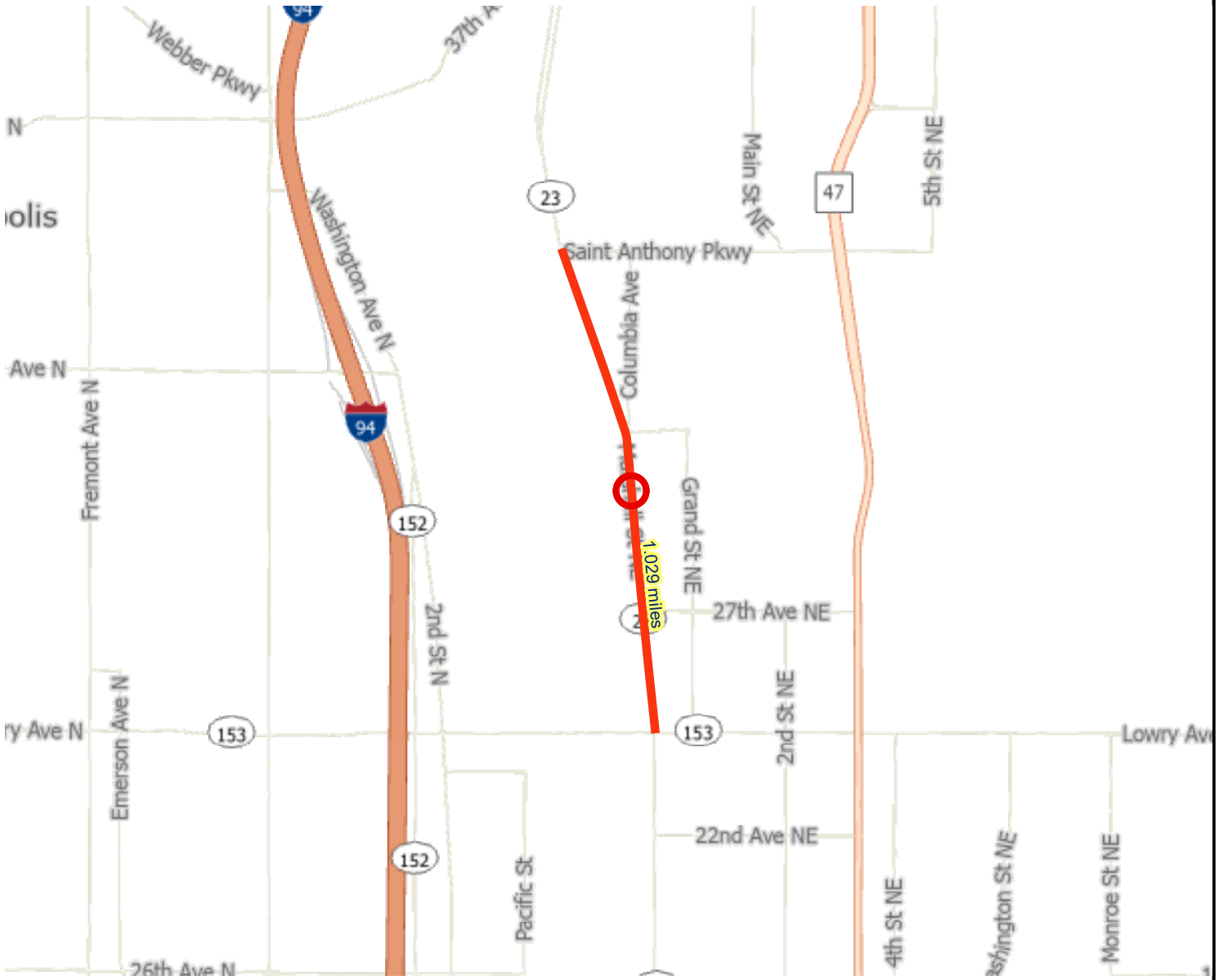
# Regional Economy

Roadway Reconstruction/Modernization Project: CSAH 23 (Marshall St NE) Phase 2 Reconstruction Project | Map ID

## Results

**WITHIN ONE MI** of project:
Postsecondary Students: 0

Totals by City:
**Fridley**
Population: 0
Employment: 0
Mfg and Dist Employment: 0
**Minneapolis**
Population: 23278
Employment: 10153
Mfg and Dist Employment: 4004




Project Points
Project
Manfacturing/Distribution Centers
Job Concentration Centers

0 0.2 0.4 0.8 1.2 1.6 Miles

Created: 10/25/2023
LandscapeRSA5

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

METROPOLITAN COUNCIL

# Transit Connections

Roadway Reconstruction/Modernization Project: CSAH 23 (Marshall St NE) Phase 2 Reconstruction Project | Map ID

## Results

Transit with a Direct Connection to project:
11 32
*Lowry

**indicates Planned Alignments*

Transit Market areas: 2


Project Points
Project
Project Area
Active Stop
Arterial Bus Rapid Transit

Commuter Rail
Dedicated Bus Rapid Transit
Highway Bus Rapid Transit
Light Rail
Arterial Bus Rapid Transit

Commuter Rail
Dedicated Bus Rapid Transit
Highway Bus Rapid Transit
Light Rail
Transit Routes

Arterial Bus Rapid Transit
Dedicated Bus Rapid Transit
Highway Bus Rapid Transit
Light Rail
Modern Streetcar

Undetermined
Arterial Bus Rapid Transit
Commuter Rail
Dedicated Bus Rapid Transit
Highway Bus Rapid Transit

Light Rail
Modern Streetcar
Undetermined

0 0.2 0.4 0.8 1.2 1.6 Miles

Created: 10/25/2023
LandscapeRSA3

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

METROPOLITAN COUNCIL

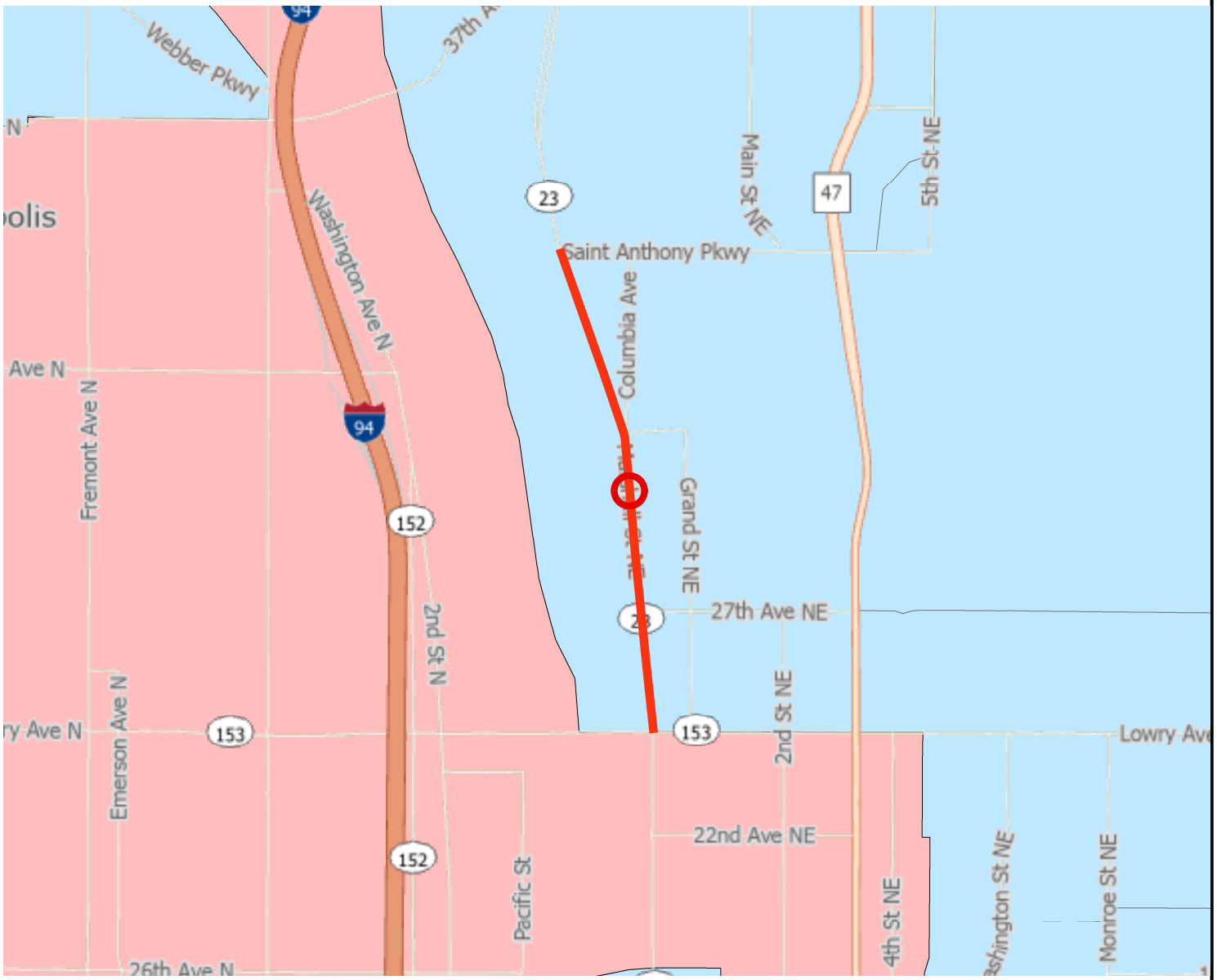
# Socio-Economic Conditions

Roadway Reconstruction/Modernization Project: CSAH 23 (Marshall St NE) Phase 2 Reconstruction Project | Map ID: 169823

## Results

Total of publicly subsidized rental housing units in census tracts within 1/2 mile: 1654

Project located IN an Area of Concentrated Poverty.




Points
Lines
Area of Concentrated Poverty
Regional Environmental Justice Area

0 0.2 0.4 0.8 1.2 1.6 Miles

Created: 10/25/2023
LandscapeRSA2

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

METROPOLITAN COUNCIL

# CSAH 23 (Marshall St NE) Phase 2 Reconstruction Project

Synchro Report – Congestion Reduction

Existing conditions (PM Peak)

50: CSAH 23 & Lowry Avenue

| Direction | All |
|---|---|
| Future Volume (vph) | 2022 |
| Total Delay / Veh (s/v) | 30 |
| CO Emissions (kg) | 2.62 |
| NOx Emissions (kg) | 0.51 |
| VOC Emissions (kg) | 0.61 |

Proposed conditions (PM Peak)

50: CSAH 23 & Lowry Avenue

| Direction | All |
|---|---|
| Future Volume (vph) | 2022 |
| Total Delay / Veh (s/v) | 30 |
| CO Emissions (kg) | 2.63 |
| NOx Emissions (kg) | 0.51 |
| VOC Emissions (kg) | 0.61 |

---

Existing conditions (PM Peak)

40: CSAH 23 & Access/27th Avenue

| Direction | All |
|---|---|
| Future Volume (vph) | 723 |
| Total Delay / Veh (s/v) | 6 |
| CO Emissions (kg) | 0.90 |
| NOx Emissions (kg) | 0.18 |
| VOC Emissions (kg) | 0.21 |

Proposed conditions (PM Peak)

40: CSAH 23 & Access/27th Avenue

| Direction | All |
|---|---|
| Future Volume (vph) | 723 |
| Total Delay / Veh (s/v) | 3 |
| CO Emissions (kg) | 0.80 |
| NOx Emissions (kg) | 0.15 |
| VOC Emissions (kg) | 0.18 |

Existing conditions (PM Peak)

30: CSAH 23 & 31st Avenue

| Direction | All |
|---|---|
| Future Volume (vph) | 557 |
| Total Delay / Veh (s/v) | 2 |
| CO Emissions (kg) | 0.68 |
| NOx Emissions (kg) | 0.13 |
| VOC Emissions (kg) | 0.16 |

Proposed conditions (PM Peak)

30: CSAH 23 & 31st Avenue

| Direction | All |
|---|---|
| Future Volume (vph) | 557 |
| Total Delay / Veh (s/v) | 1 |
| CO Emissions (kg) | 0.61 |
| NOx Emissions (kg) | 0.12 |
| VOC Emissions (kg) | 0.14 |

---

Existing conditions (PM Peak)

20: CSAH 23 & Saint Anthony Parkway

| Direction | All |
|---|---|
| Future Volume (vph) | 886 |
| Total Delay / Veh (s/v) | 13 |
| CO Emissions (kg) | 1.09 |
| NOx Emissions (kg) | 0.21 |
| VOC Emissions (kg) | 0.25 |

Proposed conditions (PM Peak)

20: CSAH 23 & Saint Anthony Parkway

| Direction | All |
|---|---|
| Future Volume (vph) | 886 |
| Total Delay / Veh (s/v) | 13 |
| CO Emissions (kg) | 1.03 |
| NOx Emissions (kg) | 0.20 |
| VOC Emissions (kg) | 0.24 |

Synchro Report for existing conditions (PM Peak) CSAH 23 & CSAH 153

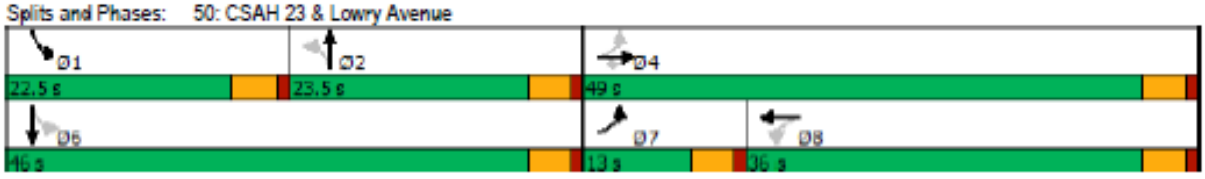
Marshall Street RS
Existing PM Peak

11/22/2023
50: CSAH 23 & Lowry Avenue

| Lane Group | EBL | EBT | EBR | WBL | WBT | NBL | NBT | SBL | SBT |
|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | |
| Traffic Volume (vph) | 101 | 505 | 71 | 34 | 596 | 73 | 248 | 41 | 166 |
| Future Volume (vph) | 101 | 505 | 71 | 34 | 596 | 73 | 248 | 41 | 166 |
| Turn Type | pm+pt | NA | Perm | Perm | NA | Perm | NA | pm+pt | NA |
| Protected Phases | 7 | 4 | | | 8 | | 2 | 1 | 6 |
| Permitted Phases | 4 | | 4 | 8 | | 2 | | 6 | |
| Detector Phase | 7 | 4 | 4 | 8 | 8 | 2 | 2 | 1 | 6 |
| Switch Phase | | | | | | | | | |
| Minimum Initial (s) | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 |
| Minimum Split (s) | 13.0 | 22.5 | 22.5 | 22.5 | 22.5 | 22.5 | 22.5 | 22.5 | 22.5 |
| Total Split (s) | 13.0 | 49.0 | 49.0 | 36.0 | 36.0 | 23.5 | 23.5 | 22.5 | 46.0 |
| Total Split (%) | 13.7% | 51.6% | 51.6% | 37.9% | 37.9% | 24.7% | 24.7% | 23.7% | 48.4% |
| Yellow Time (s) | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 |
| All-Red Time (s) | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| Lost Time Adjust (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Lost Time (s) | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 |
| Lead/Lag | Lead | | | Lag | Lag | Lag | Lag | Lead | |
| Lead-Lag Optimize? | Yes | | | Yes | Yes | Yes | Yes | Yes | |
| Recall Mode | None | None | None | None | None | Min | Min | Min | Min |
| Act Effct Green (s) | 41.8 | 41.8 | 41.8 | 31.9 | 31.9 | 17.3 | 17.3 | 28.8 | 28.8 |
| Actuated g/C Ratio | 0.52 | 0.52 | 0.52 | 0.40 | 0.40 | 0.22 | 0.22 | 0.36 | 0.36 |
| v/c Ratio | 0.45 | 0.56 | 0.09 | 0.12 | 0.93 | 0.34 | 0.78 | 0.17 | 0.46 |
| Control Delay | 16.5 | 15.9 | 3.6 | 18.9 | 46.7 | 32.5 | 45.1 | 19.0 | 19.6 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 16.5 | 15.9 | 3.6 | 18.9 | 46.7 | 32.5 | 45.1 | 19.0 | 19.6 |
| LOS | B | B | A | B | D | C | D | B | B |
| Approach Delay | | 14.7 | | | 45.2 | | 42.5 | | 19.5 |
| Approach LOS | | B | | | D | | D | | B |

| Intersection Summary | |
|---|---|
| Cycle Length: 95 | |
| Actuated Cycle Length: 79.7 | |
| Natural Cycle: 95 | |
| Control Type: Actuated-Uncoordinated | |
| Maximum v/c Ratio: 0.93 | |
| Intersection Signal Delay: 30.5 | Intersection LOS: C |
| Intersection Capacity Utilization 74.0% | ICU Level of Service D |
| Analysis Period (min) 15 | |

Splits and Phases: 50: CSAH 23 & Lowry Avenue



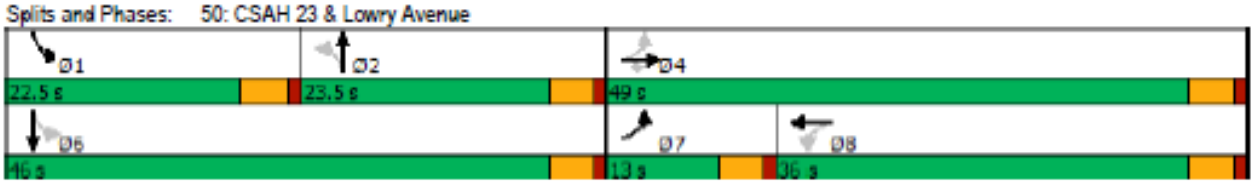
Synchro Report for proposed conditions (PM Peak) CSAH 23 & CSAH 153

Timings
Marshall Street - Build PM Peak 11/22/2023

| Lane Group | EBL | EBT | EBR | WBL | WBT | NBL | NBT | SBL | SBT |
|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | |
| Traffic Volume (vph) | 101 | 505 | 71 | 34 | 596 | 73 | 248 | 41 | 166 |
| Future Volume (vph) | 101 | 505 | 71 | 34 | 596 | 73 | 248 | 41 | 166 |
| Turn Type | pm+pt | NA | Perm | Perm | NA | Perm | NA | pm+pt | NA |
| Protected Phases | 7 | 4 | | | 8 | | 2 | 1 | 6 |
| Permitted Phases | 4 | | 4 | 8 | | 2 | | 6 | |
| Detector Phase | 7 | 4 | 4 | 8 | 8 | 2 | 2 | 1 | 6 |
| Switch Phase | | | | | | | | | |
| Minimum Initial (s) | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 |
| Minimum Split (s) | 13.0 | 22.5 | 22.5 | 22.5 | 22.5 | 22.5 | 22.5 | 22.5 | 22.5 |
| Total Split (s) | 13.0 | 49.0 | 49.0 | 36.0 | 36.0 | 23.5 | 23.5 | 22.5 | 46.0 |
| Total Split (%) | 13.7% | 51.6% | 51.6% | 37.9% | 37.9% | 24.7% | 24.7% | 23.7% | 48.4% |
| Yellow Time (s) | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 |
| All-Red Time (s) | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| Lost Time Adjust (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Lost Time (s) | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 |
| Lead/Lag | Lead | | | Lag | Lag | Lag | Lag | Lead | |
| Lead-Lag Optimize? | Yes | | | Yes | Yes | Yes | Yes | Yes | |
| Recall Mode | None | None | None | None | None | Min | Min | Min | Min |
| Act Effct Green (s) | 41.8 | 41.8 | 41.8 | 31.9 | 31.9 | 17.3 | 17.3 | 28.8 | 28.8 |
| Actuated g/C Ratio | 0.52 | 0.52 | 0.52 | 0.40 | 0.40 | 0.22 | 0.22 | 0.36 | 0.36 |
| v/c Ratio | 0.45 | 0.56 | 0.09 | 0.12 | 0.93 | 0.34 | 0.78 | 0.17 | 0.46 |
| Control Delay | 16.5 | 15.9 | 3.6 | 18.9 | 46.7 | 32.5 | 45.1 | 19.0 | 19.6 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 16.5 | 15.9 | 3.6 | 18.9 | 46.7 | 32.5 | 45.1 | 19.0 | 19.6 |
| LOS | B | B | A | B | D | C | D | B | B |
| Approach Delay | | 14.7 | | | 45.2 | | 42.5 | | 19.5 |
| Approach LOS | | B | | | D | | D | | B |

| Intersection Summary | |
|---|---|
| Cycle Length: 95 | |
| Actuated Cycle Length: 79.7 | |
| Natural Cycle: 95 | |
| Control Type: Actuated-Uncoordinated | |
| Maximum v/c Ratio: 0.93 | |
| Intersection Signal Delay: 30.5 | Intersection LOS: C |
| Intersection Capacity Utilization 74.0% | ICU Level of Service D |
| Analysis Period (min) 15 | |

Splits and Phases: 50: CSAH 23 & Lowry Avenue



Synchro Report for existing conditions (PM Peak) CSAH 23 & 27th Ave

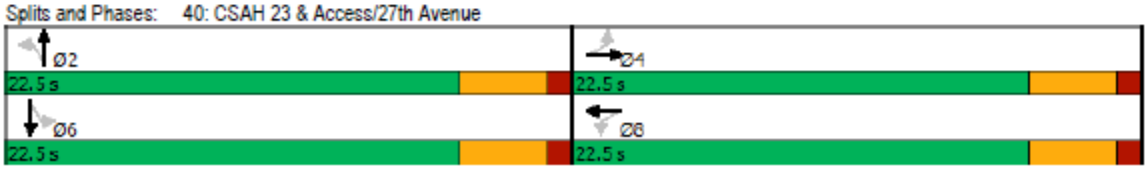
Marshall Street RS
Existing PM Peak

11/22/2023
40: CSAH 23 & Access/27th Avenue

| Lane Group | EBT | WBL | WBT | NBL | NBT | SBL | SBT |
|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | |
| Traffic Volume (vph) | 4 | 54 | 5 | 5 | 344 | 13 | 233 |
| Future Volume (vph) | 4 | 54 | 5 | 5 | 344 | 13 | 233 |
| Turn Type | NA | Perm | NA | Perm | NA | Perm | NA |
| Protected Phases | 4 | | 8 | | 2 | | 6 |
| Permitted Phases | | 8 | | 2 | | 6 | |
| Detector Phase | 4 | 8 | 8 | 2 | 2 | 6 | 6 |
| Switch Phase | | | | | | | |
| Minimum Initial (s) | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 |
| Minimum Split (s) | 22.5 | 22.5 | 22.5 | 22.5 | 22.5 | 22.5 | 22.5 |
| Total Split (s) | 22.5 | 22.5 | 22.5 | 22.5 | 22.5 | 22.5 | 22.5 |
| Total Split (%) | 50.0% | 50.0% | 50.0% | 50.0% | 50.0% | 50.0% | 50.0% |
| Yellow Time (s) | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 |
| All-Red Time (s) | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| Lost Time Adjust (s) | 0.0 | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Lost Time (s) | 4.5 | | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 |
| Lead/Lag | | | | | | | |
| Lead-Lag Optimize? | | | | | | | |
| Recall Mode | None | None | None | Min | Min | Min | Min |
| Act Effct Green (s) | 7.1 | | 7.1 | 21.9 | 21.9 | 21.9 | 21.9 |
| Actuated g/C Ratio | 0.23 | | 0.23 | 0.70 | 0.70 | 0.70 | 0.70 |
| v/c Ratio | 0.02 | | 0.31 | 0.01 | 0.32 | 0.02 | 0.19 |
| Control Delay | 8.7 | | 9.5 | 4.6 | 5.5 | 4.8 | 4.8 |
| Queue Delay | 0.0 | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 8.7 | | 9.5 | 4.6 | 5.5 | 4.8 | 4.8 |
| LOS | A | | A | A | A | A | A |
| Approach Delay | 8.7 | | 9.5 | | 5.4 | | 4.8 |
| Approach LOS | A | | A | | A | | A |

| Intersection Summary | |
|---|---|
| Cycle Length: 45 | |
| Actuated Cycle Length: 31.2 | |
| Natural Cycle: 45 | |
| Control Type: Actuated-Uncoordinated | |
| Maximum v/c Ratio: 0.32 | |
| Intersection Signal Delay: 5.8 | Intersection LOS: A |
| Intersection Capacity Utilization 39.4% | ICU Level of Service A |
| Analysis Period (min) 15 | |

Splits and Phases: 40: CSAH 23 & Access/27th Avenue



Synchro Report for proposed conditions (PM Peak) CSAH 23 & 27th Ave

County staff are proposing to remove the existing traffic signal at the CSAH 23 and 27th Ave intersection (pending further evaluation and local approval). Therefore, there are no signal timing plans for the proposed conditions.

Synchro Report for existing conditions (PM Peak) CSAH 23 & 31st Ave

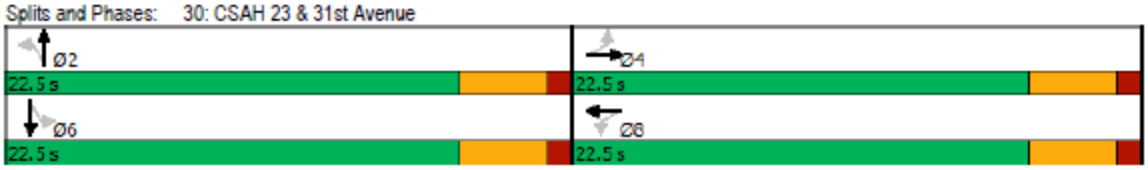
Marshall Street RS
Existing PM Peak

11/22/2023
30: CSAH 23 & 31st Avenue

| Lane Group | EBL | EBT | WBL | WBT | NBT | SBL | SBT |
|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | |
| Traffic Volume (vph) | 16 | 0 | 2 | 0 | 325 | 3 | 187 |
| Future Volume (vph) | 16 | 0 | 2 | 0 | 325 | 3 | 187 |
| Turn Type | Perm | NA | Perm | NA | NA | Perm | NA |
| Protected Phases | | 4 | | 8 | 2 | | 6 |
| Permitted Phases | 4 | | 8 | | | 6 | |
| Detector Phase | 4 | 4 | 8 | 8 | 2 | 6 | 6 |
| Switch Phase | | | | | | | |
| Minimum Initial (s) | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 |
| Minimum Split (s) | 22.5 | 22.5 | 22.5 | 22.5 | 22.5 | 22.5 | 22.5 |
| Total Split (s) | 22.5 | 22.5 | 22.5 | 22.5 | 22.5 | 22.5 | 22.5 |
| Total Split (%) | 50.0% | 50.0% | 50.0% | 50.0% | 50.0% | 50.0% | 50.0% |
| Yellow Time (s) | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 |
| All-Red Time (s) | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| Lost Time Adjust (s) | | 0.0 | | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Lost Time (s) | | 4.5 | | 4.5 | 4.5 | 4.5 | 4.5 |
| Lead/Lag | | | | | | | |
| Lead-Lag Optimize? | | | | | | | |
| Recall Mode | None | None | None | None | Min | Min | Min |
| Act Effct Green (s) | | 5.8 | | 5.8 | 25.3 | 25.3 | 25.3 |
| Actuated g/C Ratio | | 0.21 | | 0.21 | 0.91 | 0.91 | 0.91 |
| v/c Ratio | | 0.08 | | 0.04 | 0.21 | 0.00 | 0.12 |
| Control Delay | | 5.1 | | 2.6 | 2.1 | 2.3 | 1.9 |
| Queue Delay | | 0.0 | | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | | 5.1 | | 2.6 | 2.1 | 2.3 | 1.9 |
| LOS | | A | | A | A | A | A |
| Approach Delay | | 5.1 | | 2.6 | 2.1 | | 1.9 |
| Approach LOS | | A | | A | A | | A |

| Intersection Summary | |
|---|---|
| Cycle Length: 45 | |
| Actuated Cycle Length: 27.9 | |
| Natural Cycle: 45 | |
| Control Type: Actuated-Uncoordinated | |
| Maximum v/c Ratio: 0.21 | |
| Intersection Signal Delay: 2.2 | Intersection LOS: A |
| Intersection Capacity Utilization 29.2% | ICU Level of Service A |
| Analysis Period (min) 15 | |

Splits and Phases: 30: CSAH 23 & 31st Avenue



Synchro Report for proposed conditions (PM Peak) CSAH 23 & 31st Ave

County staff are proposing to remove the existing traffic signal at the CSAH 23 and 31st Ave intersection (pending further evaluation and local approval). Therefore, there are no signal timing plans for the proposed conditions.

Synchro Report for existing conditions (PM Peak) CSAH 23 & St. Anthony Pkwy

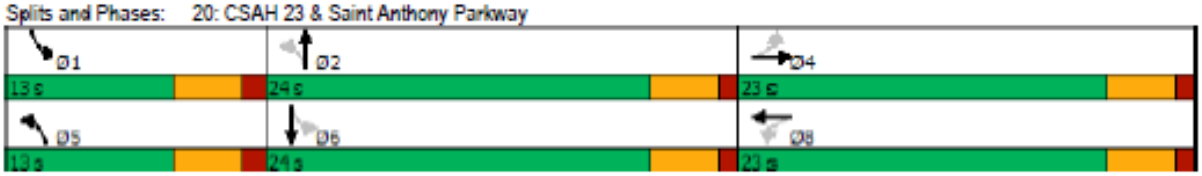
Marshall Street RS
Existing PM Peak

11/22/2023
20: CSAH 23 & Saint Anthony Parkway

| Lane Group | EBT | WBL | WBT | NBL | NBT | SBL | SBT |
|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | |
| Traffic Volume (vph) | 102 | 19 | 132 | 44 | 286 | 45 | 142 |
| Future Volume (vph) | 102 | 19 | 132 | 44 | 286 | 45 | 142 |
| Turn Type | NA | Perm | NA | pm+pt | NA | pm+pt | NA |
| Protected Phases | 4 | | 8 | 5 | 2 | 1 | 6 |
| Permitted Phases | | 8 | | 2 | | 6 | |
| Detector Phase | 4 | 8 | 8 | 5 | 2 | 1 | 6 |
| Switch Phase | | | | | | | |
| Minimum Initial (s) | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 |
| Minimum Split (s) | 22.5 | 22.5 | 22.5 | 13.0 | 22.5 | 13.0 | 22.5 |
| Total Split (s) | 23.0 | 23.0 | 23.0 | 13.0 | 24.0 | 13.0 | 24.0 |
| Total Split (%) | 38.3% | 38.3% | 38.3% | 21.7% | 40.0% | 21.7% | 40.0% |
| Yellow Time (s) | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 |
| All-Red Time (s) | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| Lost Time Adjust (s) | 0.0 | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Lost Time (s) | 4.5 | | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 |
| Lead/Lag | | | | Lead | Lag | Lead | Lag |
| Lead-Lag Optimize? | | | | Yes | Yes | Yes | Yes |
| Recall Mode | None | None | None | None | Min | None | Min |
| Act Effct Green (s) | 11.1 | | 11.1 | 16.7 | 14.7 | 16.8 | 14.7 |
| Actuated g/C Ratio | 0.28 | | 0.28 | 0.43 | 0.38 | 0.43 | 0.38 |
| v/c Ratio | 0.28 | | 0.48 | 0.08 | 0.46 | 0.10 | 0.23 |
| Control Delay | 12.1 | | 14.5 | 6.5 | 14.3 | 6.7 | 12.2 |
| Queue Delay | 0.0 | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 12.1 | | 14.5 | 6.5 | 14.3 | 6.7 | 12.2 |
| LOS | B | | B | A | B | A | B |
| Approach Delay | 12.1 | | 14.5 | | 13.3 | | 10.9 |
| Approach LOS | B | | B | | B | | B |

| Intersection Summary | |
|---|---|
| Cycle Length: 60 | |
| Actuated Cycle Length: 39.1 | |
| Natural Cycle: 60 | |
| Control Type: Actuated-Uncoordinated | |
| Maximum v/c Ratio: 0.48 | |
| Intersection Signal Delay: 12.9 | Intersection LOS: B |
| Intersection Capacity Utilization 54.5% | ICU Level of Service A |
| Analysis Period (min) 15 | |

Splits and Phases: 20: CSAH 23 & Saint Anthony Parkway



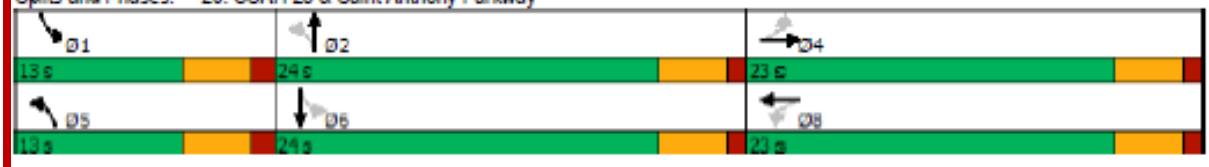
Synchro Report for proposed conditions (PM Peak) CSAH 23 & St. Anthony Pkwy

Timings
Marshall Street - Build PM Peak 11/22/2023

| Lane Group | EBT | WBL | WBT | NBL | NBT | SBL | SBT |
|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | |
| Traffic Volume (vph) | 102 | 19 | 132 | 44 | 286 | 45 | 142 |
| Future Volume (vph) | 102 | 19 | 132 | 44 | 286 | 45 | 142 |
| Turn Type | NA | Perm | NA | pm+pt | NA | pm+pt | NA |
| Protected Phases | 4 | | 8 | 5 | 2 | 1 | 6 |
| Permitted Phases | | 8 | | 2 | | 6 | |
| Detector Phase | 4 | 8 | 8 | 5 | 2 | 1 | 6 |
| Switch Phase | | | | | | | |
| Minimum Initial (s) | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 |
| Minimum Split (s) | 22.5 | 22.5 | 22.5 | 13.0 | 22.5 | 13.0 | 22.5 |
| Total Split (s) | 23.0 | 23.0 | 23.0 | 13.0 | 24.0 | 13.0 | 24.0 |
| Total Split (%) | 38.3% | 38.3% | 38.3% | 21.7% | 40.0% | 21.7% | 40.0% |
| Yellow Time (s) | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 |
| All-Red Time (s) | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| Lost Time Adjust (s) | 0.0 | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Lost Time (s) | 4.5 | | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 |
| Lead/Lag | | | | Lead | Lag | Lead | Lag |
| Lead-Lag Optimize? | | | | Yes | Yes | Yes | Yes |
| Recall Mode | None | None | None | None | Min | None | Min |
| Act Effct Green (s) | 11.1 | | 11.1 | 16.7 | 14.7 | 16.8 | 14.7 |
| Actuated g/C Ratio | 0.28 | | 0.28 | 0.43 | 0.38 | 0.43 | 0.38 |
| v/c Ratio | 0.28 | | 0.48 | 0.08 | 0.46 | 0.10 | 0.23 |
| Control Delay | 12.1 | | 14.5 | 6.5 | 14.3 | 6.7 | 12.2 |
| Queue Delay | 0.0 | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 12.1 | | 14.5 | 6.5 | 14.3 | 6.7 | 12.2 |
| LOS | B | | B | A | B | A | B |
| Approach Delay | 12.1 | | 14.5 | | 13.3 | | 10.9 |
| Approach LOS | B | | B | | B | | B |

| Intersection Summary | |
|---|---|
| Cycle Length: 60 | |
| Actuated Cycle Length: 39.1 | |
| Natural Cycle: 60 | |
| Control Type: Actuated-Uncoordinated | |
| Maximum v/c Ratio: 0.48 | |
| Intersection Signal Delay: 12.9 | Intersection LOS: B |
| Intersection Capacity Utilization 54.5% | ICU Level of Service A |
| Analysis Period (min) 15 | |

Splits and Phases: 20: CSAH 23 & Saint Anthony Parkway



# CSAH 23 (Marshall St NE) Phase 2 Reconstruction Project

Synchro Report – Congestion Reduction

Existing conditions (PM Peak)

50: CSAH 23 & Lowry Avenue

| Direction | All |
|---|---|
| Future Volume (vph) | 2022 |
| Total Delay / Veh (s/v) | 30 |
| CO Emissions (kg) | 2.62 |
| NOx Emissions (kg) | 0.51 |
| VOC Emissions (kg) | 0.61 |

Proposed conditions (PM Peak)

50: CSAH 23 & Lowry Avenue

| Direction | All |
|---|---|
| Future Volume (vph) | 2022 |
| Total Delay / Veh (s/v) | 30 |
| CO Emissions (kg) | 2.63 |
| NOx Emissions (kg) | 0.51 |
| VOC Emissions (kg) | 0.61 |

---

Existing conditions (PM Peak)

40: CSAH 23 & Access/27th Avenue

| Direction | All |
|---|---|
| Future Volume (vph) | 723 |
| Total Delay / Veh (s/v) | 6 |
| CO Emissions (kg) | 0.90 |
| NOx Emissions (kg) | 0.18 |
| VOC Emissions (kg) | 0.21 |

Proposed conditions (PM Peak)

40: CSAH 23 & Access/27th Avenue

| Direction | All |
|---|---|
| Future Volume (vph) | 723 |
| Total Delay / Veh (s/v) | 3 |
| CO Emissions (kg) | 0.80 |
| NOx Emissions (kg) | 0.15 |
| VOC Emissions (kg) | 0.18 |

Existing conditions (PM Peak)

30: CSAH 23 & 31st Avenue

| Direction | All |
|---|---|
| Future Volume (vph) | 557 |
| Total Delay / Veh (s/v) | 2 |
| CO Emissions (kg) | 0.68 |
| NOx Emissions (kg) | 0.13 |
| VOC Emissions (kg) | 0.16 |

Proposed conditions (PM Peak)

30: CSAH 23 & 31st Avenue

| Direction | All |
|---|---|
| Future Volume (vph) | 557 |
| Total Delay / Veh (s/v) | 1 |
| CO Emissions (kg) | 0.61 |
| NOx Emissions (kg) | 0.12 |
| VOC Emissions (kg) | 0.14 |

---

Existing conditions (PM Peak)

20: CSAH 23 & Saint Anthony Parkway

| Direction | All |
|---|---|
| Future Volume (vph) | 886 |
| Total Delay / Veh (s/v) | 13 |
| CO Emissions (kg) | 1.09 |
| NOx Emissions (kg) | 0.21 |
| VOC Emissions (kg) | 0.25 |

Proposed conditions (PM Peak)

20: CSAH 23 & Saint Anthony Parkway

| Direction | All |
|---|---|
| Future Volume (vph) | 886 |
| Total Delay / Veh (s/v) | 13 |
| CO Emissions (kg) | 1.03 |
| NOx Emissions (kg) | 0.20 |
| VOC Emissions (kg) | 0.24 |

Synchro Report for existing conditions (PM Peak) CSAH 23 & CSAH 153

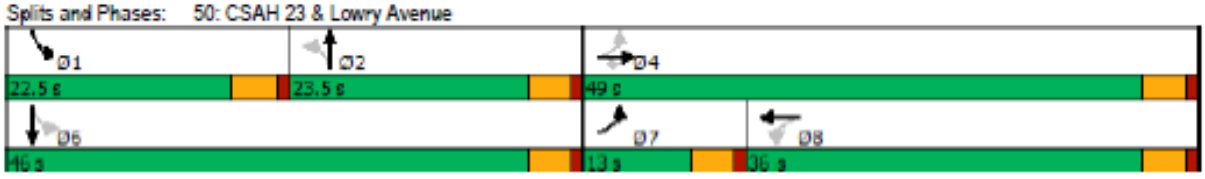
Marshall Street RS
Existing PM Peak

11/22/2023
50: CSAH 23 & Lowry Avenue

| Lane Group | EBL | EBT | EBR | WBL | WBT | NBL | NBT | SBL | SBT |
|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | |
| Traffic Volume (vph) | 101 | 505 | 71 | 34 | 596 | 73 | 248 | 41 | 166 |
| Future Volume (vph) | 101 | 505 | 71 | 34 | 596 | 73 | 248 | 41 | 166 |
| Turn Type | pm+pt | NA | Perm | Perm | NA | Perm | NA | pm+pt | NA |
| Protected Phases | 7 | 4 | | | 8 | | 2 | 1 | 6 |
| Permitted Phases | 4 | | 4 | 8 | | 2 | | 6 | |
| Detector Phase | 7 | 4 | 4 | 8 | 8 | 2 | 2 | 1 | 6 |
| Switch Phase | | | | | | | | | |
| Minimum Initial (s) | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 |
| Minimum Split (s) | 13.0 | 22.5 | 22.5 | 22.5 | 22.5 | 22.5 | 22.5 | 22.5 | 22.5 |
| Total Split (s) | 13.0 | 49.0 | 49.0 | 36.0 | 36.0 | 23.5 | 23.5 | 22.5 | 46.0 |
| Total Split (%) | 13.7% | 51.6% | 51.6% | 37.9% | 37.9% | 24.7% | 24.7% | 23.7% | 48.4% |
| Yellow Time (s) | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 |
| All-Red Time (s) | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| Lost Time Adjust (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Lost Time (s) | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 |
| Lead/Lag | Lead | | | Lag | Lag | Lag | Lag | Lead | |
| Lead-Lag Optimize? | Yes | | | Yes | Yes | Yes | Yes | Yes | |
| Recall Mode | None | None | None | None | None | Min | Min | Min | Min |
| Act Effct Green (s) | 41.8 | 41.8 | 41.8 | 31.9 | 31.9 | 17.3 | 17.3 | 28.8 | 28.8 |
| Actuated g/C Ratio | 0.52 | 0.52 | 0.52 | 0.40 | 0.40 | 0.22 | 0.22 | 0.36 | 0.36 |
| v/c Ratio | 0.45 | 0.56 | 0.09 | 0.12 | 0.93 | 0.34 | 0.78 | 0.17 | 0.46 |
| Control Delay | 16.5 | 15.9 | 3.6 | 18.9 | 46.7 | 32.5 | 45.1 | 19.0 | 19.6 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 16.5 | 15.9 | 3.6 | 18.9 | 46.7 | 32.5 | 45.1 | 19.0 | 19.6 |
| LOS | B | B | A | B | D | C | D | B | B |
| Approach Delay | | 14.7 | | | 45.2 | | 42.5 | | 19.5 |
| Approach LOS | | B | | | D | | D | | B |

| Intersection Summary | |
|---|---|
| Cycle Length: 95 | |
| Actuated Cycle Length: 79.7 | |
| Natural Cycle: 95 | |
| Control Type: Actuated-Uncoordinated | |
| Maximum v/c Ratio: 0.93 | |
| Intersection Signal Delay: 30.5 | Intersection LOS: C |
| Intersection Capacity Utilization 74.0% | ICU Level of Service D |
| Analysis Period (min) 15 | |

Splits and Phases: 50: CSAH 23 & Lowry Avenue



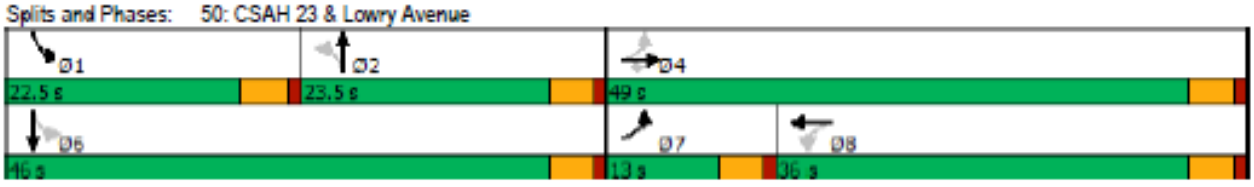
Synchro Report for proposed conditions (PM Peak) CSAH 23 & CSAH 153

Timings
Marshall Street - Build PM Peak 11/22/2023

| Lane Group | EBL | EBT | EBR | WBL | WBT | NBL | NBT | SBL | SBT |
|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | |
| Traffic Volume (vph) | 101 | 505 | 71 | 34 | 596 | 73 | 248 | 41 | 166 |
| Future Volume (vph) | 101 | 505 | 71 | 34 | 596 | 73 | 248 | 41 | 166 |
| Turn Type | pm+pt | NA | Perm | Perm | NA | Perm | NA | pm+pt | NA |
| Protected Phases | 7 | 4 | | | 8 | | 2 | 1 | 6 |
| Permitted Phases | 4 | | 4 | 8 | | 2 | | 6 | |
| Detector Phase | 7 | 4 | 4 | 8 | 8 | 2 | 2 | 1 | 6 |
| Switch Phase | | | | | | | | | |
| Minimum Initial (s) | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 |
| Minimum Split (s) | 13.0 | 22.5 | 22.5 | 22.5 | 22.5 | 22.5 | 22.5 | 22.5 | 22.5 |
| Total Split (s) | 13.0 | 49.0 | 49.0 | 36.0 | 36.0 | 23.5 | 23.5 | 22.5 | 46.0 |
| Total Split (%) | 13.7% | 51.6% | 51.6% | 37.9% | 37.9% | 24.7% | 24.7% | 23.7% | 48.4% |
| Yellow Time (s) | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 |
| All-Red Time (s) | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| Lost Time Adjust (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Lost Time (s) | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 |
| Lead/Lag | Lead | | | Lag | Lag | Lag | Lag | Lead | |
| Lead-Lag Optimize? | Yes | | | Yes | Yes | Yes | Yes | Yes | |
| Recall Mode | None | None | None | None | None | Min | Min | Min | Min |
| Act Effct Green (s) | 41.8 | 41.8 | 41.8 | 31.9 | 31.9 | 17.3 | 17.3 | 28.8 | 28.8 |
| Actuated g/C Ratio | 0.52 | 0.52 | 0.52 | 0.40 | 0.40 | 0.22 | 0.22 | 0.36 | 0.36 |
| v/c Ratio | 0.45 | 0.56 | 0.09 | 0.12 | 0.93 | 0.34 | 0.78 | 0.17 | 0.46 |
| Control Delay | 16.5 | 15.9 | 3.6 | 18.9 | 46.7 | 32.5 | 45.1 | 19.0 | 19.6 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 16.5 | 15.9 | 3.6 | 18.9 | 46.7 | 32.5 | 45.1 | 19.0 | 19.6 |
| LOS | B | B | A | B | D | C | D | B | B |
| Approach Delay | | 14.7 | | | 45.2 | | 42.5 | | 19.5 |
| Approach LOS | | B | | | D | | D | | B |

| Intersection Summary | |
|---|---|
| Cycle Length: 95 | |
| Actuated Cycle Length: 79.7 | |
| Natural Cycle: 95 | |
| Control Type: Actuated-Uncoordinated | |
| Maximum v/c Ratio: 0.93 | |
| Intersection Signal Delay: 30.5 | Intersection LOS: C |
| Intersection Capacity Utilization 74.0% | ICU Level of Service D |
| Analysis Period (min) 15 | |

Splits and Phases: 50: CSAH 23 & Lowry Avenue



Synchro Report for existing conditions (PM Peak) CSAH 23 & 27th Ave

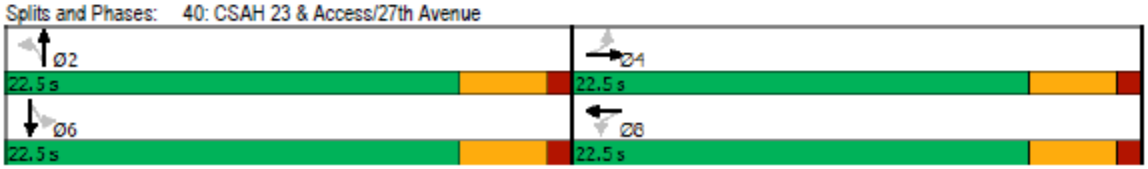
Marshall Street RS
Existing PM Peak

11/22/2023
40: CSAH 23 & Access/27th Avenue

| Lane Group | EBT | WBL | WBT | NBL | NBT | SBL | SBT |
|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | |
| Traffic Volume (vph) | 4 | 54 | 5 | 5 | 344 | 13 | 233 |
| Future Volume (vph) | 4 | 54 | 5 | 5 | 344 | 13 | 233 |
| Turn Type | NA | Perm | NA | Perm | NA | Perm | NA |
| Protected Phases | 4 | | 8 | | 2 | | 6 |
| Permitted Phases | | 8 | | 2 | | 6 | |
| Detector Phase | 4 | 8 | 8 | 2 | 2 | 6 | 6 |
| Switch Phase | | | | | | | |
| Minimum Initial (s) | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 |
| Minimum Split (s) | 22.5 | 22.5 | 22.5 | 22.5 | 22.5 | 22.5 | 22.5 |
| Total Split (s) | 22.5 | 22.5 | 22.5 | 22.5 | 22.5 | 22.5 | 22.5 |
| Total Split (%) | 50.0% | 50.0% | 50.0% | 50.0% | 50.0% | 50.0% | 50.0% |
| Yellow Time (s) | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 |
| All-Red Time (s) | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| Lost Time Adjust (s) | 0.0 | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Lost Time (s) | 4.5 | | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 |
| Lead/Lag | | | | | | | |
| Lead-Lag Optimize? | | | | | | | |
| Recall Mode | None | None | None | Min | Min | Min | Min |
| Act Effct Green (s) | 7.1 | | 7.1 | 21.9 | 21.9 | 21.9 | 21.9 |
| Actuated g/C Ratio | 0.23 | | 0.23 | 0.70 | 0.70 | 0.70 | 0.70 |
| v/c Ratio | 0.02 | | 0.31 | 0.01 | 0.32 | 0.02 | 0.19 |
| Control Delay | 8.7 | | 9.5 | 4.6 | 5.5 | 4.8 | 4.8 |
| Queue Delay | 0.0 | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 8.7 | | 9.5 | 4.6 | 5.5 | 4.8 | 4.8 |
| LOS | A | | A | A | A | A | A |
| Approach Delay | 8.7 | | 9.5 | | 5.4 | | 4.8 |
| Approach LOS | A | | A | | A | | A |

| Intersection Summary | |
|---|---|
| Cycle Length: 45 | |
| Actuated Cycle Length: 31.2 | |
| Natural Cycle: 45 | |
| Control Type: Actuated-Uncoordinated | |
| Maximum v/c Ratio: 0.32 | |
| Intersection Signal Delay: 5.8 | Intersection LOS: A |
| Intersection Capacity Utilization 39.4% | ICU Level of Service A |
| Analysis Period (min) 15 | |

Splits and Phases: 40: CSAH 23 & Access/27th Avenue



Synchro Report for proposed conditions (PM Peak) CSAH 23 & 27th Ave

County staff are proposing to remove the existing traffic signal at the CSAH 23 and 27th Ave intersection (pending further evaluation and local approval). Therefore, there are no signal timing plans for the proposed conditions.

Synchro Report for existing conditions (PM Peak) CSAH 23 & 31st Ave

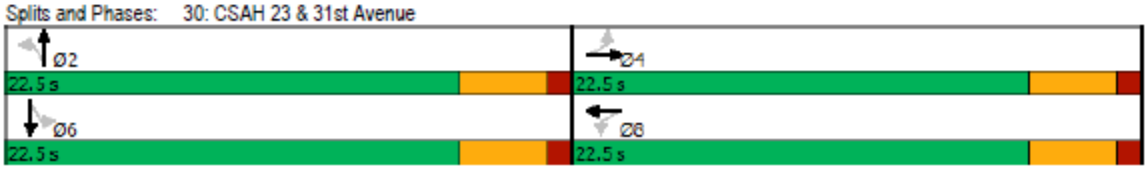
Marshall Street RS
Existing PM Peak

11/22/2023
30: CSAH 23 & 31st Avenue

| Lane Group | EBL | EBT | WBL | WBT | NBT | SBL | SBT |
|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | |
| Traffic Volume (vph) | 16 | 0 | 2 | 0 | 325 | 3 | 187 |
| Future Volume (vph) | 16 | 0 | 2 | 0 | 325 | 3 | 187 |
| Turn Type | Perm | NA | Perm | NA | NA | Perm | NA |
| Protected Phases | | 4 | | 8 | 2 | | 6 |
| Permitted Phases | 4 | | 8 | | | 6 | |
| Detector Phase | 4 | 4 | 8 | 8 | 2 | 6 | 6 |
| Switch Phase | | | | | | | |
| Minimum Initial (s) | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 |
| Minimum Split (s) | 22.5 | 22.5 | 22.5 | 22.5 | 22.5 | 22.5 | 22.5 |
| Total Split (s) | 22.5 | 22.5 | 22.5 | 22.5 | 22.5 | 22.5 | 22.5 |
| Total Split (%) | 50.0% | 50.0% | 50.0% | 50.0% | 50.0% | 50.0% | 50.0% |
| Yellow Time (s) | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 |
| All-Red Time (s) | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| Lost Time Adjust (s) | | 0.0 | | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Lost Time (s) | | 4.5 | | 4.5 | 4.5 | 4.5 | 4.5 |
| Lead/Lag | | | | | | | |
| Lead-Lag Optimize? | | | | | | | |
| Recall Mode | None | None | None | None | Min | Min | Min |
| Act Effct Green (s) | | 5.8 | | 5.8 | 25.3 | 25.3 | 25.3 |
| Actuated g/C Ratio | | 0.21 | | 0.21 | 0.91 | 0.91 | 0.91 |
| v/c Ratio | | 0.08 | | 0.04 | 0.21 | 0.00 | 0.12 |
| Control Delay | | 5.1 | | 2.6 | 2.1 | 2.3 | 1.9 |
| Queue Delay | | 0.0 | | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | | 5.1 | | 2.6 | 2.1 | 2.3 | 1.9 |
| LOS | | A | | A | A | A | A |
| Approach Delay | | 5.1 | | 2.6 | 2.1 | | 1.9 |
| Approach LOS | | A | | A | A | | A |

| Intersection Summary | |
|---|---|
| Cycle Length: 45 | |
| Actuated Cycle Length: 27.9 | |
| Natural Cycle: 45 | |
| Control Type: Actuated-Uncoordinated | |
| Maximum v/c Ratio: 0.21 | |
| Intersection Signal Delay: 2.2 | Intersection LOS: A |
| Intersection Capacity Utilization 29.2% | ICU Level of Service A |
| Analysis Period (min) 15 | |

Splits and Phases: 30: CSAH 23 & 31st Avenue



Synchro Report for proposed conditions (PM Peak) CSAH 23 & 31st Ave

County staff are proposing to remove the existing traffic signal at the CSAH 23 and 31st Ave intersection (pending further evaluation and local approval). Therefore, there are no signal timing plans for the proposed conditions.

Synchro Report for existing conditions (PM Peak) CSAH 23 & St. Anthony Pkwy

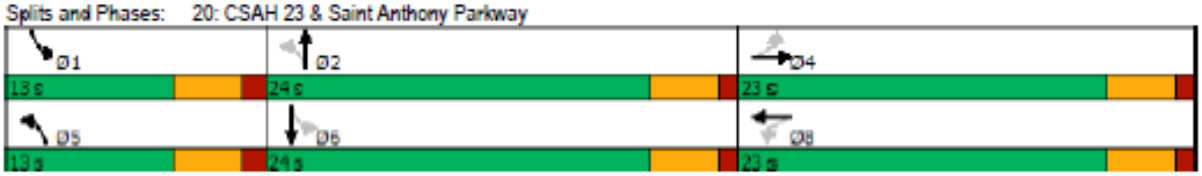
Marshall Street RS
Existing PM Peak

11/22/2023
20: CSAH 23 & Saint Anthony Parkway

| Lane Group | EBT | WBL | WBT | NBL | NBT | SBL | SBT |
|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | |
| Traffic Volume (vph) | 102 | 19 | 132 | 44 | 286 | 45 | 142 |
| Future Volume (vph) | 102 | 19 | 132 | 44 | 286 | 45 | 142 |
| Turn Type | NA | Perm | NA | pm+pt | NA | pm+pt | NA |
| Protected Phases | 4 | | 8 | 5 | 2 | 1 | 6 |
| Permitted Phases | | 8 | | 2 | | 6 | |
| Detector Phase | 4 | 8 | 8 | 5 | 2 | 1 | 6 |
| Switch Phase | | | | | | | |
| Minimum Initial (s) | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 |
| Minimum Split (s) | 22.5 | 22.5 | 22.5 | 13.0 | 22.5 | 13.0 | 22.5 |
| Total Split (s) | 23.0 | 23.0 | 23.0 | 13.0 | 24.0 | 13.0 | 24.0 |
| Total Split (%) | 38.3% | 38.3% | 38.3% | 21.7% | 40.0% | 21.7% | 40.0% |
| Yellow Time (s) | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 |
| All-Red Time (s) | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| Lost Time Adjust (s) | 0.0 | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Lost Time (s) | 4.5 | | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 |
| Lead/Lag | | | | Lead | Lag | Lead | Lag |
| Lead-Lag Optimize? | | | | Yes | Yes | Yes | Yes |
| Recall Mode | None | None | None | None | Min | None | Min |
| Act Effct Green (s) | 11.1 | | 11.1 | 16.7 | 14.7 | 16.8 | 14.7 |
| Actuated g/C Ratio | 0.28 | | 0.28 | 0.43 | 0.38 | 0.43 | 0.38 |
| v/c Ratio | 0.28 | | 0.48 | 0.08 | 0.46 | 0.10 | 0.23 |
| Control Delay | 12.1 | | 14.5 | 6.5 | 14.3 | 6.7 | 12.2 |
| Queue Delay | 0.0 | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 12.1 | | 14.5 | 6.5 | 14.3 | 6.7 | 12.2 |
| LOS | B | | B | A | B | A | B |
| Approach Delay | 12.1 | | 14.5 | | 13.3 | | 10.9 |
| Approach LOS | B | | B | | B | | B |

| Intersection Summary | |
|---|---|
| Cycle Length: 60 | |
| Actuated Cycle Length: 39.1 | |
| Natural Cycle: 60 | |
| Control Type: Actuated-Uncoordinated | |
| Maximum v/c Ratio: 0.48 | |
| Intersection Signal Delay: 12.9 | Intersection LOS: B |
| Intersection Capacity Utilization 54.5% | ICU Level of Service A |
| Analysis Period (min) 15 | |

Splits and Phases: 20: CSAH 23 & Saint Anthony Parkway



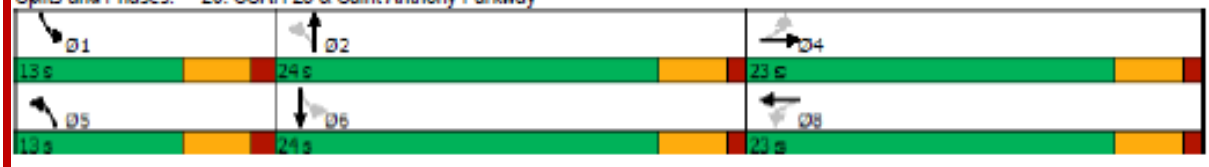
Synchro Report for proposed conditions (PM Peak) CSAH 23 & St. Anthony Pkwy

Timings
Marshall Street - Build PM Peak 11/22/2023

| Lane Group | EBT | WBL | WBT | NBL | NBT | SBL | SBT |
|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | |
| Traffic Volume (vph) | 102 | 19 | 132 | 44 | 286 | 45 | 142 |
| Future Volume (vph) | 102 | 19 | 132 | 44 | 286 | 45 | 142 |
| Turn Type | NA | Perm | NA | pm+pt | NA | pm+pt | NA |
| Protected Phases | 4 | | 8 | 5 | 2 | 1 | 6 |
| Permitted Phases | | 8 | | 2 | | 6 | |
| Detector Phase | 4 | 8 | 8 | 5 | 2 | 1 | 6 |
| Switch Phase | | | | | | | |
| Minimum Initial (s) | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 |
| Minimum Split (s) | 22.5 | 22.5 | 22.5 | 13.0 | 22.5 | 13.0 | 22.5 |
| Total Split (s) | 23.0 | 23.0 | 23.0 | 13.0 | 24.0 | 13.0 | 24.0 |
| Total Split (%) | 38.3% | 38.3% | 38.3% | 21.7% | 40.0% | 21.7% | 40.0% |
| Yellow Time (s) | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 |
| All-Red Time (s) | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| Lost Time Adjust (s) | 0.0 | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Lost Time (s) | 4.5 | | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 |
| Lead/Lag | | | | Lead | Lag | Lead | Lag |
| Lead-Lag Optimize? | | | | Yes | Yes | Yes | Yes |
| Recall Mode | None | None | None | None | Min | None | Min |
| Act Effct Green (s) | 11.1 | | 11.1 | 16.7 | 14.7 | 16.8 | 14.7 |
| Actuated g/C Ratio | 0.28 | | 0.28 | 0.43 | 0.38 | 0.43 | 0.38 |
| v/c Ratio | 0.28 | | 0.48 | 0.08 | 0.46 | 0.10 | 0.23 |
| Control Delay | 12.1 | | 14.5 | 6.5 | 14.3 | 6.7 | 12.2 |
| Queue Delay | 0.0 | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 12.1 | | 14.5 | 6.5 | 14.3 | 6.7 | 12.2 |
| LOS | B | | B | A | B | A | B |
| Approach Delay | 12.1 | | 14.5 | | 13.3 | | 10.9 |
| Approach LOS | B | | B | | B | | B |

| Intersection Summary | |
|---|---|
| Cycle Length: 60 | |
| Actuated Cycle Length: 39.1 | |
| Natural Cycle: 60 | |
| Control Type: Actuated-Uncoordinated | |
| Maximum v/c Ratio: 0.48 | |
| Intersection Signal Delay: 12.9 | Intersection LOS: B |
| Intersection Capacity Utilization 54.5% | ICU Level of Service A |
| Analysis Period (min) 15 | |

Splits and Phases: 20: CSAH 23 & Saint Anthony Parkway



# CSAH 23 (Marshall St NE) Phase 2 Reconstruction Project

Synchro Report – Congestion Reduction

Existing conditions (PM Peak)

50: CSAH 23 & Lowry Avenue

| Direction | All |
|---|---|
| Future Volume (vph) | 2022 |
| Total Delay / Veh (s/v) | 30 |
| CO Emissions (kg) | 2.62 |
| NOx Emissions (kg) | 0.51 |
| VOC Emissions (kg) | 0.61 |

Proposed conditions (PM Peak)

50: CSAH 23 & Lowry Avenue

| Direction | All |
|---|---|
| Future Volume (vph) | 2022 |
| Total Delay / Veh (s/v) | 30 |
| CO Emissions (kg) | 2.63 |
| NOx Emissions (kg) | 0.51 |
| VOC Emissions (kg) | 0.61 |

---

Existing conditions (PM Peak)

40: CSAH 23 & Access/27th Avenue

| Direction | All |
|---|---|
| Future Volume (vph) | 723 |
| Total Delay / Veh (s/v) | 6 |
| CO Emissions (kg) | 0.90 |
| NOx Emissions (kg) | 0.18 |
| VOC Emissions (kg) | 0.21 |

Proposed conditions (PM Peak)

40: CSAH 23 & Access/27th Avenue

| Direction | All |
|---|---|
| Future Volume (vph) | 723 |
| Total Delay / Veh (s/v) | 3 |
| CO Emissions (kg) | 0.80 |
| NOx Emissions (kg) | 0.15 |
| VOC Emissions (kg) | 0.18 |

Existing conditions (PM Peak)

30: CSAH 23 & 31st Avenue

| Direction | All |
|---|---|
| Future Volume (vph) | 557 |
| Total Delay / Veh (s/v) | 2 |
| CO Emissions (kg) | 0.68 |
| NOx Emissions (kg) | 0.13 |
| VOC Emissions (kg) | 0.16 |

Proposed conditions (PM Peak)

30: CSAH 23 & 31st Avenue

| Direction | All |
|---|---|
| Future Volume (vph) | 557 |
| Total Delay / Veh (s/v) | 1 |
| CO Emissions (kg) | 0.61 |
| NOx Emissions (kg) | 0.12 |
| VOC Emissions (kg) | 0.14 |

---

Existing conditions (PM Peak)

20: CSAH 23 & Saint Anthony Parkway

| Direction | All |
|---|---|
| Future Volume (vph) | 886 |
| Total Delay / Veh (s/v) | 13 |
| CO Emissions (kg) | 1.09 |
| NOx Emissions (kg) | 0.21 |
| VOC Emissions (kg) | 0.25 |

Proposed conditions (PM Peak)

20: CSAH 23 & Saint Anthony Parkway

| Direction | All |
|---|---|
| Future Volume (vph) | 886 |
| Total Delay / Veh (s/v) | 13 |
| CO Emissions (kg) | 1.03 |
| NOx Emissions (kg) | 0.20 |
| VOC Emissions (kg) | 0.24 |

Synchro Report for existing conditions (PM Peak) CSAH 23 & CSAH 153

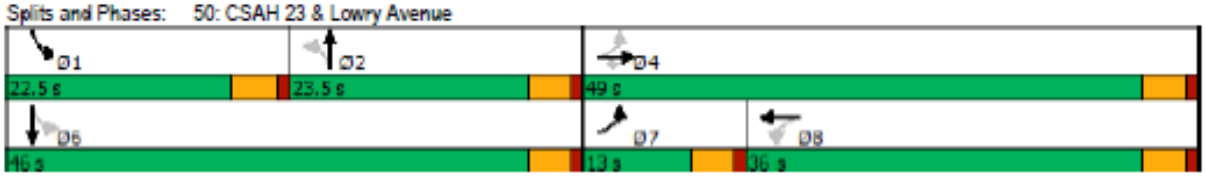
Marshall Street RS
Existing PM Peak

11/22/2023
50: CSAH 23 & Lowry Avenue

| Lane Group | EBL | EBT | EBR | WBL | WBT | NBL | NBT | SBL | SBT |
|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | |
| Traffic Volume (vph) | 101 | 505 | 71 | 34 | 596 | 73 | 248 | 41 | 166 |
| Future Volume (vph) | 101 | 505 | 71 | 34 | 596 | 73 | 248 | 41 | 166 |
| Turn Type | pm+pt | NA | Perm | Perm | NA | Perm | NA | pm+pt | NA |
| Protected Phases | 7 | 4 | | | 8 | | 2 | 1 | 6 |
| Permitted Phases | 4 | | 4 | 8 | | 2 | | 6 | |
| Detector Phase | 7 | 4 | 4 | 8 | 8 | 2 | 2 | 1 | 6 |
| Switch Phase | | | | | | | | | |
| Minimum Initial (s) | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 |
| Minimum Split (s) | 13.0 | 22.5 | 22.5 | 22.5 | 22.5 | 22.5 | 22.5 | 22.5 | 22.5 |
| Total Split (s) | 13.0 | 49.0 | 49.0 | 36.0 | 36.0 | 23.5 | 23.5 | 22.5 | 46.0 |
| Total Split (%) | 13.7% | 51.6% | 51.6% | 37.9% | 37.9% | 24.7% | 24.7% | 23.7% | 48.4% |
| Yellow Time (s) | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 |
| All-Red Time (s) | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| Lost Time Adjust (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Lost Time (s) | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 |
| Lead/Lag | Lead | | | Lag | Lag | Lag | Lag | Lead | |
| Lead-Lag Optimize? | Yes | | | Yes | Yes | Yes | Yes | Yes | |
| Recall Mode | None | None | None | None | None | Min | Min | Min | Min |
| Act Effct Green (s) | 41.8 | 41.8 | 41.8 | 31.9 | 31.9 | 17.3 | 17.3 | 28.8 | 28.8 |
| Actuated g/C Ratio | 0.52 | 0.52 | 0.52 | 0.40 | 0.40 | 0.22 | 0.22 | 0.36 | 0.36 |
| v/c Ratio | 0.45 | 0.56 | 0.09 | 0.12 | 0.93 | 0.34 | 0.78 | 0.17 | 0.46 |
| Control Delay | 16.5 | 15.9 | 3.6 | 18.9 | 46.7 | 32.5 | 45.1 | 19.0 | 19.6 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 16.5 | 15.9 | 3.6 | 18.9 | 46.7 | 32.5 | 45.1 | 19.0 | 19.6 |
| LOS | B | B | A | B | D | C | D | B | B |
| Approach Delay | | 14.7 | | | 45.2 | | 42.5 | | 19.5 |
| Approach LOS | | B | | | D | | D | | B |

| Intersection Summary | |
|---|---|
| Cycle Length: 95 | |
| Actuated Cycle Length: 79.7 | |
| Natural Cycle: 95 | |
| Control Type: Actuated-Uncoordinated | |
| Maximum v/c Ratio: 0.93 | |
| Intersection Signal Delay: 30.5 | Intersection LOS: C |
| Intersection Capacity Utilization 74.0% | ICU Level of Service D |
| Analysis Period (min) 15 | |

Splits and Phases: 50: CSAH 23 & Lowry Avenue



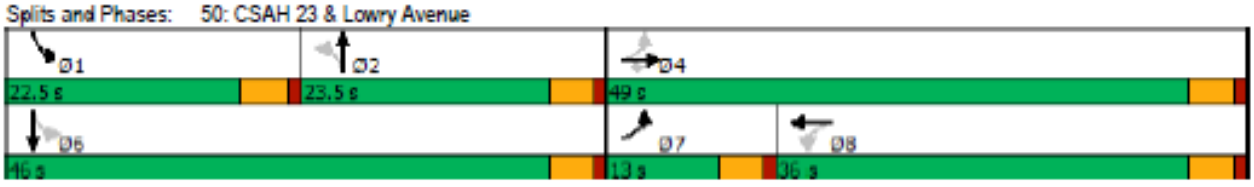
Synchro Report for proposed conditions (PM Peak) CSAH 23 & CSAH 153

Timings
Marshall Street - Build PM Peak 11/22/2023

| Lane Group | EBL | EBT | EBR | WBL | WBT | NBL | NBT | SBL | SBT |
|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | |
| Traffic Volume (vph) | 101 | 505 | 71 | 34 | 596 | 73 | 248 | 41 | 166 |
| Future Volume (vph) | 101 | 505 | 71 | 34 | 596 | 73 | 248 | 41 | 166 |
| Turn Type | pm+pt | NA | Perm | Perm | NA | Perm | NA | pm+pt | NA |
| Protected Phases | 7 | 4 | | | 8 | | 2 | 1 | 6 |
| Permitted Phases | 4 | | 4 | 8 | | 2 | | 6 | |
| Detector Phase | 7 | 4 | 4 | 8 | 8 | 2 | 2 | 1 | 6 |
| Switch Phase | | | | | | | | | |
| Minimum Initial (s) | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 |
| Minimum Split (s) | 13.0 | 22.5 | 22.5 | 22.5 | 22.5 | 22.5 | 22.5 | 22.5 | 22.5 |
| Total Split (s) | 13.0 | 49.0 | 49.0 | 36.0 | 36.0 | 23.5 | 23.5 | 22.5 | 46.0 |
| Total Split (%) | 13.7% | 51.6% | 51.6% | 37.9% | 37.9% | 24.7% | 24.7% | 23.7% | 48.4% |
| Yellow Time (s) | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 |
| All-Red Time (s) | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| Lost Time Adjust (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Lost Time (s) | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 |
| Lead/Lag | Lead | | | Lag | Lag | Lag | Lag | Lead | |
| Lead-Lag Optimize? | Yes | | | Yes | Yes | Yes | Yes | Yes | |
| Recall Mode | None | None | None | None | None | Min | Min | Min | Min |
| Act Effct Green (s) | 41.8 | 41.8 | 41.8 | 31.9 | 31.9 | 17.3 | 17.3 | 28.8 | 28.8 |
| Actuated g/C Ratio | 0.52 | 0.52 | 0.52 | 0.40 | 0.40 | 0.22 | 0.22 | 0.36 | 0.36 |
| v/c Ratio | 0.45 | 0.56 | 0.09 | 0.12 | 0.93 | 0.34 | 0.78 | 0.17 | 0.46 |
| Control Delay | 16.5 | 15.9 | 3.6 | 18.9 | 46.7 | 32.5 | 45.1 | 19.0 | 19.6 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 16.5 | 15.9 | 3.6 | 18.9 | 46.7 | 32.5 | 45.1 | 19.0 | 19.6 |
| LOS | B | B | A | B | D | C | D | B | B |
| Approach Delay | | 14.7 | | | 45.2 | | 42.5 | | 19.5 |
| Approach LOS | | B | | | D | | D | | B |

| Intersection Summary | |
|---|---|
| Cycle Length: 95 | |
| Actuated Cycle Length: 79.7 | |
| Natural Cycle: 95 | |
| Control Type: Actuated-Uncoordinated | |
| Maximum v/c Ratio: 0.93 | |
| Intersection Signal Delay: 30.5 | Intersection LOS: C |
| Intersection Capacity Utilization 74.0% | ICU Level of Service D |
| Analysis Period (min) 15 | |

Splits and Phases: 50: CSAH 23 & Lowry Avenue



Synchro Report for existing conditions (PM Peak) CSAH 23 & 27th Ave

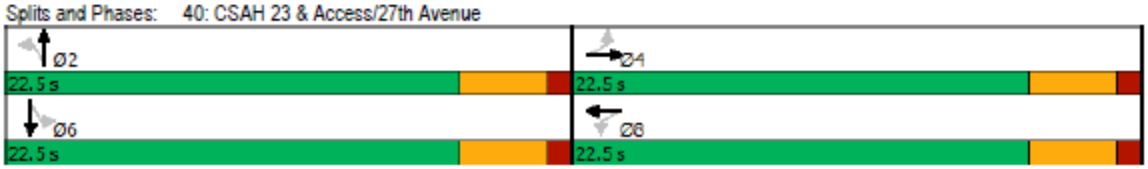
Marshall Street RS
Existing PM Peak

11/22/2023
40: CSAH 23 & Access/27th Avenue

| Lane Group | EBT | WBL | WBT | NBL | NBT | SBL | SBT |
|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | |
| Traffic Volume (vph) | 4 | 54 | 5 | 5 | 344 | 13 | 233 |
| Future Volume (vph) | 4 | 54 | 5 | 5 | 344 | 13 | 233 |
| Turn Type | NA | Perm | NA | Perm | NA | Perm | NA |
| Protected Phases | 4 | | 8 | | 2 | | 6 |
| Permitted Phases | | 8 | | 2 | | 6 | |
| Detector Phase | 4 | 8 | 8 | 2 | 2 | 6 | 6 |
| Switch Phase | | | | | | | |
| Minimum Initial (s) | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 |
| Minimum Split (s) | 22.5 | 22.5 | 22.5 | 22.5 | 22.5 | 22.5 | 22.5 |
| Total Split (s) | 22.5 | 22.5 | 22.5 | 22.5 | 22.5 | 22.5 | 22.5 |
| Total Split (%) | 50.0% | 50.0% | 50.0% | 50.0% | 50.0% | 50.0% | 50.0% |
| Yellow Time (s) | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 |
| All-Red Time (s) | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| Lost Time Adjust (s) | 0.0 | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Lost Time (s) | 4.5 | | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 |
| Lead/Lag | | | | | | | |
| Lead-Lag Optimize? | | | | | | | |
| Recall Mode | None | None | None | Min | Min | Min | Min |
| Act Effct Green (s) | 7.1 | | 7.1 | 21.9 | 21.9 | 21.9 | 21.9 |
| Actuated g/C Ratio | 0.23 | | 0.23 | 0.70 | 0.70 | 0.70 | 0.70 |
| v/c Ratio | 0.02 | | 0.31 | 0.01 | 0.32 | 0.02 | 0.19 |
| Control Delay | 8.7 | | 9.5 | 4.6 | 5.5 | 4.8 | 4.8 |
| Queue Delay | 0.0 | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 8.7 | | 9.5 | 4.6 | 5.5 | 4.8 | 4.8 |
| LOS | A | | A | A | A | A | A |
| Approach Delay | 8.7 | | 9.5 | | 5.4 | | 4.8 |
| Approach LOS | A | | A | | A | | A |

| Intersection Summary | |
|---|---|
| Cycle Length: 45 | |
| Actuated Cycle Length: 31.2 | |
| Natural Cycle: 45 | |
| Control Type: Actuated-Uncoordinated | |
| Maximum v/c Ratio: 0.32 | |
| Intersection Signal Delay: 5.8 | Intersection LOS: A |
| Intersection Capacity Utilization 39.4% | ICU Level of Service A |
| Analysis Period (min) 15 | |

Splits and Phases: 40: CSAH 23 & Access/27th Avenue



Synchro Report for proposed conditions (PM Peak) CSAH 23 & 27th Ave

County staff are proposing to remove the existing traffic signal at the CSAH 23 and 27th Ave intersection (pending further evaluation and local approval). Therefore, there are no signal timing plans for the proposed conditions.

Synchro Report for existing conditions (PM Peak) CSAH 23 & 31st Ave

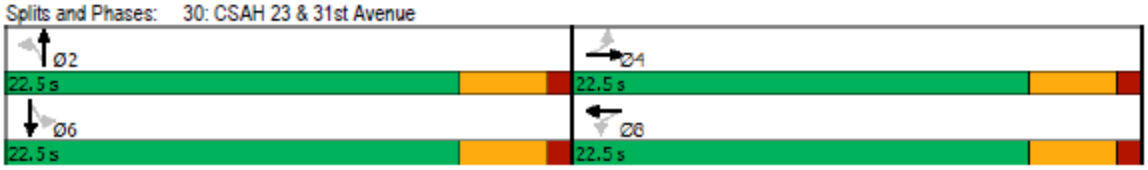
Marshall Street RS
Existing PM Peak

11/22/2023
30: CSAH 23 & 31st Avenue

| Lane Group | EBL | EBT | WBL | WBT | NBT | SBL | SBT |
|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | |
| Traffic Volume (vph) | 16 | 0 | 2 | 0 | 325 | 3 | 187 |
| Future Volume (vph) | 16 | 0 | 2 | 0 | 325 | 3 | 187 |
| Turn Type | Perm | NA | Perm | NA | NA | Perm | NA |
| Protected Phases | | 4 | | 8 | 2 | | 6 |
| Permitted Phases | 4 | | 8 | | | 6 | |
| Detector Phase | 4 | 4 | 8 | 8 | 2 | 6 | 6 |
| Switch Phase | | | | | | | |
| Minimum Initial (s) | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 |
| Minimum Split (s) | 22.5 | 22.5 | 22.5 | 22.5 | 22.5 | 22.5 | 22.5 |
| Total Split (s) | 22.5 | 22.5 | 22.5 | 22.5 | 22.5 | 22.5 | 22.5 |
| Total Split (%) | 50.0% | 50.0% | 50.0% | 50.0% | 50.0% | 50.0% | 50.0% |
| Yellow Time (s) | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 |
| All-Red Time (s) | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| Lost Time Adjust (s) | | 0.0 | | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Lost Time (s) | | 4.5 | | 4.5 | 4.5 | 4.5 | 4.5 |
| Lead/Lag | | | | | | | |
| Lead-Lag Optimize? | | | | | | | |
| Recall Mode | None | None | None | None | Min | Min | Min |
| Act Effct Green (s) | | 5.8 | | 5.8 | 25.3 | 25.3 | 25.3 |
| Actuated g/C Ratio | | 0.21 | | 0.21 | 0.91 | 0.91 | 0.91 |
| v/c Ratio | | 0.08 | | 0.04 | 0.21 | 0.00 | 0.12 |
| Control Delay | | 5.1 | | 2.6 | 2.1 | 2.3 | 1.9 |
| Queue Delay | | 0.0 | | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | | 5.1 | | 2.6 | 2.1 | 2.3 | 1.9 |
| LOS | | A | | A | A | A | A |
| Approach Delay | | 5.1 | | 2.6 | 2.1 | | 1.9 |
| Approach LOS | | A | | A | A | | A |

| Intersection Summary | |
|---|---|
| Cycle Length: 45 | |
| Actuated Cycle Length: 27.9 | |
| Natural Cycle: 45 | |
| Control Type: Actuated-Uncoordinated | |
| Maximum v/c Ratio: 0.21 | |
| Intersection Signal Delay: 2.2 | Intersection LOS: A |
| Intersection Capacity Utilization 29.2% | ICU Level of Service A |
| Analysis Period (min) 15 | |

Splits and Phases: 30: CSAH 23 & 31st Avenue



Synchro Report for proposed conditions (PM Peak) CSAH 23 & 31st Ave

County staff are proposing to remove the existing traffic signal at the CSAH 23 and 31st Ave intersection (pending further evaluation and local approval). Therefore, there are no signal timing plans for the proposed conditions.

Synchro Report for existing conditions (PM Peak) CSAH 23 & St. Anthony Pkwy

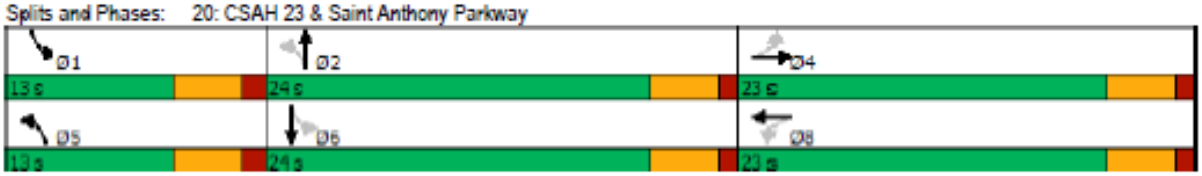
Marshall Street RS
Existing PM Peak

11/22/2023
20: CSAH 23 & Saint Anthony Parkway

| Lane Group | EBT | WBL | WBT | NBL | NBT | SBL | SBT |
|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | |
| Traffic Volume (vph) | 102 | 19 | 132 | 44 | 286 | 45 | 142 |
| Future Volume (vph) | 102 | 19 | 132 | 44 | 286 | 45 | 142 |
| Turn Type | NA | Perm | NA | pm+pt | NA | pm+pt | NA |
| Protected Phases | 4 | | 8 | 5 | 2 | 1 | 6 |
| Permitted Phases | | 8 | | 2 | | 6 | |
| Detector Phase | 4 | 8 | 8 | 5 | 2 | 1 | 6 |
| Switch Phase | | | | | | | |
| Minimum Initial (s) | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 |
| Minimum Split (s) | 22.5 | 22.5 | 22.5 | 13.0 | 22.5 | 13.0 | 22.5 |
| Total Split (s) | 23.0 | 23.0 | 23.0 | 13.0 | 24.0 | 13.0 | 24.0 |
| Total Split (%) | 38.3% | 38.3% | 38.3% | 21.7% | 40.0% | 21.7% | 40.0% |
| Yellow Time (s) | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 |
| All-Red Time (s) | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| Lost Time Adjust (s) | 0.0 | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Lost Time (s) | 4.5 | | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 |
| Lead/Lag | | | | Lead | Lag | Lead | Lag |
| Lead-Lag Optimize? | | | | Yes | Yes | Yes | Yes |
| Recall Mode | None | None | None | None | Min | None | Min |
| Act Effct Green (s) | 11.1 | | 11.1 | 16.7 | 14.7 | 16.8 | 14.7 |
| Actuated g/C Ratio | 0.28 | | 0.28 | 0.43 | 0.38 | 0.43 | 0.38 |
| v/c Ratio | 0.28 | | 0.48 | 0.08 | 0.46 | 0.10 | 0.23 |
| Control Delay | 12.1 | | 14.5 | 6.5 | 14.3 | 6.7 | 12.2 |
| Queue Delay | 0.0 | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 12.1 | | 14.5 | 6.5 | 14.3 | 6.7 | 12.2 |
| LOS | B | | B | A | B | A | B |
| Approach Delay | 12.1 | | 14.5 | | 13.3 | | 10.9 |
| Approach LOS | B | | B | | B | | B |

| Intersection Summary | |
|---|---|
| Cycle Length: 60 | |
| Actuated Cycle Length: 39.1 | |
| Natural Cycle: 60 | |
| Control Type: Actuated-Uncoordinated | |
| Maximum v/c Ratio: 0.48 | |
| Intersection Signal Delay: 12.9 | Intersection LOS: B |
| Intersection Capacity Utilization 54.5% | ICU Level of Service A |
| Analysis Period (min) 15 | |

Splits and Phases: 20: CSAH 23 & Saint Anthony Parkway



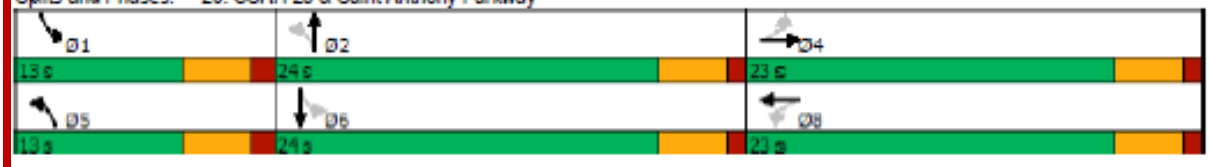
Synchro Report for proposed conditions (PM Peak) CSAH 23 & St. Anthony Pkwy

Timings
Marshall Street - Build PM Peak 11/22/2023

| Lane Group | EBT | WBL | WBT | NBL | NBT | SBL | SBT |
|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | |
| Traffic Volume (vph) | 102 | 19 | 132 | 44 | 286 | 45 | 142 |
| Future Volume (vph) | 102 | 19 | 132 | 44 | 286 | 45 | 142 |
| Turn Type | NA | Perm | NA | pm+pt | NA | pm+pt | NA |
| Protected Phases | 4 | | 8 | 5 | 2 | 1 | 6 |
| Permitted Phases | | 8 | | 2 | | 6 | |
| Detector Phase | 4 | 8 | 8 | 5 | 2 | 1 | 6 |
| Switch Phase | | | | | | | |
| Minimum Initial (s) | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 |
| Minimum Split (s) | 22.5 | 22.5 | 22.5 | 13.0 | 22.5 | 13.0 | 22.5 |
| Total Split (s) | 23.0 | 23.0 | 23.0 | 13.0 | 24.0 | 13.0 | 24.0 |
| Total Split (%) | 38.3% | 38.3% | 38.3% | 21.7% | 40.0% | 21.7% | 40.0% |
| Yellow Time (s) | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 |
| All-Red Time (s) | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| Lost Time Adjust (s) | 0.0 | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Lost Time (s) | 4.5 | | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 |
| Lead/Lag | | | | Lead | Lag | Lead | Lag |
| Lead-Lag Optimize? | | | | Yes | Yes | Yes | Yes |
| Recall Mode | None | None | None | None | Min | None | Min |
| Act Effct Green (s) | 11.1 | | 11.1 | 16.7 | 14.7 | 16.8 | 14.7 |
| Actuated g/C Ratio | 0.28 | | 0.28 | 0.43 | 0.38 | 0.43 | 0.38 |
| v/c Ratio | 0.28 | | 0.48 | 0.08 | 0.46 | 0.10 | 0.23 |
| Control Delay | 12.1 | | 14.5 | 6.5 | 14.3 | 6.7 | 12.2 |
| Queue Delay | 0.0 | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 12.1 | | 14.5 | 6.5 | 14.3 | 6.7 | 12.2 |
| LOS | B | | B | A | B | A | B |
| Approach Delay | 12.1 | | 14.5 | | 13.3 | | 10.9 |
| Approach LOS | B | | B | | B | | B |

| Intersection Summary | |
|---|---|
| Cycle Length: 60 | |
| Actuated Cycle Length: 39.1 | |
| Natural Cycle: 60 | |
| Control Type: Actuated-Uncoordinated | |
| Maximum v/c Ratio: 0.48 | |
| Intersection Signal Delay: 12.9 | Intersection LOS: B |
| Intersection Capacity Utilization 54.5% | ICU Level of Service A |
| Analysis Period (min) 15 | |

Splits and Phases: 20: CSAH 23 & Saint Anthony Parkway



# CSAH 23 (Marshall St NE) Phase 2 Reconstruction Project

Synchro Report – Congestion Reduction

Existing conditions (PM Peak)

50: CSAH 23 & Lowry Avenue

| Direction | All |
|---|---|
| Future Volume (vph) | 2022 |
| Total Delay / Veh (s/v) | 30 |
| CO Emissions (kg) | 2.62 |
| NOx Emissions (kg) | 0.51 |
| VOC Emissions (kg) | 0.61 |

Proposed conditions (PM Peak)

50: CSAH 23 & Lowry Avenue

| Direction | All |
|---|---|
| Future Volume (vph) | 2022 |
| Total Delay / Veh (s/v) | 30 |
| CO Emissions (kg) | 2.63 |
| NOx Emissions (kg) | 0.51 |
| VOC Emissions (kg) | 0.61 |

---

Existing conditions (PM Peak)

40: CSAH 23 & Access/27th Avenue

| Direction | All |
|---|---|
| Future Volume (vph) | 723 |
| Total Delay / Veh (s/v) | 6 |
| CO Emissions (kg) | 0.90 |
| NOx Emissions (kg) | 0.18 |
| VOC Emissions (kg) | 0.21 |

Proposed conditions (PM Peak)

40: CSAH 23 & Access/27th Avenue

| Direction | All |
|---|---|
| Future Volume (vph) | 723 |
| Total Delay / Veh (s/v) | 3 |
| CO Emissions (kg) | 0.80 |
| NOx Emissions (kg) | 0.15 |
| VOC Emissions (kg) | 0.18 |

Existing conditions (PM Peak)

30: CSAH 23 & 31st Avenue

| Direction | All |
|---|---|
| Future Volume (vph) | 557 |
| Total Delay / Veh (s/v) | 2 |
| CO Emissions (kg) | 0.68 |
| NOx Emissions (kg) | 0.13 |
| VOC Emissions (kg) | 0.16 |

Proposed conditions (PM Peak)

30: CSAH 23 & 31st Avenue

| Direction | All |
|---|---|
| Future Volume (vph) | 557 |
| Total Delay / Veh (s/v) | 1 |
| CO Emissions (kg) | 0.61 |
| NOx Emissions (kg) | 0.12 |
| VOC Emissions (kg) | 0.14 |

---

Existing conditions (PM Peak)

20: CSAH 23 & Saint Anthony Parkway

| Direction | All |
|---|---|
| Future Volume (vph) | 886 |
| Total Delay / Veh (s/v) | 13 |
| CO Emissions (kg) | 1.09 |
| NOx Emissions (kg) | 0.21 |
| VOC Emissions (kg) | 0.25 |

Proposed conditions (PM Peak)

20: CSAH 23 & Saint Anthony Parkway

| Direction | All |
|---|---|
| Future Volume (vph) | 886 |
| Total Delay / Veh (s/v) | 13 |
| CO Emissions (kg) | 1.03 |
| NOx Emissions (kg) | 0.20 |
| VOC Emissions (kg) | 0.24 |

Synchro Report for existing conditions (PM Peak) CSAH 23 & CSAH 153

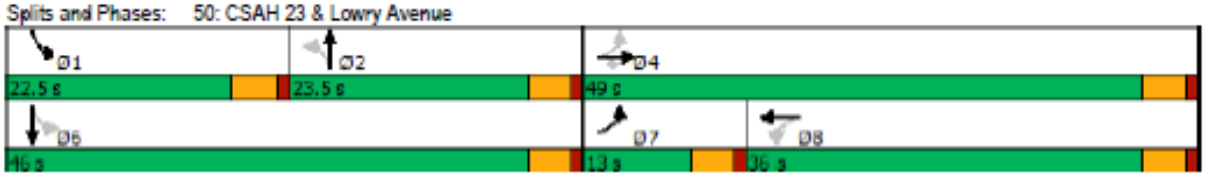
Marshall Street RS
Existing PM Peak

11/22/2023
50: CSAH 23 & Lowry Avenue

| Lane Group | EBL | EBT | EBR | WBL | WBT | NBL | NBT | SBL | SBT |
|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | |
| Traffic Volume (vph) | 101 | 505 | 71 | 34 | 596 | 73 | 248 | 41 | 166 |
| Future Volume (vph) | 101 | 505 | 71 | 34 | 596 | 73 | 248 | 41 | 166 |
| Turn Type | pm+pt | NA | Perm | Perm | NA | Perm | NA | pm+pt | NA |
| Protected Phases | 7 | 4 | | | 8 | | 2 | 1 | 6 |
| Permitted Phases | 4 | | 4 | 8 | | 2 | | 6 | |
| Detector Phase | 7 | 4 | 4 | 8 | 8 | 2 | 2 | 1 | 6 |
| Switch Phase | | | | | | | | | |
| Minimum Initial (s) | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 |
| Minimum Split (s) | 13.0 | 22.5 | 22.5 | 22.5 | 22.5 | 22.5 | 22.5 | 22.5 | 22.5 |
| Total Split (s) | 13.0 | 49.0 | 49.0 | 36.0 | 36.0 | 23.5 | 23.5 | 22.5 | 46.0 |
| Total Split (%) | 13.7% | 51.6% | 51.6% | 37.9% | 37.9% | 24.7% | 24.7% | 23.7% | 48.4% |
| Yellow Time (s) | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 |
| All-Red Time (s) | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| Lost Time Adjust (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Lost Time (s) | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 |
| Lead/Lag | Lead | | | Lag | Lag | Lag | Lag | Lead | |
| Lead-Lag Optimize? | Yes | | | Yes | Yes | Yes | Yes | Yes | |
| Recall Mode | None | None | None | None | None | Min | Min | Min | Min |
| Act Effct Green (s) | 41.8 | 41.8 | 41.8 | 31.9 | 31.9 | 17.3 | 17.3 | 28.8 | 28.8 |
| Actuated g/C Ratio | 0.52 | 0.52 | 0.52 | 0.40 | 0.40 | 0.22 | 0.22 | 0.36 | 0.36 |
| v/c Ratio | 0.45 | 0.56 | 0.09 | 0.12 | 0.93 | 0.34 | 0.78 | 0.17 | 0.46 |
| Control Delay | 16.5 | 15.9 | 3.6 | 18.9 | 46.7 | 32.5 | 45.1 | 19.0 | 19.6 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 16.5 | 15.9 | 3.6 | 18.9 | 46.7 | 32.5 | 45.1 | 19.0 | 19.6 |
| LOS | B | B | A | B | D | C | D | B | B |
| Approach Delay | | 14.7 | | | 45.2 | | 42.5 | | 19.5 |
| Approach LOS | | B | | | D | | D | | B |

| Intersection Summary | |
|---|---|
| Cycle Length: 95 | |
| Actuated Cycle Length: 79.7 | |
| Natural Cycle: 95 | |
| Control Type: Actuated-Uncoordinated | |
| Maximum v/c Ratio: 0.93 | |
| Intersection Signal Delay: 30.5 | Intersection LOS: C |
| Intersection Capacity Utilization 74.0% | ICU Level of Service D |
| Analysis Period (min) 15 | |

Splits and Phases: 50: CSAH 23 & Lowry Avenue



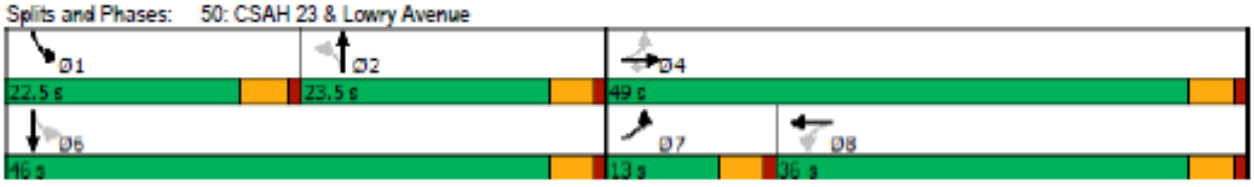
Synchro Report for proposed conditions (PM Peak) CSAH 23 & CSAH 153

Timings
Marshall Street - Build PM Peak 11/22/2023

| Lane Group | EBL | EBT | EBR | WBL | WBT | NBL | NBT | SBL | SBT |
|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | |
| Traffic Volume (vph) | 101 | 505 | 71 | 34 | 596 | 73 | 248 | 41 | 166 |
| Future Volume (vph) | 101 | 505 | 71 | 34 | 596 | 73 | 248 | 41 | 166 |
| Turn Type | pm+pt | NA | Perm | Perm | NA | Perm | NA | pm+pt | NA |
| Protected Phases | 7 | 4 | | | 8 | | 2 | 1 | 6 |
| Permitted Phases | 4 | | 4 | 8 | | 2 | | 6 | |
| Detector Phase | 7 | 4 | 4 | 8 | 8 | 2 | 2 | 1 | 6 |
| Switch Phase | | | | | | | | | |
| Minimum Initial (s) | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 |
| Minimum Split (s) | 13.0 | 22.5 | 22.5 | 22.5 | 22.5 | 22.5 | 22.5 | 22.5 | 22.5 |
| Total Split (s) | 13.0 | 49.0 | 49.0 | 36.0 | 36.0 | 23.5 | 23.5 | 22.5 | 46.0 |
| Total Split (%) | 13.7% | 51.6% | 51.6% | 37.9% | 37.9% | 24.7% | 24.7% | 23.7% | 48.4% |
| Yellow Time (s) | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 |
| All-Red Time (s) | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| Lost Time Adjust (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Lost Time (s) | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 |
| Lead/Lag | Lead | | | Lag | Lag | Lag | Lag | Lead | |
| Lead-Lag Optimize? | Yes | | | Yes | Yes | Yes | Yes | Yes | |
| Recall Mode | None | None | None | None | None | Min | Min | Min | Min |
| Act Effct Green (s) | 41.8 | 41.8 | 41.8 | 31.9 | 31.9 | 17.3 | 17.3 | 28.8 | 28.8 |
| Actuated g/C Ratio | 0.52 | 0.52 | 0.52 | 0.40 | 0.40 | 0.22 | 0.22 | 0.36 | 0.36 |
| v/c Ratio | 0.45 | 0.56 | 0.09 | 0.12 | 0.93 | 0.34 | 0.78 | 0.17 | 0.46 |
| Control Delay | 16.5 | 15.9 | 3.6 | 18.9 | 46.7 | 32.5 | 45.1 | 19.0 | 19.6 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 16.5 | 15.9 | 3.6 | 18.9 | 46.7 | 32.5 | 45.1 | 19.0 | 19.6 |
| LOS | B | B | A | B | D | C | D | B | B |
| Approach Delay | | 14.7 | | | 45.2 | | 42.5 | | 19.5 |
| Approach LOS | | B | | | D | | D | | B |

| Intersection Summary | |
|---|---|
| Cycle Length: 95 | |
| Actuated Cycle Length: 79.7 | |
| Natural Cycle: 95 | |
| Control Type: Actuated-Uncoordinated | |
| Maximum v/c Ratio: 0.93 | |
| Intersection Signal Delay: 30.5 | Intersection LOS: C |
| Intersection Capacity Utilization 74.0% | ICU Level of Service D |
| Analysis Period (min) 15 | |

Splits and Phases: 50: CSAH 23 & Lowry Avenue



Synchro Report for existing conditions (PM Peak) CSAH 23 & 27th Ave

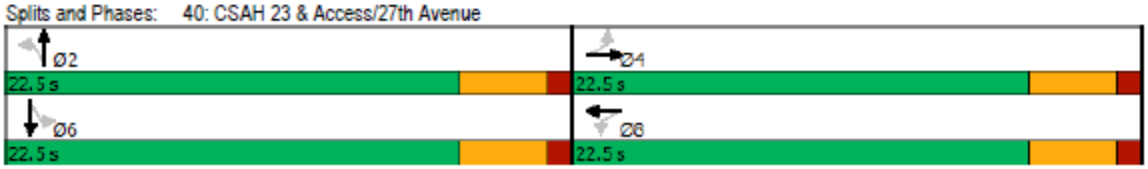
Marshall Street RS
Existing PM Peak

11/22/2023
40: CSAH 23 & Access/27th Avenue

| Lane Group | EBT | WBL | WBT | NBL | NBT | SBL | SBT |
|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | |
| Traffic Volume (vph) | 4 | 54 | 5 | 5 | 344 | 13 | 233 |
| Future Volume (vph) | 4 | 54 | 5 | 5 | 344 | 13 | 233 |
| Turn Type | NA | Perm | NA | Perm | NA | Perm | NA |
| Protected Phases | 4 | | 8 | | 2 | | 6 |
| Permitted Phases | | 8 | | 2 | | 6 | |
| Detector Phase | 4 | 8 | 8 | 2 | 2 | 6 | 6 |
| Switch Phase | | | | | | | |
| Minimum Initial (s) | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 |
| Minimum Split (s) | 22.5 | 22.5 | 22.5 | 22.5 | 22.5 | 22.5 | 22.5 |
| Total Split (s) | 22.5 | 22.5 | 22.5 | 22.5 | 22.5 | 22.5 | 22.5 |
| Total Split (%) | 50.0% | 50.0% | 50.0% | 50.0% | 50.0% | 50.0% | 50.0% |
| Yellow Time (s) | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 |
| All-Red Time (s) | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| Lost Time Adjust (s) | 0.0 | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Lost Time (s) | 4.5 | | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 |
| Lead/Lag | | | | | | | |
| Lead-Lag Optimize? | | | | | | | |
| Recall Mode | None | None | None | Min | Min | Min | Min |
| Act Effct Green (s) | 7.1 | | 7.1 | 21.9 | 21.9 | 21.9 | 21.9 |
| Actuated g/C Ratio | 0.23 | | 0.23 | 0.70 | 0.70 | 0.70 | 0.70 |
| v/c Ratio | 0.02 | | 0.31 | 0.01 | 0.32 | 0.02 | 0.19 |
| Control Delay | 8.7 | | 9.5 | 4.6 | 5.5 | 4.8 | 4.8 |
| Queue Delay | 0.0 | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 8.7 | | 9.5 | 4.6 | 5.5 | 4.8 | 4.8 |
| LOS | A | | A | A | A | A | A |
| Approach Delay | 8.7 | | 9.5 | | 5.4 | | 4.8 |
| Approach LOS | A | | A | | A | | A |

| Intersection Summary | |
|---|---|
| Cycle Length: 45 | |
| Actuated Cycle Length: 31.2 | |
| Natural Cycle: 45 | |
| Control Type: Actuated-Uncoordinated | |
| Maximum v/c Ratio: 0.32 | |
| Intersection Signal Delay: 5.8 | Intersection LOS: A |
| Intersection Capacity Utilization 39.4% | ICU Level of Service A |
| Analysis Period (min) 15 | |

Splits and Phases: 40: CSAH 23 & Access/27th Avenue



Synchro Report for proposed conditions (PM Peak) CSAH 23 & 27th Ave

County staff are proposing to remove the existing traffic signal at the CSAH 23 and 27th Ave intersection (pending further evaluation and local approval). Therefore, there are no signal timing plans for the proposed conditions.

Synchro Report for existing conditions (PM Peak) CSAH 23 & 31st Ave

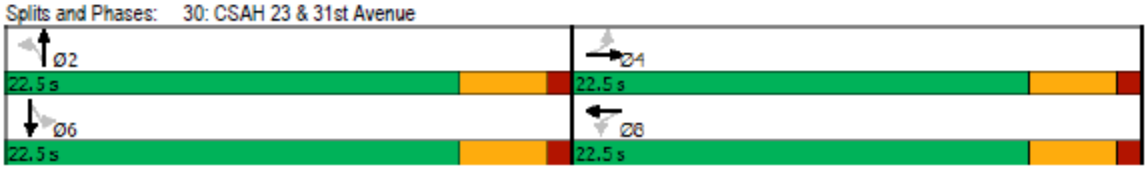
Marshall Street RS
Existing PM Peak

11/22/2023
30: CSAH 23 & 31st Avenue

| Lane Group | EBL | EBT | WBL | WBT | NBT | SBL | SBT |
|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | |
| Traffic Volume (vph) | 16 | 0 | 2 | 0 | 325 | 3 | 187 |
| Future Volume (vph) | 16 | 0 | 2 | 0 | 325 | 3 | 187 |
| Turn Type | Perm | NA | Perm | NA | NA | Perm | NA |
| Protected Phases | | 4 | | 8 | 2 | | 6 |
| Permitted Phases | 4 | | 8 | | | 6 | |
| Detector Phase | 4 | 4 | 8 | 8 | 2 | 6 | 6 |
| Switch Phase | | | | | | | |
| Minimum Initial (s) | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 |
| Minimum Split (s) | 22.5 | 22.5 | 22.5 | 22.5 | 22.5 | 22.5 | 22.5 |
| Total Split (s) | 22.5 | 22.5 | 22.5 | 22.5 | 22.5 | 22.5 | 22.5 |
| Total Split (%) | 50.0% | 50.0% | 50.0% | 50.0% | 50.0% | 50.0% | 50.0% |
| Yellow Time (s) | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 |
| All-Red Time (s) | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| Lost Time Adjust (s) | | 0.0 | | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Lost Time (s) | | 4.5 | | 4.5 | 4.5 | 4.5 | 4.5 |
| Lead/Lag | | | | | | | |
| Lead-Lag Optimize? | | | | | | | |
| Recall Mode | None | None | None | None | Min | Min | Min |
| Act Effct Green (s) | | 5.8 | | 5.8 | 25.3 | 25.3 | 25.3 |
| Actuated g/C Ratio | | 0.21 | | 0.21 | 0.91 | 0.91 | 0.91 |
| v/c Ratio | | 0.08 | | 0.04 | 0.21 | 0.00 | 0.12 |
| Control Delay | | 5.1 | | 2.6 | 2.1 | 2.3 | 1.9 |
| Queue Delay | | 0.0 | | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | | 5.1 | | 2.6 | 2.1 | 2.3 | 1.9 |
| LOS | | A | | A | A | A | A |
| Approach Delay | | 5.1 | | 2.6 | 2.1 | | 1.9 |
| Approach LOS | | A | | A | A | | A |

| Intersection Summary | |
|---|---|
| Cycle Length: 45 | |
| Actuated Cycle Length: 27.9 | |
| Natural Cycle: 45 | |
| Control Type: Actuated-Uncoordinated | |
| Maximum v/c Ratio: 0.21 | |
| Intersection Signal Delay: 2.2 | Intersection LOS: A |
| Intersection Capacity Utilization 29.2% | ICU Level of Service A |
| Analysis Period (min) 15 | |

Splits and Phases: 30: CSAH 23 & 31st Avenue



Synchro Report for proposed conditions (PM Peak) CSAH 23 & 31st Ave

County staff are proposing to remove the existing traffic signal at the CSAH 23 and 31st Ave intersection (pending further evaluation and local approval). Therefore, there are no signal timing plans for the proposed conditions.

Synchro Report for existing conditions (PM Peak) CSAH 23 & St. Anthony Pkwy

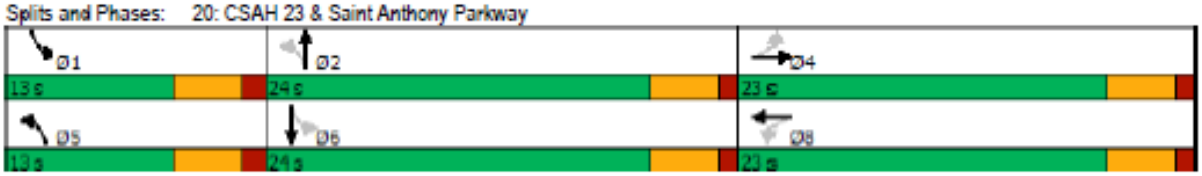
Marshall Street RS
Existing PM Peak

11/22/2023
20: CSAH 23 & Saint Anthony Parkway

| Lane Group | EBT | WBL | WBT | NBL | NBT | SBL | SBT |
|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | |
| Traffic Volume (vph) | 102 | 19 | 132 | 44 | 286 | 45 | 142 |
| Future Volume (vph) | 102 | 19 | 132 | 44 | 286 | 45 | 142 |
| Turn Type | NA | Perm | NA | pm+pt | NA | pm+pt | NA |
| Protected Phases | 4 | | 8 | 5 | 2 | 1 | 6 |
| Permitted Phases | | 8 | | 2 | | 6 | |
| Detector Phase | 4 | 8 | 8 | 5 | 2 | 1 | 6 |
| Switch Phase | | | | | | | |
| Minimum Initial (s) | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 |
| Minimum Split (s) | 22.5 | 22.5 | 22.5 | 13.0 | 22.5 | 13.0 | 22.5 |
| Total Split (s) | 23.0 | 23.0 | 23.0 | 13.0 | 24.0 | 13.0 | 24.0 |
| Total Split (%) | 38.3% | 38.3% | 38.3% | 21.7% | 40.0% | 21.7% | 40.0% |
| Yellow Time (s) | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 |
| All-Red Time (s) | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| Lost Time Adjust (s) | 0.0 | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Lost Time (s) | 4.5 | | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 |
| Lead/Lag | | | | Lead | Lag | Lead | Lag |
| Lead-Lag Optimize? | | | | Yes | Yes | Yes | Yes |
| Recall Mode | None | None | None | None | Min | None | Min |
| Act Effct Green (s) | 11.1 | | 11.1 | 16.7 | 14.7 | 16.8 | 14.7 |
| Actuated g/C Ratio | 0.28 | | 0.28 | 0.43 | 0.38 | 0.43 | 0.38 |
| v/c Ratio | 0.28 | | 0.48 | 0.08 | 0.46 | 0.10 | 0.23 |
| Control Delay | 12.1 | | 14.5 | 6.5 | 14.3 | 6.7 | 12.2 |
| Queue Delay | 0.0 | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 12.1 | | 14.5 | 6.5 | 14.3 | 6.7 | 12.2 |
| LOS | B | | B | A | B | A | B |
| Approach Delay | 12.1 | | 14.5 | | 13.3 | | 10.9 |
| Approach LOS | B | | B | | B | | B |

| Intersection Summary | |
|---|---|
| Cycle Length: 60 | |
| Actuated Cycle Length: 39.1 | |
| Natural Cycle: 60 | |
| Control Type: Actuated-Uncoordinated | |
| Maximum v/c Ratio: 0.48 | |
| Intersection Signal Delay: 12.9 | Intersection LOS: B |
| Intersection Capacity Utilization 54.5% | ICU Level of Service A |
| Analysis Period (min) 15 | |

Splits and Phases: 20: CSAH 23 & Saint Anthony Parkway



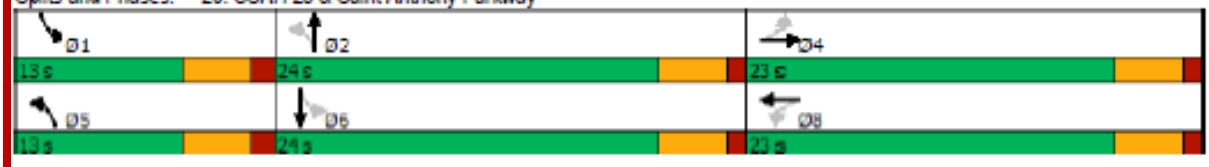
Synchro Report for proposed conditions (PM Peak) CSAH 23 & St. Anthony Pkwy

Timings
Marshall Street - Build PM Peak 11/22/2023

| Lane Group | EBT | WBL | WBT | NBL | NBT | SBL | SBT |
|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | |
| Traffic Volume (vph) | 102 | 19 | 132 | 44 | 286 | 45 | 142 |
| Future Volume (vph) | 102 | 19 | 132 | 44 | 286 | 45 | 142 |
| Turn Type | NA | Perm | NA | pm+pt | NA | pm+pt | NA |
| Protected Phases | 4 | | 8 | 5 | 2 | 1 | 6 |
| Permitted Phases | | 8 | | 2 | | 6 | |
| Detector Phase | 4 | 8 | 8 | 5 | 2 | 1 | 6 |
| Switch Phase | | | | | | | |
| Minimum Initial (s) | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 |
| Minimum Split (s) | 22.5 | 22.5 | 22.5 | 13.0 | 22.5 | 13.0 | 22.5 |
| Total Split (s) | 23.0 | 23.0 | 23.0 | 13.0 | 24.0 | 13.0 | 24.0 |
| Total Split (%) | 38.3% | 38.3% | 38.3% | 21.7% | 40.0% | 21.7% | 40.0% |
| Yellow Time (s) | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 |
| All-Red Time (s) | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| Lost Time Adjust (s) | 0.0 | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Lost Time (s) | 4.5 | | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 |
| Lead/Lag | | | | Lead | Lag | Lead | Lag |
| Lead-Lag Optimize? | | | | Yes | Yes | Yes | Yes |
| Recall Mode | None | None | None | None | Min | None | Min |
| Act Effct Green (s) | 11.1 | | 11.1 | 16.7 | 14.7 | 16.8 | 14.7 |
| Actuated g/C Ratio | 0.28 | | 0.28 | 0.43 | 0.38 | 0.43 | 0.38 |
| v/c Ratio | 0.28 | | 0.48 | 0.08 | 0.46 | 0.10 | 0.23 |
| Control Delay | 12.1 | | 14.5 | 6.5 | 14.3 | 6.7 | 12.2 |
| Queue Delay | 0.0 | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 12.1 | | 14.5 | 6.5 | 14.3 | 6.7 | 12.2 |
| LOS | B | | B | A | B | A | B |
| Approach Delay | 12.1 | | 14.5 | | 13.3 | | 10.9 |
| Approach LOS | B | | B | | B | | B |

| Intersection Summary | |
|---|---|
| Cycle Length: 60 | |
| Actuated Cycle Length: 39.1 | |
| Natural Cycle: 60 | |
| Control Type: Actuated-Uncoordinated | |
| Maximum v/c Ratio: 0.48 | |
| Intersection Signal Delay: 12.9 | Intersection LOS: B |
| Intersection Capacity Utilization 54.5% | ICU Level of Service A |
| Analysis Period (min) 15 | |

Splits and Phases: 20: CSAH 23 & Saint Anthony Parkway



# CSAH 23 (Marshall St NE) Phase 2 Reconstruction Project

Synchro Report – Emission Reduction

Existing conditions (PM Peak)

50: CSAH 23 & Lowry Avenue

| Direction | All |
|---|---|
| Future Volume (vph) | 2022 |
| Total Delay / Veh (s/v) | 30 |
| CO Emissions (kg) | 2.62 |
| NOx Emissions (kg) | 0.51 |
| VOC Emissions (kg) | 0.61 |

Proposed conditions (PM Peak)

50: CSAH 23 & Lowry Avenue

| Direction | All |
|---|---|
| Future Volume (vph) | 2022 |
| Total Delay / Veh (s/v) | 30 |
| CO Emissions (kg) | 2.63 |
| NOx Emissions (kg) | 0.51 |
| VOC Emissions (kg) | 0.61 |

---

Existing conditions (PM Peak)

40: CSAH 23 & Access/27th Avenue

| Direction | All |
|---|---|
| Future Volume (vph) | 723 |
| Total Delay / Veh (s/v) | 6 |
| CO Emissions (kg) | 0.90 |
| NOx Emissions (kg) | 0.18 |
| VOC Emissions (kg) | 0.21 |

Proposed conditions (PM Peak)

40: CSAH 23 & Access/27th Avenue

| Direction | All |
|---|---|
| Future Volume (vph) | 723 |
| Total Delay / Veh (s/v) | 3 |
| CO Emissions (kg) | 0.80 |
| NOx Emissions (kg) | 0.15 |
| VOC Emissions (kg) | 0.18 |

Existing conditions (PM Peak)

30: CSAH 23 & 31st Avenue

| Direction | All |
|---|---|
| Future Volume (vph) | 557 |
| Total Delay / Veh (s/v) | 2 |
| CO Emissions (kg) | 0.68 |
| NOx Emissions (kg) | 0.13 |
| VOC Emissions (kg) | 0.16 |

Proposed conditions (PM Peak)

30: CSAH 23 & 31st Avenue

| Direction | All |
|---|---|
| Future Volume (vph) | 557 |
| Total Delay / Veh (s/v) | 1 |
| CO Emissions (kg) | 0.61 |
| NOx Emissions (kg) | 0.12 |
| VOC Emissions (kg) | 0.14 |

---

Existing conditions (PM Peak)

20: CSAH 23 & Saint Anthony Parkway

| Direction | All |
|---|---|
| Future Volume (vph) | 886 |
| Total Delay / Veh (s/v) | 13 |
| CO Emissions (kg) | 1.09 |
| NOx Emissions (kg) | 0.21 |
| VOC Emissions (kg) | 0.25 |

Proposed conditions (PM Peak)

20: CSAH 23 & Saint Anthony Parkway

| Direction | All |
|---|---|
| Future Volume (vph) | 886 |
| Total Delay / Veh (s/v) | 13 |
| CO Emissions (kg) | 1.03 |
| NOx Emissions (kg) | 0.20 |
| VOC Emissions (kg) | 0.24 |

Synchro Report for existing conditions (PM Peak) CSAH 23 & CSAH 153

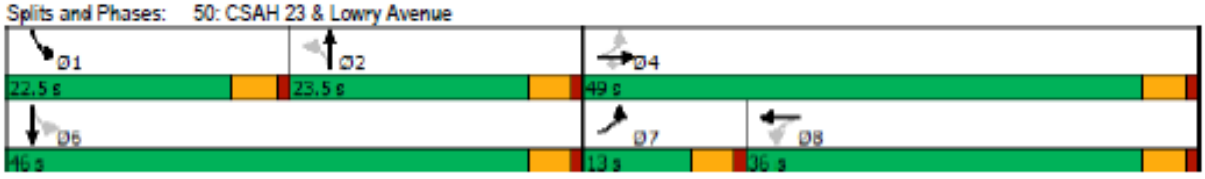
Marshall Street RS
Existing PM Peak

11/22/2023
50: CSAH 23 & Lowry Avenue

| Lane Group | EBL | EBT | EBR | WBL | WBT | NBL | NBT | SBL | SBT |
|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | |
| Traffic Volume (vph) | 101 | 505 | 71 | 34 | 596 | 73 | 248 | 41 | 166 |
| Future Volume (vph) | 101 | 505 | 71 | 34 | 596 | 73 | 248 | 41 | 166 |
| Turn Type | pm+pt | NA | Perm | Perm | NA | Perm | NA | pm+pt | NA |
| Protected Phases | 7 | 4 | | | 8 | | 2 | 1 | 6 |
| Permitted Phases | 4 | | 4 | 8 | | 2 | | 6 | |
| Detector Phase | 7 | 4 | 4 | 8 | 8 | 2 | 2 | 1 | 6 |
| Switch Phase | | | | | | | | | |
| Minimum Initial (s) | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 |
| Minimum Split (s) | 13.0 | 22.5 | 22.5 | 22.5 | 22.5 | 22.5 | 22.5 | 22.5 | 22.5 |
| Total Split (s) | 13.0 | 49.0 | 49.0 | 36.0 | 36.0 | 23.5 | 23.5 | 22.5 | 46.0 |
| Total Split (%) | 13.7% | 51.6% | 51.6% | 37.9% | 37.9% | 24.7% | 24.7% | 23.7% | 48.4% |
| Yellow Time (s) | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 |
| All-Red Time (s) | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| Lost Time Adjust (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Lost Time (s) | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 |
| Lead/Lag | Lead | | | Lag | Lag | Lag | Lag | Lead | |
| Lead-Lag Optimize? | Yes | | | Yes | Yes | Yes | Yes | Yes | |
| Recall Mode | None | None | None | None | None | Min | Min | Min | Min |
| Act Effct Green (s) | 41.8 | 41.8 | 41.8 | 31.9 | 31.9 | 17.3 | 17.3 | 28.8 | 28.8 |
| Actuated g/C Ratio | 0.52 | 0.52 | 0.52 | 0.40 | 0.40 | 0.22 | 0.22 | 0.36 | 0.36 |
| v/c Ratio | 0.45 | 0.56 | 0.09 | 0.12 | 0.93 | 0.34 | 0.78 | 0.17 | 0.46 |
| Control Delay | 16.5 | 15.9 | 3.6 | 18.9 | 46.7 | 32.5 | 45.1 | 19.0 | 19.6 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 16.5 | 15.9 | 3.6 | 18.9 | 46.7 | 32.5 | 45.1 | 19.0 | 19.6 |
| LOS | B | B | A | B | D | C | D | B | B |
| Approach Delay | | 14.7 | | | 45.2 | | 42.5 | | 19.5 |
| Approach LOS | | B | | | D | | D | | B |

| Intersection Summary | |
|---|---|
| Cycle Length: 95 | |
| Actuated Cycle Length: 79.7 | |
| Natural Cycle: 95 | |
| Control Type: Actuated-Uncoordinated | |
| Maximum v/c Ratio: 0.93 | |
| Intersection Signal Delay: 30.5 | Intersection LOS: C |
| Intersection Capacity Utilization 74.0% | ICU Level of Service D |
| Analysis Period (min) 15 | |

Splits and Phases: 50: CSAH 23 & Lowry Avenue



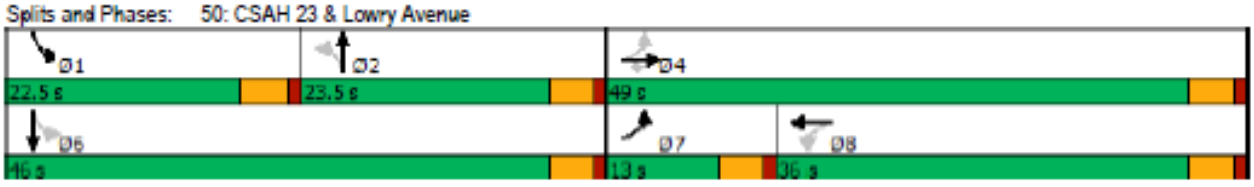
Synchro Report for proposed conditions (PM Peak) CSAH 23 & CSAH 153

Timings
Marshall Street - Build PM Peak 11/22/2023

| Lane Group | EBL | EBT | EBR | WBL | WBT | NBL | NBT | SBL | SBT |
|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | |
| Traffic Volume (vph) | 101 | 505 | 71 | 34 | 596 | 73 | 248 | 41 | 166 |
| Future Volume (vph) | 101 | 505 | 71 | 34 | 596 | 73 | 248 | 41 | 166 |
| Turn Type | pm+pt | NA | Perm | Perm | NA | Perm | NA | pm+pt | NA |
| Protected Phases | 7 | 4 | | | 8 | | 2 | 1 | 6 |
| Permitted Phases | 4 | | 4 | 8 | | 2 | | 6 | |
| Detector Phase | 7 | 4 | 4 | 8 | 8 | 2 | 2 | 1 | 6 |
| Switch Phase | | | | | | | | | |
| Minimum Initial (s) | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 |
| Minimum Split (s) | 13.0 | 22.5 | 22.5 | 22.5 | 22.5 | 22.5 | 22.5 | 22.5 | 22.5 |
| Total Split (s) | 13.0 | 49.0 | 49.0 | 36.0 | 36.0 | 23.5 | 23.5 | 22.5 | 46.0 |
| Total Split (%) | 13.7% | 51.6% | 51.6% | 37.9% | 37.9% | 24.7% | 24.7% | 23.7% | 48.4% |
| Yellow Time (s) | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 |
| All-Red Time (s) | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| Lost Time Adjust (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Lost Time (s) | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 |
| Lead/Lag | Lead | | | Lag | Lag | Lag | Lag | Lead | |
| Lead-Lag Optimize? | Yes | | | Yes | Yes | Yes | Yes | Yes | |
| Recall Mode | None | None | None | None | None | Min | Min | Min | Min |
| Act Effct Green (s) | 41.8 | 41.8 | 41.8 | 31.9 | 31.9 | 17.3 | 17.3 | 28.8 | 28.8 |
| Actuated g/C Ratio | 0.52 | 0.52 | 0.52 | 0.40 | 0.40 | 0.22 | 0.22 | 0.36 | 0.36 |
| v/c Ratio | 0.45 | 0.56 | 0.09 | 0.12 | 0.93 | 0.34 | 0.78 | 0.17 | 0.46 |
| Control Delay | 16.5 | 15.9 | 3.6 | 18.9 | 46.7 | 32.5 | 45.1 | 19.0 | 19.6 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 16.5 | 15.9 | 3.6 | 18.9 | 46.7 | 32.5 | 45.1 | 19.0 | 19.6 |
| LOS | B | B | A | B | D | C | D | B | B |
| Approach Delay | | 14.7 | | | 45.2 | | 42.5 | | 19.5 |
| Approach LOS | | B | | | D | | D | | B |

| Intersection Summary | |
|---|---|
| Cycle Length: 95 | |
| Actuated Cycle Length: 79.7 | |
| Natural Cycle: 95 | |
| Control Type: Actuated-Uncoordinated | |
| Maximum v/c Ratio: 0.93 | |
| Intersection Signal Delay: 30.5 | Intersection LOS: C |
| Intersection Capacity Utilization 74.0% | ICU Level of Service D |
| Analysis Period (min) 15 | |

Splits and Phases: 50: CSAH 23 & Lowry Avenue



Synchro Report for existing conditions (PM Peak) CSAH 23 & 27th Ave

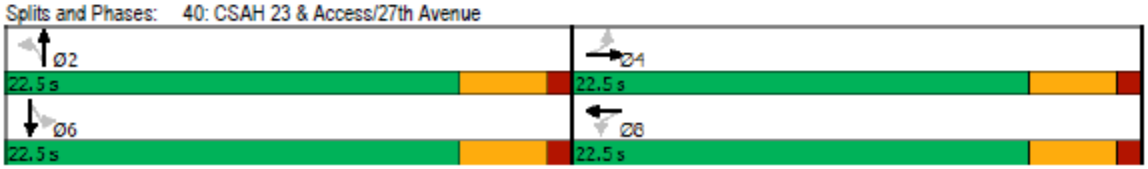
Marshall Street RS
Existing PM Peak

11/22/2023
40: CSAH 23 & Access/27th Avenue

| Lane Group | EBT | WBL | WBT | NBL | NBT | SBL | SBT |
|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | |
| Traffic Volume (vph) | 4 | 54 | 5 | 5 | 344 | 13 | 233 |
| Future Volume (vph) | 4 | 54 | 5 | 5 | 344 | 13 | 233 |
| Turn Type | NA | Perm | NA | Perm | NA | Perm | NA |
| Protected Phases | 4 | | 8 | | 2 | | 6 |
| Permitted Phases | | 8 | | 2 | | 6 | |
| Detector Phase | 4 | 8 | 8 | 2 | 2 | 6 | 6 |
| Switch Phase | | | | | | | |
| Minimum Initial (s) | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 |
| Minimum Split (s) | 22.5 | 22.5 | 22.5 | 22.5 | 22.5 | 22.5 | 22.5 |
| Total Split (s) | 22.5 | 22.5 | 22.5 | 22.5 | 22.5 | 22.5 | 22.5 |
| Total Split (%) | 50.0% | 50.0% | 50.0% | 50.0% | 50.0% | 50.0% | 50.0% |
| Yellow Time (s) | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 |
| All-Red Time (s) | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| Lost Time Adjust (s) | 0.0 | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Lost Time (s) | 4.5 | | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 |
| Lead/Lag | | | | | | | |
| Lead-Lag Optimize? | | | | | | | |
| Recall Mode | None | None | None | Min | Min | Min | Min |
| Act Effct Green (s) | 7.1 | | 7.1 | 21.9 | 21.9 | 21.9 | 21.9 |
| Actuated g/C Ratio | 0.23 | | 0.23 | 0.70 | 0.70 | 0.70 | 0.70 |
| v/c Ratio | 0.02 | | 0.31 | 0.01 | 0.32 | 0.02 | 0.19 |
| Control Delay | 8.7 | | 9.5 | 4.6 | 5.5 | 4.8 | 4.8 |
| Queue Delay | 0.0 | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 8.7 | | 9.5 | 4.6 | 5.5 | 4.8 | 4.8 |
| LOS | A | | A | A | A | A | A |
| Approach Delay | 8.7 | | 9.5 | | 5.4 | | 4.8 |
| Approach LOS | A | | A | | A | | A |

| Intersection Summary | |
|---|---|
| Cycle Length: 45 | |
| Actuated Cycle Length: 31.2 | |
| Natural Cycle: 45 | |
| Control Type: Actuated-Uncoordinated | |
| Maximum v/c Ratio: 0.32 | |
| Intersection Signal Delay: 5.8 | Intersection LOS: A |
| Intersection Capacity Utilization 39.4% | ICU Level of Service A |
| Analysis Period (min) 15 | |

Splits and Phases: 40: CSAH 23 & Access/27th Avenue



Synchro Report for proposed conditions (PM Peak) CSAH 23 & 27th Ave

County staff are proposing to remove the existing traffic signal at the CSAH 23 and 27th Ave intersection (pending further evaluation and local approval). Therefore, there are no signal timing plans for the proposed conditions.

Synchro Report for existing conditions (PM Peak) CSAH 23 & 31st Ave

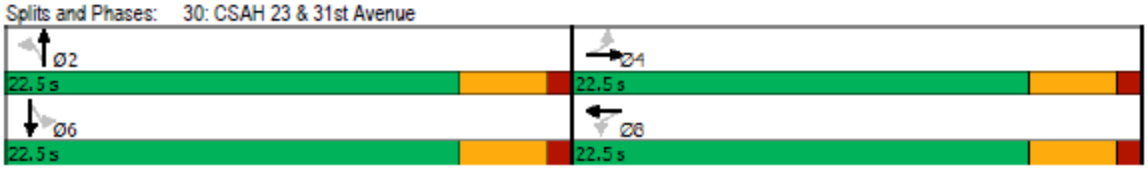
Marshall Street RS
Existing PM Peak

11/22/2023
30: CSAH 23 & 31st Avenue

| Lane Group | EBL | EBT | WBL | WBT | NBT | SBL | SBT |
|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | |
| Traffic Volume (vph) | 16 | 0 | 2 | 0 | 325 | 3 | 187 |
| Future Volume (vph) | 16 | 0 | 2 | 0 | 325 | 3 | 187 |
| Turn Type | Perm | NA | Perm | NA | NA | Perm | NA |
| Protected Phases | | 4 | | 8 | 2 | | 6 |
| Permitted Phases | 4 | | 8 | | | 6 | |
| Detector Phase | 4 | 4 | 8 | 8 | 2 | 6 | 6 |
| Switch Phase | | | | | | | |
| Minimum Initial (s) | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 |
| Minimum Split (s) | 22.5 | 22.5 | 22.5 | 22.5 | 22.5 | 22.5 | 22.5 |
| Total Split (s) | 22.5 | 22.5 | 22.5 | 22.5 | 22.5 | 22.5 | 22.5 |
| Total Split (%) | 50.0% | 50.0% | 50.0% | 50.0% | 50.0% | 50.0% | 50.0% |
| Yellow Time (s) | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 |
| All-Red Time (s) | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| Lost Time Adjust (s) | | 0.0 | | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Lost Time (s) | | 4.5 | | 4.5 | 4.5 | 4.5 | 4.5 |
| Lead/Lag | | | | | | | |
| Lead-Lag Optimize? | | | | | | | |
| Recall Mode | None | None | None | None | Min | Min | Min |
| Act Effct Green (s) | | 5.8 | | 5.8 | 25.3 | 25.3 | 25.3 |
| Actuated g/C Ratio | | 0.21 | | 0.21 | 0.91 | 0.91 | 0.91 |
| v/c Ratio | | 0.08 | | 0.04 | 0.21 | 0.00 | 0.12 |
| Control Delay | | 5.1 | | 2.6 | 2.1 | 2.3 | 1.9 |
| Queue Delay | | 0.0 | | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | | 5.1 | | 2.6 | 2.1 | 2.3 | 1.9 |
| LOS | | A | | A | A | A | A |
| Approach Delay | | 5.1 | | 2.6 | 2.1 | | 1.9 |
| Approach LOS | | A | | A | A | | A |

| Intersection Summary | |
|---|---|
| Cycle Length: 45 | |
| Actuated Cycle Length: 27.9 | |
| Natural Cycle: 45 | |
| Control Type: Actuated-Uncoordinated | |
| Maximum v/c Ratio: 0.21 | |
| Intersection Signal Delay: 2.2 | Intersection LOS: A |
| Intersection Capacity Utilization 29.2% | ICU Level of Service A |
| Analysis Period (min) 15 | |

Splits and Phases: 30: CSAH 23 & 31st Avenue



Synchro Report for proposed conditions (PM Peak) CSAH 23 & 31st Ave

County staff are proposing to remove the existing traffic signal at the CSAH 23 and 31st Ave intersection (pending further evaluation and local approval). Therefore, there are no signal timing plans for the proposed conditions.

Synchro Report for existing conditions (PM Peak) CSAH 23 & St. Anthony Pkwy

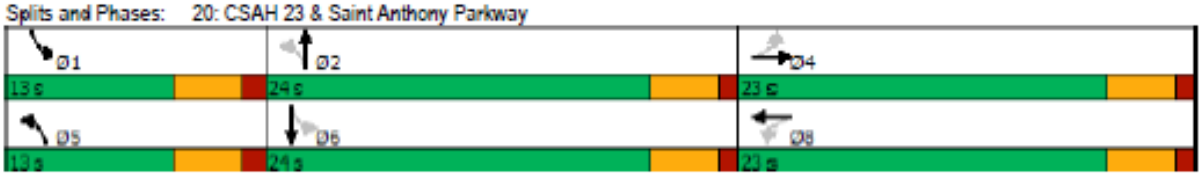
Marshall Street RS
Existing PM Peak

11/22/2023
20: CSAH 23 & Saint Anthony Parkway

| Lane Group | EBT | WBL | WBT | NBL | NBT | SBL | SBT |
|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | |
| Traffic Volume (vph) | 102 | 19 | 132 | 44 | 286 | 45 | 142 |
| Future Volume (vph) | 102 | 19 | 132 | 44 | 286 | 45 | 142 |
| Turn Type | NA | Perm | NA | pm+pt | NA | pm+pt | NA |
| Protected Phases | 4 | | 8 | 5 | 2 | 1 | 6 |
| Permitted Phases | | 8 | | 2 | | 6 | |
| Detector Phase | 4 | 8 | 8 | 5 | 2 | 1 | 6 |
| Switch Phase | | | | | | | |
| Minimum Initial (s) | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 |
| Minimum Split (s) | 22.5 | 22.5 | 22.5 | 13.0 | 22.5 | 13.0 | 22.5 |
| Total Split (s) | 23.0 | 23.0 | 23.0 | 13.0 | 24.0 | 13.0 | 24.0 |
| Total Split (%) | 38.3% | 38.3% | 38.3% | 21.7% | 40.0% | 21.7% | 40.0% |
| Yellow Time (s) | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 |
| All-Red Time (s) | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| Lost Time Adjust (s) | 0.0 | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Lost Time (s) | 4.5 | | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 |
| Lead/Lag | | | | Lead | Lag | Lead | Lag |
| Lead-Lag Optimize? | | | | Yes | Yes | Yes | Yes |
| Recall Mode | None | None | None | None | Min | None | Min |
| Act Effct Green (s) | 11.1 | | 11.1 | 16.7 | 14.7 | 16.8 | 14.7 |
| Actuated g/C Ratio | 0.28 | | 0.28 | 0.43 | 0.38 | 0.43 | 0.38 |
| v/c Ratio | 0.28 | | 0.48 | 0.08 | 0.46 | 0.10 | 0.23 |
| Control Delay | 12.1 | | 14.5 | 6.5 | 14.3 | 6.7 | 12.2 |
| Queue Delay | 0.0 | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 12.1 | | 14.5 | 6.5 | 14.3 | 6.7 | 12.2 |
| LOS | B | | B | A | B | A | B |
| Approach Delay | 12.1 | | 14.5 | | 13.3 | | 10.9 |
| Approach LOS | B | | B | | B | | B |

| Intersection Summary | |
|---|---|
| Cycle Length: 60 | |
| Actuated Cycle Length: 39.1 | |
| Natural Cycle: 60 | |
| Control Type: Actuated-Uncoordinated | |
| Maximum v/c Ratio: 0.48 | |
| Intersection Signal Delay: 12.9 | Intersection LOS: B |
| Intersection Capacity Utilization 54.5% | ICU Level of Service A |
| Analysis Period (min) 15 | |

Splits and Phases: 20: CSAH 23 & Saint Anthony Parkway



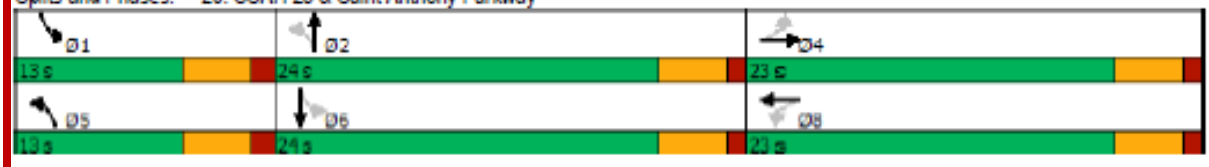
Synchro Report for proposed conditions (PM Peak) CSAH 23 & St. Anthony Pkwy

Timings
Marshall Street - Build PM Peak 11/22/2023

| Lane Group | EBT | WBL | WBT | NBL | NBT | SBL | SBT |
|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | |
| Traffic Volume (vph) | 102 | 19 | 132 | 44 | 286 | 45 | 142 |
| Future Volume (vph) | 102 | 19 | 132 | 44 | 286 | 45 | 142 |
| Turn Type | NA | Perm | NA | pm+pt | NA | pm+pt | NA |
| Protected Phases | 4 | | 8 | 5 | 2 | 1 | 6 |
| Permitted Phases | | 8 | | 2 | | 6 | |
| Detector Phase | 4 | 8 | 8 | 5 | 2 | 1 | 6 |
| Switch Phase | | | | | | | |
| Minimum Initial (s) | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 |
| Minimum Split (s) | 22.5 | 22.5 | 22.5 | 13.0 | 22.5 | 13.0 | 22.5 |
| Total Split (s) | 23.0 | 23.0 | 23.0 | 13.0 | 24.0 | 13.0 | 24.0 |
| Total Split (%) | 38.3% | 38.3% | 38.3% | 21.7% | 40.0% | 21.7% | 40.0% |
| Yellow Time (s) | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 |
| All-Red Time (s) | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| Lost Time Adjust (s) | 0.0 | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Lost Time (s) | 4.5 | | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 |
| Lead/Lag | | | | Lead | Lag | Lead | Lag |
| Lead-Lag Optimize? | | | | Yes | Yes | Yes | Yes |
| Recall Mode | None | None | None | None | Min | None | Min |
| Act Effct Green (s) | 11.1 | | 11.1 | 16.7 | 14.7 | 16.8 | 14.7 |
| Actuated g/C Ratio | 0.28 | | 0.28 | 0.43 | 0.38 | 0.43 | 0.38 |
| v/c Ratio | 0.28 | | 0.48 | 0.08 | 0.46 | 0.10 | 0.23 |
| Control Delay | 12.1 | | 14.5 | 6.5 | 14.3 | 6.7 | 12.2 |
| Queue Delay | 0.0 | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 12.1 | | 14.5 | 6.5 | 14.3 | 6.7 | 12.2 |
| LOS | B | | B | A | B | A | B |
| Approach Delay | 12.1 | | 14.5 | | 13.3 | | 10.9 |
| Approach LOS | B | | B | | B | | B |

| Intersection Summary | |
|---|---|
| Cycle Length: 60 | |
| Actuated Cycle Length: 39.1 | |
| Natural Cycle: 60 | |
| Control Type: Actuated-Uncoordinated | |
| Maximum v/c Ratio: 0.48 | |
| Intersection Signal Delay: 12.9 | Intersection LOS: B |
| Intersection Capacity Utilization 54.5% | ICU Level of Service A |
| Analysis Period (min) 15 | |

Splits and Phases: 20: CSAH 23 & Saint Anthony Parkway



# Traffic Safety Benefit-Cost Calculation

Highway Safety Improvement Program (HSIP) Reactive Project

DEPARTMENT OF TRANSPORTATION

## A. Roadway Description

**Route** CSAH 23 **District** Metro **County** Hennepin County

**Begin RP** 1.98 **End RP** 2.01 **Miles** 0.03

**Location** At CSAH 153 (Lowry Ave NE)

## B. Project Description

**Proposed Work** No CMFs Proposed - Scope of Work to be included with SP 027-753-021

**Project Cost*** $11,280,000 **Installation Year** 2029

**Project Service Life** 20 years **Traffic Growth Factor** 0.5%

** exclude Right of Way from Project Cost*

## C. Crash Modification Factor

**Fatal (K) Crashes** **Reference** No CMFs Proposed

**Serious Injury (A) Crashes**

**Moderate Injury (B) Crashes** **Crash Type** Not Applicable

**Possible Injury (C) Crashes**

**Property Damage Only Crashes** www.CMFclearinghouse.org

## D. Crash Modification Factor (optional second CMF)

**Fatal (K) Crashes** **Reference** Not Applicable

**Serious Injury (A) Crashes**

**Moderate Injury (B) Crashes** **Crash Type** Not Applicable

**Possible Injury (C) Crashes**

**Property Damage Only Crashes** www.CMFclearinghouse.org

## E. Crash Data

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

**Data Source** MnCMAT Version 2.0

| Crash Severity | None | None |
|---|---|---|
| K crashes | 1 | |
| A crashes | 1 | |
| B crashes | 4 | |
| C crashes | 3 | |
| PDO crashes | 21 | |

## F. Benefit-Cost Calculation

$0 **Benefit (present value)**

$11,280,000 **Cost**

**B/C Ratio = 0.00**

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

## F. Analysis Assumptions

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

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

**Real Discount Rate:** 0.8% Default

**Traffic Growth Rate:** 0.5% **Revised**

**Project Service Life:** 20 years **Revised**

## G. Annual Benefit

| Crash Severity | Crash Reduction | Annual Reduction | Annual Benefit |
|---|---|---|---|
| K crashes | 0.00 | 0.00 | $0 |
| A crashes | 0.00 | 0.00 | $0 |
| B crashes | 0.00 | 0.00 | $0 |
| C crashes | 0.00 | 0.00 | $0 |
| PDO crashes | 0.00 | 0.00 | $0 |
| | | | **$0** |

## H. Amortized Benefit

| Year | Crash Benefits | Present Value |
|---|---|---|
| 2029 | $0 | $0 |
| 2030 | $0 | $0 |
| 2031 | $0 | $0 |
| 2032 | $0 | $0 |
| 2033 | $0 | $0 |
| 2034 | $0 | $0 |
| 2035 | $0 | $0 |
| 2036 | $0 | $0 |
| 2037 | $0 | $0 |
| 2038 | $0 | $0 |
| 2039 | $0 | $0 |
| 2040 | $0 | $0 |
| 2041 | $0 | $0 |
| 2042 | $0 | $0 |
| 2043 | $0 | $0 |
| 2044 | $0 | $0 |
| 2045 | $0 | $0 |
| 2046 | $0 | $0 |
| 2047 | $0 | $0 |
| 2048 | $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 | $0 | $0 |

**Total = $0**

*NOTE:*
*This calculation relies on the real discount rate, which accounts for inflation. No further discounting is necessary.*

# Traffic Safety Benefit-Cost Calculation

Highway Safety Improvement Program (HSIP) Reactive Project

DEPARTMENT OF TRANSPORTATION

## A. Roadway Description

**Route** CSAH 23 **District** Metro **County** Hennepin County

**Begin RP** 2.01 **End RP** 2.21 **Miles** 0.20

**Location** From CSAH 153 (Lowry Ave NE) to 27th Ave NE

## B. Project Description

**Proposed Work** Prohibit on-street parking along west side of CSAH 23 (Marshall St NE)
Introduce protected bikeway and resurface pavement

**Project Cost*** $11,280,000 **Installation Year** 2029

**Project Service Life** 20 years **Traffic Growth Factor** 0.5%

** exclude Right of Way from Project Cost*

## C. Crash Modification Factor

| | | |
|---|---|---|
| | **Fatal (K) Crashes** | **Reference** No CMF: Prohibit parking along west side (100% reduction) |
| 0.00 | **Serious Injury (A) Crashes** | |
| | **Moderate Injury (B) Crashes** | **Crash Type** No CMF: Crashes involving parked vehicles along west side |
| | **Possible Injury (C) Crashes** | |
| 0.33 | **Property Damage Only Crashes** | www.CMFclearinghouse.org |

## D. Crash Modification Factor (optional second CMF)

| | | |
|---|---|---|
| | **Fatal (K) Crashes** | **Reference** CMF 08279: Introduce Protected Bikeway (17.2%) |
| | **Serious Injury (A) Crashes** | CMF 09300: Resurface Pavement (14.7%) |
| | **Moderate Injury (B) Crashes** | **Crash Type** CMF 08279: RE, SS, LT, RA, OR, & HO |
| 0.71 | **Possible Injury (C) Crashes** | CMF 09300: RE, SS, LT, RA, OR, & HO |
| 0.20 | **Property Damage Only Crashes** | www.CMFclearinghouse.org |

## E. Crash Data

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

**Data Source** MnCMAT Version 2.0

| Crash Severity | No CMF: Parked Vehicles | CMF 08279: RE, SS, LT, RA, OR, & HO<br>CMF 09300: RE, SS, LT, RA, OR, & HO |
|---|---|---|
| K crashes | 0 | 0 |
| A crashes | 1 | 0 |
| B crashes | 0 | 0 |
| C crashes | 0 | 1 |
| PDO crashes | 3 | 3 |

## F. Benefit-Cost Calculation

| | |
|---|---|
| $5,862,840 | **Benefit (present value)** |
| $11,280,000 | **Cost** |

**B/C Ratio = 0.52**

*Proposed project expected to reduce 2 crashes annually, 1 of which involving fatality or serious injury.*

## F. Analysis Assumptions

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

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

**Real Discount Rate:** 0.8% Default

**Traffic Growth Rate:** 0.5% **Revised**

**Project Service Life:** 20 years **Revised**

## G. Annual Benefit

| Crash Severity | Crash Reduction | Annual Reduction | Annual Benefit |
|---|---|---|---|
| K crashes | 0.00 | 0.00 | $0 |
| A crashes | 1.00 | 0.33 | $266,667 |
| B crashes | 0.00 | 0.00 | $0 |
| C crashes | 0.29 | 0.10 | $12,740 |
| PDO crashes | 4.42 | 1.47 | $22,110 |
| | | | **$301,517** |

## H. Amortized Benefit

| Year | Crash Benefits | Present Value |
|---|---|---|
| 2029 | $301,517 | $301,517 |
| 2030 | $303,024 | $300,619 |
| 2031 | $304,539 | $299,725 |
| 2032 | $306,062 | $298,833 |
| 2033 | $307,592 | $297,943 |
| 2034 | $309,130 | $297,056 |
| 2035 | $310,676 | $296,172 |
| 2036 | $312,229 | $295,291 |
| 2037 | $313,791 | $294,412 |
| 2038 | $315,359 | $293,536 |
| 2039 | $316,936 | $292,662 |
| 2040 | $318,521 | $291,791 |
| 2041 | $320,114 | $290,923 |
| 2042 | $321,714 | $290,057 |
| 2043 | $323,323 | $289,194 |
| 2044 | $324,939 | $288,333 |
| 2045 | $326,564 | $287,475 |
| 2046 | $328,197 | $286,619 |
| 2047 | $329,838 | $285,766 |
| 2048 | $331,487 | $284,916 |
| 0 | $0 | $0 |
| 0 | $0 | $0 |
| 0 | $0 | $0 |
| 0 | $0 | $0 |
| 0 | $0 | $0 |
| 0 | $0 | $0 |
| 0 | $0 | $0 |
| 0 | $0 | $0 |
| 0 | $0 | $0 |
| 0 | $0 | $0 |
| 0 | $0 | $0 |

**Total = $5,862,840**

*NOTE:*
*This calculation relies on the real discount rate, which accounts for inflation. No further discounting is necessary.*

# Traffic Safety Benefit-Cost Calculation

Highway Safety Improvement Program (HSIP) Reactive Project

DEPARTMENT OF TRANSPORTATION

## A. Roadway Description

**Route** CSAH 23 **District** Metro **County** Hennepin County

**Begin RP** 2.21 **End RP** 2.27 **Miles** 0.06

**Location** At 27th Ave NE

## B. Project Description

**Proposed Work** No CMFs Proposed - No reported crashes from 2020-2022

**Project Cost*** $11,280,000 **Installation Year** 2029

**Project Service Life** 20 years **Traffic Growth Factor** 0.5%

** exclude Right of Way from Project Cost*

## C. Crash Modification Factor

**Fatal (K) Crashes** **Reference** No CMFs Proposed

**Serious Injury (A) Crashes**

**Moderate Injury (B) Crashes** **Crash Type** Not Applicable

**Possible Injury (C) Crashes**

**Property Damage Only Crashes** www.CMFclearinghouse.org

## D. Crash Modification Factor (optional second CMF)

**Fatal (K) Crashes** **Reference** Not Applicable

**Serious Injury (A) Crashes**

**Moderate Injury (B) Crashes** **Crash Type** Not Applicable

**Possible Injury (C) Crashes**

**Property Damage Only Crashes** www.CMFclearinghouse.org

## E. Crash Data

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

**Data Source** MnCMAT Version 2.0

| Crash Severity | None | None |
|---|---|---|
| K crashes | 0 | |
| A crashes | 0 | |
| B crashes | 0 | |
| C crashes | 0 | |
| PDO crashes | 0 | |

## F. Benefit-Cost Calculation

$0 **Benefit (present value)**

$11,280,000 **Cost**

**B/C Ratio = 0.00**

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

## F. Analysis Assumptions

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

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

**Real Discount Rate:** 0.8% Default

**Traffic Growth Rate:** 0.5% **Revised**

**Project Service Life:** 20 years **Revised**

## G. Annual Benefit

| Crash Severity | Crash Reduction | Annual Reduction | Annual Benefit |
|---|---|---|---|
| K crashes | 0.00 | 0.00 | $0 |
| A crashes | 0.00 | 0.00 | $0 |
| B crashes | 0.00 | 0.00 | $0 |
| C crashes | 0.00 | 0.00 | $0 |
| PDO crashes | 0.00 | 0.00 | $0 |
| | | | **$0** |

## H. Amortized Benefit

| Year | Crash Benefits | Present Value |
|---|---|---|
| 2029 | $0 | $0 |
| 2030 | $0 | $0 |
| 2031 | $0 | $0 |
| 2032 | $0 | $0 |
| 2033 | $0 | $0 |
| 2034 | $0 | $0 |
| 2035 | $0 | $0 |
| 2036 | $0 | $0 |
| 2037 | $0 | $0 |
| 2038 | $0 | $0 |
| 2039 | $0 | $0 |
| 2040 | $0 | $0 |
| 2041 | $0 | $0 |
| 2042 | $0 | $0 |
| 2043 | $0 | $0 |
| 2044 | $0 | $0 |
| 2045 | $0 | $0 |
| 2046 | $0 | $0 |
| 2047 | $0 | $0 |
| 2048 | $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 | $0 | $0 |

**Total = $0**

*NOTE:*
*This calculation relies on the real discount rate, which accounts for inflation. No further discounting is necessary.*

# Traffic Safety Benefit-Cost Calculation

Highway Safety Improvement Program (HSIP) Reactive Project

DEPARTMENT OF TRANSPORTATION

## A. Roadway Description

**Route** CSAH 23 **District** Metro **County** Hennepin County

**Begin RP** 2.27 **End RP** 2.71 **Miles** 0.44

**Location** From 27th Ave NE to 31st Ave NE

## B. Project Description

**Proposed Work** Prohibit on-street parking along west side of CSAH 23 (Marshall St NE)
Introduce protected bikeway and resurface pavement

**Project Cost*** $11,280,000 **Installation Year** 2029

**Project Service Life** 20 years **Traffic Growth Factor** 0.5%

** exclude Right of Way from Project Cost*

## C. Crash Modification Factor

| | | | |
|---|---|---|---|
| | **Fatal (K) Crashes** | **Reference** | No CMF: Prohibit parking along west side (100% reduction) |
| 1.00 | **Serious Injury (A) Crashes** | | |
| | **Moderate Injury (B) Crashes** | **Crash Type** | No CMF: Crashes involving parked vehicles along west side |
| | **Possible Injury (C) Crashes** | | |
| | **Property Damage Only Crashes** | | www.CMFclearinghouse.org |

## D. Crash Modification Factor (optional second CMF)

| | | | |
|---|---|---|---|
| | **Fatal (K) Crashes** | **Reference** | CMF 08279: Introduce Protected Bikeway (17.2%) |
| | **Serious Injury (A) Crashes** | | CMF 09300: Resurface Pavement (14.7%) |
| | **Moderate Injury (B) Crashes** | **Crash Type** | CMF 08279: RE, SS, LT, RA, OR, & HO |
| | **Possible Injury (C) Crashes** | | CMF 09300: RE, SS, LT, RA, OR, & HO |
| 0.71 | **Property Damage Only Crashes** | | www.CMFclearinghouse.org |

## E. Crash Data

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

**Data Source** MnCMAT Version 2.0

| Crash Severity | No CMF: Parked Vehicles | CMF 08279: RE, SS, LT, RA, OR, & HO<br>CMF 09300: RE, SS, LT, RA, OR, & HO |
|---|---|---|
| K crashes | 0 | 0 |
| A crashes | 1 | 0 |
| B crashes | 0 | 0 |
| C crashes | 0 | 0 |
| PDO crashes | 0 | 1 |

## F. Benefit-Cost Calculation

| | | |
|---|---|---|
| $28,584 | **Benefit (present value)** | **B/C Ratio = 0.01** |
| $11,280,000 | **Cost** | |

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

## F. Analysis Assumptions

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

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

**Real Discount Rate:** 0.8% Default

**Traffic Growth Rate:** 0.5% **Revised**

**Project Service Life:** 20 years **Revised**

## G. Annual Benefit

| Crash Severity | Crash Reduction | Annual Reduction | Annual Benefit |
|---|---|---|---|
| K crashes | 0.00 | 0.00 | $0 |
| A crashes | 0.00 | 0.00 | $0 |
| B crashes | 0.00 | 0.00 | $0 |
| C crashes | 0.00 | 0.00 | $0 |
| PDO crashes | 0.29 | 0.10 | $1,470 |
| | | | **$1,470** |

## H. Amortized Benefit

| Year | Crash Benefits | Present Value |
|---|---|---|
| 2029 | $1,470 | $1,470 |
| 2030 | $1,477 | $1,466 |
| 2031 | $1,485 | $1,461 |
| 2032 | $1,492 | $1,457 |
| 2033 | $1,500 | $1,453 |
| 2034 | $1,507 | $1,448 |
| 2035 | $1,515 | $1,444 |
| 2036 | $1,522 | $1,440 |
| 2037 | $1,530 | $1,435 |
| 2038 | $1,537 | $1,431 |
| 2039 | $1,545 | $1,427 |
| 2040 | $1,553 | $1,423 |
| 2041 | $1,561 | $1,418 |
| 2042 | $1,568 | $1,414 |
| 2043 | $1,576 | $1,410 |
| 2044 | $1,584 | $1,406 |
| 2045 | $1,592 | $1,402 |
| 2046 | $1,600 | $1,397 |
| 2047 | $1,608 | $1,393 |
| 2048 | $1,616 | $1,389 |
| 0 | $0 | $0 |
| 0 | $0 | $0 |
| 0 | $0 | $0 |
| 0 | $0 | $0 |
| 0 | $0 | $0 |
| 0 | $0 | $0 |
| 0 | $0 | $0 |
| 0 | $0 | $0 |
| 0 | $0 | $0 |
| 0 | $0 | $0 |
| 0 | $0 | $0 |

**Total = $28,584**

*NOTE:*
*This calculation relies on the real discount rate, which accounts for inflation. No further discounting is necessary.*

# Traffic Safety Benefit-Cost Calculation

Highway Safety Improvement Program (HSIP) Reactive Project

DEPARTMENT OF TRANSPORTATION

## A. Roadway Description

**Route** CSAH 23 **District** Metro **County** Hennepin County

**Begin RP** 2.71 **End RP** 2.77 **Miles** 0.06

**Location** At 31st Ave NE

## B. Project Description

**Proposed Work** No CMFs Proposed - No reported crashes from 2020-2022

**Project Cost*** $11,280,000 **Installation Year** 2029

**Project Service Life** 20 years **Traffic Growth Factor** 0.5%

** exclude Right of Way from Project Cost*

## C. Crash Modification Factor

**Fatal (K) Crashes**

**Serious Injury (A) Crashes**

**Moderate Injury (B) Crashes**

**Possible Injury (C) Crashes**

**Property Damage Only Crashes**

**Reference** No CMFs Proposed

**Crash Type** Not Applicable

www.CMFclearinghouse.org

## D. Crash Modification Factor (optional second CMF)

**Fatal (K) Crashes**

**Serious Injury (A) Crashes**

**Moderate Injury (B) Crashes**

**Possible Injury (C) Crashes**

**Property Damage Only Crashes**

**Reference** Not Applicable

**Crash Type** Not Applicable

www.CMFclearinghouse.org

## E. Crash Data

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

**Data Source** MnCMAT Version 2.0

| Crash Severity | None | None |
|---|---|---|
| K crashes | 0 | |
| A crashes | 0 | |
| B crashes | 0 | |
| C crashes | 0 | |
| PDO crashes | 0 | |

## F. Benefit-Cost Calculation

$0 **Benefit (present value)**

$11,280,000 **Cost**

**B/C Ratio = 0.00**

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

## F. Analysis Assumptions

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

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

**Real Discount Rate:** 0.8% Default

**Traffic Growth Rate:** 0.5% **Revised**

**Project Service Life:** 20 years **Revised**

## G. Annual Benefit

| Crash Severity | Crash Reduction | Annual Reduction | Annual Benefit |
|---|---|---|---|
| K crashes | 0.00 | 0.00 | $0 |
| A crashes | 0.00 | 0.00 | $0 |
| B crashes | 0.00 | 0.00 | $0 |
| C crashes | 0.00 | 0.00 | $0 |
| PDO crashes | 0.00 | 0.00 | $0 |
| | | | **$0** |

## H. Amortized Benefit

| Year | Crash Benefits | Present Value |
|---|---|---|
| 2029 | $0 | $0 |
| 2030 | $0 | $0 |
| 2031 | $0 | $0 |
| 2032 | $0 | $0 |
| 2033 | $0 | $0 |
| 2034 | $0 | $0 |
| 2035 | $0 | $0 |
| 2036 | $0 | $0 |
| 2037 | $0 | $0 |
| 2038 | $0 | $0 |
| 2039 | $0 | $0 |
| 2040 | $0 | $0 |
| 2041 | $0 | $0 |
| 2042 | $0 | $0 |
| 2043 | $0 | $0 |
| 2044 | $0 | $0 |
| 2045 | $0 | $0 |
| 2046 | $0 | $0 |
| 2047 | $0 | $0 |
| 2048 | $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 | $0 | $0 |

**Total = $0**

*NOTE:*
*This calculation relies on the real discount rate, which accounts for inflation. No further discounting is necessary.*

# Traffic Safety Benefit-Cost Calculation

Highway Safety Improvement Program (HSIP) Reactive Project

DEPARTMENT OF TRANSPORTATION

## A. Roadway Description

**Route** CSAH 23 **District** Metro **County** Hennepin County

**Begin RP** 2.77 **End RP** 2.98 **Miles** 0.21

**Location** From 31st Ave NE to St. Anthony Pkwy

## B. Project Description

**Proposed Work** No CMFs Proposed - No reported crashes from 2020-2022

**Project Cost*** $11,280,000 **Installation Year** 2029

**Project Service Life** 20 years **Traffic Growth Factor** 0.5%

** exclude Right of Way from Project Cost*

## C. Crash Modification Factor

**Fatal (K) Crashes** **Reference** No CMFs Proposed

**Serious Injury (A) Crashes**

**Moderate Injury (B) Crashes** **Crash Type** Not Applicable

**Possible Injury (C) Crashes**

**Property Damage Only Crashes** www.CMFclearinghouse.org

## D. Crash Modification Factor (optional second CMF)

**Fatal (K) Crashes** **Reference** Not Applicable

**Serious Injury (A) Crashes**

**Moderate Injury (B) Crashes** **Crash Type** Not Applicable

**Possible Injury (C) Crashes**

**Property Damage Only Crashes** www.CMFclearinghouse.org

## E. Crash Data

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

**Data Source** MnCMAT Version 2.0

| Crash Severity | None | None |
|---|---|---|
| K crashes | 0 | |
| A crashes | 0 | |
| B crashes | 0 | |
| C crashes | 0 | |
| PDO crashes | 0 | |

## F. Benefit-Cost Calculation

$0 **Benefit (present value)**

$11,280,000 **Cost**

**B/C Ratio = 0.00**

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

## F. Analysis Assumptions

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

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

**Real Discount Rate:** 0.8% Default

**Traffic Growth Rate:** 0.5% **Revised**

**Project Service Life:** 20 years **Revised**

## G. Annual Benefit

| Crash Severity | Crash Reduction | Annual Reduction | Annual Benefit |
|---|---|---|---|
| K crashes | 0.00 | 0.00 | $0 |
| A crashes | 0.00 | 0.00 | $0 |
| B crashes | 0.00 | 0.00 | $0 |
| C crashes | 0.00 | 0.00 | $0 |
| PDO crashes | 0.00 | 0.00 | $0 |
| | | | **$0** |

## H. Amortized Benefit

| Year | Crash Benefits | Present Value |
|---|---|---|
| 2029 | $0 | $0 |
| 2030 | $0 | $0 |
| 2031 | $0 | $0 |
| 2032 | $0 | $0 |
| 2033 | $0 | $0 |
| 2034 | $0 | $0 |
| 2035 | $0 | $0 |
| 2036 | $0 | $0 |
| 2037 | $0 | $0 |
| 2038 | $0 | $0 |
| 2039 | $0 | $0 |
| 2040 | $0 | $0 |
| 2041 | $0 | $0 |
| 2042 | $0 | $0 |
| 2043 | $0 | $0 |
| 2044 | $0 | $0 |
| 2045 | $0 | $0 |
| 2046 | $0 | $0 |
| 2047 | $0 | $0 |
| 2048 | $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 | $0 | $0 |

**Total = $0**

*NOTE:*
*This calculation relies on the real discount rate, which accounts for inflation. No further discounting is necessary.*

# Traffic Safety Benefit-Cost Calculation

Highway Safety Improvement Program (HSIP) Reactive Project

## A. Roadway Description

**Route** CSAH 23 **District** Metro **County** Hennepin County

**Begin RP** 2.98 **End RP** 3.01 **Miles** 0.03

**Location** At St. Anthony Pkwy

## B. Project Description

**Proposed Work** Install signal mastarm on east approach
Add primary signal on north and south approaches

**Project Cost*** $11,280,000 **Installation Year** 2029

**Project Service Life** 20 years **Traffic Growth Factor** 0.5%

** exclude Right of Way from Project Cost*

## C. Crash Modification Factor

| | | | |
|---|---|---|---|
| | **Fatal (K) Crashes** | **Reference** | CMF 01428: Install signal MA on east app (74% reduction) |
| | **Serious Injury (A) Crashes** | | CMF 01414: Add primary sig heads on N/S app (28% reduction) |
| | **Moderate Injury (B) Crashes** | **Crash Type** | CMF 01428: RA crashes involving EB vehicles |
| 0.59 | **Possible Injury (C) Crashes** | | CMF 01414: All crashes involving NB/SB vehicles |
| 0.61 | **Property Damage Only Crashes** | | www.CMFclearinghouse.org |

## D. Crash Modification Factor (optional second CMF)

| | | | |
|---|---|---|---|
| | **Fatal (K) Crashes** | **Reference** | Not Applicable |
| | **Serious Injury (A) Crashes** | | |
| | **Moderate Injury (B) Crashes** | **Crash Type** | Not Applicable |
| | **Possible Injury (C) Crashes** | | |
| | **Property Damage Only Crashes** | | www.CMFclearinghouse.org |

## E. Crash Data

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

**Data Source** MnCMAT Version 2.0

| Crash Severity | CMF 01428: RA<br>CMF 01414: ALL | None |
|---|---|---|
| K crashes | 0 | |
| A crashes | 0 | |
| B crashes | 0 | |
| C crashes | 4 | |
| PDO crashes | 7 | |

## F. Benefit-Cost Calculation

| | | |
|---|---|---|
| $1,658,746 | **Benefit (present value)** | **B/C Ratio = 0.15** |
| $11,280,000 | **Cost** | |

*Proposed project expected to reduce 2 crashes annually, 0 of which involving fatality or serious injury.*

## F. Analysis Assumptions

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

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

**Real Discount Rate:** 0.8% Default

**Traffic Growth Rate:** 0.5% **Revised**

**Project Service Life:** 20 years **Revised**

## G. Annual Benefit

| Crash Severity | Crash Reduction | Annual Reduction | Annual Benefit |
|---|---|---|---|
| K crashes | 0.00 | 0.00 | $0 |
| A crashes | 0.00 | 0.00 | $0 |
| B crashes | 0.00 | 0.00 | $0 |
| C crashes | 1.65 | 0.55 | $71,587 |
| PDO crashes | 2.74 | 0.91 | $13,720 |
| | | | **$85,307** |

## H. Amortized Benefit

| Year | Crash Benefits | Present Value |
|---|---|---|
| 2029 | $85,307 | $85,307 |
| 2030 | $85,733 | $85,053 |
| 2031 | $86,162 | $84,800 |
| 2032 | $86,593 | $84,547 |
| 2033 | $87,026 | $84,296 |
| 2034 | $87,461 | $84,045 |
| 2035 | $87,898 | $83,795 |
| 2036 | $88,338 | $83,545 |
| 2037 | $88,779 | $83,297 |
| 2038 | $89,223 | $83,049 |
| 2039 | $89,669 | $82,802 |
| 2040 | $90,118 | $82,555 |
| 2041 | $90,568 | $82,309 |
| 2042 | $91,021 | $82,064 |
| 2043 | $91,476 | $81,820 |
| 2044 | $91,934 | $81,577 |
| 2045 | $92,393 | $81,334 |
| 2046 | $92,855 | $81,092 |
| 2047 | $93,319 | $80,850 |
| 2048 | $93,786 | $80,610 |
| 0 | $0 | $0 |
| 0 | $0 | $0 |
| 0 | $0 | $0 |
| 0 | $0 | $0 |
| 0 | $0 | $0 |
| 0 | $0 | $0 |
| 0 | $0 | $0 |
| 0 | $0 | $0 |
| 0 | $0 | $0 |
| 0 | $0 | $0 |
| 0 | $0 | $0 |

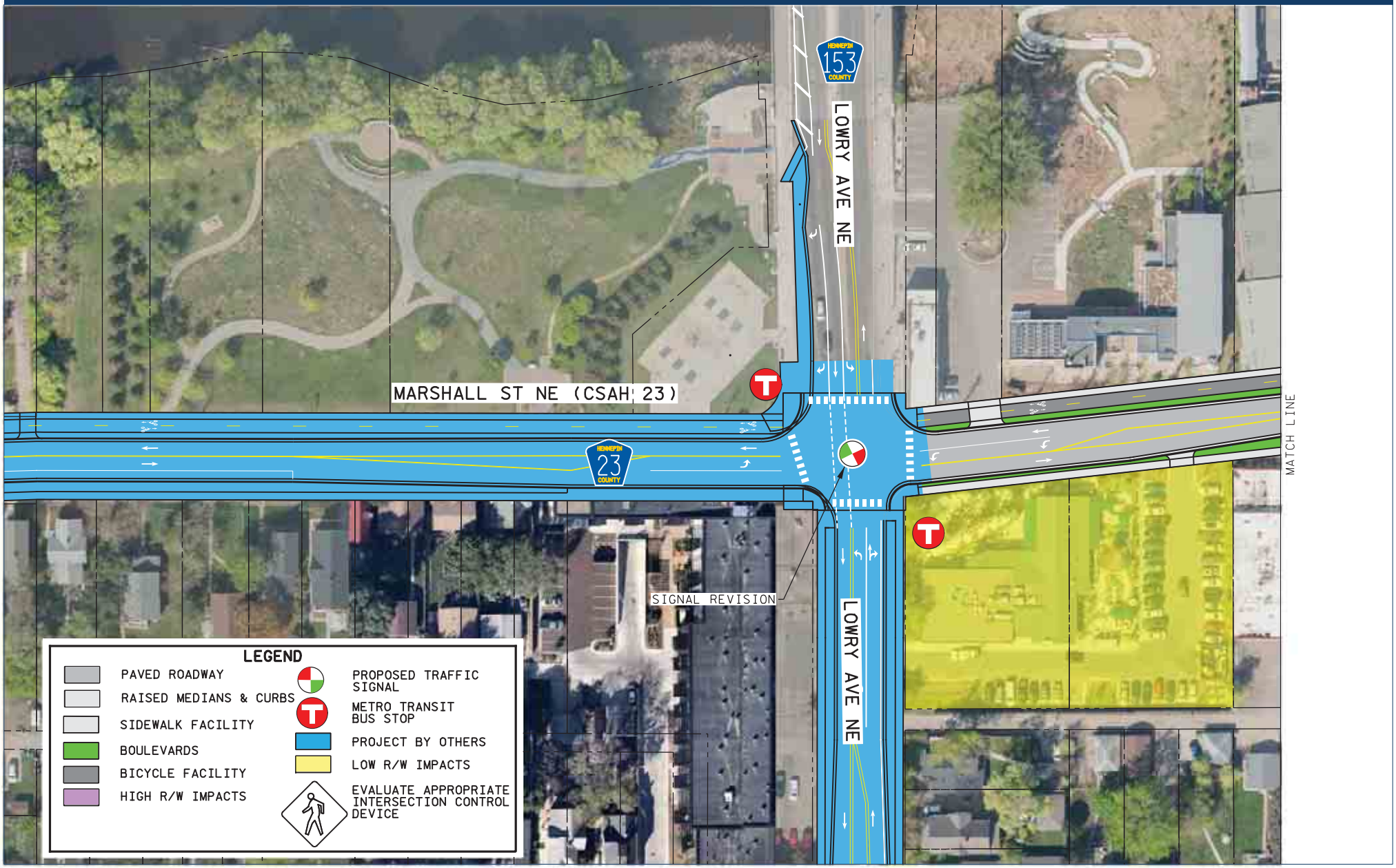
**Total = $1,658,746**

*NOTE:*
*This calculation relies on the real discount rate, which accounts for inflation. No further discounting is necessary.*

# CSAH 23 (Marshall St NE) Reconstruction Project

Attachment 05 | Potential Concept

HENNEPIN COUNTY
MINNESOTA

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SCALE IN FEET

Job #16612
11/5/2023
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# CSAH 23 (Marshall St NE) Reconstruction Project

Attachment 05 | Potential Concept

HENNEPIN COUNTY
MINNESOTA


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Job #16612
11/5/2023
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# CSAH 23 (Marshall St NE) Reconstruction Project

## Attachment 05 | Potential Concept

HENNEPIN COUNTY
MINNESOTA


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Job #16612
11/5/2023
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# CSAH 23 (Marshall St NE) Reconstruction Project

Attachment 05 | Potential Concept

HENNEPIN COUNTY
MINNESOTA


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Job #16612
11/5/2023
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# CSAH 23 (Marshall St NE) Reconstruction Project

Attachment 05 | Potential Concept

HENNEPIN COUNTY
MINNESOTA


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11/5/2023
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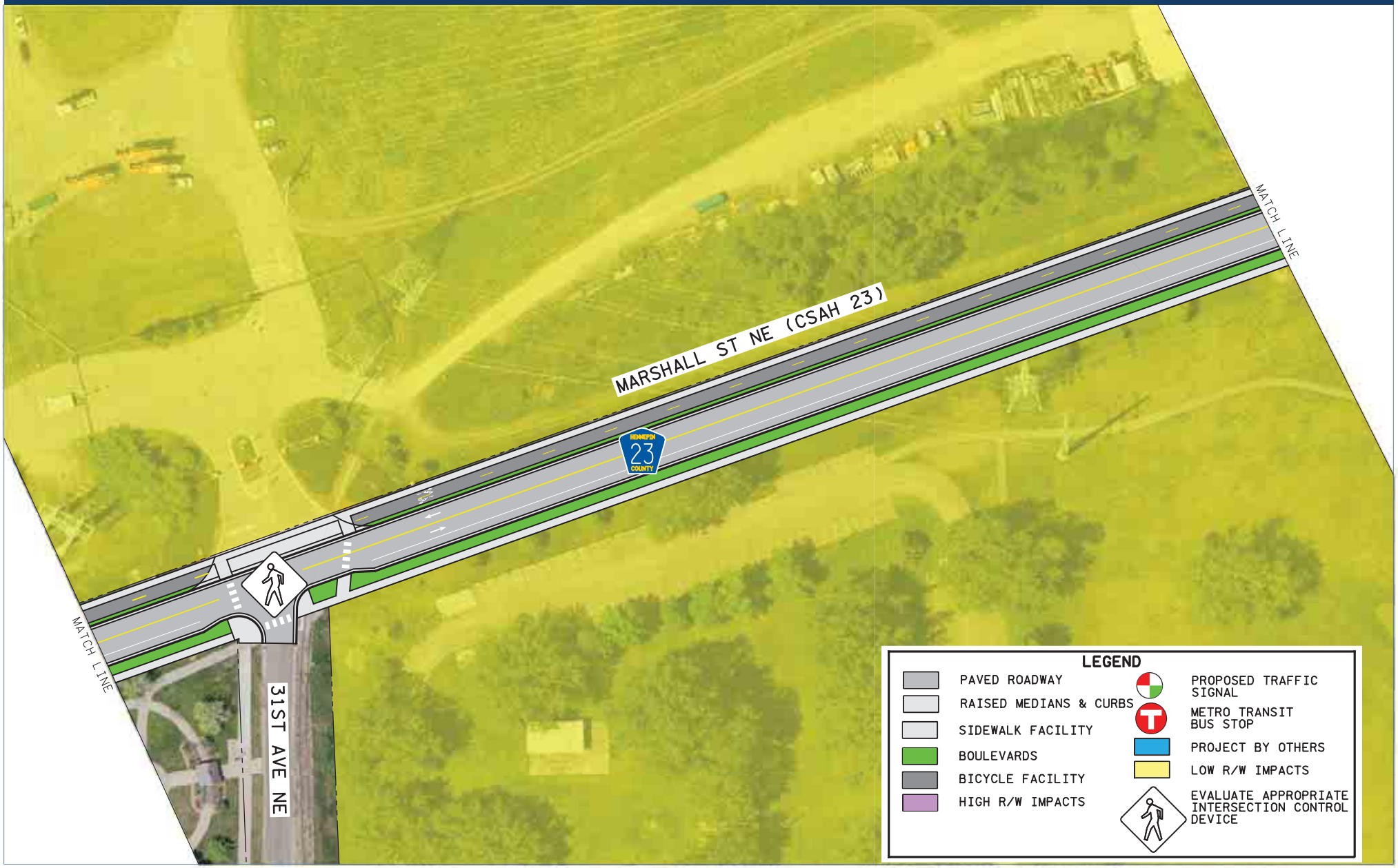
# CSAH 23 (Marshall St NE) Reconstruction Project

Attachment 05 | Potential Concept

HENNEPIN COUNTY
MINNESOTA

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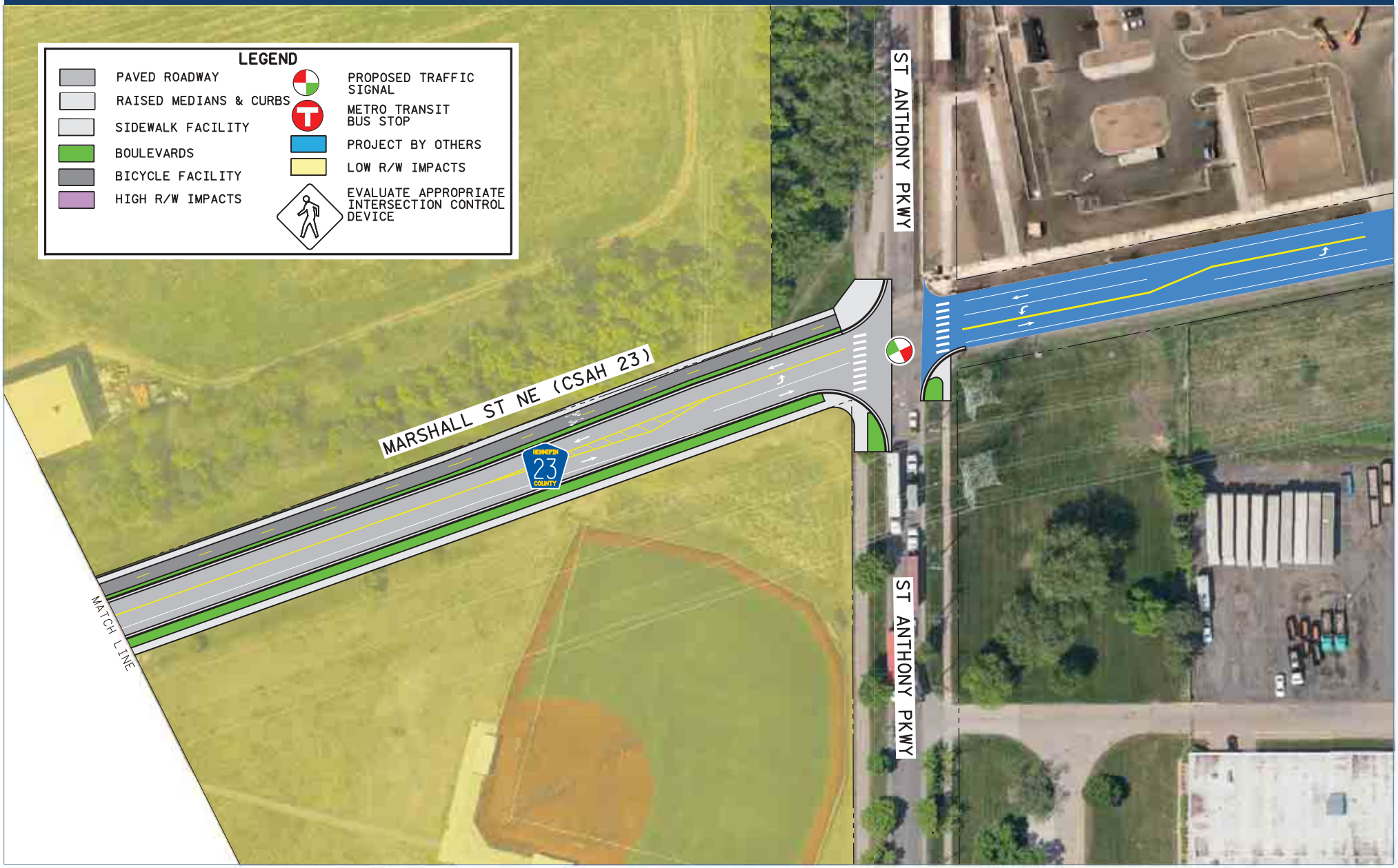
# CSAH 23 (Marshall St NE) Reconstruction Project

Attachment 05 | Potential Concept

HENNEPIN COUNTY
MINNESOTA

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# CSAH 23 (Marshall St NE) Phase 2 Reconstruction Project

List of Attachments

1. Project Narrative
2. Project Location Map
3. Existing Condition Photos
4. Potential Typical Section
5. Potential Concept
6. Hennepin County Enhanced Bikeway Network Study Maps
7. City of Minneapolis All Ages and Abilities Bicycle Network
8. Marshall St NE Transportation Study Engagement
9. Disadvantaged Communities and Resources Map
10. Affordable Housing Access Map and Detail Summary
11. Hennepin County Streetlight Analysis
12. Crash Map and Detail Listing
13. Crash Modification Factors
14. Multimodal Connections Map
15. Notice of Application Submittal to City of Minneapolis
16. Hennepin County and City of Minneapolis Maintenance Agreement
17. Minneapolis Park and Recreation Board Support Letter

# CSAH 23 (Marshall St NE) Phase 2 Reconstruction Project

Attachment 01 | Project Narrative

HENNEPIN COUNTY
MINNESOTA

**Project Name**
CSAH 23 (Marshall St NE) Phase 2 Reconstruction Project

**City(ies)**
Minneapolis

**Commisioner District(s)**
2

**Capital Project Number**
Work Plan ID #2201724

**Project Category**
Roadway Reconstruction

**Scoping Manager**
Jordan Kocak

**Scoping Form Revision Dates**
11/6/2023

## Project Summary

Reconstruct Marshall Street NE (CSAH 23) from Lowry Avenue NE (CSAH 153) to St. Anthony Parkway in the City of Minneapolis.

## Roadway History

The existing roadway (last reconstructed in 1960) is nearing the end of its useful life and warrants replacement. Routine maintenance activities are no longer cost effective in preserving assets. Existing sidewalk facilities contain numerous deficiencies, and a sidewalk gap exists on the east side of Marshall Street NE (CSAH 23) from 30th Avenue NE to Saint Anthony Parkway. Minimal pedestrian crossing enhancements (such as curb extensions, raised medians, and beacons) exist along the corridor. Furthermore, the lack of a boulevard in many areas creates a constrained environment for people walking, especially during snowfall events.

## Project Description and Benefits

The proposed project will include new pavement, curb, storm water utilities, sidewalk, ADA accommodations, and traffic signals. It is anticipated that proven traffic calming strategies (such as raised medians, curb extensions, and streetscaping) will be introduced to improve the crossing experiences for people walking and to manage vehicle speeds. The proposed project is anticipated to provide an All Ages and Abilities facility for people biking that extends north/south adjacent to the Mississippi River and connects to the Grand Rounds system along Saint Anthony Parkway.

## Project Risks & Uncertainities

Future intersection design at Marshall Street NE (CSAH 23) and 31st Street NE in recognition of recent changes in the area.

## Project Map


## Initial Project Timeline

| | |
|---|---|
| Scoping: | 2018 - 2025 |
| Design: | Q1 2026 - Q4 2028 |
| R/W Acquisition: | Q1 2027 - Q4 2028 |
| Bid Advertisement: | Q1 2029 |
| Construction: | Q2 2029 - Q3 2030 |

## Project Delivery Responsibilities

| | |
|---|---|
| Preliminary Design: | Consultant |
| Final Design: | Consultant |
| Construction Services: | Consultant |

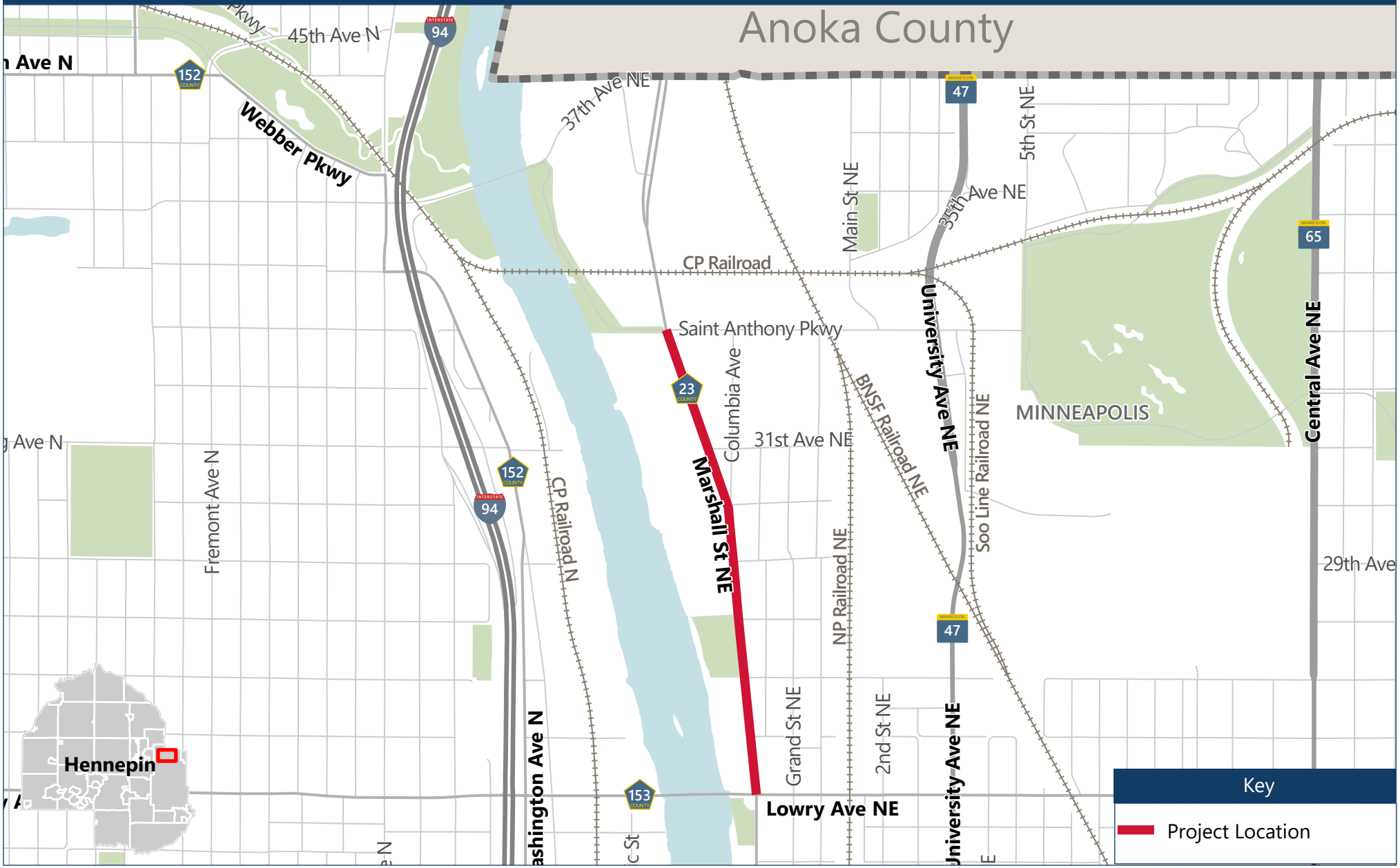
| Project Budget - | Project Level | |
|---|---|---|
| Construction: | $ | 8,680,000 |
| Cost Estimate Year: | | 2023 |
| Construction Year: | | 2029 |
| Annual Inflation Rate: | | 2.0% |
| Inflated Construction: | $ | 9,780,000 |
| Design Services: | $ | 1,960,000 |
| R/W Acquisition: | $ | 960,000 |
| Other (Utility Burial): | $ | - |
| Construction Services: | $ | 780,000 |
| Contingency: | $ | 2,930,000 |
| **Total Project Budget:** | **$** | **16,410,000** |

## Funding Notes

Eligible for federal funding through the Metropolitan Council's Regional Solicitation given the function classification of A-Minor Reliever.

# CSAH 23 (Marshall St NE) Phase 2 Reconstruction Project

Attachment 02 | Project Location Map

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Publication date: 12/4/2023

Data sources (if applicable):

# CSAH 23 (Marshall St NE) Phase 2 Reconstruction Project

Attachment 03 | Existing Roadway Condition Photos

The intersection of Marshall St NE (CSAH 23) and NE Lowry Ave (CSAH 153) pictured above. Traffic signals are aging and require replacement.

The Marshall St NE (CSAH 23) corridor lacks sufficient infrastructure for people walking and biking. This project would provide consistent multimodal facilities throughout the corridor.

Aging pedestrian pavement along roadway requires repair. The condition of the sidewalk makes it difficult for people to walk and roll.

The intersection of Marshall St NE (CSAH) 23 and NE 28th Ave pictured above. Pavement prone to flooding will be addressed through this project

**Hennepin County** Public Works
1600 Prairie Drive, Medina, MN 55340
612-596-0300 | hennepin.us

# CSAH 23 (Marshall St NE) Phase 2 Reconstruction Project

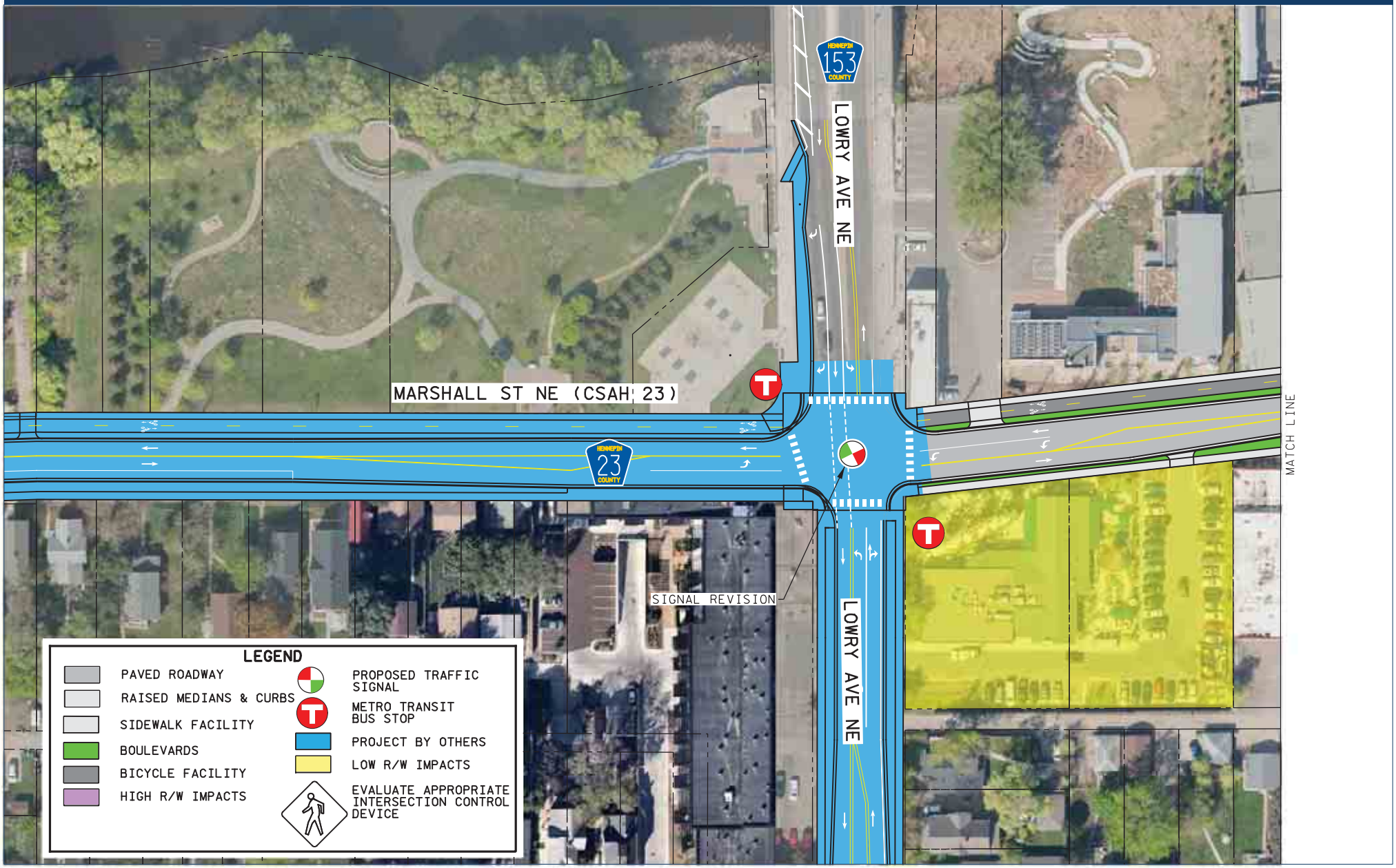
Attachment 04 | Potential Typical Section

Source: Marshall St NE Transportation Feasibility Study Report (2018)
hennepin.us/-/media/hennepinus/residents/transportation/marshall/marshall-street-2018-design-study.pdf

# CSAH 23 (Marshall St NE) Reconstruction Project

Attachment 05 | Potential Concept

HENNEPIN COUNTY
MINNESOTA

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# CSAH 23 (Marshall St NE) Reconstruction Project

Attachment 05 | Potential Concept

HENNEPIN COUNTY
MINNESOTA


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11/5/2023
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# CSAH 23 (Marshall St NE) Reconstruction Project

## Attachment 05 | Potential Concept

HENNEPIN COUNTY
MINNESOTA


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Job #16612
11/5/2023
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# CSAH 23 (Marshall St NE) Reconstruction Project

Attachment 05 | Potential Concept

HENNEPIN COUNTY
MINNESOTA


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Job #16612
11/5/2023
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# CSAH 23 (Marshall St NE) Reconstruction Project

Attachment 05 | Potential Concept

HENNEPIN COUNTY
MINNESOTA


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Job #16612
11/5/2023
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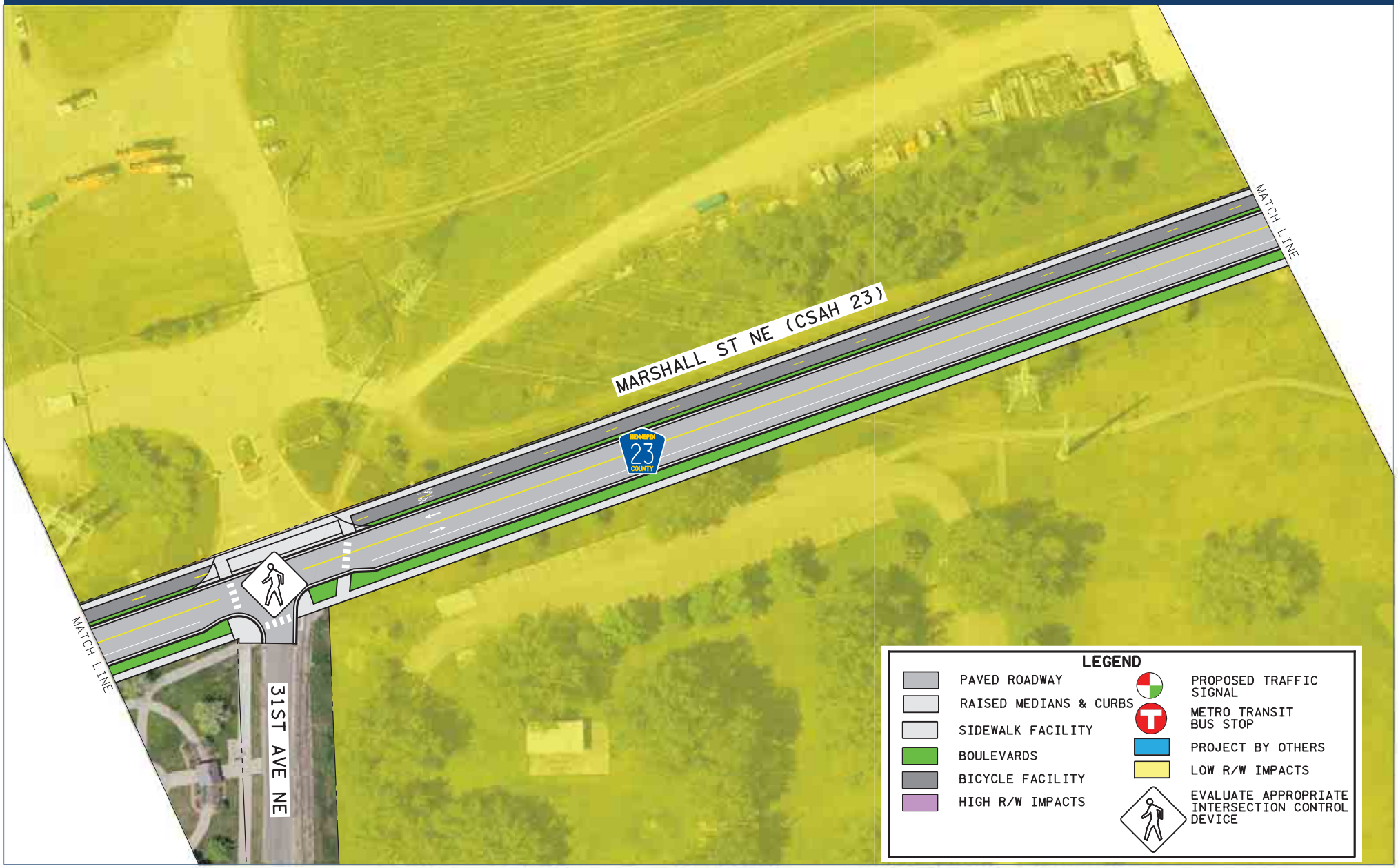
# CSAH 23 (Marshall St NE) Reconstruction Project

Attachment 05 | Potential Concept

HENNEPIN COUNTY
MINNESOTA

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11/5/2023
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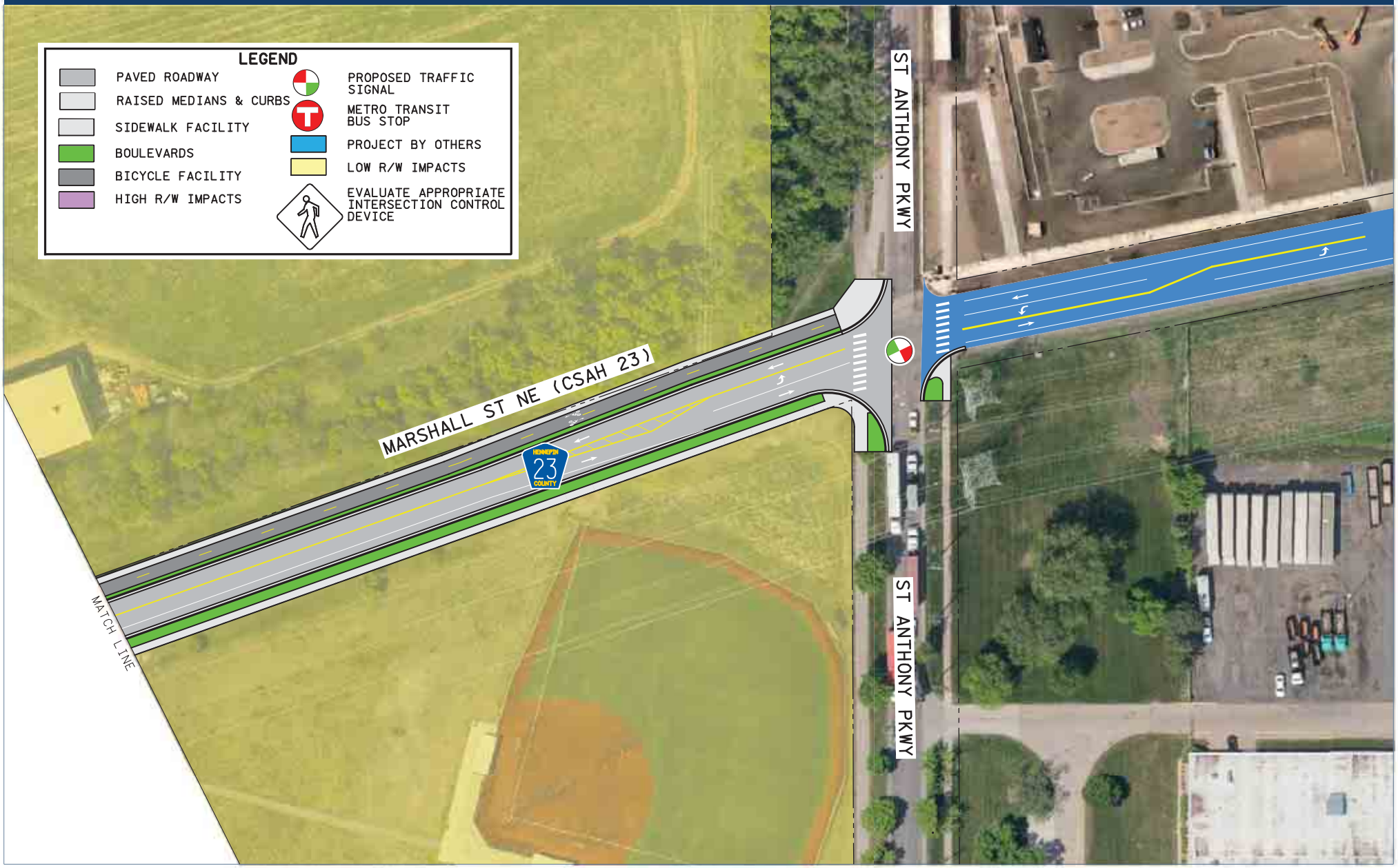
# CSAH 23 (Marshall St NE) Reconstruction Project

Attachment 05 | Potential Concept

HENNEPIN COUNTY
MINNESOTA

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Job #16612
11/5/2023
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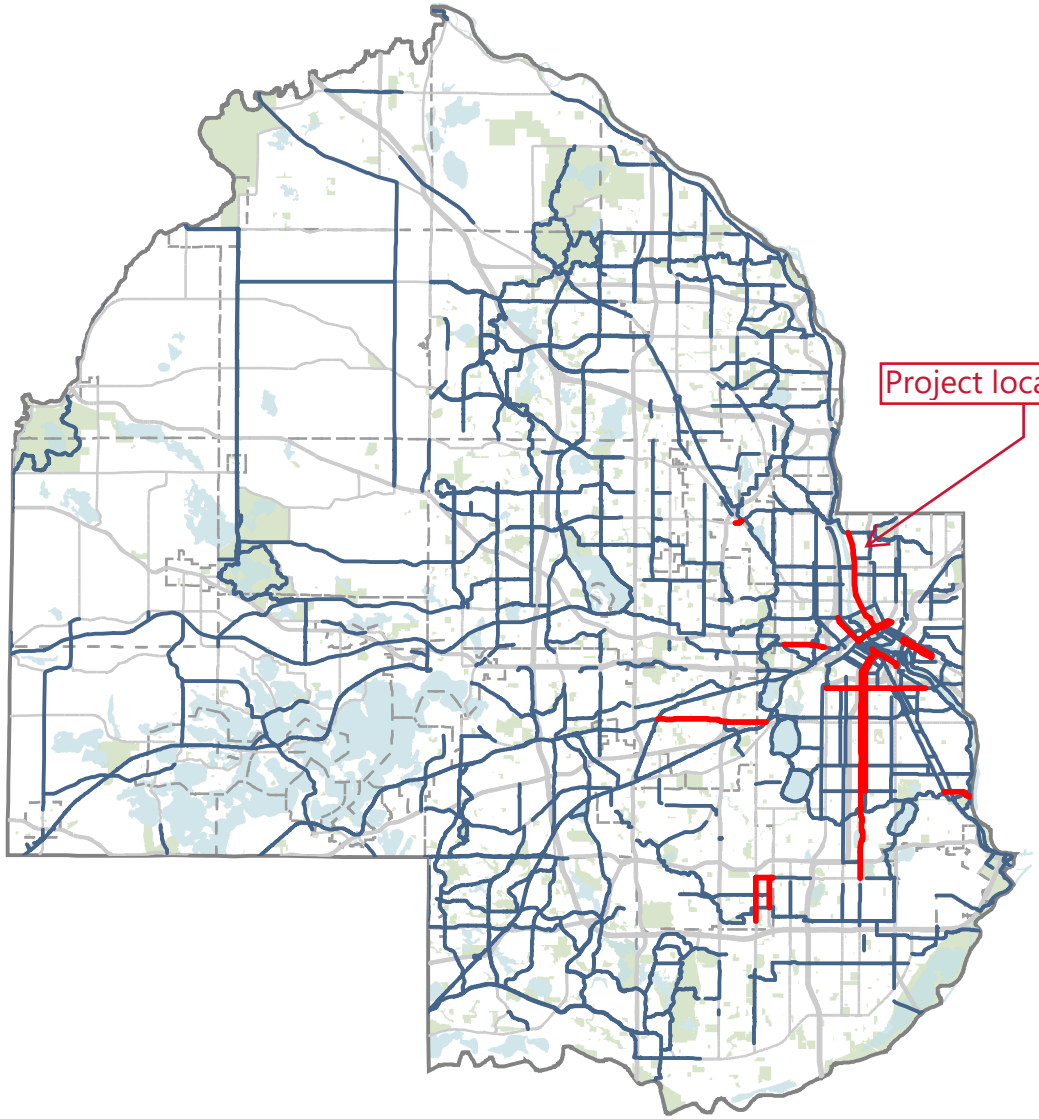
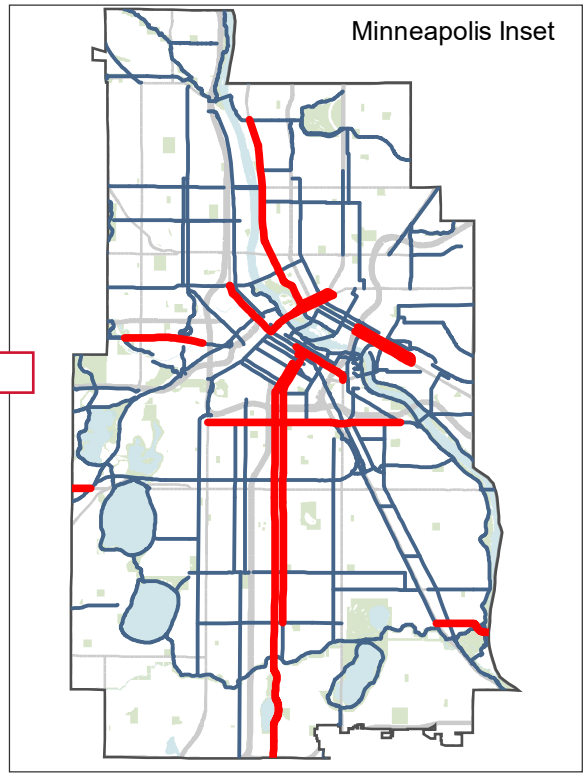
# CSAH 23 (Marshall St NE) Phase 2 Reconstruction Project

Attachment 06 | Hennepin County Enhanced Bikeway Study Maps

HENNEPIN COUNTY
MINNESOTA




Hennepin Proposed Enhanced Bikeway

Open Bikeway

0 8 16 Miles

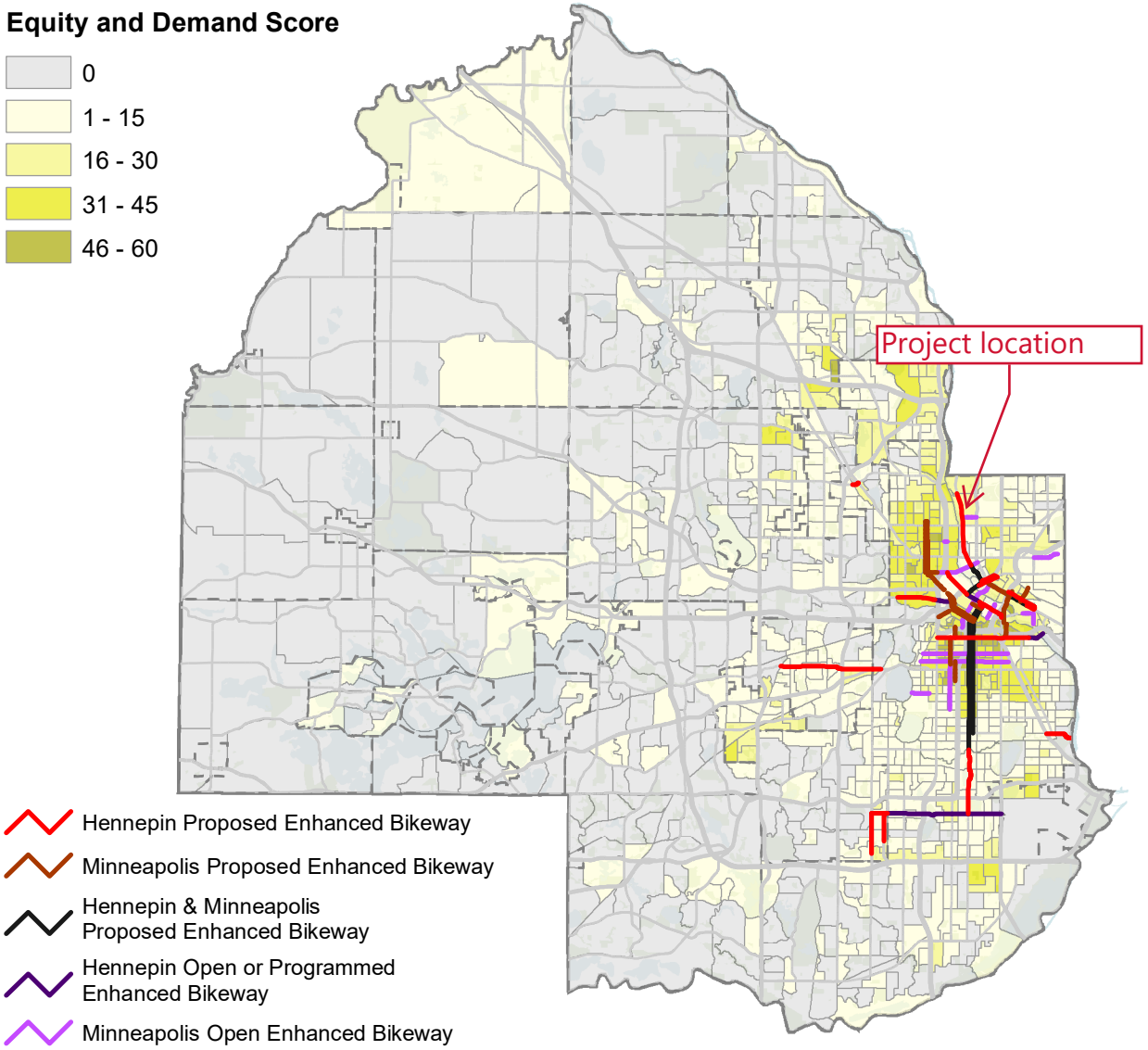
N

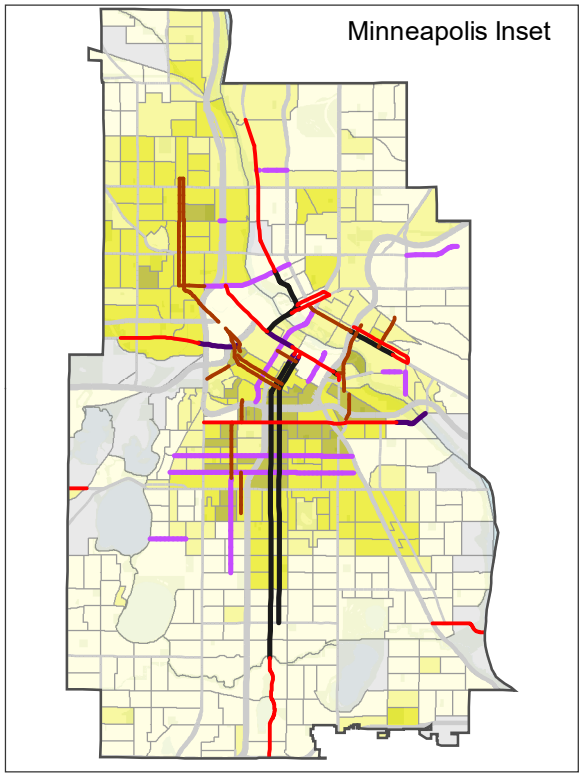
**Hennepin County** Public Works

# CSAH 23 (Marshall St NE) Phase 2 Reconstruction Project

Attachment 06 | Hennepin County Enhanced Bikeway Study Maps

HENNEPIN COUNTY
MINNESOTA



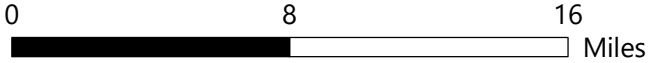




Equity and demand scores were calculated by summing scores using three criteria: areas of concentrated poverty, population density, percentage of households with no vehicle. Highly-scored areas should get more investment consideration based on these measures.

Area of concentrated poverty: Yes=20, No=0
*Population density: 20,15,10,5,0
*Households with no vehicle: 20,15,10,5,0

*These criteria were grouped into five categories and scored using the natural breaks classification scheme

Source: Metropolitan Council, 2012-2016 American Community Survey





**Hennepin County** Public Works

# CSAH 23 (Marshall St NE) Phase 2 Reconstruction Project

Attachment 07 | City of Minneapolis All Ages and Abilities Network

# CSAH 23 (Marshall St NE) Phase 2 Reconstruction Project

Attachment 08 | Marshall St NE Transportation Study Engagement

## MARSHALL ST. NE

TRANSPORTATION FEASIBILITY STUDY

LOOKING NORTH ON MARSHALL ST. NE

**The two-mile Marshall St. NE Project Corridor is home to businesses, residents, industry, parks, and entertainment.**

Hennepin County and the City of Minneapolis are partnering with local community stakeholders and residents to propose street design improvements to Marshall St. NE between Broadway St. and St. Anthony Parkway in Northeast Minneapolis.

### CURRENT TRAFFIC PATTERNS

| | North of Lowry Ave VOLUME PER DAY | South of Lowry Ave VOLUME PER DAY |
|---|---|---|
| Data from 2014 | **40** pedestrians | **110** pedestrians |
| Data from 2014 | **130** bicyclists | **200** bicyclists |
| Data from 2017 | **8,200** vehicles | **10,800** vehicles |
| Data from 2011 | **600** freight trucks | **800** freight trucks |




Minneapolis City of Lakes

Hennepin

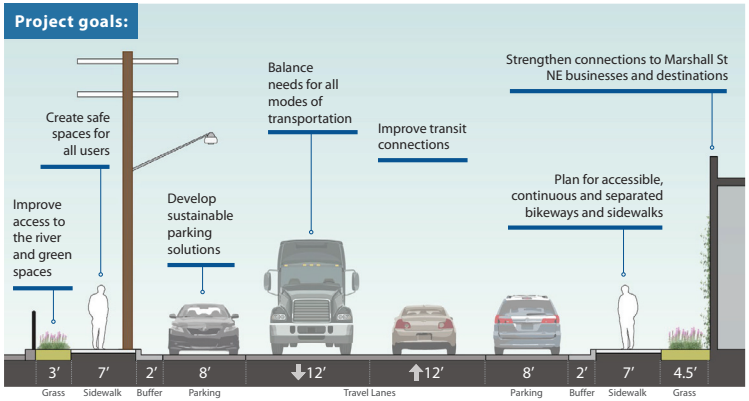
# CSAH 23 (Marshall St NE) Phase 2 Reconstruction Project

Attachment 08 | Marshall St NE Transportation Study Engagement

## EXISTING CONDITIONS

**The goals of the study were identified by working with all stakeholders to develop balanced planning concepts.**

**Project goals:**




## ENGAGEMENT EFFORTS

**Local residents and businesses were engaged since 2000 and during the study to both determine design goals and to assess potential solutions.**

## EXISTING CHALLENGES

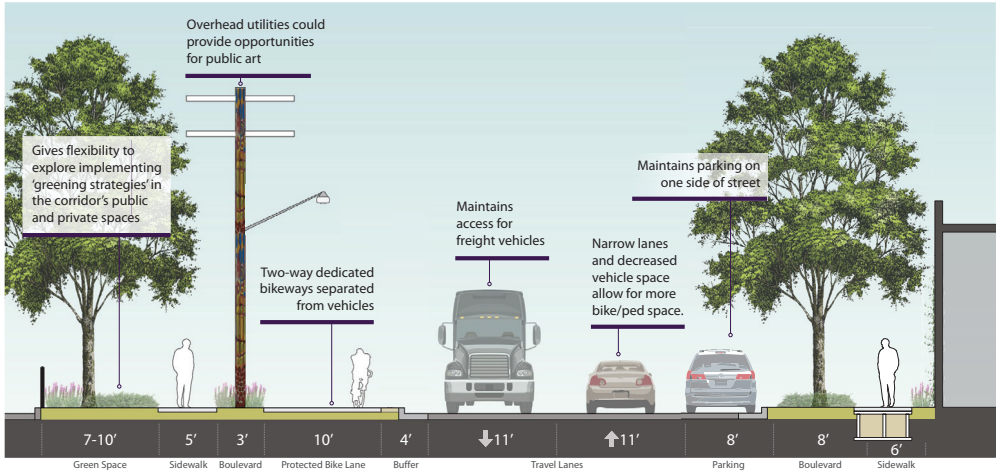
- Poor road and pavement condition.
- Typical street maintenance will soon be ineffective to keep the street in good condition.
- Lacks safe mid-block crossing points for pedestrians.
- Identified as a bike route on County and City networks, yet there is no dedicated facility along the route.
- Corridor growth from increase in entertainment, dining, retail, and multi-unit housing within walking and/or biking distance.

## PREFERRED OPTION

**The preferred option balances all modes of transportation with the needs of the corridor community.**

**Construction Cost**

$18 to $22 million




## NEXT STEPS

The county has applied for federal funding to construct a portion of the 16th Ave NE to 27th Ave NE corridor. If funding is received the county will continue to explore improving pedestrian and bicycle crossing treatments and identify greening strategies along this segment as they work on the design. Since stakeholders expressed a desire for transit along Marshall St NE, the county will explore this request with Metro Transit.

1. **Discuss transit needs with Metro Transit.**
2. **Obtain federal funding for construction.**
3. **Begin preliminary design.**

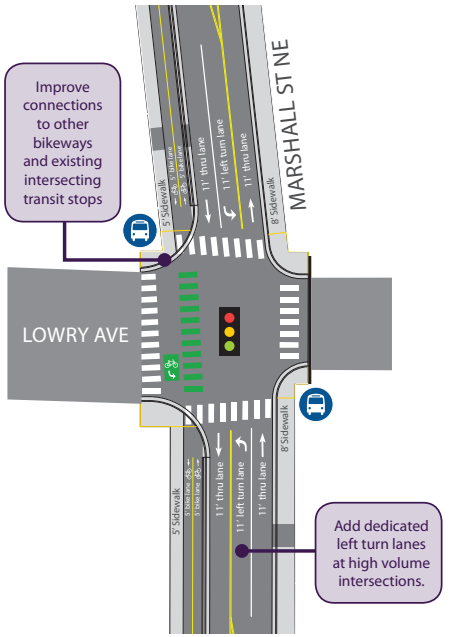
## EXAMPLES OF BICYCLE AND PEDESTRIAN IMPROVEMENTS

The following treatments are examples of what will be considered as the design progresses to improve bicycle and pedestrian connections and crossings throughout the corridor.

### IMPROVED STREET CROSSINGS

Safer crossings for pedestrians and bicyclists at high volume intersections.

**BUSY INTERSECTIONS**
(Lowry Ave. Example)

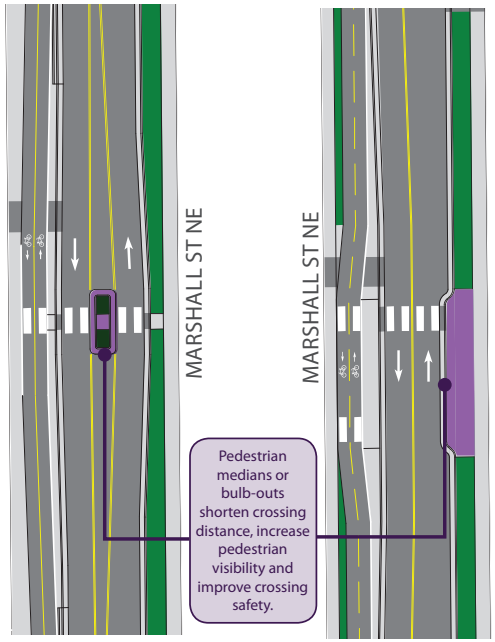



### MID-BLOCK PEDESTRIAN CROSSINGS

Safer options for pedestrians to cross Marshall St. NE in between intersections at key destinations

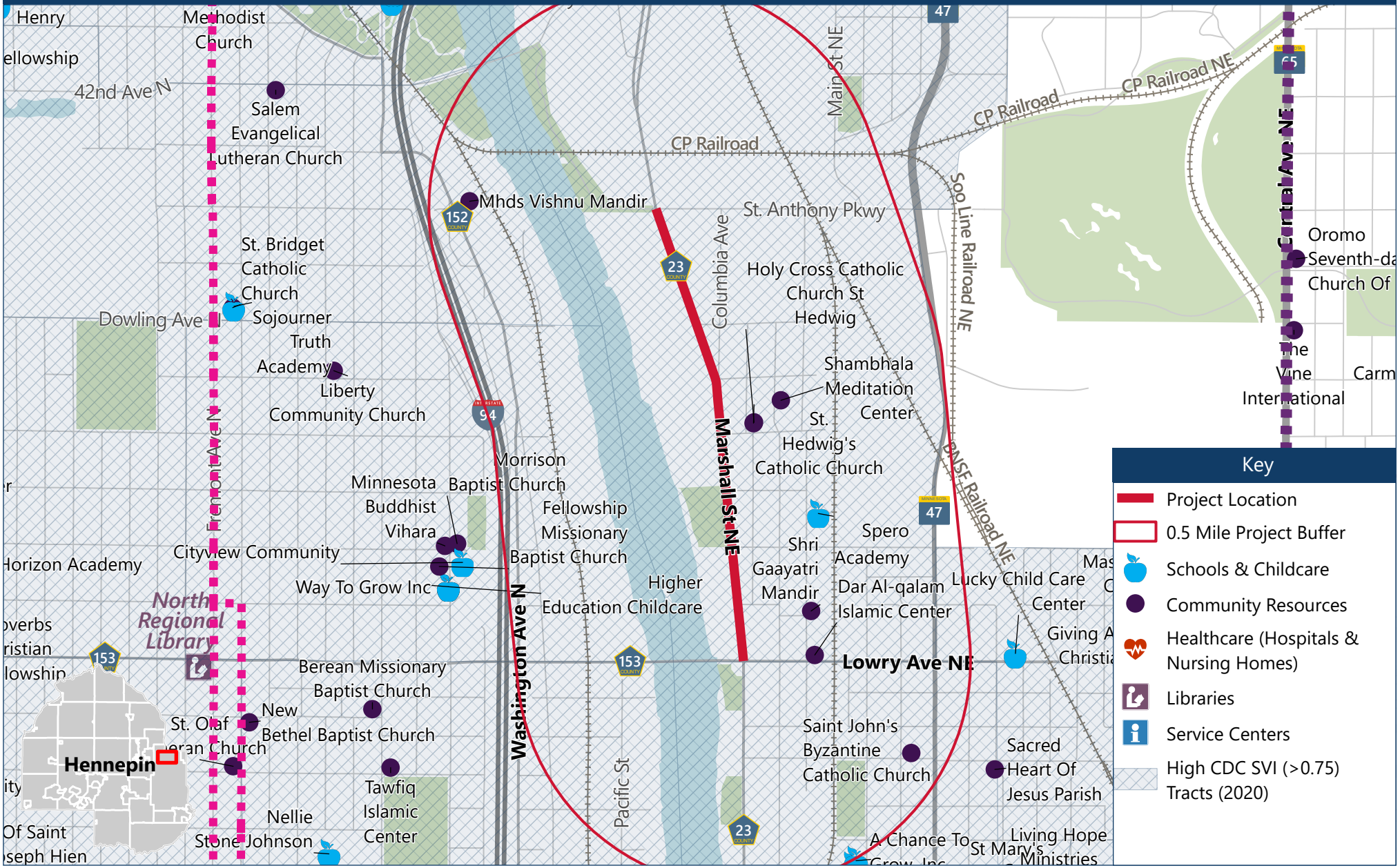
**OPTION 1**
Pedestrian Median

**OPTION 2**
Bulb-Out



# CSAH 23 (Marshall St NE) Phase 2 Reconstruction Project

Attachment 09 | Disadvantaged Communities and Resources Map

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N

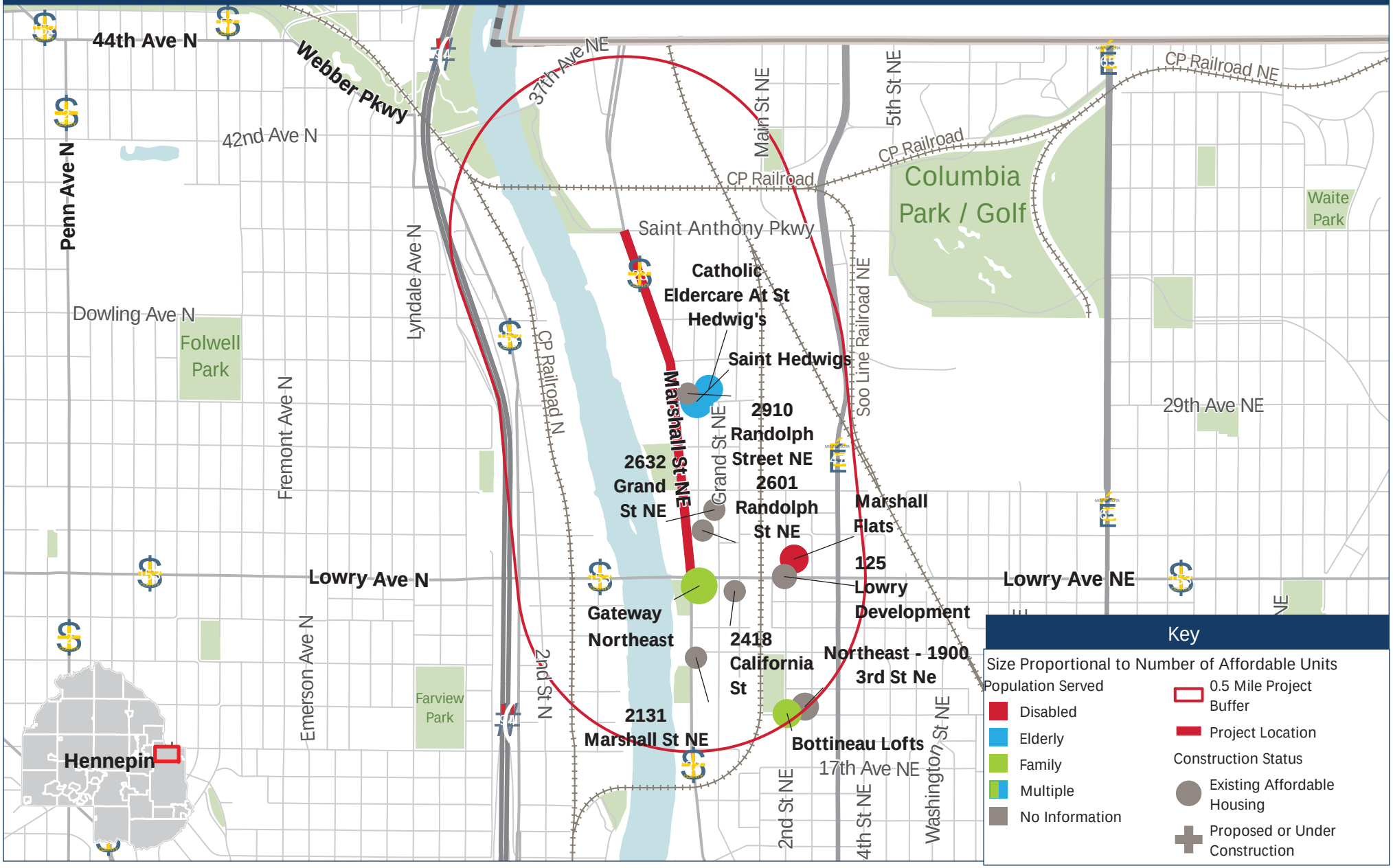
0 0.5 1 Miles

Publication date: 12/4/2023

Data sources (if applicable):

# CSAH 23 (Marshall St NE) Phase 2 Reconstruction Project

Attachment 10 | Affordable Housing Access Map and Detail Summary

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Publication date: 11/6/2023

Data sources (if applicable):

# CSAH 23 (Marshall St NE) Phase 2 Reconstruction Project

Attachment 10 | Affordable Housing Access Map and Detail Summary

| Property ID | Property Name | Total Units | Affordable Units | 30% AMI | 50% AMI | 60% AMI | 0 BR | 1 BR | 2 BR | 3 BR | 4 BR |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 10912 | Marshall Flats (fka Clare Lowry) | 36 | 36 | 7 | 29 | 0 | 22 | 14 | 0 | 0 | 0 |
| 11122 | Northeast - 1900 3rd St Ne | 32 | 32 | 32 | 0 | 0 | 0 | 32 | 0 | 0 | 0 |
| 10371 | Saint Hedwigs | 107 | 60 | 25 | 35 | 0 | 10 | 50 | 0 | 0 | 0 |
| 13502 | Catholic Eldercare At St Hedwig's | 35 | 35 | 35 | 0 | 0 | 0 | 35 | 0 | 0 | 0 |
| 13634 | Gateway Northeast | 129 | 77 | 10 | 16 | 51 | 51 | 46 | 21 | 10 | 0 |
| 15730 | 125 Lowry Development | 209 | 17 | 0 | 0 | 17 | 0 | 0 | 0 | 0 | 0 |
| 15885 | 2131 Marshall St NE | 2 | 2 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 |
| 15912 | 2418 California St | 2 | 2 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 |
| 15939 | 2601 Randolph St NE | 2 | 2 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 |
| 15945 | 2632 Grand St NE | 2 | 2 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 |
| 15982 | 2910 Randolph Street NE | 2 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| 4560 | Bottineau Lofts | 37 | 37 | 11 | 0 | 26 | 2 | 7 | 17 | 11 | 0 |

AMI: Area Median Income

# CSAH 23 (Marshall St NE) Phase 2 Reconstruction Project

Attachment 11 | Hennepin County StreetLight Analysis

| Type of Travel | Zone Name | Truck - StL Truck Index | HCAADT to Index Ratio | Estimated HCAADT |
|---|---|---|---|---|
| Commercial | CSAH 005 & E of Louisiana Ave | 2058 | 0.2910 | 600 |
| Commercial | CSAH 023 & N of 28th Ave NE | 11578 | 0.2910 | 3350 |
| Commercial | CSAH 030 & W of Jefferson Hwy | 1658 | 0.2910 | 485 |
| Commercial | CSAH 152 & S of 36th St E | 5993 | 0.2910 | 1750 |
| Commercial | CSAH 153 & W of Stinson Pkwy | 2512 | 0.2910 | 730 |

Example calculation: 2058*0.2910=600

| Type of Travel | Zone Name | Truck - StL Truck Index | 2021 HCAADT | HCAADT to Index Ratio |
|---|---|---|---|---|
| Commercial | H019 | 1383 | 270 | 0.1952 |
| Commercial | H045 | 14065 | 2950 | 0.2097 |
| Commercial | H052 | 6363 | 2750 | 0.4322 |
| Commercial | H118 | 1182 | 330 | 0.2792 |
| Commercial | H120 | 9342 | 750 | 0.0803 |
| Commercial | H146 | 3240 | 770 | 0.2377 |
| Commercial | H250 | 6116 | 500 | 0.0818 |
| Commercial | H251 | 4374 | 2050 | 0.4687 |
| Commercial | H302 | 28750 | 3250 | 0.1130 |
| Commercial | H313 | 4876 | 1300 | 0.2666 |
| Commercial | H315 | 3686 | 920 | 0.2496 |
| Commercial | H404 | 1756 | 890 | 0.5068 |
| Commercial | H443 | 5276 | 2850 | 0.5402 |
| Commercial | H488 | 1173 | 225 | 0.1918 |
| Commercial | H543 | 2906 | 960 | 0.3304 |
| Commercial | H570 | 5202 | 2700 | 0.5190 |
| Commercial | H571 | 11759 | 1450 | 0.1233 |
| Commercial | H610 | 10808 | 4100 | 0.3793 |
| Commercial | H637 | 6878 | 1600 | 0.2326 |
| Commercial | H649 | 2398 | 600 | 0.2502 |
| Commercial | H745 | 8290 | 3350 | 0.4041 |
| Commercial | H766 | 3945 | 1800 | 0.4563 |
| Commercial | H807 | 13019 | 1900 | 0.1459 |

Average ratio 0.2910

# CSAH 23 (Marshall St NE) Phase 2 Reconstruction Project

Attachment 12 | Crash Map and Detail Listing


**Disclaimer:** This map (i) is furnished "AS IS" with no representation as to completeness or accuracy; (ii) is furnished with no warranty of any kind; and (iii) is not suitable for legal, engineering or surveying purposes. Hennepin County shall not be liable for any damage, injury or loss resulting from this map.

0 0.42 0.85 Miles

Publication date: 10/12/2023

Data sources (if applicable):

# CSAH 23 (Marshall St NE) Phase 2 Reconstruction Project

Attachment 12 | Crash Map and Detail Listing

**Intersection A | At CSAH 153 (Lowry Ave NE)**

| Incident ID | Roadway | Month | Day | Year | Basic Type | Severity | Number K's | Number of Veh | Latitude | Longitude |
|---|---|---|---|---|---|---|---|---|---|---|
| 00978160 | NE MARSHALL ST | 12-Dec | 7 | 2021 | Sideswipe Same Direction (Parked Car) | Property Damage Only | 0 | 2 | 45.01245 | -93.27176 |
| 01012866 | NE MARSHALL ST | 3-Mar | 16 | 2022 | Single Vehicle Run Off Road | Property Damage Only | 0 | 1 | 45.01258 | -93.27177 |
| 00980604 | NE MARSHALL ST | 12-Dec | 15 | 2021 | Sideswipe Same Direction (Parked Car) | Property Damage Only | 0 | 2 | 45.01295 | -93.27177 |
| 00846858 | NE MARSHALL ST | 10-Oct | 17 | 2020 | Sideswipe Same Direction | Minor Injury | 0 | 3 | 45.01304 | -93.27177 |
| 00866889 | NE MARSHALL ST | 12-Dec | 7 | 2020 | Angle | Property Damage Only | 0 | 2 | 45.01312 | -93.27177 |
| 00837163 | NE MARSHALL ST | 8-Aug | 25 | 2020 | Rear End | Possible Injury | 0 | 2 | 45.01313 | -93.27177 |
| 00971677 | NE MARSHALL ST | 11-Nov | 5 | 2021 | Left Turn | Property Damage Only | 0 | 2 | 45.01315 | -93.27177 |
| 00778545 | NE MARSHALL ST | 1-Jan | 11 | 2020 | Angle | Property Damage Only | 0 | 2 | 45.01317 | -93.27177 |
| 00803469 | NE MARSHALL ST | 3-Mar | 11 | 2020 | Angle | Minor Injury | 0 | 3 | 45.01317 | -93.27177 |
| 01016689 | NE MARSHALL ST | 4-Apr | 8 | 2022 | Angle | Minor Injury | 0 | 2 | 45.01316 | -93.27177 |
| 01043061 | NE MARSHALL ST | 8-Aug | 31 | 2022 | Angle | Property Damage Only | 0 | 2 | 45.01316 | -93.27177 |
| 00978109 | NE MARSHALL ST | 12-Dec | 7 | 2021 | Sideswipe Same Direction | Property Damage Only | 0 | 2 | 45.01319 | -93.27177 |
| 00902314 | NE MARSHALL ST | 4-Apr | 25 | 2021 | Single Vehicle Run Off Road | Property Damage Only | 0 | 1 | 45.01322 | -93.27178 |
| 00812852 | NE MARSHALL ST | 6-Jun | 3 | 2020 | Left Turn | Property Damage Only | 0 | 2 | 45.01326 | -93.27178 |
| 00820230 | NE MARSHALL ST | 7-Jul | 17 | 2020 | Sideswipe Same Direction | Property Damage Only | 0 | 2 | 45.01329 | -93.27179 |
| 01043062 | LOWRY AVE NE | 9-Sep | 1 | 2022 | Sideswipe Same Direction | Property Damage Only | 0 | 2 | 45.01316 | -93.27206 |
| 01040532 | LOWRY AVE NE | 8-Aug | 18 | 2022 | Sideswipe Same Direction | Possible Injury | 0 | 2 | 45.01316 | -93.27202 |
| 00933035 | LOWRY AVE NE | 8-Aug | 8 | 2021 | Bike | Minor Injury | 0 | 1 | 45.01316 | -93.27190 |
| 00932848 | LOWRY AVE NE | 8-Aug | 7 | 2021 | Angle | Property Damage Only | 0 | 2 | 45.01316 | -93.27187 |
| 00820941 | LOWRY AVE NE | 7-Jul | 21 | 2020 | Angle | Property Damage Only | 0 | 2 | 45.01316 | -93.27184 |
| 0936456 | LOWRY AVE NE | 8-Aug | 25 | 2021 | Angle | Possible Injury | 0 | 2 | 45.01316 | -93.27183 |
| 01068893 | LOWRY AVE NE | 12-Dec | 23 | 2022 | Head On | Property Damage Only | 0 | 2 | 45.01316 | -93.27182 |
| 00837920 | LOWRY AVE NE | 8-Aug | 29 | 2020 | Rear End | Property Damage Only | 0 | 2 | 45.01316 | -93.27181 |
| 00916202 | LOWRY AVE NE | 7-Jul | 3 | 2021 | Left Turn | Property Damage Only | 0 | 2 | 45.01316 | -93.27181 |
| 01036724 | LOWRY AVE NE | 7-Jul | 27 | 2022 | Rear End | Serious Injury | 0 | 3 | 45.01316 | -93.27180 |
| 00813549 | LOWRY AVE NE | 6-Jun | 8 | 2020 | Angle | Fatal | 1 | 3 | 45.01316 | -93.27177 |
| 00898415 | LOWRY AVE NE | 3-Mar | 31 | 2021 | Angle | Property Damage Only | 0 | 2 | 45.01316 | -93.27176 |
| 00915534 | LOWRY AVE NE | 6-Jun | 29 | 2021 | Rear End | Property Damage Only | 0 | 2 | 45.01316 | -93.27176 |
| 01050855 | LOWRY AVE NE | 10-Oct | 11 | 2022 | Single Vehicle Run Off Road | Property Damage Only | 0 | 1 | 45.01316 | -93.27177 |
| 00987478 | LOWRY AVE NE | 1-Jan | 9 | 2022 | Angle | Property Damage Only | 0 | 2 | 45.01316 | -93.27171 |
| | **Subtotal:** | 30 | | | | | | | | |

**Segment B | From North of CSAH 153 (Lowry Ave NE) to South of 27th Ave NE**

| Incident ID | Roadway | Month | Day | Year | Basic Type | Severity | Number K's | Number of Veh | Latitude | Longitude |
|---|---|---|---|---|---|---|---|---|---|---|
| 00906574 | NE MARSHALL ST | 5-May | 19 | 2021 | Head On | Possible Injury | 0 | 2 | 45.01347 | -93.27181 |
| 00805184 | NE MARSHALL ST | 3-Mar | 25 | 2020 | Single Vehicle Run Off Road | Property Damage Only | 0 | 1 | 45.01435 | -93.27194 |
| 00812346 | NE MARSHALL ST | 6-Jun | 1 | 2020 | Rear End (Parked Car) | Serious Injury | 0 | 2 | 45.01500 | -93.27204 |
| 01038191 | NE MARSHALL ST | 8-Aug | 5 | 2022 | Rear End | Property Damage Only | 0 | 2 | 45.01600 | -93.27218 |
| 00934096 | NE MARSHALL ST | 8-Aug | 14 | 2021 | Rear End (Parked Car) | Property Damage Only | 0 | 2 | 45.01633 | -93.27223 |
| 00800295 | NE MARSHALL ST | 2-Feb | 23 | 2020 | Sideswipe Same Direction (Parked Car) | Property Damage Only | 0 | 2 | 45.01652 | -93.27226 |
| 00872270 | NE MARSHALL ST | 1-Jan | 1 | 2021 | Rear End (Parked Car) | Property Damage Only | 0 | 3 | 45.01678 | -93.27229 |
| | **Subtotal:** | 7 | | | | | | | | |

**Intersection C | At 27th Ave NE**

| Incident ID | Roadway | Month | Day | Year | Basic Type | Severity | Number K's | Number of Veh | Latitude | Longitude |
|---|---|---|---|---|---|---|---|---|---|---|
| No crashes reported within the Area of Influence for Intersection C | | | | | | | | | | |
| | **Subtotal:** | **0** | | | | | | | | |

**Segment D | From North of 27th Ave NE to South of 31st Ave NE**

| Incident ID | Roadway | Month | Day | Year | Basic Type | Severity | Number K's | Number of Veh | Latitude | Longitude |
|---|---|---|---|---|---|---|---|---|---|---|
| 00897041 | NE MARSHALL ST | 3-Mar | 21 | 2021 | Rear End (Parked Car) | Serious Injury | 0 | 3 | 45.01725 | -93.27236 |
| 00862370 | NE MARSHALL ST | 11-Nov | 10 | 2020 | Single Vehicle Run Off Road | Property Damage Only | 0 | 1 | 45.02345 | -93.27370 |
| | **Subtotal:** | **2** | | | | | | | | |

# CSAH 23 (Marshall St NE) Phase 2 Reconstruction Project

Attachment 12 | Crash Map and Detail Listing

**Intersection E | At 31st Ave NE**

| Incident ID | Roadway | Month | Day | Year | Basic Type | Severity | Number K's | Number of Veh | Latitude | Longitude |
|---|---|---|---|---|---|---|---|---|---|---|
| No crashes reported within the Area of Influence for Intersection E | | | | | | | | | | |

**Subtotal: 0**

**Segment F | From North of 31st Ave NE to South of St. Anthony Pkwy**

| Incident ID | Roadway | Month | Day | Year | Basic Type | Severity | Number K's | Number of Veh | Latitude | Longitude |
|---|---|---|---|---|---|---|---|---|---|---|
| No crashes reported within the Area of Influence for Intersection F | | | | | | | | | | |

**Subtotal: 0**

**Intersection G | At St. Anthony Pkwy**

| Incident ID | Roadway | Month | Day | Year | Basic Type | Severity | Number K's | Number of Veh | Latitude | Longitude |
|---|---|---|---|---|---|---|---|---|---|---|
| 01042278 | NE MARSHALL ST | 8-Aug | 28 | 2022 | Bike | Possible Injury | 0 | 1 | 45.02750 | -93.27575 |
| 00797015 | NE MARSHALL ST | 2-Feb | 11 | 2020 | Sideswipe Same Direction | Property Damage Only | 0 | 2 | 45.02756 | -93.27578 |
| 00899659 | NE MARSHALL ST | 4-Apr | 7 | 2021 | Angle | Property Damage Only | 0 | 2 | 45.02756 | -93.27578 |
| 00976570 | NE MARSHALL ST | 11-Nov | 30 | 2021 | Angle | Property Damage Only | 0 | 2 | 45.02759 | -93.27579 |
| 00911059 | NE MARSHALL ST | 6-Jun | 9 | 2021 | Left Turn | Property Damage Only | 0 | 2 | 45.02761 | -93.27580 |
| 01003293 | SAINT ANTHONY PKWY | 1-Jan | 31 | 2022 | Left Turn | Property Damage Only | 0 | 2 | 45.02757 | -93.27578 |
| 01008794 | SAINT ANTHONY PKWY | 2-Feb | 24 | 2022 | Sideswipe Same Direction | Possible Injury | 0 | 2 | 45.02757 | -93.27577 |
| 01021975 | SAINT ANTHONY PKWY | 5-May | 11 | 2022 | Single Vehicle Run Off Road | Property Damage Only | 0 | 1 | 45.02757 | -93.27574 |
| 00980738 | SAINT ANTHONY PKWY | 12-Dec | 15 | 2021 | Angle | Property Damage Only | 0 | 2 | 45.02757 | -93.27588 |
| 00907685 | SAINT ANTHONY PKWY | 5-May | 25 | 2021 | Angle | Possible Injury | 0 | 2 | 45.02757 | -93.27584 |
| 00967912 | MARSHALL ST NE / | 10-Oct | 19 | 2021 | Bike | Possible Injury | 0 | 1 | 45.02757 | -93.27583 |

**Subtotal: 11**

**Reported Crashes Located Outside of the Project Area**

| Incident ID | Roadway | Month | Day | Year | Basic Type | Severity | Number K's | Number of Veh | Latitude | Longitude |
|---|---|---|---|---|---|---|---|---|---|---|
| ~~00909085~~ | ~~NE MARSHALL ST~~ | ~~6-Jun~~ | ~~1~~ | ~~2021~~ | ~~Sideswipe Same Direction~~ | ~~Possible Injury~~ | ~~0~~ | ~~2~~ | ~~45.02868~~ | ~~-93.27606~~ |
| ~~00902566~~ | ~~NE MARSHALL ST~~ | ~~4-Apr~~ | ~~27~~ | ~~2021~~ | ~~Single Vehicle Run Off Road~~ | ~~Property Damage Only~~ | ~~0~~ | ~~1~~ | ~~45.02938~~ | ~~-93.27623~~ |
| ~~01022210~~ | ~~EAST RIVER RD~~ | ~~5-May~~ | ~~11~~ | ~~2022~~ | ~~Single Vehicle Other~~ | ~~Property Damage Only~~ | ~~0~~ | ~~1~~ | ~~45.03421~~ | ~~-93.27605~~ |
| ~~01050263~~ | ~~LOWRY AVE NE~~ | ~~10-Oct~~ | ~~2~~ | ~~2022~~ | ~~Other~~ | ~~Property Damage Only~~ | ~~0~~ | ~~2~~ | ~~45.01316~~ | ~~-93.27177~~ |
| ~~00945163~~ | ~~LOWRY AVE NE~~ | ~~10-Oct~~ | ~~6~~ | ~~2021~~ | ~~Sideswipe Same Direction~~ | ~~Property Damage Only~~ | ~~0~~ | ~~2~~ | ~~45.01316~~ | ~~-93.27168~~ |
| ~~01004740~~ | ~~LOWRY AVE NE~~ | ~~2-Feb~~ | ~~7~~ | ~~2022~~ | ~~Rear End~~ | ~~Property Damage Only~~ | ~~0~~ | ~~2~~ | ~~45.01316~~ | ~~-93.27166~~ |
| ~~00869439~~ | ~~37TH AVE NE~~ | ~~12-Dec~~ | ~~22~~ | ~~2020~~ | ~~Other~~ | ~~Property Damage Only~~ | ~~0~~ | ~~2~~ | ~~45.03548~~ | ~~-93.27592~~ |
| ~~00932835~~ | ~~SAINT ANTHONY PKWY~~ | ~~8-Aug~~ | ~~7~~ | ~~2021~~ | ~~Bike~~ | ~~Possible Injury~~ | ~~0~~ | ~~1~~ | ~~45.02757~~ | ~~-93.27565~~ |
| ~~00873462~~ | ~~26TH AVE NE~~ | ~~1-Jan~~ | ~~8~~ | ~~2021~~ | ~~Single Vehicle Other~~ | ~~Possible Injury~~ | ~~0~~ | ~~1~~ | ~~45.01500~~ | ~~-93.27195~~ |

**Subtotal: 9**

CRASH MODIFICATION FACTORS CLEARINGHOUSE

**CSAH 23 (Marshall St NE) Phase 2 Reconstruction Project**

Attachment 13 | Crash Modification Factors



# CMF / CRF DETAILS

## CMF ID: 1414

## ADD SIGNAL (ADDITIONAL PRIMARY HEAD)

DESCRIPTION:

PRIOR CONDITION: INTERSECTION HAS ONE PRIMARY SIGNAL HEAD PER APPROACH

CATEGORY: INTERSECTION TRAFFIC CONTROL

STUDY: *SAFETY BENEFITS OF ADDITIONAL PRIMARY SIGNAL HEADS*, FELIPE ET AL., 1998

| | |
|---|---|
| Star Quality Rating: | CANNOT BE RATED (INSUFFICIENT INFORMATION) |
| Rating Points Total: | |

**Crash Modification Factor (CMF)**

| | |
|---|---|
| Value: | 0.72 |
| Adjusted Standard Error: | |
| Unadjusted Standard Error: | |

**Crash Reduction Factor (CRF)**

| | |
|---|---|
| Value: | 28 *(This value indicates a **decrease** in crashes)* |
| Adjusted Standard Error: | |
| Unadjusted Standard Error: | |

**Applicability**

| | |
|---|---|
| Crash Type: | All |
| Crash Severity: | All |
| Roadway Types: | Not specified |
| Street Type: | |
| Minimum Number of Lanes: | |
| Maximum Number of Lanes: | |
| Number of Lanes Direction: | |
| Number of Lanes Comment: | |

| | |
|---|---|
| Road Division Type: | |
| Minimum Speed Limit: | |
| Maximum Speed Limit: | |
| Speed Unit: | |
| Speed Limit Comment: | |
| Area Type: | Urban |
| Traffic Volume: | |
| Average Traffic Volume: | |
| Time of Day: | |

*If countermeasure is intersection-based*

| | |
|---|---|
| Intersection Type: | Roadway/roadway (not interchange related) |
| Intersection Geometry: | 4-leg |
| Traffic Control: | Signalized |
| Major Road Traffic Volume: | |
| Minor Road Traffic Volume: | |
| Average Major Road Volume : | |
| Average Minor Road Volume : | |

## Development Details

| | |
|---|---|
| Date Range of Data Used: | |
| Municipality: | Richmond, British Columbia |
| State: | notusa |
| Country: | Canada |
| Type of Methodology Used: | Before/after using empirical Bayes or full Bayes |
| Sample Size (sites): | 8 sites after |

## Other Details

| | |
|---|---|
| Included in Highway Safety Manual? | No |
| Date Added to Clearinghouse: | Dec 01, 2009 |
| Comments: | The authors state that "three year of data were used for this analysis" (p. 7). This statement does not indicate if the be was 3 years, the after period was 3 years, both were 3 years, or the total time period was 3 years (i.e. 1.5 years for bef and 1.5 years for after period). |

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CRASH MODIFICATION FACTORS CLEARINGHOUSE

**CSAH 23 (Marshall St NE) Phase 2 Reconstruction Project**

Attachment 13 | Crash Modification Factors



# CMF / CRF DETAILS

## CMF ID: 1428

## CONVERT SIGNAL FROM PEDESTAL-MOUNTED TO MAST ARM

DESCRIPTION:

PRIOR CONDITION: EXISTING PEDESTALS WERE REMOVED AND REPLACED WITH MAST ARM SIGNALS

CATEGORY: INTERSECTION TRAFFIC CONTROL

STUDY: *SIGNALIZED INTERSECTIONS: INFORMATIONAL GUIDE*, RODEGERDTS ET AL., 2004

| | |
|---|---|
| Star Quality Rating: | ★☆☆☆☆ [VIEW SCORE DETAILS] |
| Rating Points Total: | 30 |

**Crash Modification Factor (CMF)**

| | |
|---|---|
| Value: | 0.26 |
| Adjusted Standard Error: | |
| Unadjusted Standard Error: | 0.032 |

**Crash Reduction Factor (CRF)**

| | |
|---|---|
| Value: | 74 *(This value indicates a **decrease** in crashes)* |
| Adjusted Standard Error: | |
| Unadjusted Standard Error: | 3.2 |

**Applicability**

| | |
|---|---|
| Crash Type: | Angle |
| Crash Severity: | All |
| Roadway Types: | Not specified |
| Street Type: | |
| Minimum Number of Lanes: | |
| Maximum Number of Lanes: | |
| Number of Lanes Direction: | |
| Number of Lanes Comment: | |

| | |
|---|---|
| Crash Weather: | Not specified |

## CSAH 23 (Marshall St NE) Phase 2 Reconstruction Project

Attachment 13 | Crash Modification Factors

| | |
|---|---|
| Maximum Speed Limit: | |
| Speed Unit: | |
| Speed Limit Comment: | |
| Area Type: | All |
| Traffic Volume: | |
| Average Traffic Volume: | |
| Time of Day: | All |
| | *If countermeasure is intersection-based* |
| Intersection Type: | Roadway/roadway (not interchange related) |
| Intersection Geometry: | |
| Traffic Control: | Signalized |
| Major Road Traffic Volume: | |
| Minor Road Traffic Volume: | |
| Average Major Road Volume : | |
| Average Minor Road Volume : | |

### Development Details

| | |
|---|---|
| Date Range of Data Used: | |
| Municipality: | |
| State: | KS |
| Country: | usa |
| Type of Methodology Used: | Simple before/after |
| Sample Size (crashes): | 334 crashes before, 88 crashes after |

### Other Details

| | |
|---|---|
| Included in Highway Safety Manual? | No |
| Date Added to Clearinghouse: | Dec 01, 2009 |
| Comments: | |

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CRASH MODIFICATION FACTORS CLEARINGHOUSE

**CSAH 23 (Marshall St NE) Phase 2 Reconstruction Project**

Attachment 13 | Crash Modification Factors



# CMF / CRF DETAILS

## CMF ID: 8279

## INSTALL SEPARATED BICYCLE LANE

DESCRIPTION: BIKE LANES SEPARATED FROM MOTORIZED TRAFFIC BY DIFFERENT TYPES OF BARRIERS AND/OR PARKING LANE CONFIGURATIONS

PRIOR CONDITION: NO SEPARATE BICYCLE LANE

CATEGORY: BICYCLISTS

STUDY: *SEPARATED BIKE LANE CRASH ANALYSIS*, ROTHENBERG ET AL., 2016

| | |
|---|---|
| Star Quality Rating: | ★☆☆☆☆ [VIEW SCORE DETAILS] |
| Rating Points Total: | 20 |

### Crash Modification Factor (CMF)

| | |
|---|---|
| Value: | 0.828 |
| Adjusted Standard Error: | |
| Unadjusted Standard Error: | |

### Crash Reduction Factor (CRF)

| | |
|---|---|
| Value: | 17.2 *(This value indicates a **decrease** in crashes)* |
| Adjusted Standard Error: | |
| Unadjusted Standard Error: | |

### Applicability

| | |
|---|---|
| Crash Type: | All |
| Crash Severity: | All |
| Roadway Types: | Not specified |
| Street Type: | |
| Minimum Number of Lanes: | |
| Maximum Number of Lanes: | |
| Number of Lanes Direction: | |
| Number of Lanes Comment: | |

| | |
|---|---|
| Crash Weather: | Not specified |

**CSAH 23 (Marshall St NE) Phase 2 Reconstruction Project**
Attachment 13 | Crash Modification Factors

| | |
|---|---|
| Maximum Speed Limit: | |
| Speed Unit: | |
| Speed Limit Comment: | |
| Area Type: | Not specified |
| Traffic Volume: | |
| Average Traffic Volume: | |
| Time of Day: | Not specified |
| *If countermeasure is intersection-based* | |
| Intersection Type: | |
| Intersection Geometry: | |
| Traffic Control: | |
| Major Road Traffic Volume: | |
| Minor Road Traffic Volume: | |
| Average Major Road Volume : | |
| Average Minor Road Volume : | |

**Development Details**

| | |
|---|---|
| Date Range of Data Used: | |
| Municipality: | |
| State: | CA,DC,FL,IL,MT,NY,OR,TX |
| Country: | USA |
| Type of Methodology Used: | Simple before/after |
| Sample Size (sites): | 9 sites before, 9 sites after |

**Other Details**

| | |
|---|---|
| Included in Highway Safety Manual? | No |
| Date Added to Clearinghouse: | Jan 17, 2017 |
| Comments: | CMF Applies to average total crashes when intersection treatment is bike signals plus. Study sites were located in Te Oregon, California, Montana, New York, Florida, and Washington DC; however, it is unclear which States were used f development of this CMF. The number of crashes in the after period were not reported in this study, however, they ha recorded as 300 to give 10 points as a beneift of doubt for one or more of the following: (1) number of miles/sites in t reference/treatment group, (2) number of crashes in the references/treatment group, (3) reporting AADTs for the ag dataset but not for the disaggragate dataset used for CMF development. |

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CRASH MODIFICATION FACTORS CLEARINGHOUSE

**CSAH 23 (Marshall St NE) Phase 2 Reconstruction Project**

Attachment 13 | Crash Modification Factors



# CMF / CRF DETAILS

## CMF ID: 9300

## RESURFACE PAVEMENT

DESCRIPTION:

PRIOR CONDITION: *NO PRIOR CONDITION(S)*

CATEGORY: ROADWAY

STUDY: *TIME SERIES TRENDS OF THE SAFETY EFFECTS OF PAVEMENT RESURFACING*, PARK ET AL., 2017

| | |
|---|---|
| Star Quality Rating: | ★★★☆☆ [VIEW SCORE DETAILS] |
| Rating Points Total: | 105 |

### Crash Modification Factor (CMF)

| | |
|---|---|
| Value: | 0.853 |
| Adjusted Standard Error: | |
| Unadjusted Standard Error: | 0.074 |

### Crash Reduction Factor (CRF)

| | |
|---|---|
| Value: | 14.7 *(This value indicates a **decrease** in crashes)* |
| Adjusted Standard Error: | |
| Unadjusted Standard Error: | 7.4 |

### Applicability

| | |
|---|---|
| Crash Type: | All |
| Crash Severity: | All |
| Roadway Types: | Principal Arterial Other |
| Street Type: | |
| Minimum Number of Lanes: | 1 |
| Maximum Number of Lanes: | 4 |
| Number of Lanes Direction: | |
| Number of Lanes Comment: | |

| | |
|---|---|
| Crash Weather: | Not specified |

## CSAH 23 (Marshall St NE) Phase 2 Reconstruction Project

Attachment 13 | Crash Modification Factors

| | |
|---|---|
| Maximum Speed Limit: | 65 |
| Speed Unit: | mph |
| Speed Limit Comment: | |
| Area Type: | Urban |
| Traffic Volume: | Minimum of 2100 to Maximum of 40500 Annual Average Daily Traffic (AADT) |
| Average Traffic Volume: | 8659 Annual Average Daily Traffic (AADT) |
| Time of Day: | Not specified |
| | *If countermeasure is intersection-based* |
| Intersection Type: | |
| Intersection Geometry: | |
| Traffic Control: | |
| Major Road Traffic Volume: | |
| Minor Road Traffic Volume: | |
| Average Major Road Volume : | |
| Average Minor Road Volume : | |

### Development Details

| | |
|---|---|
| Date Range of Data Used: | 2004 to 2013 |
| Municipality: | |
| State: | FL |
| Country: | USA |
| Type of Methodology Used: | Before/after using comparison group |
| Sample Size (crashes): | 1157 crashes before |
| Sample Size (sites): | 195 sites before, 195 sites after |
| Sample Size (miles): | 115.44 miles before, 115.44 miles after |

### Other Details

| | |
|---|---|
| Included in Highway Safety Manual? | No |
| Date Added to Clearinghouse: | Jun 17, 2018 |
| Comments: | Second year after treatment implementation |

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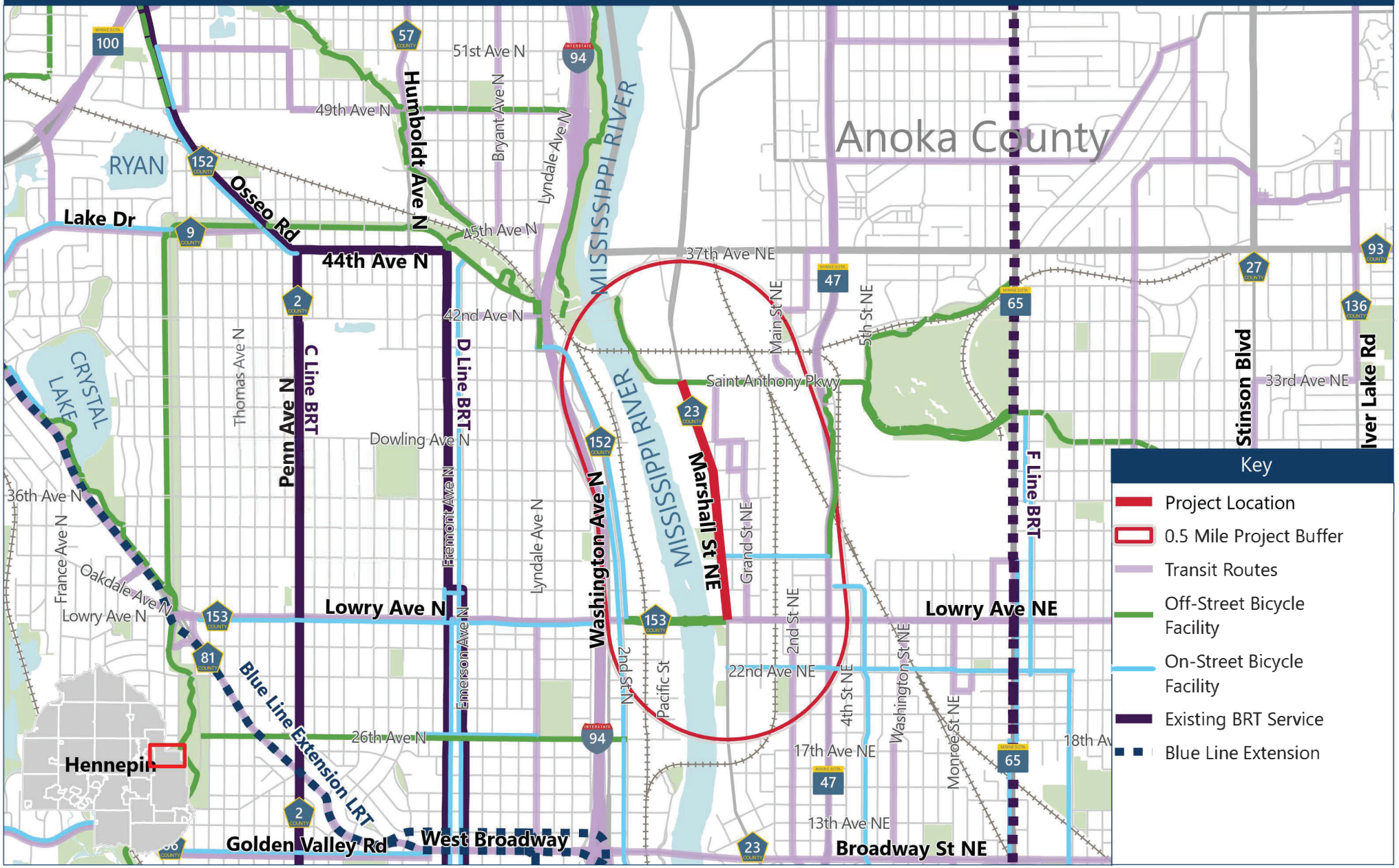
# CSAH 23 (Marshall St NE) Phase 2 Reconstruction Project

Attachment 14 | Multimodal Connections Map




**Disclaimer:** This map (i) is furnished "AS IS" with no representation as to completeness or accuracy; (ii) is furnished with no warranty of any kind; and (iii) is not suitable for legal, engineering or surveying purposes. Hennepin County shall not be liable for any damage, injury or loss resulting from this map.

Publication date: 10/12/2023

Data sources (if applicable):

HENNEPIN COUNTY
MINNESOTA

October 18, 2023

Nathan Koster
Transportation Planning Manager
City of Minneapolis – Department of Public Works
301 4th Ave S – Suite 785N
Minneapolis, MN 55415

Re: Support for 2024 Regional Solicitation Application
CSAH 23 (Marshall St NE) from CSAH 153 (Lowry Ave NE) to St. Anthony Pkwy

Dear Mr. Koster:

As part of the Metropolitan Council's 2024 Regional Solicitation, Hennepin County is submitting an application to seek federal funding for a reconstruction project along CSAH 23 (Marshall St NE) from CSAH 153 (Lowry Ave NE) to St. Anthony Pkwy in the City of Minneapolis. Federal funding through this solicitation is available for program years 2028 and 2029.

This project will involve the reconstruction of the existing roadway and will include, but not limited to, the following elements: new pavement, curb, stormwater structures, traffic signals, sidewalk facilities, bikeway facility, and ADA accommodations. The preferred typical section will be determined as part of the project development process based on characteristics of the project area, values of the community, as well as the infrastructure, safety, and user needs. It is anticipated that these proposed improvements will provide additional accessibility, safety, and mobility for people walking, biking, and driving, thereby enhancing the livability and quality of life for Minneapolis and Hennepin County residents.

We would appreciate a letter of support or resolution from the City of Minneapolis for this application and project, acknowledging that the city is aware of this project and understands that the city will likely be required to cost participate in this project and maintain the new bikeway facility year-round as outlined in the county's Cost Participation and Maintenance policies. Specific details regarding cost participation and maintenance responsibilities are anticipated to be determined during the design process as project development is advanced. A PDF detailing the city's anticipated financial obligations are included as an attachment to this letter.

**Hennepin County** Public Works
1600 Prairie Drive | Medina, MN 55340
612-596-0300 | hennepin.us

Hennepin

If you agree to support this proposed project, please send a PDF letter via email addressed to:

Carla Stueve, P.E.
Director and County Highway Engineer
Hennepin County Transportation Project Delivery
1600 Prairie Drive
Medina, MN 55340

You may email the electronic version of the letter to me at Emily.Buell@hennepin.us. I have attached a letter template that you may use or modify as you see fit.

Hennepin County appreciates the opportunity to partner with the City of Minneapolis on this important transportation improvement project. Given an application deadline of December 15, 2023, we would appreciate your support letter by December 1, 2023. If you have any questions, please contact me at (612) 543-1963 or at Emily.Buell@hennepin.us.

Sincerely,

Emily Buell

Emily Buell
Transportation Project Delivery – Capital Programming

Cc: Carla Stueve, P.E. – Director and County Highway Engineer
Jason Pieper, P.E. - Transportation Project Delivery – Capital Programming Manager

**Agreement No. PW 41-20-20**
**Contract No. _____**
**Maintenance Agreement**
**City of Minneapolis**
**County of Hennepin**

# COUNTY OF HENNEPIN/CITY OF MINNEAPOLIS ROAD MAINTENANCE AGREEMENT

This Agreement ("Agreement") is made between the **County of Hennepin**, a body politic and corporate under the laws of the State of Minnesota, hereinafter referred to as the "County", and the **City of Minneapolis**, a Minnesota home-rule charter city under the laws of the State of Minnesota, hereinafter referred to as the "City". The County and the City collectively are referred to as the "Parties".

## Recitals

The following Recitals are incorporated into this Agreement.

1. There exists County State Aid Highways (CSAHs) inside of and bordering the corporate limits of the City as shown in the attached Exhibit "A", "B", "C", "D" and "H", and traffic signal systems owned by the County within the said limits as shown in the attached Exhibit "E" and "I".

2. The geographical location of the CSAHs and traffic signal systems listed in Exhibits above are such that the City can provide routine maintenance services in a more timely and cost effective manner.

3. To ensure proper maintenance, repair and coordination of the County's infrastructure within and bordering the City's corporate limits, both Parties periodically enter into an agreement called County of Hennepin/City of Minneapolis Road Maintenance Agreement (the "Agreement"), providing for the maintenance of County-owned roadways, bridges, storm sewers and traffic control devices within the corporate limits of the City.

4. To effectively coordinate all work, the County and City staffs will meet quarterly (or as needed) to discuss general maintenance items, and leadership will meet as needed to discuss any amendment to the Agreement.

5. The work will be carried out by the Parties under the provisions of Minnesota Statutes, Section 162.17.

## Agreement

**NOW, THEREFORE,** the Parties agree as follows:

**1. Term of Agreement, Survival of Terms, and Exhibits.**

**1.1. Effective Date.** This Agreement is effective as of the date of the final signature, and retroactively in effect from January 01, 2021.

**1.2. Expiration Date.** This Agreement will expire on December 31, 2023.

**1.3. Survival of Terms.** Provisions that by their nature are intended to survive the term, cancellation or termination of this Agreement do survive such term, cancellation or termination. Such provisions include but are not limited to: Maintenance Responsibilities, Records/Audits, Indemnification, Insurance, Worker Compensation Claims, Cancellation, Termination, and Minnesota Laws Govern.

**1.4. Exhibits** are attached and incorporated into this Agreement.

**1.4.1. Exhibit "A".**

- COUNTY STATE AID HIGHWAYS IN MINNEAPOLIS
  Surface Maintenance by City of Minneapolis Forces
- COUNTY STATE AID HIGHWAYS IN MINNEAPOLIS
  Towing, Snow and Ice Control by City of Minneapolis Forces (Including Bridges and Bridge Sidewalks and Vertically Separated Bikeways)
- COUNTY STATE AID HIGHWAYS BORDERING MINNEAPOLIS
  Sign Maintenance, Permit Responsibility, and Lane Designation Striping by City of Minneapolis Forces

  Routine Sweeping, Roadside, Drainage, Bridge Maintenance, Snow and Ice Control, and Sign Legends by Hennepin County Forces

**1.4.2. Exhibit "B".**

- COUNTY STATE AID HIGHWAYS IN MINNEAPOLIS
  Routine Sweeping, Roadside, Bridge Maintenance
  Sign Maintenance, Permit Responsibility, and Lane Designation Striping by City of Minneapolis Forces

  Sign Legends by Hennepin County Forces

**1.4.3. Exhibit "C".**

- COUNTY STATE AID HIGHWAYS IN MINNEAPOLIS
  Routine Surface Maintenance by Hennepin County Forces

**1.4.4. Exhibit "D".**

- COUNTY STATE AID HIGHWAYS IN MINNEAPOLIS
  Snow and Ice Control by Hennepin County Forces (Bridge Sidewalks Cleared

by City of Minneapolis) (Tagging and Towing Services by City of Minneapolis)

**1.4.5. Exhibit "E".**

- COUNTY STATE AID HIGHWAYS IN MINNEAPOLIS Traffic Signals

**1.4.6. Exhibit "F".** Schedule of Costs

**1.4.7. Exhibit "G".** Lane Mile Table

**1.4.8. Exhibit "H".** Selected Sample of Urban County State Aid Highways

**1.4.9. Exhibit "I".** Selected Sample of Traffic Control Signals

**1.4.10. Exhibit "J".** Lowry Bridge Electrical Services

## 2. The City's Maintenance Responsibilities.

### 2.1. Surface Maintenance.

**2.1.1. The City's Core Area Surface Maintenance.** The City shall maintain the City's core area portion of the County State Aid Highways defined as the area south of CSAH 66 (Broadway Avenue), east and north of I-94, and west of I-35W and southwest of the Mississippi River, marked as Exhibit "A", so as to keep the same reasonably smooth and in reasonably good repair for the passage of vehicular traffic and reasonably free of all obstructions and impediments to traffic. This maintenance shall include such preventative maintenance services as may be reasonably required to preserve the roadway in reasonably good condition, including but not limited to proper and timely crack and joint sealing and surface patching.

### 2.2. Snow and Ice Control.

**2.2.1. The City's Core Area Snow and Ice Control.** The City shall keep the aforesaid portions of County State Aid Highways marked as Exhibit "A", reasonably free and clear from snow, ice and debris and undertake proper snow and ice control operations when necessary. The City shall maintain the through traffic lanes to their full width and ensure that such lanes are reasonably free and clear from snow and ice within a reasonable period of time following each winter storm.

**2.2.2. Raised Medians/Pedestrian Refuges.** The City shall keep raised median pedestrian openings and pedestrian refuges reasonably free and clear from snow and ice in accordance with City practices following each winter storm.

**2.2.3. Bicycle Facilities.** The City shall keep protected bicycle facilities with vertical separation including; delineators, raised curb, concrete barrier, parking, etc., on County State Aid Highways marked as Exhibit "B", reasonably free and clear

from snow, ice and debris in accordance with City practices.

**2.2.4. Unlimited Access to Fueling Station.** The City shall provide County personnel and vehicles unlimited access to an automated fueling station 24 hours a day. To facilitate fueling station access:

The County will:

- Provide employees' names and associated County driver permit numbers,
- Provide County unit numbers, unit descriptions, VINs, and tank capacities assigned to each City provided fueling fob,
- Provide the unit numbers that are taken out of service when no longer in use,
- Provide the employees' names and driver permit numbers of employees separated from employment and/or who no longer need to fuel County units,
- Pay for fuel usage within 30 calendar days of being invoiced by the City, and
- Provide a point of contact to resolve issues related to fueling and billing.

The City will:

- Provide a fueling PIN for each County employee with fueling station access,
- Provide fueling fobs and associated fob number,
- Add County employees to City's fueling station database,
- Add County vehicle information assigned to each fob to City's fueling station database,
- Modify unit status within fuel management system,
- Disable fuel access for users who no longer require the fuel privileges,
- Provide a monthly invoice of County fuel use, and
- Provide a point of contact to resolve issues related to fueling and billing.

**2.3. Sweeping.** Maintain the portions of the County State Aid Highways marked as Exhibit "B" by keeping them reasonably free of all obstructions and impediments. This maintenance shall include street sweeping, rubbish removal, and cleaning in accordance with City practices and trimming of trees within County State Aid Highway right of way.

**2.4. Drainage.** The City-owned drainage trunk line storm sewers under County roads listed on Exhibit "B" shall be maintained by the City in accordance with City practices.

**2.4.1 Manhole and Catch Basin Maintenance as Agreed to by County.** If, in the context of performing maintenance on the City's drainage system, the City observes a need for corrective maintenance on nearby County-owned manholes or catch basins, the City will notify the County Road Operations Manager via Hennepin County Dispatch 612-596-0299. If it is agreed to be mutually beneficial, the County, subject to limitations and restrictions provided in Subsection 4.1, may facilitate or cause the City to perform the agreed upon corrective maintenance. The

**CSAH 23 (Marshall St) Phase 2 Reconstruction Project**
Attachment 17 - Minneapolis Park and Recreation Board Support Letter

**Minneapolis**
**Park & Recreation Board**

**Administrative Offices**
2117 West River Road North
Minneapolis, MN 55411-2227

**Northside Operations Center**
4022 1/2 North Washington Avenue
Minneapolis, MN 55412-1742

**Southside Operations Center**
3800 Bryant Avenue South
Minneapolis, MN 55409-1000

**Phone**
612-230-6400

**Fax**
612-230-6500

**www.minneapolisparks.org**

December 5, 2023

Carla Stueve, P.E.
Director and County Highway Engineer
Hennepin County Transportation Project Delivery
1600 Prairie Drive, Medina, MN 55340

RE: Letter of Support
Regional Solicitation for Reconstruction Project at CSAH 23

Dear Ms. Stueve:

The Minneapolis Park and Recreation Board (MPRB) hereby expresses its support for Hennepin County's Regional Solicitation federal funding application for the reconstruction of CSAH 23 (Marshall St NE) from CSAH 153 (Lowry Ave NE) to St. Anthony Pkwy in the City of Minneapolis.

This project will involve the reconstruction of the existing roadway and will include, but not limited to, the following elements: new pavement, curb, stormwater structures, traffic signals, sidewalk facilities, bikeway facility, and ADA accommodations. The preferred typical section will be determined as part of the project development process based on characteristics of the project area, values of the community, as well as the infrastructure, safety, and user needs. This project also provides an opportunity to promote connections to the MPRB Grand Rounds network along the East Bank Trail. MPRB anticipates close coordination with the County to ensure trail connectivity from the currently underway 1st Avenue and Hennepin Avenue roadway improvements to the adjacent regional parks including the Central Riverfront Regional Park and Above the Falls Regional Park. It is anticipated that these proposed improvements will provide additional accessibility, safety, and mobility for people walking, biking, and driving; thereby enhancing the livability and quality of life for Minneapolis and Hennepin County residents.

MPRB acknowledges that the Park Board may be requested to cost participate in this project as outlined in the county's cost participation policy. Specific details regarding cost participation and maintenance responsibilities are anticipated to be determined during the design process as project development is advanced and will need to move through MPRB Board approvals if not associated with an existing capital project. Additionally, if an off-road facility is selected as the preferred option, MPRB agrees to collaborate on an operations and maintenance agreement of the bikeway facility year-round in accordance with the county's Cost Participation and Maintenance policies. Thank-you for making us aware of this application and project, and the opportunity to provide support. MPRB looks forward to working with you on this project.

Sincerely,

Michael Schroeder, Assistant Superintendent for Planning Services