Application

13861 - 2020 Roadway Modernization

14012 - CSAH 153 (Lowry Ave NE) Reconstruction Project

Regional Solicitation - Roadways Including Multimodal Elements

Status:	Submitted
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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	Minnesota	55340
	City	State/Province	Postal Code/Zip

County: Hennepin

Phone:* 763-745-7600 Ext.

Fax:

PeopleSoft Vendor Number 0000028004A9

Project Information

Project Name CSAH 153 (Lowry Ave NE) 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 project includes the reconstruction of the CSAH 153 (Lowry Ave NE) corridor from approximately 0.05 miles west of CSAH 23 (Marshall St NE) to approximately 0.03 miles west of Washington St NE in the City of Minneapolis. CSAH 153 (Lowry Ave NE) is classified as an A-Minor Arterial roadway that functions as an augmentor. It is also designated as an intermodal connector as part of the National Highway System (NHS). Attachment 2 illustrates the project location.

The project objectives are to improve safety and mobility for people biking, driving, walking, and using transit. Photos depicting the roadway's current condition are included in Attachment 3.

Hennepin County Community Works completed the Lowry Ave NE Corridor Plan and Implementation Framework in 2015 that provided recommendations for the long term vision of Lowry Ave NE. At this time, the preferred typical section (in terms of specific space allocation for people biking, driving, walking, and using transit) has not yet been determined. The 2015 Framework Plan will assist in guiding conversations as it included extensive community engagement and was adopted by both the City of Minneapolis and Hennepin County. A potential typical section and concept that implement the 2015 Framework Plan are included in Attachments 4 and 5, respectively.

The project will include, but is not limited to, the following elements. The specific type and location of improvements will be determined as part of the design process based on community input and data analysis.

- Roadway improvements; such as the replacement of the deteriorated curb and gutter, storm sewer structures, and pavement substructure

- Safety improvements; such as the upgrading of traffic signal systems to include mast arms and dedicated left-turn phasing, the conversion of the existing four-lane undivided configuration to a three-lane or two-lane (depending on the community engagement and design processes), and installation of curb extensions and/or raised medians to reduce the crossing distance for people walking and to manage speeds of people driving

- Pedestrian improvements; such as ADA compliant ramps and sidewalks, Accessible Pedestrian Signals (APS), high-visibility crosswalk markings, curb extensions, raised medians, and countdown timers

- Bicycle improvements; such as the conversion of the existing four-lane undivided configuration to improve the biking experience for people crossing and riding along the corridor. Further investigation will take place to determine if dedicated facilities for people biking will be provided as part of the project

- Streetscaping enhancements; such as the introduction of a boulevard and lighting. Additionally, staff will evaluate the potential for burying overhead utilities during project design

(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 153 (Lowry Ave NE) from 0.05 miles west of CSAH 23 (Marshall St NE) to 0.03 miles west of Washington St NE in Minneapolis

Project Length (Miles)

0.76

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)

Federal Amount $7,000,000.00

Match Amount $2,022,600.00

Minimum of 20% of project total

Project Total $9,022,600.00

For transit projects, the total cost for the application is total cost minus fare revenues.

Match Percentage 22.42%

Minimum of 20%
Compute the match percentage by dividing the match amount by the project total

Source of Match Funds Hennepin County

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

Preferred Program Year

Select one: 2025

Select 2022 or 2023 for TDM projects only. For all other applications, select 2024 or 2025.

Additional Program Years:

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

Project Information-Roadways

County, City, or Lead Agency Hennepin County

Functional Class of Road A-Minor Augmentor

Road System CSAH

TH, CSAH, MSAS, CO. RD., TWP. RD., CITY STREET

Road/Route No. 153

i.e., 53 for CSAH 53

Name of Road Lowry Ave NE

Example; 1st ST., MAIN AVE

Zip Code where Majority of Work is Being Performed 55418

(Approximate) Begin Construction Date 05/05/2025

(Approximate) End Construction Date 11/20/2026

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

From: **(Intersection or Address)**	CSAH 23 (Marshall St NE)
To: **(Intersection or Address)**	Washington St NE
DO NOT INCLUDE LEGAL DESCRIPTION	
Or At	
Miles of Sidewalk (nearest 0.1 miles)	0.76
Miles of Trail (nearest 0.1 miles)	0
Miles of Trail on the Regional Bicycle Transportation Network (nearest 0.1 miles)	0
Primary Types of Work	Grading, aggregate base, bituminous base & surface, storm water, sidewalk, ADA, traffic signals, streetscaping, lighting, and curb/gutter.

Examples: GRADE, AGG BASE, BIT BASE, BIT SURF, SIDEWALK, CURB AND GUTTER,STORM SEWER, SIGNALS, LIGHTING, GUARDRAIL, BIKE PATH, PED RAMPS, BRIDGE, PARK AND RIDE, ETC.

BRIDGE/CULVERT PROJECTS (IF APPLICABLE)

Old Bridge/Culvert No.:

New Bridge/Culvert No.:

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

Requirements - All Projects

All Projects

1.The project must be consistent with the goals and policies in these adopted regional plans: Thrive MSP 2040 (2014), the 2040 Transportation Policy Plan (2018), the 2040 Regional Parks Policy Plan (2018), and the 2040 Water Resources Policy Plan (2015).

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

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

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

A) Transportation System Stewardship (P 2.2-2.4)

This project is needed as routine maintenance activities (such as overlays and crack seals) are no longer cost effective in extending the useful life of the roadway. New assets will allow for proper management of storm water, especially during intense weather events, reducing flood risk for the area.

B) Safety/Security (P 2.5-2.9)

This project will implement best practices and proven strategies to provide safe and accessible options for corridor users, especially for people biking and walking. Specific attention will be given to the CSAH 23 (Marshall St NE) and TH 47 (University Ave NE) intersections as they rank in the Top 100 intersections countywide in terms of existing crash frequency.

C) Access to Destinations (P 2.10-2.25)

This project will create a more friendly environment for people walking by introducing a boulevard space. This design element will provide separation from people driving, collect storm runoff, and allow for better snow control operations. Also, the introduction of dedicated left-turn lanes will better accommodate people turning. Additionally, compact intersection designs will be considered during the project development process in an effort to minimize crossing distances and promote traffic calming. This will be especially important at the CSAH 23 (Marshall St), 2nd St NE, and TH 47 (University Ave NE) intersections that serve as commercial nodes.

D) Competitive Economy (P 2.26-2.29)

This route is classified as an Intermodel Connector as part of FHWA's National Highway System (NHS) and is essential to the regional economy as over 10,000 employees, nearly 4,000 related to manufacturing and distribution, are located within 1 mile of this project. Shoreham Yards, an FHWA designated truck-rail facility, generates significant freight traffic along Lowry Ave NE.

E) Healthy and Equitable Communities (P 2.30-2.34)

Storm water mitigation strategies will be considered as part of the design process to target known flooding areas near 2nd St NE and the BNSF Railroad crossing. Additionally, previous overlays extended over the existing gutter pan, diminishing the curb's ability to collect storm water. A full reconstruction is needed to replace and modernize roadway assets.

F) Leveraging Transportation Investments to Guide Land Use (P 2.35-2.41)

This project will complement current redevelopment at the CSAH 23 (Marshall St NE) and 2nd St NE intersections. The introduction of plantings, upgraded lighting, and street furniture will improve the experience for people walking along the corridor. Additionally, upgraded ITS infrastructure will allow for smart signal operations to provide safe and comfortable crossings for people walking and biking at each of the signalized 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:

2020-2024 Hennepin County Transportation CIP (Attachment 6)

2020-2024 Hennepin County Community Works CIP (Attachment 7)

Lowry Ave NE Corridor Implementation Framework Plan (Attachment 8)

Limit 2,800 characters, approximately 400 words

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

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

5.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.
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): *$250,000 to $3,500,000*
Spot Mobility and Safety: *$1,000,000 to $3,500,000*
Bridges Rehabilitation/Replacement: *$1,000,000 to $7,000,000*

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

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

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

9.In order for a selected project to be included in the Transportation Improvement Program (TIP) and approved by USDOT, the public agency sponsor must either have a current Americans with Disabilities Act (ADA) self-evaluation or transition plan that covers the public right of way/transportation, as required under Title II of the ADA. The plan must be completed by the local agency before the Regional Solicitation application deadline. For the 2022 Regional Solicitation funding cycle, this requirement may include that the plan is updated within the past five years.

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

Date plan completed: 08/31/2015

Link to plan: https://www.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, per FHWA direction established 8/27/2008 and updated 6/27/2017.

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

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

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

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

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

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

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

Roadways Including Multimodal Elements

1.All roadway and bridge projects must be identified as a principal arterial (non-freeway facilities only) or A-minor arterial as shown on the latest TAB approved roadway functional classification map.

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

Roadway Expansion and Reconstruction/Modernization and Spot Mobility projects only:

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

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

Bridge Rehabilitation/Replacement and Strategic Capacity projects only:

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

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

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

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

Bridge Rehabilitation/Replacement projects only:

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

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

6. The bridge must have a National Bridge Inventory Rating of 6 or less for rehabilitation projects and 4 or less for replacement projects.

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

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

7. All roadway projects that involve the construction of a new/expanded interchange or new interchange ramps must have approval by the Metropolitan Council/MnDOT Interchange Planning Review Committee prior to application submittal. Please contact Michael Corbett at MnDOT (Michael.J.Corbett@state.mn.us or 651-234-7793) to determine whether your project needs to go through this process as described in Appendix F of the 2040 Transportation Policy Plan.

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

Requirements - Roadways Including Multimodal Elements

Specific Roadway Elements

CONSTRUCTION PROJECT ELEMENTS/COST ESTIMATES	Cost
Mobilization (approx. 5% of total cost)	$356,000.00
Removals (approx. 5% of total cost)	$296,000.00
Roadway (grading, borrow, etc.)	$475,000.00
Roadway (aggregates and paving)	$961,000.00
Subgrade Correction (muck)	$0.00
Storm Sewer	$708,000.00
Ponds	$0.00
Concrete Items (curb & gutter, sidewalks, median barriers)	$255,000.00
Traffic Control	$356,000.00
Striping	$75,000.00
Signing	$45,000.00
Lighting	$320,000.00
Turf - Erosion & Landscaping	$354,000.00
Bridge	$0.00
Retaining Walls	$0.00

Noise Wall (not calculated in cost effectiveness measure)	$0.00
Traffic Signals	$1,140,000.00
Wetland Mitigation	$0.00
Other Natural and Cultural Resource Protection	$0.00
RR Crossing	$0.00
Roadway Contingencies	$1,662,600.00
Other Roadway Elements	$200,000.00
Totals	**$7,203,600.00**

Specific Bicycle and Pedestrian Elements

CONSTRUCTION PROJECT ELEMENTS/COST ESTIMATES	Cost
Path/Trail Construction	$0.00
Sidewalk Construction	$420,000.00
On-Street Bicycle Facility Construction	$0.00
Right-of-Way	$0.00
Pedestrian Curb Ramps (ADA)	$205,000.00
Crossing Aids (e.g., Audible Pedestrian Signals, HAWK)	$55,000.00
Pedestrian-scale Lighting	$320,000.00
Streetscaping	$354,000.00
Wayfinding	$0.00
Bicycle and Pedestrian Contingencies	$420,000.00
Other Bicycle and Pedestrian Elements	$45,000.00
Totals	**$1,819,000.00**

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

Totals

Total Cost	$9,022,600.00
Construction Cost Total	$9,022,600.00
Transit Operating Cost Total	$0.00

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

Existing Employment within 1 Mile:	10061
Existing Manufacturing/Distribution-Related Employment within 1 Mile:	3629
Existing Post-Secondary Students within 1 Mile:	0
Upload Map	1582991894829_2020 RS Map 02 - CSAH 153 (Lowry Ave NE) Reconstruction Project - Regional Economy.pdf

Please upload attachment in PDF form.

Measure C: Current Heavy Commercial Traffic

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

Along Tier 1:

Miles: 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:	Yes
None of the tiers:	

Measure A: Current Daily Person Throughput

Location	West of CSAH 23 (Marshall St NE)
Current AADT Volume	16500
Existing Transit Routes on the Project	11, 17, 32, 824, 888-Northstar Commuter Rail

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

Upload Transit Connections Map	1582992741431_2020 RS Map 04 - CSAH 153 (Lowry Ave NE) Reconstruction Project - Transit Connections.pdf

Please upload attachment in PDF form.

Response: Current Daily Person Throughput

Average Annual Daily Transit Ridership	0
Current Daily Person Throughput	21450.0

Measure B: 2040 Forecast ADT

Use Metropolitan Council model to determine forecast (2040) ADT volume	No
If checked, METC Staff will provide Forecast (2040) ADT volume	
OR	
Identify the approved county or city travel demand model to determine forecast (2040) ADT volume	Hennepin County conducted a comprehensive travel demand forecasting analysis based on the Metropolitan Council's regional activity-based model. Forecast traffic volumes were based on a combination of socio-economic and land use assumptions. It should be noted that the future transportation network was assumed to include projects identified in the regional Transportation Improvement Program and the county's Capital Improvement Program. Attachment 10 illustrates the forecast traffic volumes.
Forecast (2040) ADT volume	18300

Measure A: Connection to disadvantaged populations and projects benefits, impacts, and mitigation

*1.**Sub-measure**: Equity Population Engagement: A successful project is one that is the result of active engagement of low-income populations, people of color, persons with disabilities, youth and the elderly. Engagement should occur prior to and during a projects development, with the intent to provide direct benefits to, or solve, an expressed transportation issue, while also limiting and mitigating any negative impacts. Describe and map the location of any low-income populations, people of color, disabled populations, youth or the elderly within a ½ mile of the proposed project. Describe how these specific populations were engaged and provided outreach to, whether through community planning efforts, project needs identification, or during the project development process. Describe what engagement methods and tools were used and how the input is reflected in the projects purpose and need and design. Elements of quality engagement include: outreach and engagement to specific communities and populations that are likely to be directly impacted by the project; techniques to reach out to populations traditionally not involved in community engagement related to transportation projects; feedback from these populations identifying potential positive and negative elements of the proposed project through engagement, study recommendations, or plans that provide feedback from populations that may be impacted by the proposed project. If relevant, describe how NEPA or Title VI regulations will guide engagement activities.*

Response:

Engagement efforts completed to date:

The CSAH 153 (Lowry Ave NE) reconstruction project has been guided by the 2015 Lowry Avenue NE Corridor Plan and Implementation Framework (the Plan) that can be viewed at hennepin.us/residents/transportation/lowry-avenue-community-works. The Plan utilized three committees throughout the process: Technical Advisory Team, Steering Committee and Community Advisory Team that included representatives from neighborhood organizations, business associations, local institutions and property owners. Other Plan engagement included public workshops, open houses, a winter walking tour, working groups with local high school students and Level 2 English Language Learners (six different first languages). Key themes revealed in the Plan included redevelopment opportunities along the corridor, poor sidewalk conditions, lack of streetscaping, and inadequate storm water management during rain events.

Engagement efforts anticipated for the design stage:

Public engagement will continue through design and will target neighborhood organizations/associations, including: Marshall Terrace, Bottineau, and Holland. These groups demonstrate knowledge of existing issues and how to effectively communicate with the community. Engagement efforts will also target locally owned businesses rooted in the community. One organization of interest is the Mississippi Watershed Management Organization which works to protect and improve water quality, habitat and natural resources in the area. Engagement events will be offered all times of days to minimize conflicts with work schedules. A project website will be

created to share the latest information in terms of project scope, schedule, and upcoming engagement events. Given the population diversity in the area, staff will rely on visualizations (instead of general text) to communicate effectively with the community.

Engagement efforts anticipated for the construction stage:

Staff will work with Metro Transit and the City of Minneapolis to determine impacts to people biking, driving, walking, and using transit during construction activities. There are eight restaurants/bars/coffee shops located directly along the project that will be impacted by this project, including: Tony Jaros River Garden, Betty Dangers Country Club, Market Bar-B-Que Restaurant, Olive and Lamb, Al's Place, Stanley's NE Bar Room, Northeast Palace, and Carma Coffee. Temporary Traffic Control Plans for people biking and people walking will be followed to ensure access to these businesses during construction. Construction inspection crews will visit this site often to ensure that reasonable accommodations are being met. Temporary impacts to transit services will be communicated with the public during the design and construction phases.

(Limit 2,800 characters; approximately 400 words)

*2.**Sub-measure**: Equity Population Benefits and Impacts: A successful project is one that has been designed to provide direct benefits to low-income populations, people of color, persons with disabilities, youth and the elderly. All projects must mitigate potential negative benefits as required under federal law. Projects that are designed to provide benefits go beyond the mitigation requirement to proactively provide transportation benefits and solve transportation issues experienced by Equity populations.*
a.Describe the projects benefits to low-income populations, people of color, children, people with disabilities, and the elderly. 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. Note that this is not an exhaustive list.

Response:

Anticipated project benefits

The proposed project includes the reconstruction of the CSAH 153 (Lowry Ave NE) corridor from CSAH 23 (Marshall St NE) to Washington St NE to improve safety and mobility for people biking, driving, walking, and using transit along the corridor. Although there are a number of alternate routes for users in the Northeast area, CSAH 153 (Lowry Ave NE) is one of only four crossings over the Mississippi River between Hennepin Ave and I-694 that provides direct access between the Northeast and North Minneapolis neighborhoods. A detailed description of how this project will benefit disadvantaged populations is included below. Attachment 11 identifies specific destinations within 0.5 miles of the project area that attract each population group.

Nearby community resource destinations

Five community resource destinations were identified within the project area, including: Marshall Terrace Park, Edgewater Park, Gluek Park, Bottineau Field Park and Dar Al-Qalam Islamic Center. The parks attract diverse populations and offer benefits to low-income populations, people of color, youth populations, people with disabilities, and elderly populations. The Dar Al Qalam Islamic Center is a key resource for Islamic members of the local community. The conversion of the four-lane configuration to a three-lane/two-lane configuration will improve the crossing experience for people biking and walking by eliminating the potential of dual-threat related crashes.

Benefits for populations with disabilities

Although no specific destinations for populations with disabilities were identified, this project will

provide significant benefits to people with limited mobility and/or visual abilities. The existing sidewalk facilities are relatively narrow with various obstructions in the walking path (ie: fire hydrants, utility poles, and signs) and transition poorly at driveways. This project will allow for the introduction of exceptional accommodations via obstruction free sidewalks, ADA compliant pedestrian ramps, and APS. These features will provide a consistent experience for users with limited mobility and/or visual abilities.

Benefits for low-income populations

Two destinations for low-income populations were identified, including Start Today Hennepin and East Side Neighborhood Services. The introduction of a boulevard and streetscaping elements will improve the safety and comfort of people walking which is especially important for people who do not own a vehicle.

Benefits for Youth

Four destinations for youth populations were identified; including Spero Academy, Lucky Child Care Center, A Chance to Grow, and a skatepark. Enhancements to existing sidewalk conditions will improve the safety and comfort of young people who are unable to drive.

(Limit 2,800 characters; approximately 400 words)

b. Describe any negative impacts to low-income populations, people of color, children, people with disabilities, and the elderly created by the project, along with measures that will be taken to mitigate them. Negative impacts that are not adequately mitigated can result in a reduction in points.

Below is a list of negative impacts. Note that this is not an exhaustive list.

Increased difficulty in street crossing caused by increased roadway width, increased traffic speed, wider turning radii, or other elements that negatively impact pedestrian access.

Increased noise.

Decreased pedestrian access through sidewalk removal / narrowing, placement of barriers along the walking path, increase in auto-oriented curb cuts, etc.

Project elements that are detrimental to location-based air quality by increasing stop/start activity at intersections, creating vehicle idling areas, directing an increased number of vehicles to a particular point, 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.

Displacement of residents and businesses.

Mitigation of temporary construction/implementation impacts such as dust; noise; reduced access for travelers and to businesses; disruption of utilities; and eliminated street crossings.

Other

Response:

Anticipated project negative impacts

The CSAH 153 (Lowry Ave NE) reconstruction will likely avoid long-term impacts to the quality of life for community members. However, short-term disturbances are anticipated by this project. A detailed description of how negative impacts to accessibility, mobility, transit, and the environment will be minimized is included below. Hennepin County has a specialized communications team that is responsible for phone hotline and project website inquiries. This team will be critical for responding quickly to inquiries. Additionally, county staff will partner with Minneapolis and Metro Transit to coordinate operations/services during construction.

Negative impacts to accessibility

Impacts to existing sidewalk facilities are anticipated during construction activities. However, the contractor will be required to follow the Temporary Traffic Control Plans which will provide instructions on temporary accommodations and/or detour routes for people walking and biking. Access to adjacent buildings, particularly housing, restaurants/bars, local shops, and to the Lowry Avenue Bridge will be most critical. Staff will seek out opportunities to promote local businesses during construction, to minimize negative impacts to sales during construction.

Negative impacts to mobility

All transportation modes will be provided with proper signage and pavement markings to ensure all users have clear and safe detour routes. Staff will distribute detailed maps to the community that identify the location and timing of detour routes. The potential removal of the traffic signal at Grand

St NE may cause negative public reaction due to the perceptions of decreased traffic operations and safety. However, this project element will be a key topic as part of the public engagement process to educate the community on negative outcomes caused by unwarranted traffic signal systems. Furthermore, if determined that removal of this traffic signal system is supported, it is anticipated that an enhanced pedestrian crossing would be provided at this intersection to promote traffic calming.

Negative impacts to transit

Some of the transit routes may need to be re-routed during construction. Staff will coordinate with Metro Transit to publish consistent messaging on our respective websites to notify transit customers of these changes.

Negative impacts to the environment

Potential storm water impacts during construction will be mitigated through treatments such as silt fencing and inlet protection. Areas susceptible to flooding (at the 2nd St NE intersection and the BNSF RR Bridge) will be monitored by staff during rain events to ensure nearby residents aren't at risk.

(Limit 2,800 characters; approximately 400 words)

Select one:

*3.**Sub-measure: Bonus Points** Those projects that score at least 80% of the maximum total points available through sub-measures 1 and 2 will be awarded bonus points based on the geographic location of the project. These points will be assigned as follows, based on the highest-scoring geography the project contacts:*
a.25 points to projects within an Area of Concentrated Poverty with 50% or more people of color
b.20 points to projects within an Area of Concentrated Poverty
c.15 points to projects within census tracts with the percent of population in poverty or population of color above the regional average percent
d.10 points for all other areas

Project is located in an Area of Concentrated Poverty where 50% or more of residents are people of color (ACP50):	Yes

Project located in Area of Concentrated Poverty:

Projects census tracts are above the regional average for population in poverty or population of color:

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

(up to 40% of maximum score)

Upload the "Socio-Economic Conditions" map used for this measure. The second map created for sub measure A1 can be uploaded on the Other Attachments Form, or can be combined with the "Socio-Economic Conditions" map into a single PDF and uploaded here.

Upload Map

1584393990723_2020 RS Map 03 - CSAH 153 (Lowry Ave NE) Reconstruction Project - Socio Economic Conditions.pdf

Measure B: Part 1: Housing Performance Score

City	Segment Length (For stand-alone projects, enter population from Regional Economy map) within each City/Township	Segment Length/Total Project Length	Score	Housing Score Multiplied by Segment percent
Minneapolis	0.76	1.0	100.0	100.0

Total Project Length

Total Project Length 0.76

Project length entered on the Project Information - General form.

Housing Performance Score

Total Project Length (Miles) or Population 0.76

Total Housing Score 100.0

Affordable Housing Scoring

Part 2: Affordable Housing Access

Reference Access to Affordable Housing Guidance located under Regional Solicitation Resources for information on how to respond to this measure and create the map.
If text box is not showing, click Edit or "Add" in top right of page.

Response:

This project will improve access to affordable housing locations by reallocating space within the corridor to promote choices in transportation. Enhanced sidewalk facilities (boulevard, lighting, and streetscaping) will benefit people walking along the corridor. Detailed information regarding affordable housing locations within close proximity of this project is included below; including number of bedrooms, affordability limit based on area median income (AMI), etc. Attachment 12 identifies specific affordable housing sites within a 1/2 mile of the project location.

Total number of affordable sites within project area: 10

Number of existing sites: 9

Number of sites under construction: 0

Number of planned sites identified: 1

Location 1: Audubon Crossing

Affordable Units: 30

Bedrooms per unit: 1-3

30% AMI: 6

50% AMI: 9

60% AMI: 15

LIHTC

Location 2: Bottineau Commons

Affordable Units: 95

Bedrooms per unit: 1-3

30% AMI: 25

60% AMI: 69

Location 3: Bottineau Commons

Affordable Units: 37

Bedrooms per unit: 0-3

30% AMI: 11

60% AMI: 26

LIHTC

Location 4: Central Avenue Lofts

Affordable Units: 53

Bedrooms per unit: 1-3

60% AMI: 53

LIHTC

Location 5: Holland Highrise

Affordable Units: 181

Bedrooms per unit: 1-2

30% AMI: 181

Public Housing

Location 6: Hook & Ladder Apts

Affordable Units: 118

Bedrooms per unit: 1-3

30% AMI: 10

60% AMI: 108

Location 7: Marshall Flats

Affordable Units: 36

Bedrooms per unit: 0-1

30% AMI: 7

50% AMI: 29

LIHTC

Location 8: Northeast 1900 3rd St NE

Affordable Units: 32

Bedrooms per unit: 1

30% AMI: 32

Public Housing

Location 9: Washington Court Apartments

Affordable Units: 38

Bedrooms per unit: 1-3

50% AMI: 8

60% AMI: 30

LIHTC

Location 10: Gateway Northeast (planned)

Affordable Units: 77

Bedrooms per unit: 0-3

30% AMI: 10

50% AMI: 16

60% AMI: 51

Section 8

(Limit 2,100 characters; approximately 300 words)

Upload map:

1588266091323_Attachment 12 - Affordable Housing Access Map.pdf

Measure A: Year of Roadway Construction

Year of Original Roadway Construction or Most Recent Reconstruction	Segment Length	Calculation	Calculation 2
2012	0.05	100.6	132.368
1958	0.08	156.64	206.105
1958	0.2	391.6	515.263
1959	0.43	842.37	1108.382
	1	**1491**	**1962**

Total Project Length

Total Project Length (as entered in "Project Information" form) 0.76

Average Construction Year

Weighted Year 1962

Total Segment Length (Miles)

Total Segment Length 0.76

Measure B: Geometric, Structural, or Infrastructure Improvements

Improved roadway to better accommodate freight movements: Yes

Lowry Ave NE is a 10-ton roadway that is identified as an Intermodal Connector as part of the FHWA's National Highway System given its proximity to the CP Shoreham Railyard. Staff referenced a StreetLight analysis to estimate 1,300 commercial vehicles along Lowry Ave NE daily (Attachment 13).

Response:

This project will better facilitate freight movements by redesigning intersections to accommodate truck turns, modifying driveway aprons to improve delivery operations, and providing left-turn phasing to serve vehicles that have difficulty finding gaps. These improvements are most critical near the Marshall St NE and University Ave NE intersections which experience relatively high freight activity.

(Limit 700 characters; approximately 100 words)

Improved clear zones or sight lines: Yes

The roadway network near Lowry Ave NE follows a grid system, therefore, sight distance is generally adequate. The proposed locations of project elements (fencing, retaining walls, lighting, signs, and landscaping) will not obstruct sight lines. The inclusion of a boulevard will allow for proper locating of these fixed objects.

Response:

It is anticipated that the 4-lane undivided configuration will likely be modified to a 3-lane/2-lane configuration, along with prohibition of on-street parking. This will help to mitigate the sight line restrictions caused by the BNSF bridge piers. Raised medians and/or curb extensions will be constructed at key locations as identified in the design process.

(Limit 700 characters; approximately 100 words)

Improved roadway geometrics:

Yes

Specific design characteristics (such as design speed and lane width) will be determined during the design process to serve as strategies to manage mobility and safety along the corridor.

Response:

Corridor improvements will likely include converting the 4-lane undivided configuration to a 3-lane or 2-lane to better facilitate turning vehicles. Also, the roadway has experienced numerous overlays that have extended over the gutter pan, reducing the drainage and safety benefits provided by the curb. A reconstruction is needed to re-establish the roadway environment. In addition, intersection improvements will likely include (as feasible): curb extensions, raised medians, and dedicated turn lanes.

(Limit 700 characters; approximately 100 words)

Access management enhancements:

Yes

A number of commercial destinations exist along Lowry Ave NE, generating routine activity. The upgrading of sidewalks, by eliminating obstructions and defects, will improve accessibility for people walking. Also, the introduction of a boulevard will provide space for signs and snow storage, ensuring clear walking areas during all times of year.

Response:

The anticipated reconfiguration of the 4-lane environment to a 3-lane or 2-lane will benefit users accessing local businesses by reducing left-turn, rear-end, and pedestrian related crashes. The shared left-turn lane will specifically benefit left-turning vehicles at non-signalized intersections by eliminating conflicts with through moving vehicles.

(Limit 700 characters; approximately 100 words)

Vertical/horizontal alignment improvements:

Yes

The area surrounding the project is mainly developed and offers limited opportunities to make significant changes to the roadway's vertical/horizontal alignment, however, this project will target known issues at three key intersections.

Response:

Lowry Ave NE/Marshall St NE will be revised to minimize the potential for roadway departure related crashes for eastbound drivers caused by the skew. Lowry Ave NE/University Ave NE will be modified to better facilitate freight movements that encroach onto sidewalk areas as illustrated in Attachment 14. Additionally, turn restrictions will be considered for Lowry Ave NE/7th St NE to address poor sight distance issues caused by the nearby railroad bridge.

(Limit 700 characters; approximately 100 words)

Improved stormwater mitigation:

Yes

Response:

There are two known areas along Lowry Ave NE that are susceptible to flooding (near 2nd St NE and the BNSF railroad bridge) as identified by MetCouncil's Localized Flood Map Screening Tool. During design, specific attention will be given to these areas to investigate the feasibility of stormwater mitigation strategies including green stormwater management strategies and techniques (ie: rain gardens, bio swales, etc.)

The introduction of streetscaping elements, specifically boulevard areas, will assist in collecting rain to avoid ponding. Also, the size and capacity of new storm water structures will accommodate required flood year events.

(Limit 700 characters; approximately 100 words)

Signals/lighting upgrades:

Yes

Response:

The project will replace and/or upgrade signal systems and include the latest technologies, such as: mast arms, dedicated left-turn phasing, signal communications, and ITS components. APS will be installed to accommodate users with visual impairments. Additionally, the intersection at Grand St NE will be evaluated to determine the recommended intersection control device to ensure safe, efficient, and environmentally-friendly mobility.

The existing lighting along Lowry Ave NE is outdated and warrants replacement. The specific type and location of lighting will be consistent with the Minneapolis Street Lighting Policy as recommended by the Minneapolis Street Lighting Plan (Attachment 15).

(Limit 700 characters; approximately 100 words)

Other Improvements

Yes

Response:

A number of improvements will be introduced to benefit people walking. The current sidewalk environment includes barriers (such as utility poles, signs, and driveway aprons) that pose difficulties for people walking, especially users with limited mobility. These conditions are especially poor during snowfall events as there is inadequate space for snow storage. The introduction of a boulevard, curb extensions, and raised medians will improve the safety and comfort for people walking along and crossing the corridor. Specific consideration will be given for crossing safety countermeasures during design to ensure users have access to popular destinations along the corridor.

(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 Reduced by the Project:	Total Peak Hour Delay Reduced by the Project:	EXPLANATION of methodology used to calculate railroad crossing delay, if applicable.	Synchro or HCM Reports
16.0	69.0	-53	2433	2434	-128949	-129002	Not applicable	1586450065455_CSAH 153 - CP 1408 - Marshall St NE & Lowry Ave NE.pdf
4.0	1.0	3.0	1364	1364	4092.0	4092.0	Not applicable	1586450095240_CSAH 153 - CP 1408 - Grand St NE & Lowry Ave NE.pdf

13.0	16.0	-3	1550	1551	-4650	-4653	Not applicable	1586450121596_CSAH 153 - CP 1408 - 2nd St NE & Lowry Ave NE.pdf
42.0	73.0	-31	2787	2786	-86397	-86366	Not applicable	1586450185555_CSAH 153 - CP 1408 - University Ave NE & Lowry Ave NE.pdf
						-215929		

Vehicle Delay Reduced

Total Peak Hour Delay Reduced	-215904
Total Peak Hour Delay Reduced	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):
3.06	5.85	-2.79
1.15	0.85	0.3
2.08	2.17	-0.09
5.43	7.25	-1.82
12	**16**	**-4**

Total

Total Emissions Reduced:	-4.4
Upload Synchro Report	1586450468469_CSAH 153 - CP 1408 - MOE Report.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

Attachment 16 lists reported crashes (2016-2018) along the project, and Attachment 17 lists CMFs applied in the B/C Analysis.

XX - Countermeasure: Crashes Targeted (CMF ID, % Reduction)

1) LT lanes on CSAH 153 at intersections: LT (269/271, 42%/47%)

2) Increase sight distance on minor approaches: RA (308, 11%)

3) Signal mastarms: All (1420, 49%)

Crash Modification Factor Used:

4) Convert to 3-lane: All (2841, 47%)

5) FYA prot/perm phasing: LT on CSAH 153 (4177, 19%)

6) Prot/perm phasing: LT on minor approaches (4270, 14%)

7) Resurface pavement: LT, RA, & HO on CSAH 153 (9299, 23%)

8) Prohibit parking: Crashes involving parked veh (CMF N/A, 100%)

9) Remove unwarranted signal: All (FHWA Safety Issue Briefs #5, 24%)

(Limit 700 Characters; approximately 100 words)

Rationale for Crash Modification Selected:

The Benefit/Cost Analysis evaluated the project corridor in eight separate sections (comprised of major intersections and segments) to target crash themes. Up to two (of the nine 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 biking, driving, and walking.

The expected service life for each improvement ranged from 10 years to 20 years (primarily 20 years), and it should be noted that an average value was entered into the Benefit/Cost Worksheets, whenever applicable. If a service life value was not stated within the guidelines of the 2020 Highway Safety Improvement Program Criteria, then staff identified an expected service life value based on information provided in the 2015 MnDOT Traffic Engineering Manual.

The overall average crash reduction expected from the project is 41% (based on a 59% crash modification factor). Approximately 41% (23) of the total number of reported crashes from the years 2016 to 2018 will be reduced annually through the implementation of various safety countermeasures as part of this project.

(Limit 1400 Characters; approximately 200 words)

Project Benefit ($) from B/C Ratio	$26,648,699.00
Total Fatal (K) Crashes:	0
Total Serious Injury (A) Crashes:	2
Total Non-Motorized Fatal and Serious Injury Crashes:	1
Total Crashes:	166

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:	1
Total Crashes Reduced by Project:	69
Worksheet Attachment	1586909748837_CSAH 153 (Lowry Ave NE) Reconstruction Project - BC Analysis 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 A: Multimodal Elements and Existing Connections

The current environment along CSAH 153 (Lowry Ave NE) is uncomfortable for people walking as the existing sidewalks are located immediately adjacent to the roadway. In addition, the roadway includes four travel lanes for people driving; creating the potential for a dual-threat condition for people crossing.

The proposed project will introduce a number of strategies to improve the safety and comfort for people walking (as illustrated in Attachment 5). The following improvements are anticipated as part of the project; however, further evaluation will be required to confirm their feasibility and stakeholder support.

Improvements for people crossing the corridor

Response:

Traffic signals are provided at key intersections along the corridor, including the commercial nodes at both CSAH 23 (Marshall St NE) and TH 47 (University Ave NE). These signals will continue to provide people walking with a controlled crossing experience. However, this project presents an opportunity to introduce the latest signal technologies to provide both adequate accessibility (to accommodate people with limited mobility) and flexible signal operations (to minimize conflicts between turning vehicles and people crossing). Also, enhanced pavement markings, with supplemental stop bars, will likely be installed at each signalized intersection to ensure adequate visibility. Additionally, staff will evaluate the potential for leading pedestrian interval (LPI) to determine if this tool should be considered at signalized intersections.

The majority of intersections along the project

corridor are unsignalized. The anticipated conversion of the 4-lane configuration to a 3-lane or 2-lane configuration will likely improve the experience for people walking by shortening the crossing distance. Also, special consideration will be given to unsignalized intersections during the design phase to better understand crossing activity. Locations that warrant additional traffic calming elements (such as curb extensions, raised medians, and/or crossing beacons) will be evaluated to determine their feasibility for implementation as safety countermeasures. T-intersections provide optimal opportunities to implement safety countermeasures for people walking as one approach will not require a dedicated left-turn lane for people driving.

Improvements for people walking along the roadway

Sidewalks will be constructed on both sides of the roadway to minimize the need to cross roadway. It is anticipated that a boulevard space will be introduced to provide a physical barrier between people driving and walking. Streetscaping elements (such as lighting, plantings, and street furniture) will be considered during the design phase to further improve the comfort for people walking along CSAH 153 (Lowry Ave NE).

(Limit 2,800 characters; approximately 400 words)

Measure A: Multimodal Elements and Existing Connections

Response:

The proposed project will benefit people biking, walking, and using transit as described below. Attachment 18 illustrates existing multimodal connections along or near the project corridor.

Improvements for people biking

The Lowry Ave Bridge has designated bicycle facilities, however the section of CSAH 153 (Lowry Ave NE) within the project limits does not currently have designated bicycle facilities; creating a stressful environment for people biking. Bicyclists currently use the outside lanes, which at times, may be obstructed in areas where on-street parking is permitted. The county's 2040 Bicycle Transportation Plan identifies 22nd Ave NE (0.2 miles south) and 27th Ave NE (0.3 miles north) as parallel bicycle routes for the corridor. Further evaluation will occur as part of the design process to determine if dedicated facilities for people biking will be included in the project. CSAH 153 (Lowry Ave NE) within the project area connects to the RBTN, including CSAH 23 (Marshall St NE) and 5th St NE.

Improvements for people walking

CSAH 153 (Lowry Ave NE) currently includes sidewalk facilities on both sides of the roadway. Portions of these facilities are not ADA condition compliant, posing as challenges for people with limited mobility. ADA improvements will address obstructions on the sidewalk; including signs, signal poles and fire hydrants. The Lowry Ave NE Corridor Plan & Implementation Framework includes a recommendation to introduce a boulevard to enhance the safety and comfort of people walking. Additional recommendations from the plan prioritized pedestrian infrastructure, including plantings, lighting, benches, ornamental fencing (to

screen parking areas), and public art. CSAH 153 (Lowry Ave NE) is identified in the Minneapolis Street Lighting Plan as a priority corridor based on its proximity to transit, traffic and pedestrian volumes, and commercial use. Pedestrian ramps, APS, crosswalk markings, and countdown timers will be designed properly for people walking, especially those with limited mobility.

Improvements for people using transit

The project area currently provides Metro Transit services via routes 11, 17, 32, and 824. CSAH 153 (Lowry Ave NE) includes transit stops to connect to these routes. This project will likely includes strategies to improve transit operations at multiple intersections with high transit volumes, including Grand St NE, 2nd St NE, and University Ave NE. The project will consider the implementation of transit signal priority (TSP) to improve transit operations; particularly for Route 32. Transit features impacted by the project (such as benches or transit shelters) will be restored to their existing condition. Furtermore, some transit stops may include enhancements to improve the customer experience.

(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)Layout (25 Percent of Points)

Layout should include proposed geometrics and existing and proposed right-of-way boundaries.

Layout approved by the applicant and all impacted jurisdictions (i.e., cities/counties that the project goes through or agencies that maintain the roadway(s)). A PDF of the layout must be attached along with letters from each jurisdiction to receive points.

100%

Attach Layout

Please upload attachment in PDF form.

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

50%

Attach Layout 1586733270316_Attachment 05 - Potential Layout.pdf

Please upload attachment in PDF form.

Layout has not been started

0%

Anticipated date or date of completion 05/26/2023

2)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

3)Right-of-Way (25 Percent of Points)

Right-of-way, permanent or temporary easements either not required or all have been acquired

100%

Right-of-way, permanent or temporary easements required, plat, legal descriptions, or official map complete

50%

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

25%

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

0%

Anticipated date or date of acquisition 12/20/2024

4)Railroad Involvement (15 Percent of Points)

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

100%

Signature Page

Please upload attachment in PDF form.

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

50%

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

0%

Anticipated date or date of executed Agreement 02/21/2025

5) 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. List Dates of most recent meetings and outreach specific to this project:

Meeting with general public: 02/27/2014

Meeting with partner agencies: 01/14/2014

Targeted online/mail outreach:

Number of respondents:

Meetings specific to this project with the general public and partner agencies have been used to help identify the project need. Yes

100%

Targeted outreach to this project with the general public and partner agencies have been used to help identify the project need.

75%

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

50%

At least one meeting specific to this project with key partner agencies 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%

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

Public engagement for the CSAH 153 (Lowry Ave NE) Reconstruction Project was executed via a strengths, weaknesses, opportunities, and threats (SWOT) exercise. A summary of the public engagement process is available at: hennepin.us/residents/transportation/lowry-avenue-community-works

Three important teams were developed to guide study recommendations:

- A Steering Team, consisting of local government leadership, was responsible for recommending policy changes, reviewing plan recommendations, allocating funding, and monitoring plan progress.

- A Community Advisory Team, consisting of people who live/work/play/worship in the area, was responsible for facilitating community engagement, establishing plan priorities, evaluating corridor alternatives, and sharing plan information.

- A Technical Advisory Team, consisting of staff from impacted government agencies, was responsible collecting data, providing expertise on strategies, and promoting the plan to elected officials.

Information was gathered as part of the public engagement process that included Open Houses on 6/01/14 and 9/25/14, and an Open Streets Event on 7/27/14. Each event provided an overview of the project, the anticipated schedule, and an opportunity for the public to share comments and feedback.

Key issues identified during the public engagement process are listed below:

- Poor pedestrian accommodations for people walking including non-ADA compliant facilities and lack of space for snow storage

- Lack of streetscaping features to providing greening along the corridor

- Safety concerns at the Lowry/University and Lowry/Central intersections

Potential solutions offered during the public engagement process are listed below:

- Conversion of the 4-lane roadway to a 3-lane/2-lane to reallocate space to improve the sidewalk environment

- Modifications to the Lowry/University and Lowry/Central intersections to better facilitate user activity and attract potential redevelopment opportunities

- Investigate green infrastructure strategies to improve storm water management and air quality

Measure A: Cost Effectiveness

Total Project Cost (entered in Project Cost Form):	$9,022,600.00
Enter Amount of the Noise Walls:	$0.00
Total Project Cost subtract the amount of the noise walls:	$9,022,600.00
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	59 KB
Attachment 01 - Project Narrative.pdf	Attachment 01 - Project Narrative	1.2 MB
Attachment 02 - Project Location Map.pdf	Attachment 02 - Project Location Map	361 KB
Attachment 03 - Existing Roadway Condition Photos.pdf	Attachment 03 - Existing Roadway Condition Photos	668 KB
Attachment 04 - Potential Typical Section.pdf	Attachment 04 - Potential Typical Section	39 KB
Attachment 05 - Potential Layout.pdf	Attachment 05 - Potential Layout	684 KB
Attachment 06 - 2020-2024 Hennepin County Transportation Capital Improvement Program.pdf	2020-2024 Hennepin County Transportation Capital Improvement Program	168 KB
Attachment 07 - 2020-2024 Hennepin County Community Works Capital Improvement Program.pdf	2020-2024 Hennepin County Community Works Capital Improvement Program	137 KB
Attachment 08 - Lowry Ave NE Corridor Plan & Implementation Framework Summary.pdf	Attachment 08 - Lowry Ave NE Corridor Plan & Implementation Framework Summary	248 KB
Attachment 09 - MnDOT 50 Series Map.pdf	Attachment 09 - MnDOT 50 Series Map	1.5 MB
Attachment 10 - Hennepin County 2040 TSP.pdf	Attachment 10 - Hennepin County 2040 TSP	1.5 MB
Attachment 11 - Socio-Economic Equity Map.pdf	Attachment 11 - Socio-Economic Equity Map	547 KB
Attachment 12 - Affordable Housing Access Map.pdf	Attachment 12 - Affordable Housing Access Map	333 KB
Attachment 13 - StreetLight HCAADT Estimate.pdf	Attachment 13 - StreetLight HCAADT Estimate	69 KB
Attachment 14 - Truck Turn Examples at TH 47 (University Ave NE).pdf	Attachment 14 - Truck Turn Examples at TH 47 (University Ave NE)	426 KB
Attachment 15 - Minneapolis Street Lighting Plan.pdf	Attachment 15 - Minneapolis Street Lighting Plan	543 KB
Attachment 16 - Crash Map and Detail Listing.pdf	Attachment 16 - Crash Map and Detail Listing	397 KB
Attachment 17 - Crash Modification Factors.pdf	Attachment 17 - Crash Modification Factors	887 KB
Attachment 18 - Multimodal Connections Map.pdf	Attachment 18 - Multimodal Connections Map	345 KB
Attachment 19 - MnDOT Support Letter - PLACEHOLDER.pdf	Attachment 19 - MnDOT Support Letter - PLACEHOLDER	54 KB

Attachment 20 - Minneapolis Support Letter - PLACEHOLDER.pdf	Attachment 20 - Minneapolis Support Letter - PLACEHOLDER	54 KB

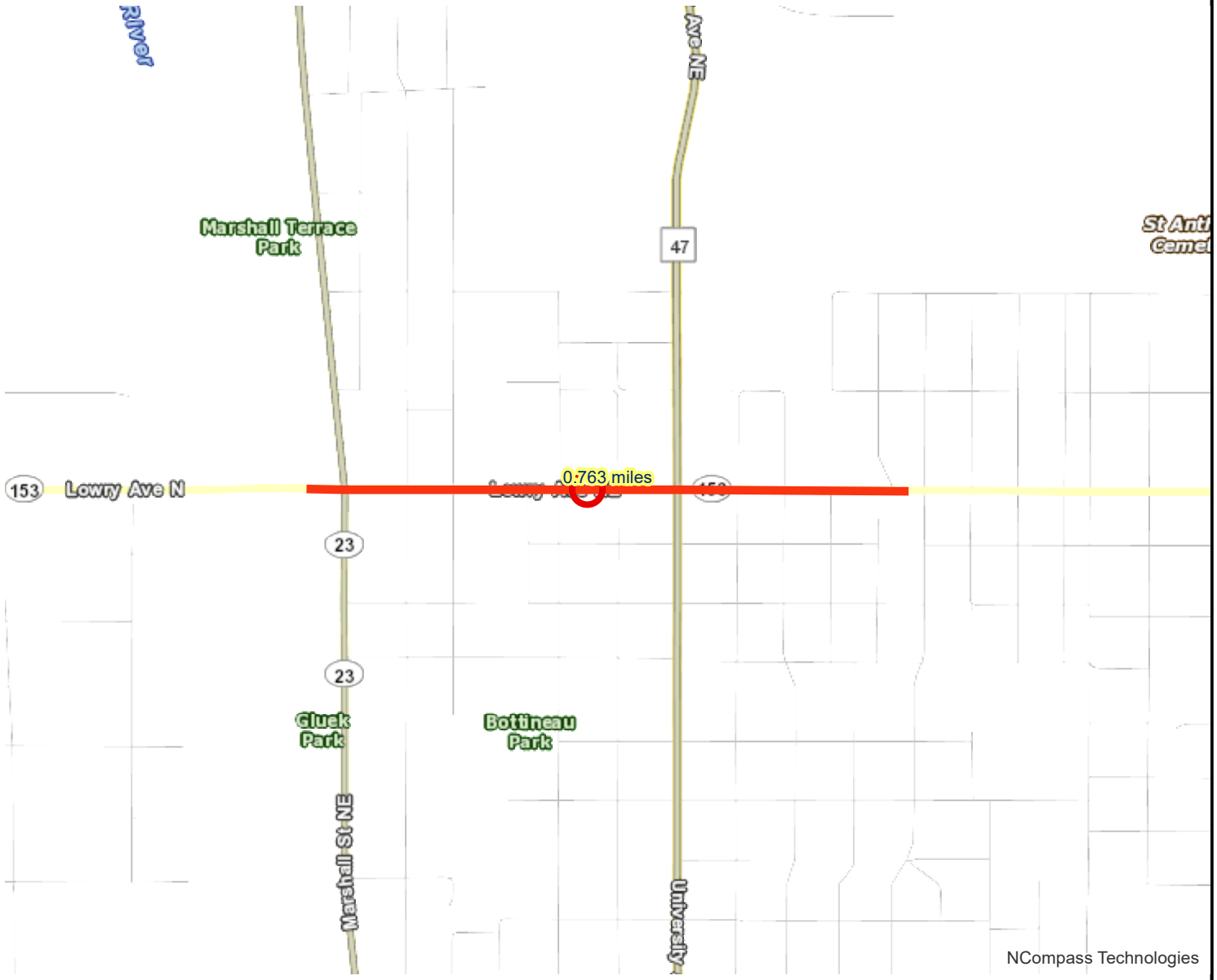
Regional Economy

Roadway Reconstruction/Modernization Project: CSAH 153 (Lowry Ave NE) Reconstruction Project | Map ID: 158298

Results

WITHIN ONE MI of project:
Postsecondary Students: 0

Totals by City:
Minneapolis
Population: 22683
Employment: 10061
Mfg and Dist Employment: 3629



Project Points
Project
Manfacturing/Distribution Centers
Job Concentration Centers

0 0.125 0.25 0.5 0.75 1 Miles

Created: 2/29/2020
LandscapeRSA5

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

METROPOLITAN COUNCIL

Transit Connections

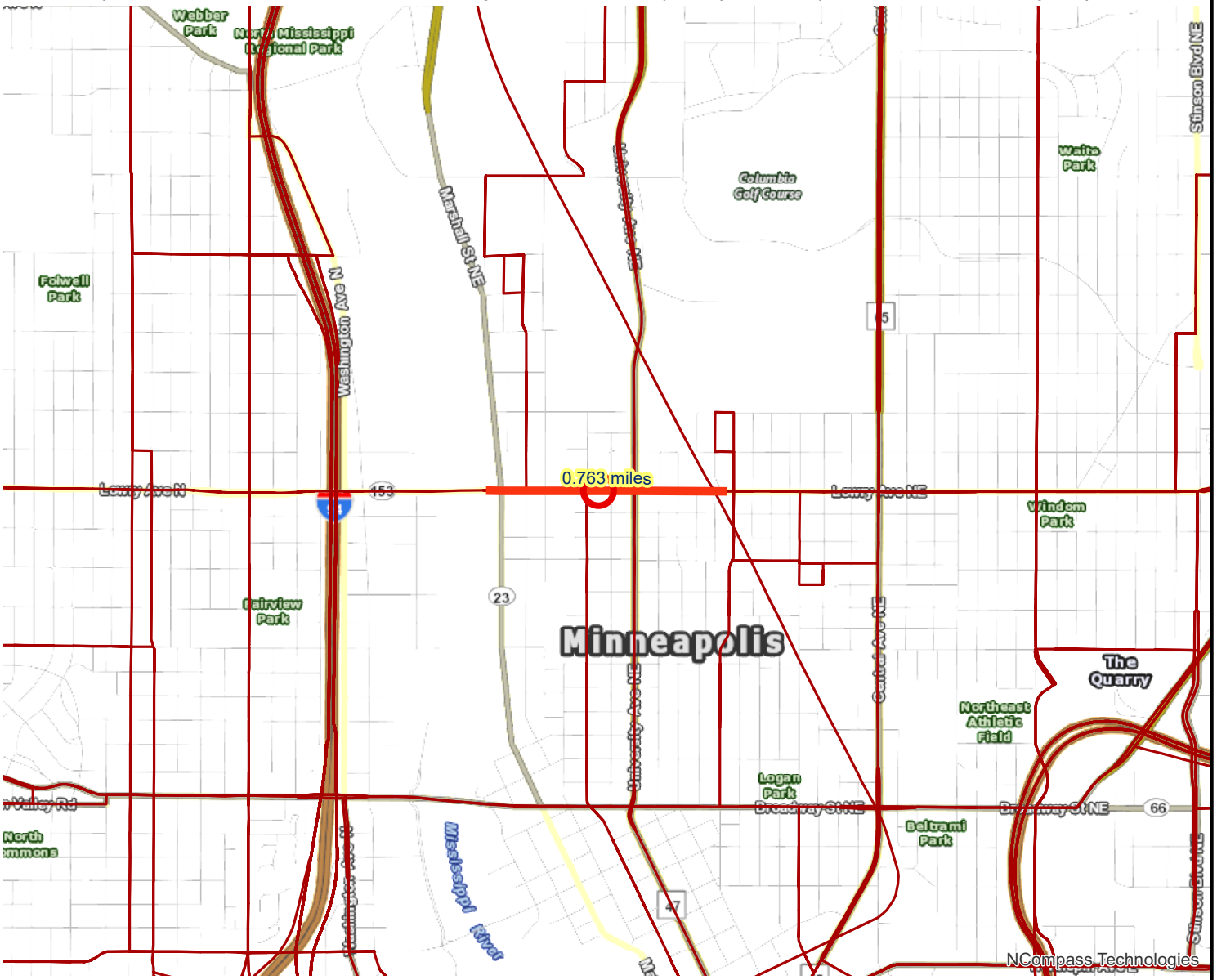
Roadway Reconstruction/Modernization Project: CSAH 153 (Lowry Ave NE) Reconstruction Project | Map ID: 15829

Results

Transit with a Direct Connection to project:
11 17 32 824 888
*Northstar

**indicates Planned Alignments*

Transit Market areas: 2



Project Points — Transit Routes

Project

Project Area

0 0.3 0.6 1.2 1.8 2.4 Miles

Created: 2/29/2020
LandscapeRSA3

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https://giswebsite.metc.state.mn.us/gissite/notice.aspx

METROPOLITAN COUNCIL

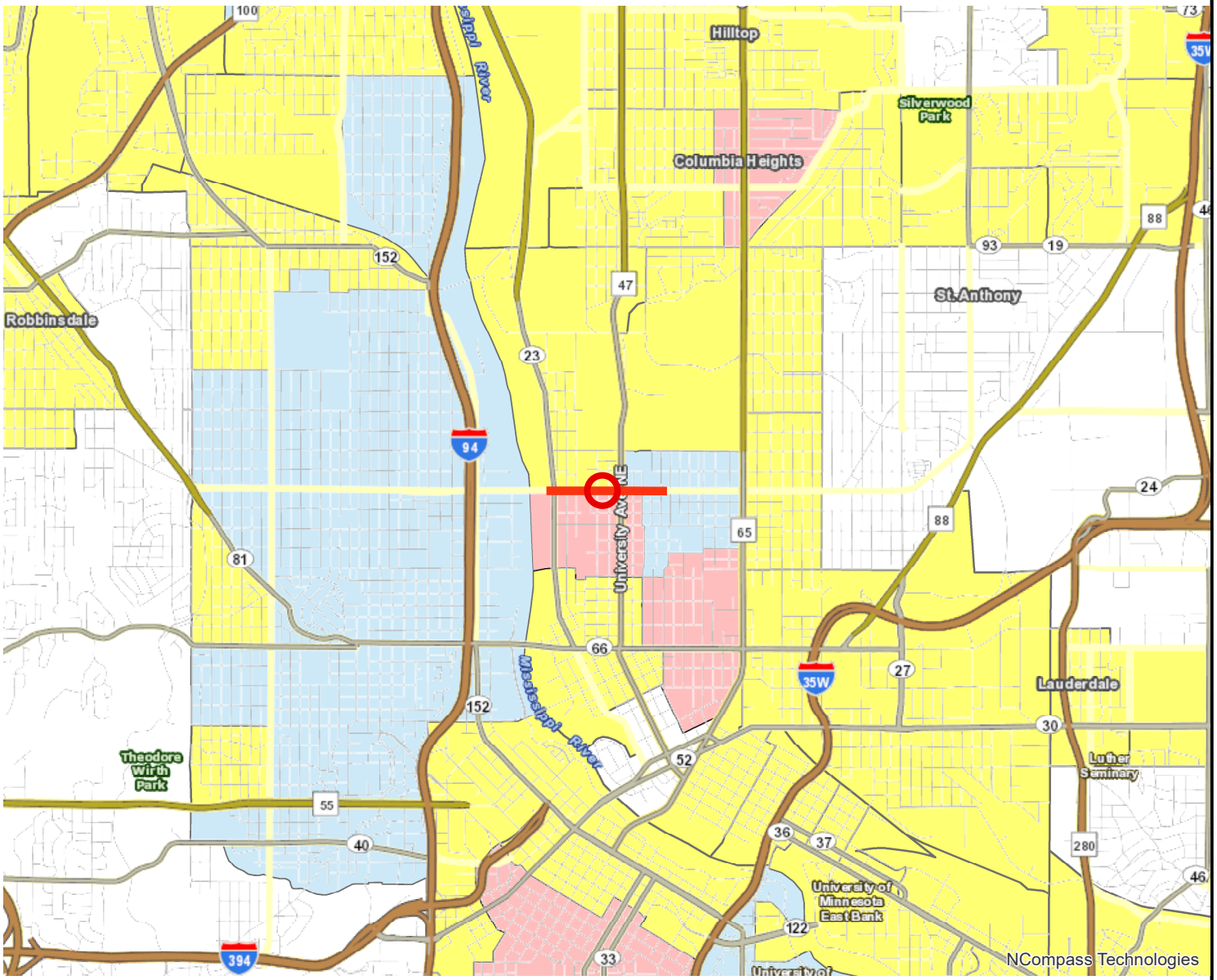
Socio-Economic Conditions

Roadway Reconstruction/Modernization Project: CSAH 153 (Lowry Ave NE) Reconstruction Project | Map ID: 1582988323250

Results

Project located **IN**
Area of Concentrated Poverty with 50% or more of residents are people of color (ACP50):
(0 to 30 Points)

Tracts within half-mile:
601 1100 1700
2400 100500 100900
101600 101800 101900
102300 102500



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

0 0.5 1 2 3 4 Miles

Created: 2/29/2020
LandscapeRSA2

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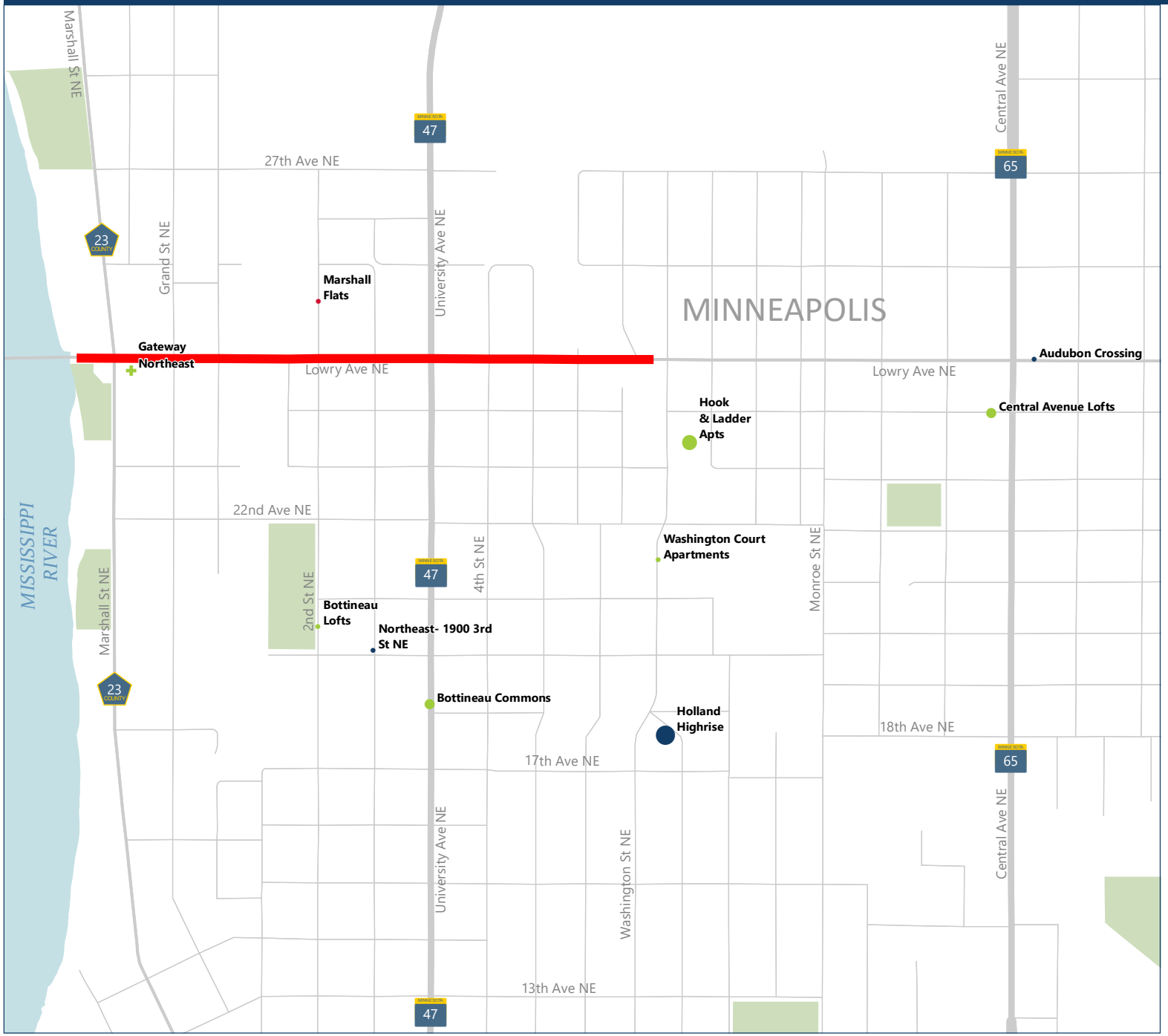
METROPOLITAN COUNCIL

CSAH 153 (Lowry Ave NE) Reconstruction Project

Attachment 12 | Affordable Housing Access Map

HENNEPIN COUNTY
MINNESOTA



Key

- Project Location

Affordable Units

- 0 - 50
- 51 - 100
- 101 - 150
- 151 - 200
- 201 - 1500

Groups Served

- People with Disabilities
- Elderly
- Family
- Homeless
- Single People
- Multiple Groups
- No Information

Construction Status

- Complete
- Planned

0 0.15 0.3 Miles

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.

Published date: 4/29/2020

N

Hennepin

Existing Conditions (AM Peak)

CSAH 153 (Lowry Ave NE) Reconstruction Project
312: Marshall St NE & Lowry Av NE

Direction	All
Future Volume (vph)	2433
Total Delay / Veh (s/v)	16
CO Emissions (kg)	2.14
NOx Emissions (kg)	0.42
VOC Emissions (kg)	0.50

Proposed Conditions (AM Peak)

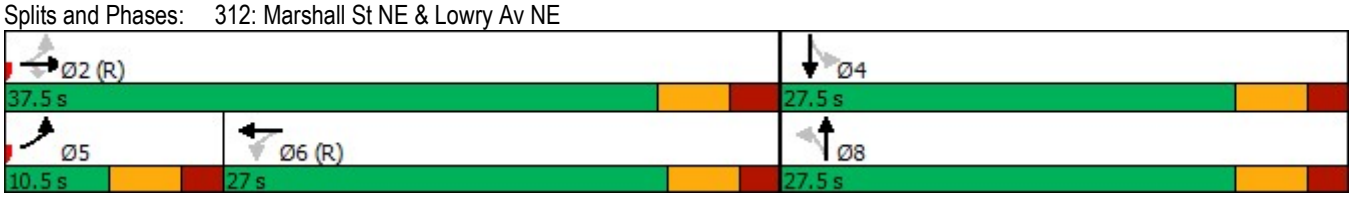
CSAH 153 (Lowry Ave NE) Reconstruction Project
312: Marshall St NE & Lowry Av NE

Direction	All
Future Volume (vph)	2434
Total Delay / Veh (s/v)	69
CO Emissions (kg)	4.10
NOx Emissions (kg)	0.80
VOC Emissions (kg)	0.95

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	81	562	137	29	633	61	111	46	482
Future Volume (vph)	81	562	137	29	633	61	111	46	482
Turn Type	pm+pt	NA	Perm	Perm	NA	Perm	NA	Perm	NA
Protected Phases	5	2			6		8		4
Permitted Phases	2		2	6		8		4	
Detector Phase	5	2	2	6	6	8	8	4	4
Switch Phase									
Minimum Initial (s)	5.0	10.0	10.0	10.0	10.0	7.0	7.0	7.0	7.0
Minimum Split (s)	10.5	24.0	24.0	23.5	23.5	22.5	22.5	27.5	27.5
Total Split (s)	10.5	37.5	37.5	27.0	27.0	27.5	27.5	27.5	27.5
Total Split (%)	16.2%	57.7%	57.7%	41.5%	41.5%	42.3%	42.3%	42.3%	42.3%
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)	2.0	2.5	2.5	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)		0.0	0.0		0.0		0.0		0.0
Total Lost Time (s)		6.0	6.0		5.5		5.5		5.5
Lead/Lag	Lead			Lag	Lag				
Lead-Lag Optimize?									
Recall Mode	None	C-Max	C-Max	C-Max	C-Max	Max	Max	Max	Max
Act Effct Green (s)		31.5	31.5		32.0		22.0		22.0
Actuated g/C Ratio		0.48	0.48		0.49		0.34		0.34
v/c Ratio		0.54	0.20		0.48		0.29		0.75
Control Delay		13.7	10.4		12.2		15.5		21.0
Queue Delay		0.0	0.0		0.0		0.0		0.0
Total Delay		13.7	10.4		12.2		15.5		21.0
LOS		B	B		B		B		C
Approach Delay		13.1			12.2		15.5		21.0
Approach LOS		B			B		B		C

Intersection Summary	
Cycle Length: 65	
Actuated Cycle Length: 65	
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of 1st Green	
Natural Cycle: 65	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.75	
Intersection Signal Delay: 15.5	Intersection LOS: B
Intersection Capacity Utilization 84.2%	ICU Level of Service E
Analysis Period (min) 15	

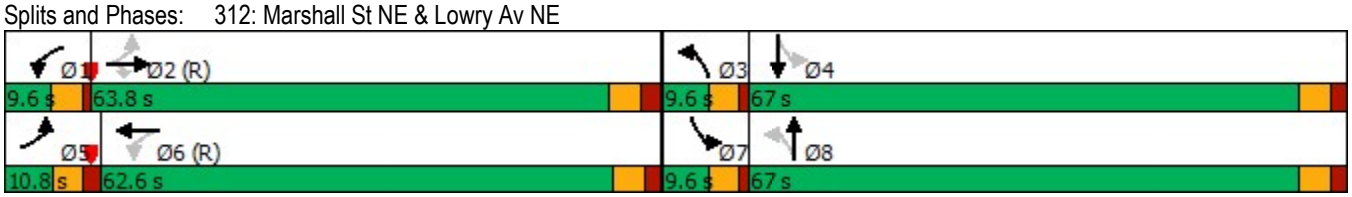
Splits and Phases: 312: Marshall St NE & Lowry Av NE



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	81	562	137	29	633	61	111	46	482
Future Volume (vph)	81	562	137	29	633	61	111	46	482
Turn Type	pm+pt	NA	Perm	pm+pt	NA	pm+pt	NA	pm+pt	NA
Protected Phases	5	2		1	6	3	8	7	4
Permitted Phases	2		2	6		8		4	
Detector Phase	5	2	2	1	6	3	8	7	4
Switch Phase									
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	5.0	7.0	5.0	7.0
Minimum Split (s)	10.5	24.0	24.0	9.5	23.5	9.5	22.5	9.5	27.5
Total Split (s)	10.8	63.8	63.8	9.6	62.6	9.6	67.0	9.6	67.0
Total Split (%)	7.2%	42.5%	42.5%	6.4%	41.7%	6.4%	44.7%	6.4%	44.7%
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)	2.0	2.5	2.5	1.0	2.0	1.0	2.0	1.0	2.0
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)	5.5	6.0	6.0	4.5	5.5	4.5	5.5	4.5	5.5
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?		Yes	Yes	Yes		Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	C-Max	None	C-Max	None	Max	None	Max
Act Effct Green (s)	67.2	63.6	63.6	65.2	59.0	66.6	61.5	66.6	61.5
Actuated g/C Ratio	0.45	0.42	0.42	0.43	0.39	0.44	0.41	0.44	0.41
v/c Ratio	0.79	0.78	0.22	0.18	0.99	0.61	0.19	0.09	1.08
Control Delay	69.0	47.1	30.5	24.9	76.0	45.9	27.7	21.6	99.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	69.0	47.1	30.5	24.9	76.0	45.9	27.7	21.6	99.3
LOS	E	D	C	C	E	D	C	C	F
Approach Delay		46.5			73.8		33.5		94.7
Approach LOS		D			E		C		F

Intersection Summary	
Cycle Length: 150	
Actuated Cycle Length: 150	
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of 1st Green	
Natural Cycle: 150	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.08	
Intersection Signal Delay: 68.5	Intersection LOS: E
Intersection Capacity Utilization 101.4%	ICU Level of Service G
Analysis Period (min) 15	

Splits and Phases: 312: Marshall St NE & Lowry Av NE



Existing Conditions (AM Peak)

CSAH 153 (Lowry Ave NE) Reconstruction Project

708: Grand St NE & Lowry Av NE

Direction	All
Future Volume (vph)	1364
Total Delay / Veh (s/v)	4
CO Emissions (kg)	0.80
NOx Emissions (kg)	0.16
VOC Emissions (kg)	0.19

Proposed Conditions (AM Peak)

CSAH 153 (Lowry Ave NE) Reconstruction Project

708: Grand St NE & Lowry Av NE

Direction	All
Future Volume (vph)	1364
Total Delay / Veh (s/v)	1
CO Emissions (kg)	0.59
NOx Emissions (kg)	0.12
VOC Emissions (kg)	0.14

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	6	623	4	652	2	3	25	8
Future Volume (vph)	6	623	4	652	2	3	25	8
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		2		2		4		4
Permitted Phases	2		2		4		4	
Detector Phase	2	2	2	2	4	4	4	4
Switch Phase								
Minimum Initial (s)	10.0	10.0	10.0	10.0	7.0	7.0	7.0	7.0
Minimum Split (s)	20.5	20.5	20.5	20.5	22.5	22.5	22.5	22.5
Total Split (s)	27.0	27.0	27.0	27.0	23.0	23.0	23.0	23.0
Total Split (%)	54.0%	54.0%	54.0%	54.0%	46.0%	46.0%	46.0%	46.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)		0.0		0.0		0.0		0.0
Total Lost Time (s)		5.5		5.5		5.5		5.5
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	C-Max	C-Max	C-Max	C-Max	None	None	None	None
Act Effct Green (s)		38.7		38.7		7.5		7.5
Actuated g/C Ratio		0.77		0.77		0.15		0.15
v/c Ratio		0.27		0.28		0.05		0.24
Control Delay		3.7		3.8		13.5		15.8
Queue Delay		0.0		0.0		0.0		0.0
Total Delay		3.7		3.8		13.5		15.8
LOS		A		A		B		B
Approach Delay		3.7		3.8		13.5		15.8
Approach LOS		A		A		B		B

Intersection Summary	
Cycle Length: 50	
Actuated Cycle Length: 50	
Offset: 0 (0%), Referenced to phase 2:EBWB, Start of 1st Green	
Natural Cycle: 45	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.28	
Intersection Signal Delay: 4.3	Intersection LOS: A
Intersection Capacity Utilization 37.6%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 708: Grand St NE & Lowry Av NE

Staff is proposing to remove the signal at Grand St NE (pending further evaluation and local approval), therefore, there no Timing Page Report at this intersection under the proposed conditions.

Existing Conditions (AM Peak)

CSAH 153 (Lowry Ave NE) Reconstruction Project
97: 2nd St NE & Lowry Av NE

Direction	All
Future Volume (vph)	1550
Total Delay / Veh (s/v)	13
CO Emissions (kg)	1.46
NOx Emissions (kg)	0.28
VOC Emissions (kg)	0.34

Proposed Conditions (AM Peak)

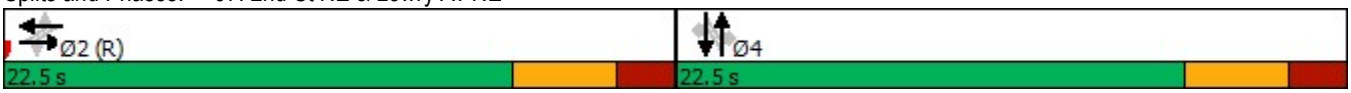
CSAH 153 (Lowry Ave NE) Reconstruction Project
97: 2nd St NE & Lowry Av NE

Direction	All
Future Volume (vph)	1551
Total Delay / Veh (s/v)	16
CO Emissions (kg)	1.52
NOx Emissions (kg)	0.30
VOC Emissions (kg)	0.35

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	29	556	24	635	40	31	17	9	116	26
Future Volume (vph)	29	556	24	635	40	31	17	9	116	26
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	Perm	NA	Perm
Protected Phases		2		2		4			4	
Permitted Phases	2		2		4		4	4		4
Detector Phase	2	2	2	2	4	4	4	4	4	4
Switch Phase										
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	21.5	21.5	21.5	21.5	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	22.5	22.5	22.5
Total Split (%)	50.0%	50.0%	50.0%	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	3.5	3.5	3.5
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)		0.0		0.0		0.0	0.0		0.0	0.0
Total Lost Time (s)		5.5		5.5		5.5	5.5		5.5	5.5
Lead/Lag										
Lead-Lag Optimize?										
Recall Mode	Max	Max	Max	Max	Max	Max	Max	Max	Max	Max
Act Effct Green (s)		17.0		17.0		17.0	17.0		17.0	17.0
Actuated g/C Ratio		0.38		0.38		0.38	0.38		0.38	0.38
v/c Ratio		0.58		0.61		0.14	0.03		0.20	0.05
Control Delay		13.2		13.9		10.0	0.5		10.4	9.2
Queue Delay		0.0		0.0		0.0	0.0		0.0	0.0
Total Delay		13.2		13.9		10.0	0.5		10.4	9.2
LOS		B		B		B	A		B	A
Approach Delay		13.2		13.9		8.2			10.2	
Approach LOS		B		B		A			B	

Intersection Summary	
Cycle Length: 45	
Actuated Cycle Length: 45	
Offset: 0 (0%), Referenced to phase 2:EBWB, Start of 1st Green	
Natural Cycle: 45	
Control Type: Pretimed	
Maximum v/c Ratio: 0.61	
Intersection Signal Delay: 12.9	Intersection LOS: B
Intersection Capacity Utilization 60.8%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 97: 2nd St NE & Lowry Av NE



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	29	556	24	635	40	31	17	9	116	26
Future Volume (vph)	29	556	24	635	40	31	17	9	116	26
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	Perm	NA	Perm
Protected Phases		2		2		4			4	
Permitted Phases	2		2		4		4	4		4
Detector Phase	2	2	2	2	4	4	4	4	4	4
Switch Phase										
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	21.5	21.5	21.5	21.5	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	37.2	37.2	37.2	37.2	22.8	22.8	22.8	22.8	22.8	22.8
Total Split (%)	62.0%	62.0%	62.0%	62.0%	38.0%	38.0%	38.0%	38.0%	38.0%	38.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5	5.5		5.5	5.5		5.5	5.5
Lead/Lag										
Lead-Lag Optimize?										
Recall Mode	Max	Max	Max	Max	Max	Max	Max	Max	Max	Max
Act Effct Green (s)	31.7	31.7	31.7	31.7		17.3	17.3		17.3	17.3
Actuated g/C Ratio	0.53	0.53	0.53	0.53		0.29	0.29		0.29	0.29
v/c Ratio	0.14	0.67	0.10	0.74		0.18	0.04		0.26	0.06
Control Delay	9.3	14.5	8.2	16.8		17.5	2.2		18.1	16.0
Queue Delay	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0
Total Delay	9.3	14.5	8.2	16.8		17.5	2.2		18.1	16.0
LOS	A	B	A	B		B	A		B	B
Approach Delay		14.3		16.5		14.6			17.8	
Approach LOS		B		B		B			B	

Intersection Summary	
Cycle Length: 60	
Actuated Cycle Length: 60	
Offset: 0 (0%), Referenced to phase 2:EBWB, Start of 1st Green	
Natural Cycle: 60	
Control Type: Pretimed	
Maximum v/c Ratio: 0.74	
Intersection Signal Delay: 15.6	Intersection LOS: B
Intersection Capacity Utilization 65.4%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 97: 2nd St NE & Lowry Av NE

Existing Conditions (AM Peak)

CSAH 153 (Lowry Ave NE) Reconstruction Project
860: University Av NE & Lowry Av NE

Direction	All
Future Volume (vph)	2787
Total Delay / Veh (s/v)	42
CO Emissions (kg)	3.81
NOx Emissions (kg)	0.74
VOC Emissions (kg)	0.88

Proposed Conditions (AM Peak)

CSAH 153 (Lowry Ave NE) Reconstruction Project
860: University Av NE & Lowry Av NE

Direction	All
Future Volume (vph)	2786
Total Delay / Veh (s/v)	73
CO Emissions (kg)	5.08
NOx Emissions (kg)	0.99
VOC Emissions (kg)	1.18

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	30	509	53	569	14	237	174	947
Future Volume (vph)	30	509	53	569	14	237	174	947
Turn Type	pm+pt	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases	1	6		2		4		4
Permitted Phases	6		2		4		4	
Detector Phase	1 6	1 6	2	2	4	4	4	4
Switch Phase								
Minimum Initial (s)	5.0	10.0	10.0	10.0	7.0	7.0	7.0	7.0
Minimum Split (s)	10.5	22.5	22.5	22.5	23.5	23.5	23.5	23.5
Total Split (s)	10.8	39.0	28.2	28.2	41.0	41.0	41.0	41.0
Total Split (%)	13.5%	48.8%	35.3%	35.3%	51.3%	51.3%	51.3%	51.3%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)		0.0		0.0		0.0		0.0
Total Lost Time (s)		5.5		5.5		5.5		5.5
Lead/Lag	Lead		Lag	Lag				
Lead-Lag Optimize?	Yes							
Recall Mode	Max	Max	Max	Max	Max	Max	Max	Max
Act Effct Green (s)		33.5		22.7		35.5		35.5
Actuated g/C Ratio		0.42		0.28		0.44		0.44
v/c Ratio		0.52		0.92		0.24		1.03
Control Delay		18.2		45.1		13.4		57.3
Queue Delay		0.0		0.0		0.0		0.0
Total Delay		18.2		45.1		13.4		57.3
LOS		B		D		B		E
Approach Delay		18.2		45.1		13.4		57.3
Approach LOS		B		D		B		E

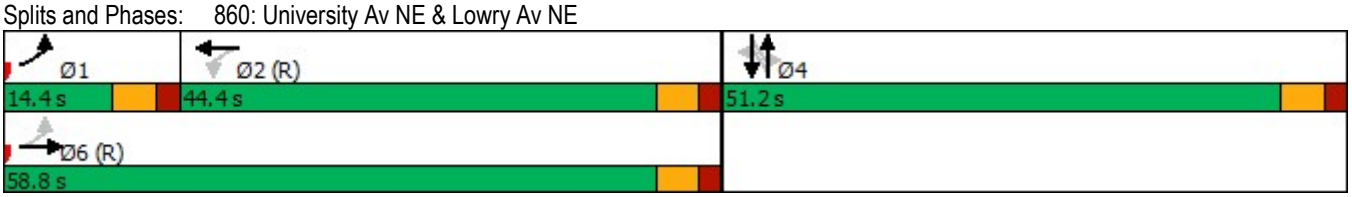
Intersection Summary	
Cycle Length: 80	
Actuated Cycle Length: 80	
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of 1st Green	
Natural Cycle: 90	
Control Type: Pretimed	
Maximum v/c Ratio: 1.03	
Intersection Signal Delay: 41.5	Intersection LOS: D
Intersection Capacity Utilization 96.9%	ICU Level of Service F
Analysis Period (min) 15	

Splits and Phases: 860: University Av NE & Lowry Av NE

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	30	509	53	569	14	237	174	947
Future Volume (vph)	30	509	53	569	14	237	174	947
Turn Type	pm+pt	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases	1	6		2		4		4
Permitted Phases	6		2		4		4	
Detector Phase	1 6	1 6	2	2	4	4	4	4
Switch Phase								
Minimum Initial (s)	5.0	10.0	10.0	10.0	7.0	7.0	7.0	7.0
Minimum Split (s)	10.5	22.5	22.5	22.5	23.5	23.5	23.5	23.5
Total Split (s)	14.4	58.8	44.4	44.4	51.2	51.2	51.2	51.2
Total Split (%)	13.1%	53.5%	40.4%	40.4%	46.5%	46.5%	46.5%	46.5%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0		0.0
Total Lost Time (s)	5.5	5.5	5.5	5.5		5.5		5.5
Lead/Lag	Lead		Lag	Lag				
Lead-Lag Optimize?	Yes							
Recall Mode	Max	Max	Max	Max	Max	Max	Max	Max
Act Effct Green (s)	53.3	53.3	38.9	38.9		45.7		45.7
Actuated g/C Ratio	0.48	0.48	0.35	0.35		0.42		0.42
v/c Ratio	0.16	0.68	0.26	1.10		0.28		1.12
Control Delay	16.7	26.5	29.5	99.6		20.9		95.7
Queue Delay	0.0	0.0	0.0	0.0		0.0		0.0
Total Delay	16.7	26.5	29.5	99.6		20.9		95.7
LOS	B	C	C	F		C		F
Approach Delay		26.0		94.3		20.9		95.7
Approach LOS		C		F		C		F

Intersection Summary	
Cycle Length: 110	
Actuated Cycle Length: 110	
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of 1st Green	
Natural Cycle: 130	
Control Type: Pretimed	
Maximum v/c Ratio: 1.12	
Intersection Signal Delay: 73.1	Intersection LOS: E
Intersection Capacity Utilization 99.6%	ICU Level of Service F
Analysis Period (min) 15	

Splits and Phases: 860: University Av NE & Lowry Av NE



Existing Conditions (AM Peak)

CSAH 153 (Lowry Ave NE) Reconstruction Project
312: Marshall St NE & Lowry Av NE

Direction	All
Future Volume (vph)	2433
Total Delay / Veh (s/v)	16
CO Emissions (kg)	2.14
NOx Emissions (kg)	0.42
VOC Emissions (kg)	0.50

Proposed Conditions (AM Peak)

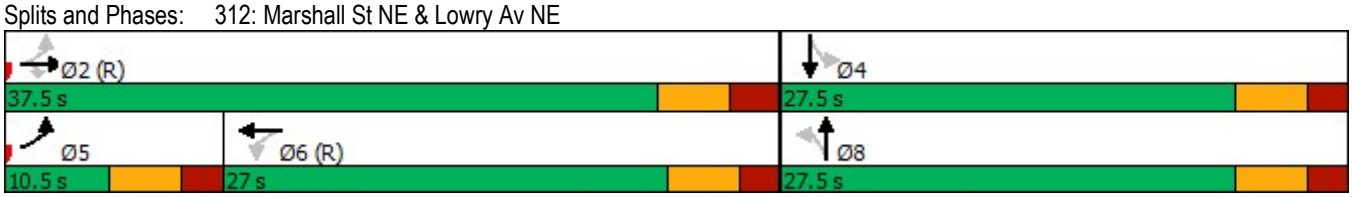
CSAH 153 (Lowry Ave NE) Reconstruction Project
312: Marshall St NE & Lowry Av NE

Direction	All
Future Volume (vph)	2434
Total Delay / Veh (s/v)	69
CO Emissions (kg)	4.10
NOx Emissions (kg)	0.80
VOC Emissions (kg)	0.95

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	81	562	137	29	633	61	111	46	482
Future Volume (vph)	81	562	137	29	633	61	111	46	482
Turn Type	pm+pt	NA	Perm	Perm	NA	Perm	NA	Perm	NA
Protected Phases	5	2			6		8		4
Permitted Phases	2		2	6		8		4	
Detector Phase	5	2	2	6	6	8	8	4	4
Switch Phase									
Minimum Initial (s)	5.0	10.0	10.0	10.0	10.0	7.0	7.0	7.0	7.0
Minimum Split (s)	10.5	24.0	24.0	23.5	23.5	22.5	22.5	27.5	27.5
Total Split (s)	10.5	37.5	37.5	27.0	27.0	27.5	27.5	27.5	27.5
Total Split (%)	16.2%	57.7%	57.7%	41.5%	41.5%	42.3%	42.3%	42.3%	42.3%
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)	2.0	2.5	2.5	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)		0.0	0.0		0.0		0.0		0.0
Total Lost Time (s)		6.0	6.0		5.5		5.5		5.5
Lead/Lag	Lead			Lag	Lag				
Lead-Lag Optimize?									
Recall Mode	None	C-Max	C-Max	C-Max	C-Max	Max	Max	Max	Max
Act Effct Green (s)		31.5	31.5		32.0		22.0		22.0
Actuated g/C Ratio		0.48	0.48		0.49		0.34		0.34
v/c Ratio		0.54	0.20		0.48		0.29		0.75
Control Delay		13.7	10.4		12.2		15.5		21.0
Queue Delay		0.0	0.0		0.0		0.0		0.0
Total Delay		13.7	10.4		12.2		15.5		21.0
LOS		B	B		B		B		C
Approach Delay		13.1			12.2		15.5		21.0
Approach LOS		B			B		B		C

Intersection Summary	
Cycle Length: 65	
Actuated Cycle Length: 65	
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of 1st Green	
Natural Cycle: 65	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.75	
Intersection Signal Delay: 15.5	Intersection LOS: B
Intersection Capacity Utilization 84.2%	ICU Level of Service E
Analysis Period (min) 15	

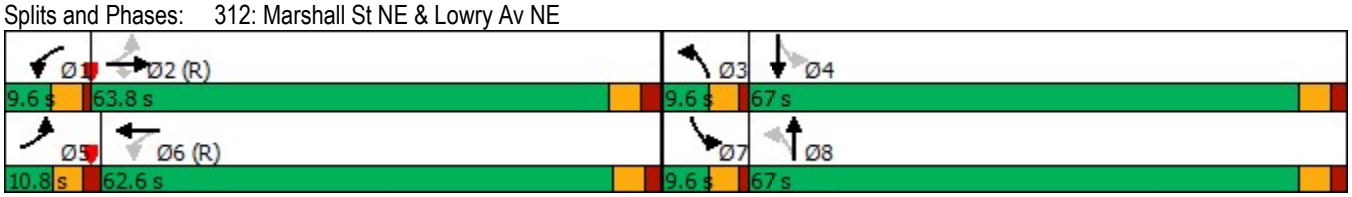
Splits and Phases: 312: Marshall St NE & Lowry Av NE



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	81	562	137	29	633	61	111	46	482
Future Volume (vph)	81	562	137	29	633	61	111	46	482
Turn Type	pm+pt	NA	Perm	pm+pt	NA	pm+pt	NA	pm+pt	NA
Protected Phases	5	2		1	6	3	8	7	4
Permitted Phases	2		2	6		8		4	
Detector Phase	5	2	2	1	6	3	8	7	4
Switch Phase									
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	5.0	7.0	5.0	7.0
Minimum Split (s)	10.5	24.0	24.0	9.5	23.5	9.5	22.5	9.5	27.5
Total Split (s)	10.8	63.8	63.8	9.6	62.6	9.6	67.0	9.6	67.0
Total Split (%)	7.2%	42.5%	42.5%	6.4%	41.7%	6.4%	44.7%	6.4%	44.7%
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)	2.0	2.5	2.5	1.0	2.0	1.0	2.0	1.0	2.0
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)	5.5	6.0	6.0	4.5	5.5	4.5	5.5	4.5	5.5
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?		Yes	Yes	Yes		Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	C-Max	None	C-Max	None	Max	None	Max
Act Effct Green (s)	67.2	63.6	63.6	65.2	59.0	66.6	61.5	66.6	61.5
Actuated g/C Ratio	0.45	0.42	0.42	0.43	0.39	0.44	0.41	0.44	0.41
v/c Ratio	0.79	0.78	0.22	0.18	0.99	0.61	0.19	0.09	1.08
Control Delay	69.0	47.1	30.5	24.9	76.0	45.9	27.7	21.6	99.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	69.0	47.1	30.5	24.9	76.0	45.9	27.7	21.6	99.3
LOS	E	D	C	C	E	D	C	C	F
Approach Delay		46.5			73.8		33.5		94.7
Approach LOS		D			E		C		F

Intersection Summary	
Cycle Length: 150	
Actuated Cycle Length: 150	
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of 1st Green	
Natural Cycle: 150	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.08	
Intersection Signal Delay: 68.5	Intersection LOS: E
Intersection Capacity Utilization 101.4%	ICU Level of Service G
Analysis Period (min) 15	

Splits and Phases: 312: Marshall St NE & Lowry Av NE



Existing Conditions (AM Peak)

CSAH 153 (Lowry Ave NE) Reconstruction Project

708: Grand St NE & Lowry Av NE

Direction	All
Future Volume (vph)	1364
Total Delay / Veh (s/v)	4
CO Emissions (kg)	0.80
NOx Emissions (kg)	0.16
VOC Emissions (kg)	0.19

Proposed Conditions (AM Peak)

CSAH 153 (Lowry Ave NE) Reconstruction Project

708: Grand St NE & Lowry Av NE

Direction	All
Future Volume (vph)	1364
Total Delay / Veh (s/v)	1
CO Emissions (kg)	0.59
NOx Emissions (kg)	0.12
VOC Emissions (kg)	0.14

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	6	623	4	652	2	3	25	8
Future Volume (vph)	6	623	4	652	2	3	25	8
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		2		2		4		4
Permitted Phases	2		2		4		4	
Detector Phase	2	2	2	2	4	4	4	4
Switch Phase								
Minimum Initial (s)	10.0	10.0	10.0	10.0	7.0	7.0	7.0	7.0
Minimum Split (s)	20.5	20.5	20.5	20.5	22.5	22.5	22.5	22.5
Total Split (s)	27.0	27.0	27.0	27.0	23.0	23.0	23.0	23.0
Total Split (%)	54.0%	54.0%	54.0%	54.0%	46.0%	46.0%	46.0%	46.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)		0.0		0.0		0.0		0.0
Total Lost Time (s)		5.5		5.5		5.5		5.5
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	C-Max	C-Max	C-Max	C-Max	None	None	None	None
Act Effct Green (s)		38.7		38.7		7.5		7.5
Actuated g/C Ratio		0.77		0.77		0.15		0.15
v/c Ratio		0.27		0.28		0.05		0.24
Control Delay		3.7		3.8		13.5		15.8
Queue Delay		0.0		0.0		0.0		0.0
Total Delay		3.7		3.8		13.5		15.8
LOS		A		A		B		B
Approach Delay		3.7		3.8		13.5		15.8
Approach LOS		A		A		B		B

Intersection Summary	
Cycle Length: 50	
Actuated Cycle Length: 50	
Offset: 0 (0%), Referenced to phase 2:EBWB, Start of 1st Green	
Natural Cycle: 45	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.28	
Intersection Signal Delay: 4.3	Intersection LOS: A
Intersection Capacity Utilization 37.6%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 708: Grand St NE & Lowry Av NE

Staff is proposing to remove the signal at Grand St NE (pending further evaluation and local approval), therefore, there no Timing Page Report at this intersection under the proposed conditions.

Existing Conditions (AM Peak)

CSAH 153 (Lowry Ave NE) Reconstruction Project
97: 2nd St NE & Lowry Av NE

Direction	All
Future Volume (vph)	1550
Total Delay / Veh (s/v)	13
CO Emissions (kg)	1.46
NOx Emissions (kg)	0.28
VOC Emissions (kg)	0.34

Proposed Conditions (AM Peak)

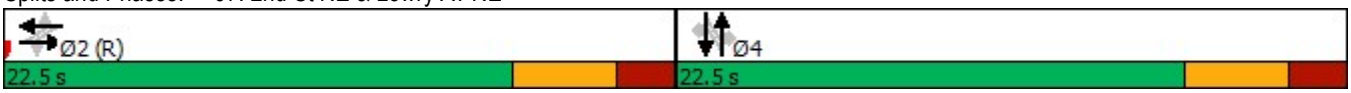
CSAH 153 (Lowry Ave NE) Reconstruction Project
97: 2nd St NE & Lowry Av NE

Direction	All
Future Volume (vph)	1551
Total Delay / Veh (s/v)	16
CO Emissions (kg)	1.52
NOx Emissions (kg)	0.30
VOC Emissions (kg)	0.35

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	29	556	24	635	40	31	17	9	116	26
Future Volume (vph)	29	556	24	635	40	31	17	9	116	26
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	Perm	NA	Perm
Protected Phases		2		2		4			4	
Permitted Phases	2		2		4		4	4		4
Detector Phase	2	2	2	2	4	4	4	4	4	4
Switch Phase										
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	21.5	21.5	21.5	21.5	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	22.5	22.5	22.5
Total Split (%)	50.0%	50.0%	50.0%	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	3.5	3.5	3.5
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)		0.0		0.0		0.0	0.0		0.0	0.0
Total Lost Time (s)		5.5		5.5		5.5	5.5		5.5	5.5
Lead/Lag										
Lead-Lag Optimize?										
Recall Mode	Max	Max	Max	Max	Max	Max	Max	Max	Max	Max
Act Effct Green (s)		17.0		17.0		17.0	17.0		17.0	17.0
Actuated g/C Ratio		0.38		0.38		0.38	0.38		0.38	0.38
v/c Ratio		0.58		0.61		0.14	0.03		0.20	0.05
Control Delay		13.2		13.9		10.0	0.5		10.4	9.2
Queue Delay		0.0		0.0		0.0	0.0		0.0	0.0
Total Delay		13.2		13.9		10.0	0.5		10.4	9.2
LOS		B		B		B	A		B	A
Approach Delay		13.2		13.9		8.2			10.2	
Approach LOS		B		B		A			B	

Intersection Summary	
Cycle Length: 45	
Actuated Cycle Length: 45	
Offset: 0 (0%), Referenced to phase 2:EBWB, Start of 1st Green	
Natural Cycle: 45	
Control Type: Pretimed	
Maximum v/c Ratio: 0.61	
Intersection Signal Delay: 12.9	Intersection LOS: B
Intersection Capacity Utilization 60.8%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 97: 2nd St NE & Lowry Av NE



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	29	556	24	635	40	31	17	9	116	26
Future Volume (vph)	29	556	24	635	40	31	17	9	116	26
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	Perm	NA	Perm
Protected Phases		2		2		4			4	
Permitted Phases	2		2		4		4	4		4
Detector Phase	2	2	2	2	4	4	4	4	4	4
Switch Phase										
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	21.5	21.5	21.5	21.5	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	37.2	37.2	37.2	37.2	22.8	22.8	22.8	22.8	22.8	22.8
Total Split (%)	62.0%	62.0%	62.0%	62.0%	38.0%	38.0%	38.0%	38.0%	38.0%	38.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5	5.5		5.5	5.5		5.5	5.5
Lead/Lag										
Lead-Lag Optimize?										
Recall Mode	Max	Max	Max	Max	Max	Max	Max	Max	Max	Max
Act Effct Green (s)	31.7	31.7	31.7	31.7		17.3	17.3		17.3	17.3
Actuated g/C Ratio	0.53	0.53	0.53	0.53		0.29	0.29		0.29	0.29
v/c Ratio	0.14	0.67	0.10	0.74		0.18	0.04		0.26	0.06
Control Delay	9.3	14.5	8.2	16.8		17.5	2.2		18.1	16.0
Queue Delay	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0
Total Delay	9.3	14.5	8.2	16.8		17.5	2.2		18.1	16.0
LOS	A	B	A	B		B	A		B	B
Approach Delay		14.3		16.5		14.6			17.8	
Approach LOS		B		B		B			B	

Intersection Summary	
Cycle Length: 60	
Actuated Cycle Length: 60	
Offset: 0 (0%), Referenced to phase 2:EBWB, Start of 1st Green	
Natural Cycle: 60	
Control Type: Pretimed	
Maximum v/c Ratio: 0.74	
Intersection Signal Delay: 15.6	Intersection LOS: B
Intersection Capacity Utilization 65.4%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 97: 2nd St NE & Lowry Av NE

Existing Conditions (AM Peak)

CSAH 153 (Lowry Ave NE) Reconstruction Project
860: University Av NE & Lowry Av NE

Direction	All
Future Volume (vph)	2787
Total Delay / Veh (s/v)	42
CO Emissions (kg)	3.81
NOx Emissions (kg)	0.74
VOC Emissions (kg)	0.88

Proposed Conditions (AM Peak)

CSAH 153 (Lowry Ave NE) Reconstruction Project
860: University Av NE & Lowry Av NE

Direction	All
Future Volume (vph)	2786
Total Delay / Veh (s/v)	73
CO Emissions (kg)	5.08
NOx Emissions (kg)	0.99
VOC Emissions (kg)	1.18

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	30	509	53	569	14	237	174	947
Future Volume (vph)	30	509	53	569	14	237	174	947
Turn Type	pm+pt	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases	1	6		2		4		4
Permitted Phases	6		2		4		4	
Detector Phase	1 6	1 6	2	2	4	4	4	4
Switch Phase								
Minimum Initial (s)	5.0	10.0	10.0	10.0	7.0	7.0	7.0	7.0
Minimum Split (s)	10.5	22.5	22.5	22.5	23.5	23.5	23.5	23.5
Total Split (s)	10.8	39.0	28.2	28.2	41.0	41.0	41.0	41.0
Total Split (%)	13.5%	48.8%	35.3%	35.3%	51.3%	51.3%	51.3%	51.3%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)		0.0		0.0		0.0		0.0
Total Lost Time (s)		5.5		5.5		5.5		5.5
Lead/Lag	Lead		Lag	Lag				
Lead-Lag Optimize?	Yes							
Recall Mode	Max	Max	Max	Max	Max	Max	Max	Max
Act Effct Green (s)		33.5		22.7		35.5		35.5
Actuated g/C Ratio		0.42		0.28		0.44		0.44
v/c Ratio		0.52		0.92		0.24		1.03
Control Delay		18.2		45.1		13.4		57.3
Queue Delay		0.0		0.0		0.0		0.0
Total Delay		18.2		45.1		13.4		57.3
LOS		B		D		B		E
Approach Delay		18.2		45.1		13.4		57.3
Approach LOS		B		D		B		E

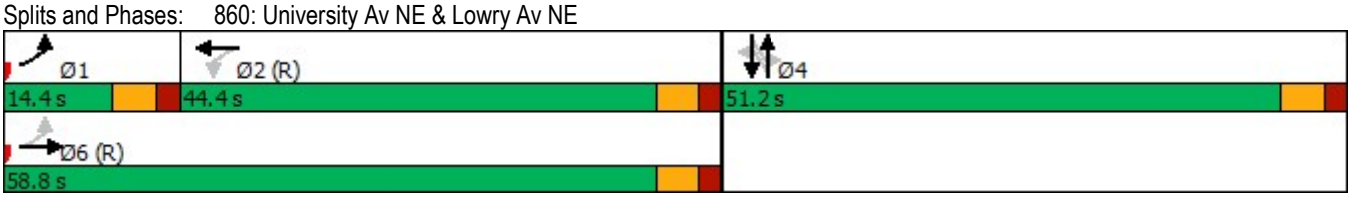
Intersection Summary	
Cycle Length: 80	
Actuated Cycle Length: 80	
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of 1st Green	
Natural Cycle: 90	
Control Type: Pretimed	
Maximum v/c Ratio: 1.03	
Intersection Signal Delay: 41.5	Intersection LOS: D
Intersection Capacity Utilization 96.9%	ICU Level of Service F
Analysis Period (min) 15	

Splits and Phases: 860: University Av NE & Lowry Av NE

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	30	509	53	569	14	237	174	947
Future Volume (vph)	30	509	53	569	14	237	174	947
Turn Type	pm+pt	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases	1	6		2		4		4
Permitted Phases	6		2		4		4	
Detector Phase	1 6	1 6	2	2	4	4	4	4
Switch Phase								
Minimum Initial (s)	5.0	10.0	10.0	10.0	7.0	7.0	7.0	7.0
Minimum Split (s)	10.5	22.5	22.5	22.5	23.5	23.5	23.5	23.5
Total Split (s)	14.4	58.8	44.4	44.4	51.2	51.2	51.2	51.2
Total Split (%)	13.1%	53.5%	40.4%	40.4%	46.5%	46.5%	46.5%	46.5%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0		0.0
Total Lost Time (s)	5.5	5.5	5.5	5.5		5.5		5.5
Lead/Lag	Lead		Lag	Lag				
Lead-Lag Optimize?	Yes							
Recall Mode	Max	Max	Max	Max	Max	Max	Max	Max
Act Effct Green (s)	53.3	53.3	38.9	38.9		45.7		45.7
Actuated g/C Ratio	0.48	0.48	0.35	0.35		0.42		0.42
v/c Ratio	0.16	0.68	0.26	1.10		0.28		1.12
Control Delay	16.7	26.5	29.5	99.6		20.9		95.7
Queue Delay	0.0	0.0	0.0	0.0		0.0		0.0
Total Delay	16.7	26.5	29.5	99.6		20.9		95.7
LOS	B	C	C	F		C		F
Approach Delay		26.0		94.3		20.9		95.7
Approach LOS		C		F		C		F

Intersection Summary	
Cycle Length: 110	
Actuated Cycle Length: 110	
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of 1st Green	
Natural Cycle: 130	
Control Type: Pretimed	
Maximum v/c Ratio: 1.12	
Intersection Signal Delay: 73.1	Intersection LOS: E
Intersection Capacity Utilization 99.6%	ICU Level of Service F
Analysis Period (min) 15	

Splits and Phases: 860: University Av NE & Lowry Av NE



Traffic Safety Benefit-Cost Calculation

Highway Safety Improvement Program (HSIP) Reactive Project

DEPARTMENT OF TRANSPORTATION

A. Roadway Description

Route	CSAH 153	**District**	Metro	**County**	Hennepin County
Begin RP	2.27	**End RP**	2.33	**Miles**	0.06
Location	At: CSAH 23 (Marshall St NE)				

B. Project Description

Proposed Work	CSAH 153: install dedicated left-turn lanes; CSAH 23: prohibit on-street parking		
Project Cost*	$9,022,600	**Installation Year**	2025
Project Service Life	20 years	**Traffic Growth Factor**	0.4%

** exclude Right of Way from Project Cost*

C. Crash Modification Factor

0.58	**Fatal (K) Crashes**	**Reference**	CMF 0271: Install LT lanes on major approaches (42% reduction)
0.58	**Serious Injury (A) Crashes**		
0.58	**Moderate Injury (B) Crashes**	**Crash Type**	CMF 0271: SS, RE, and LT crashes involving EB/WB vehicles
0.58	**Possible Injury (C) Crashes**		
0.58	**Property Damage Only Crashes**		www.CMFclearinghouse.org

D. Crash Modification Factor (optional second CMF)

	Fatal (K) Crashes	**Reference**	No CMF ID: Prohibit On-Street Parking (100% reduction)
	Serious Injury (A) Crashes		
0.00	**Moderate Injury (B) Crashes**	**Crash Type**	Crashes involving parked vehicles on the N/S approaches
	Possible Injury (C) Crashes		
	Property Damage Only Crashes		www.CMFclearinghouse.org

E. Crash Data

Begin Date	1/1/2016	**End Date**	12/31/2018	3 years
Data Source	MnCMAT Version 2.0			

Crash Severity	CMF 0271: SS, RE, and LT crashes involving EB/WB vehicles	Crashes involving parked vehicles on the N/S approaches
K crashes	0	0
A crashes	0	0
B crashes	4	1
C crashes	1	0
PDO crashes	16	0

F. Benefit-Cost Calculation

$4,268,166	**Benefit (present value)**	**B/C Ratio = 0.48**
$9,022,600	**Cost**	

Proposed project expected to reduce 4 crashes annually, 0 of which involving fatality or serious injury.

F. Analysis Assumptions

Crash Severity	Crash Cost
K crashes	$1,360,000
A crashes	$680,000
B crashes	$210,000
C crashes	$110,000
PDO crashes	$12,000

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

Real Discount Rate	1.2%
Traffic Growth Rate	0.4%
Project Service Life	20 years

G. Annual Benefit

Crash Severity	Crash Reduction	Annual Reduction	Annual Benefit
K crashes	0.00	0.00	$0
A crashes	0.00	0.00	$0
B crashes	2.68	0.89	$187,600
C crashes	0.42	0.14	$15,400
PDO crashes	6.72	2.24	$26,880
			$229,880

H. Amortized Benefit

Year	Crash Benefits	Present Value
2025	$229,880	$229,880
2026	$230,800	$228,063
2027	$231,723	$226,260
2028	$232,650	$224,471
2029	$233,580	$222,697
2030	$234,515	$220,936
2031	$235,453	$219,190
2032	$236,394	$217,457
2033	$237,340	$215,738
2034	$238,289	$214,033
2035	$239,242	$212,341
2036	$240,199	$210,662
2037	$241,160	$208,997
2038	$242,125	$207,345
2039	$243,093	$205,706
2040	$244,066	$204,079
2041	$245,042	$202,466
2042	$246,022	$200,866
2043	$247,006	$199,278
2044	$247,994	$197,702
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 = $4,268,166

Traffic Safety Benefit-Cost Calculation

Highway Safety Improvement Program (HSIP) Reactive Project

DEPARTMENT OF TRANSPORTATION

A. Roadway Description

Route	CSAH 153	**District**	Metro	**County**	Hennepin County
Begin RP	2.35	**End RP**	2.41	**Miles**	0.06
Location	At Grand St NE				

B. Project Description

Proposed Work	CSAH 153: Install dedicated left-turn lanes and remove unwarranted traffic signal		
Project Cost*	$9,022,600	**Installation Year**	2025
Project Service Life	20 years	**Traffic Growth Factor**	0.4%

** exclude Right of Way from Project Cost*

C. Crash Modification Factor

	Fatal (K) Crashes	**Reference**	CMF 0269: Install LT lanes on major approaches (42% reduction)
	Serious Injury (A) Crashes		FHWA-SA-10-005: Remove unwarranted signal (24% reduction)
0.41	**Moderate Injury (B) Crashes**	**Crash Type**	CMF 0269: RE & LT crashes involving EB/WB vehicles
0.41	**Possible Injury (C) Crashes**		FHWA-SA-10-005: RE, & LT crashes involving EB/WB veh
0.41	**Property Damage Only Crashes**		www.CMFclearinghouse.org

D. Crash Modification Factor (optional second CMF)

	Fatal (K) Crashes	**Reference**	FHWA-SA-10-005: Remove unwarranted signal (24% reduction)
	Serious Injury (A) Crashes		
0.76	**Moderate Injury (B) Crashes**	**Crash Type**	FHWA-SA-10-005: SS, RE, LT, & RA crashes involving NB/SB veh
0.76	**Possible Injury (C) Crashes**		
0.76	**Property Damage Only Crashes**		www.CMFclearinghouse.org

E. Crash Data

Begin Date	1/1/2016	**End Date**	12/31/2018	3 years
Data Source	MnCMAT Version 2.0			

Crash Severity	CMF 0269: SS, RE, & LT involving EB/WB veh FHWA-SA: SS, RE, & LT involving EB/WB veh	FHWA-SA-10-005: SS, RE, LT, & RA crashes involving NB/SB veh
K crashes	0	0
A crashes	0	0
B crashes	1	1
C crashes	0	3
PDO crashes	4	2

F. Benefit-Cost Calculation

$1,775,036	**Benefit (present value)**
$9,022,600	**Cost**

B/C Ratio = 0.20

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	$1,360,000
A crashes	$680,000
B crashes	$210,000
C crashes	$110,000
PDO crashes	$12,000

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

Real Discount Rate	1.2%
Traffic Growth Rate	0.4%
Project Service Life	20 years

G. Annual Benefit

Crash Severity	Crash Reduction	Annual Reduction	Annual Benefit
K crashes	0.00	0.00	$0
A crashes	0.00	0.00	$0
B crashes	0.83	0.28	$57,890
C crashes	0.72	0.24	$26,400
PDO crashes	2.83	0.94	$11,312
			$95,602

H. Amortized Benefit

Year	Crash Benefits	Present Value
2025	$95,602	$95,602
2026	$95,984	$94,846
2027	$96,368	$94,096
2028	$96,754	$93,353
2029	$97,141	$92,615
2030	$97,529	$91,883
2031	$97,920	$91,156
2032	$98,311	$90,436
2033	$98,704	$89,721
2034	$99,099	$89,011
2035	$99,496	$88,308
2036	$99,894	$87,610
2037	$100,293	$86,917
2038	$100,694	$86,230
2039	$101,097	$85,548
2040	$101,502	$84,872
2041	$101,908	$84,201
2042	$102,315	$83,536
2043	$102,724	$82,875
2044	$103,135	$82,220
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 = $1,775,036

Traffic Safety Benefit-Cost Calculation

Highway Safety Improvement Program (HSIP) Reactive Project

DEPARTMENT OF TRANSPORTATION

A. Roadway Description

Route	CSAH 153	**District**	Metro	**County**	Hennepin County
Begin RP	2.42	**End RP**	2.54	**Miles**	0.12
Location	From Grand St NE to 2nd St NE				

B. Project Description

Proposed Work	CSAH 153: Convert 4-lane roadway to 3-lane roadway and resurface existing pavement		
Project Cost*	$9,022,600	**Installation Year**	2025
Project Service Life	15 years	**Traffic Growth Factor**	0.4%

** exclude Right of Way from Project Cost*

C. Crash Modification Factor

	Fatal (K) Crashes	**Reference**	CMF 2841: Convert from 4-lane to 3-lane (47% reduction)
	Serious Injury (A) Crashes		CMF 9299: Resurface existing pavement (23.4% reduction)
	Moderate Injury (B) Crashes	**Crash Type**	CMF 2841: SS and RE crashes involving EB/WB vehicles
	Possible Injury (C) Crashes		CMF 9299: SS and RE crashes involving EB/WB vehicles
0.41	**Property Damage Only Crashes**		www.CMFclearinghouse.org

D. Crash Modification Factor (optional second CMF)

	Fatal (K) Crashes	**Reference**	CMF 2841: Convert from 4-lane to 3-lane (47% reduction)
	Serious Injury (A) Crashes		
	Moderate Injury (B) Crashes	**Crash Type**	CMF 2841: LT, RA, & HO crashes involving EB/WB vehicles
0.53	**Possible Injury (C) Crashes**		
0.53	**Property Damage Only Crashes**		www.CMFclearinghouse.org

E. Crash Data

Begin Date	1/1/2016	**End Date**	12/31/2018	3 years
Data Source	MnCMAT Version 2.0			

Crash Severity	**CMF 2841: SS & RE involving EB/WB veh CMF 9299: SS & RE involving EB/WB veh**	**CMF 2841: LT, RA, & HO crashes involving EB/WB vehicles**
K crashes		
A crashes		
B crashes		
C crashes		1
PDO crashes	4	5

F. Benefit-Cost Calculation

$513,069	**Benefit (present value)**	**B/C Ratio = 0.06**
$9,022,600	**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	$1,360,000
A crashes	$680,000
B crashes	$210,000
C crashes	$110,000
PDO crashes	$12,000

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

Real Discount Rate	1.2%
Traffic Growth Rate	0.4%
Project Service Life	15 years

G. Annual Benefit

Crash Severity	Crash Reduction	Annual Reduction	Annual Benefit
K crashes	0.00	0.00	$0
A crashes	0.00	0.00	$0
B crashes	0.00	0.00	$0
C crashes	0.47	0.16	$17,233
PDO crashes	4.73	1.58	$18,904
			$36,137

H. Amortized Benefit

Year	Crash Benefits	Present Value
2025	$36,137	$36,137
2026	$36,282	$35,852
2027	$36,427	$35,568
2028	$36,573	$35,287
2029	$36,719	$35,008
2030	$36,866	$34,731
2031	$37,013	$34,457
2032	$37,161	$34,184
2033	$37,310	$33,914
2034	$37,459	$33,646
2035	$37,609	$33,380
2036	$37,760	$33,116
2037	$37,911	$32,854
2038	$38,062	$32,595
2039	$38,214	$32,337
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	$0
0	$0	$0
0	$0	$0
0	$0	$0
0	$0	$0
0	$0	$0

Total = $513,069

Traffic Safety Benefit-Cost Calculation

Highway Safety Improvement Program (HSIP) Reactive Project

DEPARTMENT OF TRANSPORTATION

A. Roadway Description

Route	CSAH 153	**District**	Metro	**County**	Hennepin County
Begin RP	2.55	**End RP**	2.61	**Miles**	0.06
Location	At 2nd St NE				

B. Project Description

Proposed Work	CSAH 153: install left-turn lanes and implement prot/perm phasing; 2nd St N: install mast-arms		
Project Cost*	$9,022,600	**Installation Year**	2025
Project Service Life	20 years	**Traffic Growth Factor**	0.4%

** exclude Right of Way from Project Cost*

C. Crash Modification Factor

	Fatal (K) Crashes	**Reference**	CMF 0271: Install LT lanes on major approaches (42% reduction)
	Serious Injury (A) Crashes		CMF 4210: Implement prot/perm LT phasing (13.8% reduction)
	Moderate Injury (B) Crashes	**Crash Type**	CMF 0271: SS, RE, & LT crashes involving EB/WB vehicles
0.58	**Possible Injury (C) Crashes**		CMF 4210: LT crashes involving EB/WB vehicles
0.44	**Property Damage Only Crashes**		www.CMFclearinghouse.org

D. Crash Modification Factor (optional second CMF)

	Fatal (K) Crashes	**Reference**	CMF 1420: Install mast-arms on minor app (49% reduction)
	Serious Injury (A) Crashes		
	Moderate Injury (B) Crashes	**Crash Type**	CMF 1420: RA crashes involving NB/SB vehicles
0.51	**Possible Injury (C) Crashes**		
0.51	**Property Damage Only Crashes**		www.CMFclearinghouse.org

E. Crash Data

Begin Date	1/1/2016	**End Date**	12/31/2018	3 years
Data Source	MnCMAT Version 2.0			

Crash Severity	CMF 0271: SS, RE, & LT involving EB/WB veh CMF 4210: LT crashes involving EB/WB veh	CMF 1420: RA involving NB/SB veh
K crashes	0	0
A crashes	0	0
B crashes	0	0
C crashes	1	1
PDO crashes	7	4

F. Benefit-Cost Calculation

$1,056,211	**Benefit (present value)**
$9,022,600	**Cost**

B/C Ratio = 0.12

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

F. Analysis Assumptions

Crash Severity	Crash Cost
K crashes	$1,360,000
A crashes	$680,000
B crashes	$210,000
C crashes	$110,000
PDO crashes	$12,000

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

Real Discount Rate	1.2%
Traffic Growth Rate	0.4%
Project Service Life	20 years

G. Annual Benefit

Crash Severity	Crash Reduction	Annual Reduction	Annual Benefit
K crashes	0.00	0.00	$0
A crashes	0.00	0.00	$0
B crashes	0.00	0.00	$0
C crashes	0.91	0.30	$33,367
PDO crashes	5.88	1.96	$23,520
			$56,887

H. Amortized Benefit

Year	Crash Benefits	Present Value
2025	$56,887	$56,887
2026	$57,114	$56,437
2027	$57,343	$55,991
2028	$57,572	$55,548
2029	$57,802	$55,109
2030	$58,034	$54,673
2031	$58,266	$54,241
2032	$58,499	$53,812
2033	$58,733	$53,387
2034	$58,968	$52,965
2035	$59,204	$52,546
2036	$59,440	$52,131
2037	$59,678	$51,719
2038	$59,917	$51,310
2039	$60,156	$50,904
2040	$60,397	$50,502
2041	$60,639	$50,103
2042	$60,881	$49,707
2043	$61,125	$49,314
2044	$61,369	$48,924
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 = $1,056,211

Traffic Safety Benefit-Cost Calculation

Highway Safety Improvement Program (HSIP) Reactive Project

DEPARTMENT OF TRANSPORTATION

A. Roadway Description

Route	CSAH 153	**District**	Metro	**County**	Hennepin County
Begin RP	2.62	**End RP**	2.69	**Miles**	0.07
Location	From 2nd St NE to TH 47 (University Ave NE)				

B. Project Description

Proposed Work	CSAH 153: Convert 4-lane roadway to 3-lane roadway and prohibit on-street parking		
Project Cost*	$9,022,600	**Installation Year**	2025
Project Service Life	20 years	**Traffic Growth Factor**	0.4%

** exclude Right of Way from Project Cost*

C. Crash Modification Factor

	Fatal (K) Crashes	**Reference**	CMF 2841: Convert from 4-lane to 3-lane (47% reduction)
	Serious Injury (A) Crashes		
0.53	**Moderate Injury (B) Crashes**	**Crash Type**	CMF 2841: OR, SS, RE, LT, RA, & HO crashes involv EB/WB veh
0.53	**Possible Injury (C) Crashes**		
0.53	**Property Damage Only Crashes**		www.CMFclearinghouse.org

D. Crash Modification Factor (optional second CMF)

	Fatal (K) Crashes	**Reference**	No CMF ID: Prohibit On-Street Parking (100% reduction)
	Serious Injury (A) Crashes		
	Moderate Injury (B) Crashes	**Crash Type**	Crashes involving parked vehicles along CSAH 153
	Possible Injury (C) Crashes		
0.00	**Property Damage Only Crashes**		www.CMFclearinghouse.org

E. Crash Data

Begin Date	1/1/2016	**End Date**	12/31/2018	3 years
Data Source	MnCMAT Version 2.0			

Crash Severity	CMF 2841: OR, SS, RE, LT, RA, & HO crashes involv EB/WB veh	Crashes involving parked vehicles along CSAH 153
K crashes		
A crashes		
B crashes	2	
C crashes	3	
PDO crashes	6	3

F. Benefit-Cost Calculation

$2,613,853	**Benefit (present value)**	**B/C Ratio = 0.29**
$9,022,600	**Cost**	

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

F. Analysis Assumptions

Crash Severity	Crash Cost
K crashes	$1,360,000
A crashes	$680,000
B crashes	$210,000
C crashes	$110,000
PDO crashes	$12,000

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

Real Discount Rate	1.2%
Traffic Growth Rate	0.4%
Project Service Life	20 years

G. Annual Benefit

Crash Severity	Crash Reduction	Annual Reduction	Annual Benefit
K crashes	0.00	0.00	$0
A crashes	0.00	0.00	$0
B crashes	0.94	0.31	$65,800
C crashes	1.41	0.47	$51,700
PDO crashes	5.82	1.94	$23,280
			$140,780

H. Amortized Benefit

Year	Crash Benefits	Present Value
2025	$140,780	$140,780
2026	$141,343	$139,667
2027	$141,908	$138,563
2028	$142,476	$137,468
2029	$143,046	$136,381
2030	$143,618	$135,303
2031	$144,193	$134,233
2032	$144,769	$133,172
2033	$145,349	$132,119
2034	$145,930	$131,075
2035	$146,514	$130,039
2036	$147,100	$129,011
2037	$147,688	$127,991
2038	$148,279	$126,979
2039	$148,872	$125,975
2040	$149,467	$124,980
2041	$150,065	$123,992
2042	$150,666	$123,011
2043	$151,268	$122,039
2044	$151,873	$121,074
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 = $2,613,853

Traffic Safety Benefit-Cost Calculation

Highway Safety Improvement Program (HSIP) Reactive Project

DEPARTMENT OF TRANSPORTATION

A. Roadway Description

Route	CSAH 153	**District**	Metro	**County**	Hennepin County
Begin RP	2.70	**End RP**	2.76	**Miles**	0.06
Location	TH 47 (University Ave NE)				

B. Project Description

Proposed Work	CSAH 153: install LT lanes & implement FYA LT phasing TH 47: install additional primary signal head & implement prot/perm LT phasing		
Project Cost*	$9,022,600	**Installation Year**	2025
Project Service Life	20 years	**Traffic Growth Factor**	0.4%

** exclude Right of Way from Project Cost*

C. Crash Modification Factor

	Fatal (K) Crashes	**Reference**	CMF 0271: Install LT lanes on CSAH 153 (42% reduction)
	Serious Injury (A) Crashes		CMF 4177: Implement FYA LT phasing (19.6% reduction)
0.46	**Moderate Injury (B) Crashes**	**Crash Type**	CMF 0271: SS, RE, & PED crashes involving EB/WB vehicles
0.50	**Possible Injury (C) Crashes**		CMF 4177: LT crashes involving EB/WB vehicles
0.53	**Property Damage Only Crashes**		www.CMFclearinghouse.org

D. Crash Modification Factor (optional second CMF)

	Fatal (K) Crashes	**Reference**	CMF 1414: Install addtl primary signal head (28% reduction)
0.72	**Serious Injury (A) Crashes**		CMF 4270: Implement prot/perm LT phasing (13.8% reduction)
0.65	**Moderate Injury (B) Crashes**	**Crash Type**	CMF 1414: RE & RA crashes involving NB/SB vehicles
0.66	**Possible Injury (C) Crashes**		CMF 4270: LT crashes involving NB/SB vehicles
0.68	**Property Damage Only Crashes**		www.CMFclearinghouse.org

E. Crash Data

Begin Date	1/1/2016	**End Date**	12/31/2018	3 years
Data Source	MnCMAT Version 2.0			

Crash Severity	**CMF 0271: SS, RE, & PED inv EB/WB veh CMF 4177: LT inv EB/WB veh**	**CMF 1414: RE & RA involving NB/SB veh CMF 4270: LT involving NB/SB veh**
K crashes		
A crashes		1
B crashes	2	6
C crashes	6	7
PDO crashes	21	21

F. Benefit-Cost Calculation

$10,142,656	**Benefit (present value)**	**B/C Ratio = 1.13**
$9,022,600	**Cost**	

Proposed project expected to reduce 9 crashes annually, 1 of which involving fatality or serious injury.

F. Analysis Assumptions

Crash Severity	Crash Cost
K crashes	$1,360,000
A crashes	$680,000
B crashes	$210,000
C crashes	$110,000
PDO crashes	$12,000

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

Real Discount Rate	1.2%
Traffic Growth Rate	0.4%
Project Service Life	20 years

G. Annual Benefit

Crash Severity	Crash Reduction	Annual Reduction	Annual Benefit
K crashes	0.00	0.00	$0
A crashes	0.28	0.09	$63,467
B crashes	3.15	1.05	$220,360
C crashes	5.34	1.78	$195,837
PDO crashes	16.65	5.55	$66,612
			$546,275

H. Amortized Benefit

Year	Crash Benefits	Present Value
2025	$546,275	$546,275
2026	$548,460	$541,957
2027	$550,654	$537,673
2028	$552,857	$533,422
2029	$555,068	$529,206
2030	$557,289	$525,022
2031	$559,518	$520,872
2032	$561,756	$516,754
2033	$564,003	$512,669
2034	$566,259	$508,616
2035	$568,524	$504,596
2036	$570,798	$500,607
2037	$573,081	$496,649
2038	$575,374	$492,723
2039	$577,675	$488,828
2040	$579,986	$484,964
2041	$582,306	$481,130
2042	$584,635	$477,327
2043	$586,973	$473,554
2044	$589,321	$469,810
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 = $10,142,656

Traffic Safety Benefit-Cost Calculation

Highway Safety Improvement Program (HSIP) Reactive Project

DEPARTMENT OF TRANSPORTATION

A. Roadway Description

Route	CSAH 153	**District**	Metro	**County**	Hennepin County
Begin RP	2.77	**End RP**	2.83	**Miles**	0.06
Location	At 4th St NE				

B. Project Description

Proposed Work	CSAH 153: Install dedicated left-turn lanes; 4th St NE: Improve entering sight distance (4-to-3 lane)		
Project Cost*	$9,022,600	**Installation Year**	2025
Project Service Life	20 years	**Traffic Growth Factor**	0.4%

** exclude Right of Way from Project Cost*

C. Crash Modification Factor

	Fatal (K) Crashes	**Reference**	CMF 0269: Install LT lanes on major approaches (42% reduction)
	Serious Injury (A) Crashes		
0.53	**Moderate Injury (B) Crashes**	**Crash Type**	CMF 0269: RE, LT, & PED crashes involving EB/WB vehicles
0.53	**Possible Injury (C) Crashes**		
0.53	**Property Damage Only Crashes**		www.CMFclearinghouse.org

D. Crash Modification Factor (optional second CMF)

	Fatal (K) Crashes	**Reference**	CMF 0308: Improve sight dist on minor app (11% reduction on PD's)
	Serious Injury (A) Crashes		
	Moderate Injury (B) Crashes	**Crash Type**	CMF 0308: RA crashes involving NB/SB vehicles
	Possible Injury (C) Crashes		
0.89	**Property Damage Only Crashes**		www.CMFclearinghouse.org

E. Crash Data

Begin Date	1/1/2016	**End Date**	12/31/2018	3 years
Data Source	MnCMAT Version 2.0			

Crash Severity	CMF 0269: RE, LT, & PED crashes involving EB/WB vehicles	CMF 0308: RA crashes involving NB/SB vehicles
K crashes		
A crashes		
B crashes	1	
C crashes	1	
PDO crashes	4	5

F. Benefit-Cost Calculation

$1,111,293	**Benefit (present value)**	**B/C Ratio = 0.13**
$9,022,600	**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	$1,360,000
A crashes	$680,000
B crashes	$210,000
C crashes	$110,000
PDO crashes	$12,000

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

Real Discount Rate	1.2%
Traffic Growth Rate	0.4%
Project Service Life	20 years

G. Annual Benefit

Crash Severity	Crash Reduction	Annual Reduction	Annual Benefit
K crashes	0.00	0.00	$0
A crashes	0.00	0.00	$0
B crashes	0.47	0.16	$32,900
C crashes	0.47	0.16	$17,233
PDO crashes	2.43	0.81	$9,720
			$59,853

H. Amortized Benefit

Year	Crash Benefits	Present Value
2025	$59,853	$59,853
2026	$60,093	$59,380
2027	$60,333	$58,911
2028	$60,574	$58,445
2029	$60,817	$57,983
2030	$61,060	$57,525
2031	$61,304	$57,070
2032	$61,549	$56,619
2033	$61,796	$56,171
2034	$62,043	$55,727
2035	$62,291	$55,287
2036	$62,540	$54,850
2037	$62,790	$54,416
2038	$63,042	$53,986
2039	$63,294	$53,559
2040	$63,547	$53,136
2041	$63,801	$52,716
2042	$64,056	$52,299
2043	$64,312	$51,885
2044	$64,570	$51,475
0	$0	$0
0	$0	$0
0	$0	$0
0	$0	$0
0	$0	$0
0	$0	$0
0	$0	$0
0	$0	$0
0	$0	$0
0	$0	$0
0	$0	$0

Total = $1,111,293

Traffic Safety Benefit-Cost Calculation

Highway Safety Improvement Program (HSIP) Reactive Project

DEPARTMENT OF TRANSPORTATION

A. Roadway Description

Route	CSAH 153	**District**	Metro	**County**	Hennepin County
Begin RP	2.84	**End RP**	3.01	**Miles**	0.17
Location	From 4th St NE to Washington St NE				

B. Project Description

Proposed Work	CSAH 153: Convert 4-lane roadway to 3-lane roadway and prohibit on-street parking		
Project Cost*	$9,022,600	**Installation Year**	2025
Project Service Life	20 years	**Traffic Growth Factor**	0.4%

** exclude Right of Way from Project Cost*

C. Crash Modification Factor

	Fatal (K) Crashes	**Reference**	CMF 2841: Convert from 4-lane to 3-lane (47% reduction)
0.53	**Serious Injury (A) Crashes**		
0.53	**Moderate Injury (B) Crashes**	**Crash Type**	CMF 2841: OR, SS, RE, LT, RA, PED, & BIKE crashes involving EB/WB veh
0.53	**Possible Injury (C) Crashes**		
0.53	**Property Damage Only Crashes**		www.CMFclearinghouse.org

D. Crash Modification Factor (optional second CMF)

	Fatal (K) Crashes	**Reference**	No CMF ID: Prohibit On-Street Parking (100% reduction)
	Serious Injury (A) Crashes		
0.00	**Moderate Injury (B) Crashes**	**Crash Type**	Crashes involving parked vehicles along CSAH 153
	Possible Injury (C) Crashes		
	Property Damage Only Crashes		www.CMFclearinghouse.org

E. Crash Data

Begin Date	1/1/2016	**End Date**	12/31/2018	3 years
Data Source	MnCMAT Version 2.0			

Crash Severity	CMF 2841: OR, SS, RE, LT, RA, PED, & BIKE crashes involving EB/WB veh	Crashes involving parked vehicles along CSAH 153
K crashes		
A crashes	1	
B crashes	2	1
C crashes	1	
PDO crashes	10	

F. Benefit-Cost Calculation

$5,168,415	**Benefit (present value)**	**B/C Ratio = 0.58**
$9,022,600	**Cost**	

Proposed project expected to reduce 3 crashes annually, 1 of which involving fatality or serious injury.

F. Analysis Assumptions

Crash Severity	Crash Cost
K crashes	$1,360,000
A crashes	$680,000
B crashes	$210,000
C crashes	$110,000
PDO crashes	$12,000

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

Real Discount Rate 1.2%

Traffic Growth Rate 0.4%

Project Service Life 20 years

G. Annual Benefit

Crash Severity	Crash Reduction	Annual Reduction	Annual Benefit
K crashes	0.00	0.00	$0
A crashes	0.47	0.16	$106,533
B crashes	1.94	0.65	$135,800
C crashes	0.47	0.16	$17,233
PDO crashes	4.70	1.57	$18,800
			$278,367

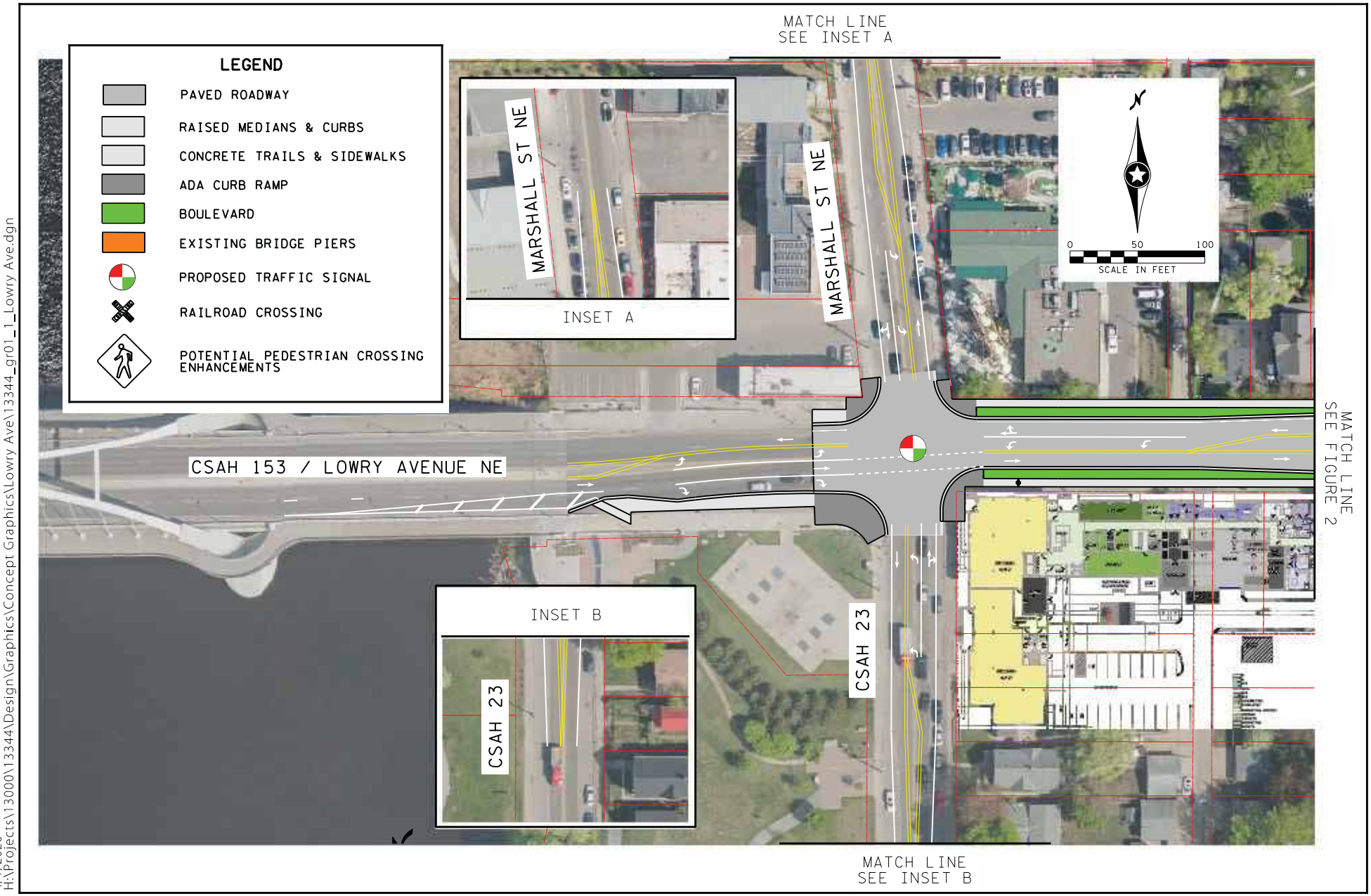
H. Amortized Benefit

Year	Crash Benefits	Present Value
2025	$278,367	$278,367
2026	$279,480	$276,166
2027	$280,598	$273,983
2028	$281,720	$271,817
2029	$282,847	$269,668
2030	$283,979	$267,537
2031	$285,115	$265,422
2032	$286,255	$263,324
2033	$287,400	$261,242
2034	$288,550	$259,177
2035	$289,704	$257,128
2036	$290,863	$255,095
2037	$292,026	$253,079
2038	$293,194	$251,078
2039	$294,367	$249,093
2040	$295,545	$247,124
2041	$296,727	$245,171
2042	$297,914	$243,233
2043	$299,105	$241,310
2044	$300,302	$239,402
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 = $5,168,415

CSAH 153 (Lowry Ave NE) Reconstruction Project

Attachment 05 | Potential Layout



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4/1/2020
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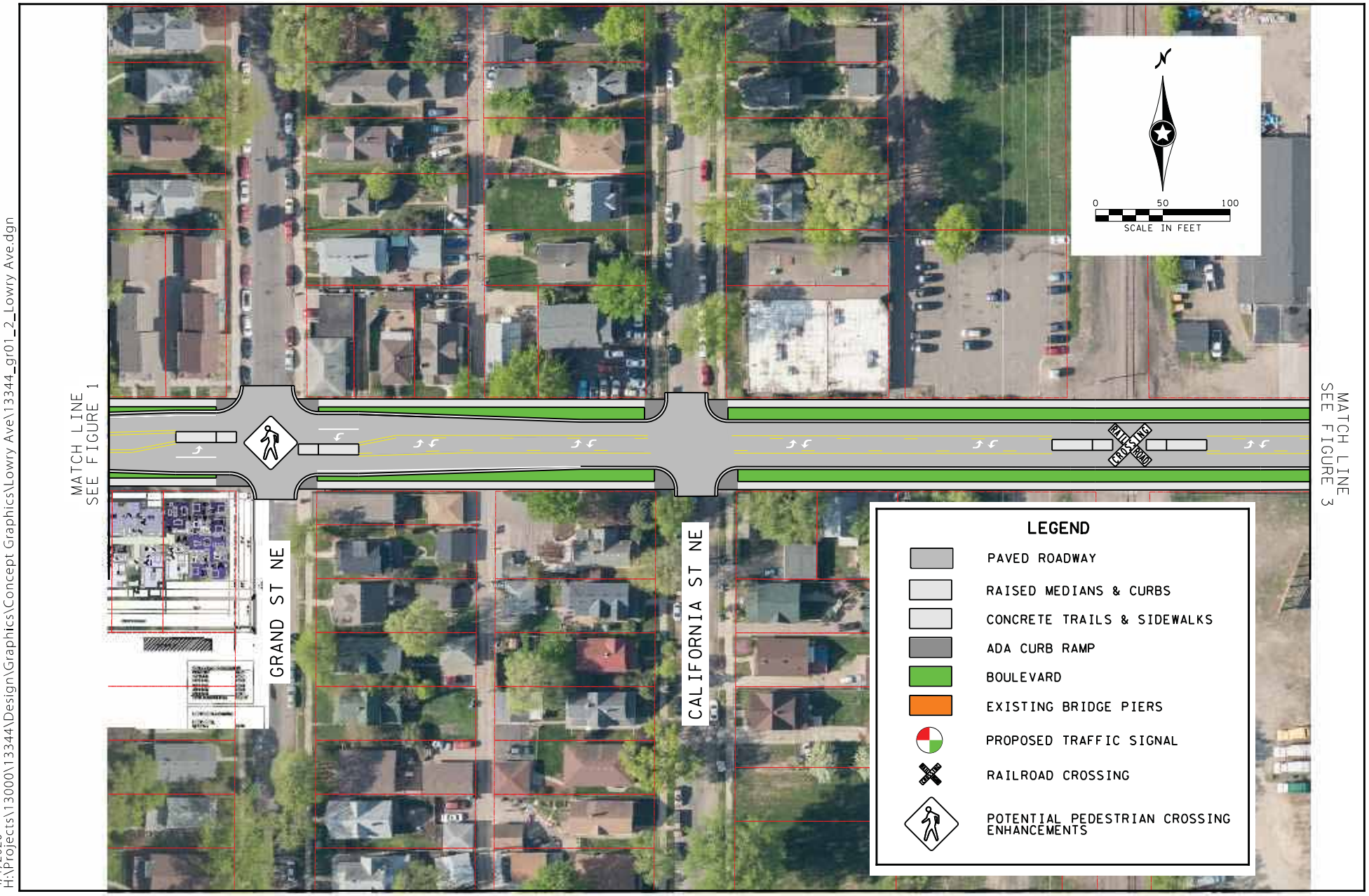
Hennepin County Improvements

CSAH 153 (Lowry Ave) from CSAH 23 (Marshall St NE) to Washington St NE
Minneapolis, MN

Figure 1

CSAH 153 (Lowry Ave NE) Reconstruction Project

Attachment 05 | Potential Layout



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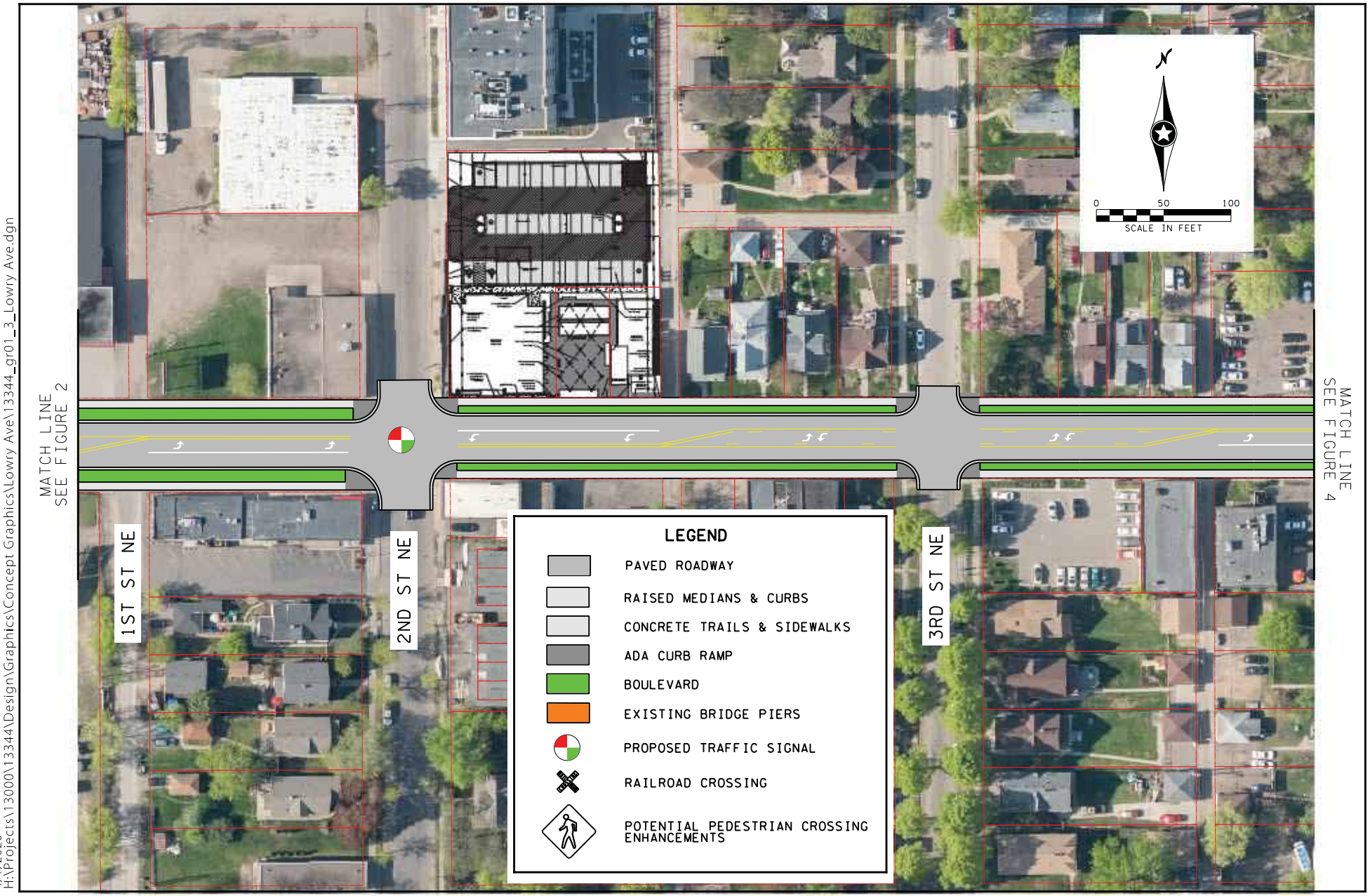
Hennepin County Improvements

CSAH 153 (Lowry Ave) from CSAH 23 (Marshall St NE) to Washington St NE
Minneapolis, MN

Figure 2

CSAH 153 (Lowry Ave NE) Reconstruction Project

Attachment 05 | Potential Layout



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Hennepin County Improvements

CSAH 153 (Lowry Ave) from CSAH 23 (Marshall St NE) to Washington St NE
Minneapolis, MN

Figure 3

CSAH 153 (Lowry Ave NE) Reconstruction Project

Attachment 05 | Potential Layout

Job #13344
4/1/2020
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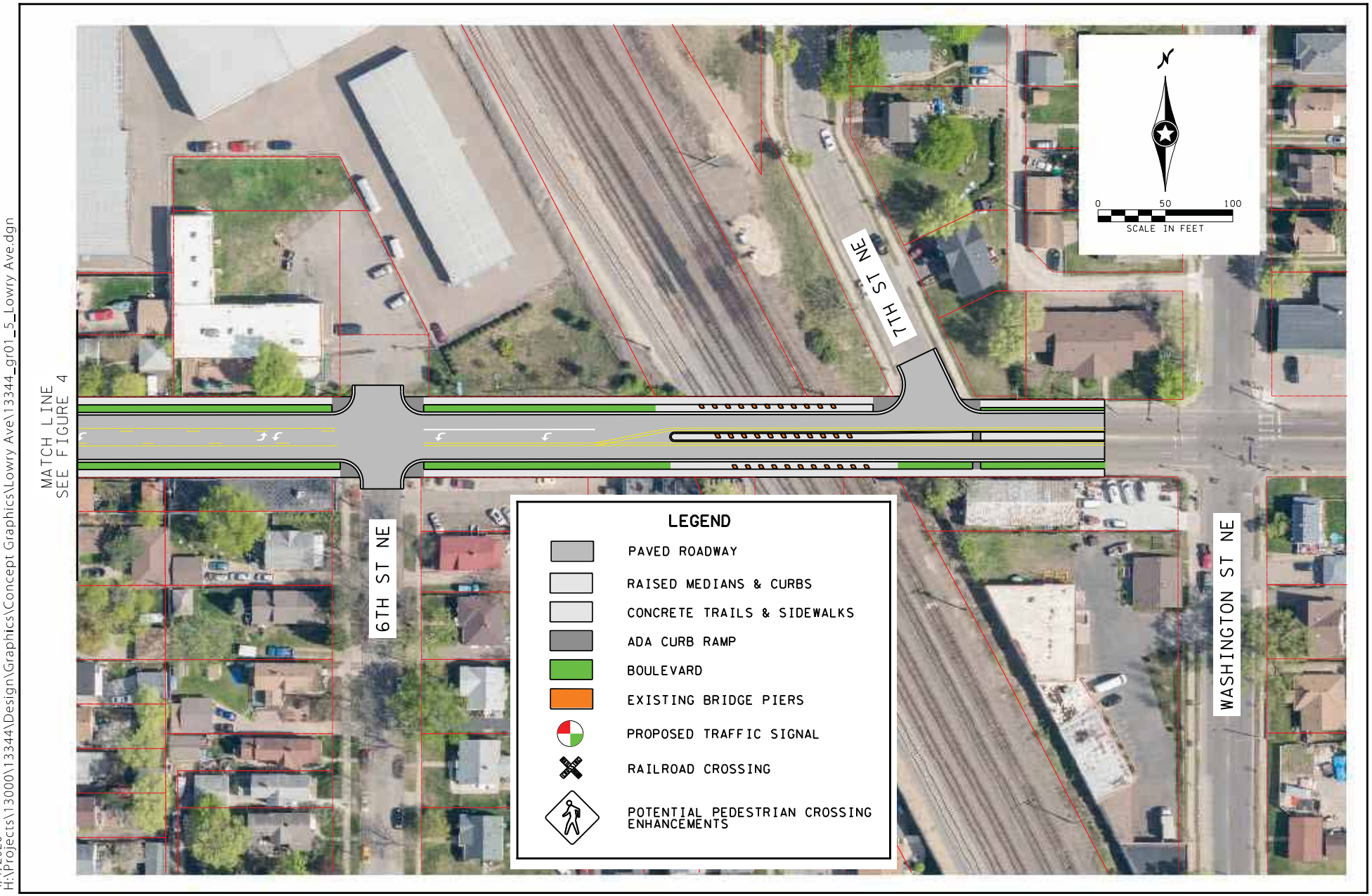
Hennepin County Improvements

CSAH 153 (Lowry Ave) from CSAH 23 (Marshall St NE) to Washington St NE
Minneapolis, MN

Figure 4

CSAH 153 (Lowry Ave NE) Reconstruction Project

Attachment 05 | Potential Layout



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Hennepin County Improvements

CSAH 153 (Lowry Ave) from CSAH 23 (Marshall St NE) to Washington St NE
Minneapolis, MN

Figure 5

CSAH 153 (Lowry Ave NE) Reconstruction Project

List of Attachments

1. Project Narrative
2. Project Location Map
3. Existing Roadway Condition Photos
4. Potential Typical Section
5. Potential Layout
6. 2020-2024 Hennepin County Transportation Capital Improvement Program
7. 2020-2024 Hennepin County Community Works Capital Improvement Program
8. Lowry Ave NE Corridor Plan & Implementation Framework Summary
9. MnDOT 50-Series Map
10. Hennepin County Transportation Systems Plan – 2040 Forecast Traffic Volumes
11. Socio-Economic Equity Map
12. Affordable Housing Access Map
13. StreetLight HCAADT Report
14. Truck Turn Examples at TH 47 (University Avenue NE)
15. Minneapolis Street Lighting Plan
16. Crash Map and Detail Listing
17. Crash Modification Factors
18. Multi-Modal Connections Map
19. MnDOT Support Letter – PLACEHOLDER
20. City of Minneapolis Support Letter - PLACEHOLDER

CSAH 153 (Lowry Ave NE) Reconstruction Project

Attachment 01 | Project Narrative

HENNEPIN COUNTY
MINNESOTA

Project Name

CSAH 153 (Lowry Ave NE) Reconstruction Project

City(ies)

Minneapolis N/A N/A

Commisioner Districts

2 N/A N/A

Capital Project Number

2140800

Project Category

Reconstruction

Scoping Manager

Jason Pieper

Scoping Form Revision Dates

4/4/2020

Project Summary

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

Roadway History

The existing roadway (last reconstructed in 1962) is nearing the end of its service life and warrants replacement. Routine maintenance activities (such as overlays and crackseals) are no longer effective in preserving assets. The roadway was originally constructed as concrete pavement, causing premature surface cracking at joints after the completion of each pavement overlay. The sidewalk is located adjacent to the roadway, includes various obstructions within the walking route (such as fire hydrants, utility poles, and signs), and includes many pedestrian ramps that do not meet current ADA design standards. These sidewalk characteristics result in poor accommodations for people walking, especially those with limited mobility. Furthermore, there is an existing Burlington Northern Santa Fe (BNSF) Railroad bridge that extends over Lowry Avenue NE (CSAH 153) near 7th Street NE. The bridge structure is not adequate; only providing enough space underneath for one vehicle lane in each direction, causing an unnecessary convergence of vehicle lanes.

Community Works completed the Lowry Avenue NE Framework Plan in 2015 that identified corridor needs in terms of mobility and development potential. There were two main themes that ensued from the study. First, the need to create a more pedestrian friendly environment,

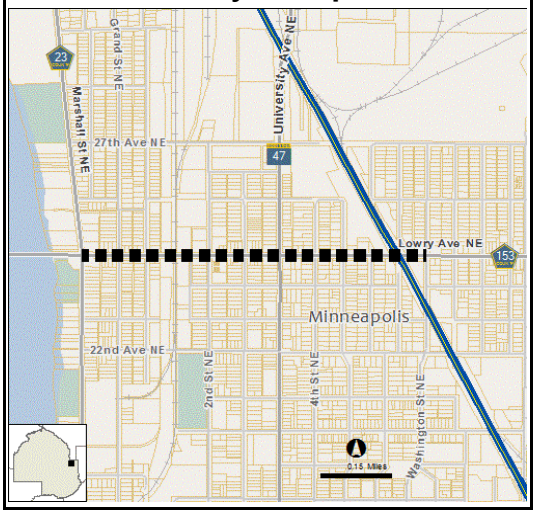
Project Description and Benefits

The proposed project will include new pavement, curb, storm water utilities, sidewalk, ADA accommodations, and traffic signals. It is anticipated that a boulevard area will be constructed to accomplish the following: provide space for streetscaping elements, separate pedestrians from the roadway, and provide adequate space for signs and snow storage. Staff is currently analyzing various roadway configurations to determine the recommended environment to accommodate users. Additionally, this project
would include improvements to the University Avenue (TH 47) intersection, which was identified as a priority from the Lowry Avenue NE Framework Plan. This project is Phase 2 (or 2) of capital improvements recommended for the Lowry Avenue NE corridor.

Project Risks & Uncertainities

- The proposed project will likely have impacts to the existing BNSF Railroad Bridge that currently acts a barrier to people biking, driving, and walking along the corridor
- Limited ability to realign the skewed CSAH 23/CSAH 153 intersection due to constrained right-of-way

Project Map



Anticpated Project Timeline

Scoping:	Q3 2019 - Q4 2021
Design:	2022 - 2024
R/W Acquisition:	2023 - 2024
Bid Advertisement:	Q1 2025
Construction:	Q2 2025 - Q4 2026

Project Delivery Responsibilities

Preliminary Design:	Consultant
Final Design:	Consultant
Construction Services:	Consultant

Project Budget -		Project Level
Construction:	$	6,940,000
Cost Estimate Year:		2020
Construction Year:		2025
Annual Inflation Rate:		3.0%
Inflated Construction:	$	8,050,000
Design Services:	$	1,210,000
R/W Acquisition:	$	-
Other (Utility Burial):	$	-
Construction Services:	$	810,000
Contingency:	$	2,080,000
Total Project Budget:	**$**	**12,150,000**

Funding Notes

- Eligible for federal funding through the Metropolitan Council's Regional Solicitation given the functional classification of CSAH 153 (A-Minor Arterial)
- Eligible for federal funding through MnDOT given the NHS designation of CSAH 153 (Intermodal Connector)

CSAH 153 (Lowry Ave NE) Reconstruction Project

Attachment 02 | Project Location Map

HENNEPIN COUNTY
MINNESOTA

Key

Project Location

0 0.125 0.25 Miles

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.

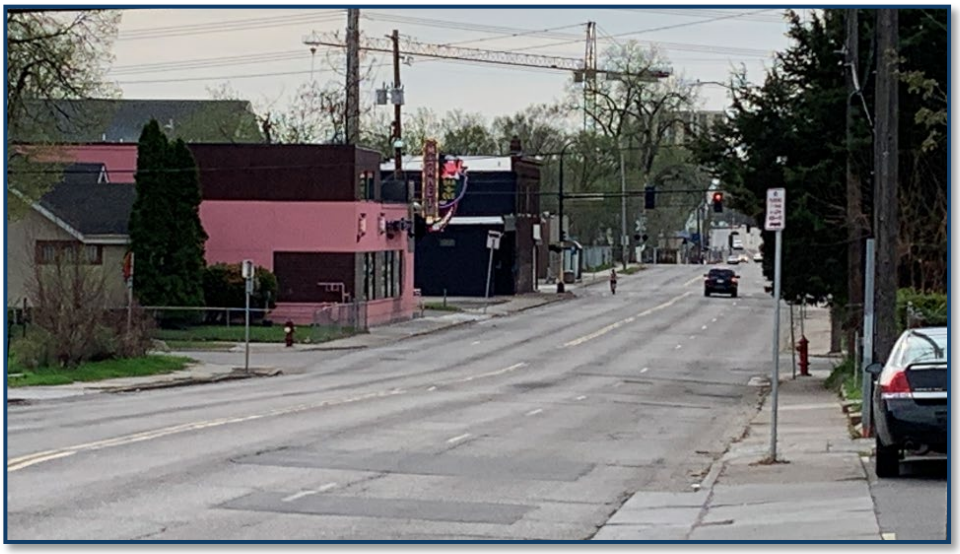
Published date: 3/27/2020

N

Hennepin

CSAH 153 (Lowry Ave NE) Reconstruction Project

Attachment 03 | Existing Roadway Condition Photos

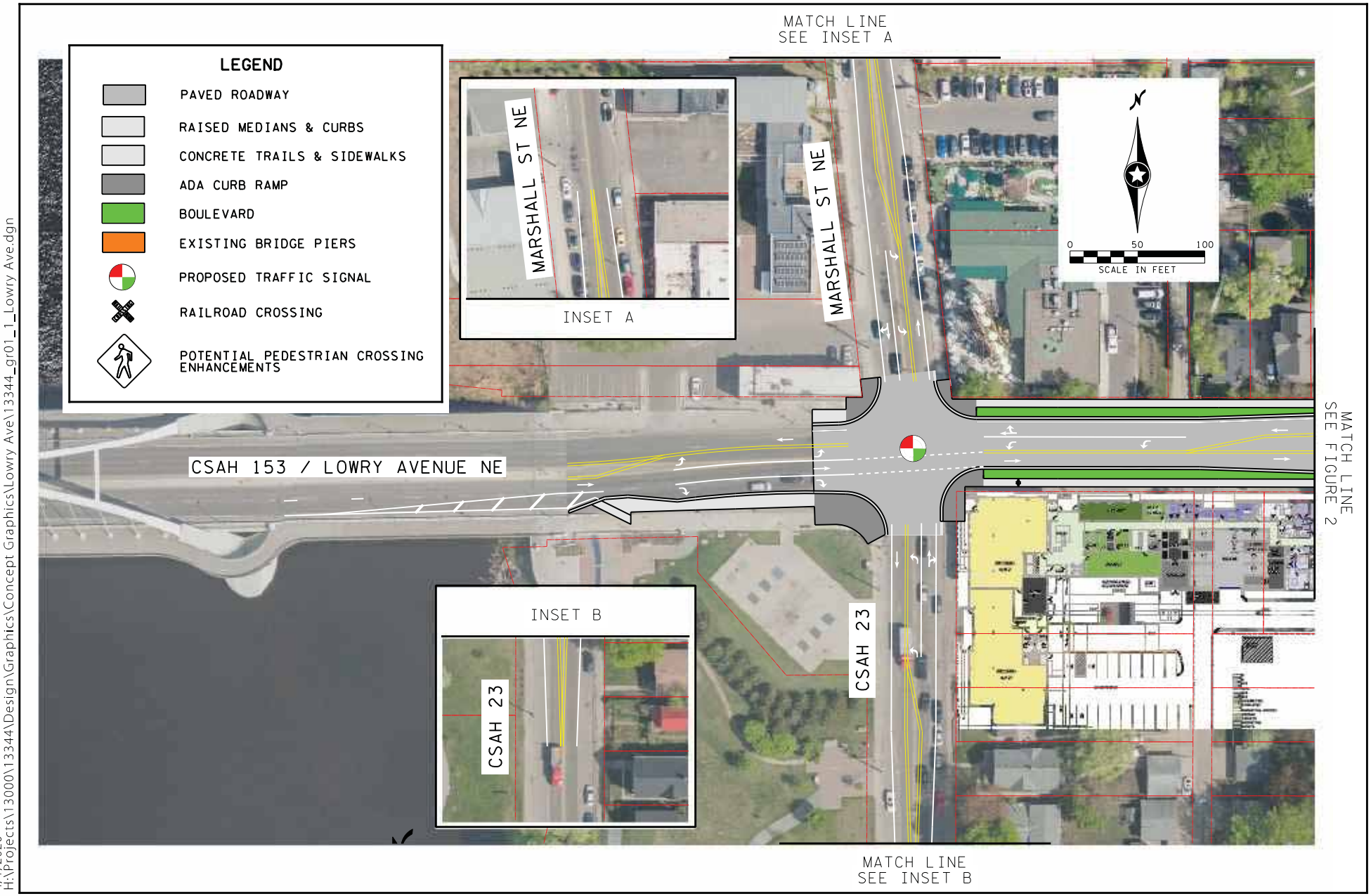


CSAH 153 (Lowry Ave NE) Reconstruction Project

Attachment 04 | Potential Typical Section

CSAH 153 (Lowry Ave NE) Reconstruction Project

Attachment 05 | Potential Layout



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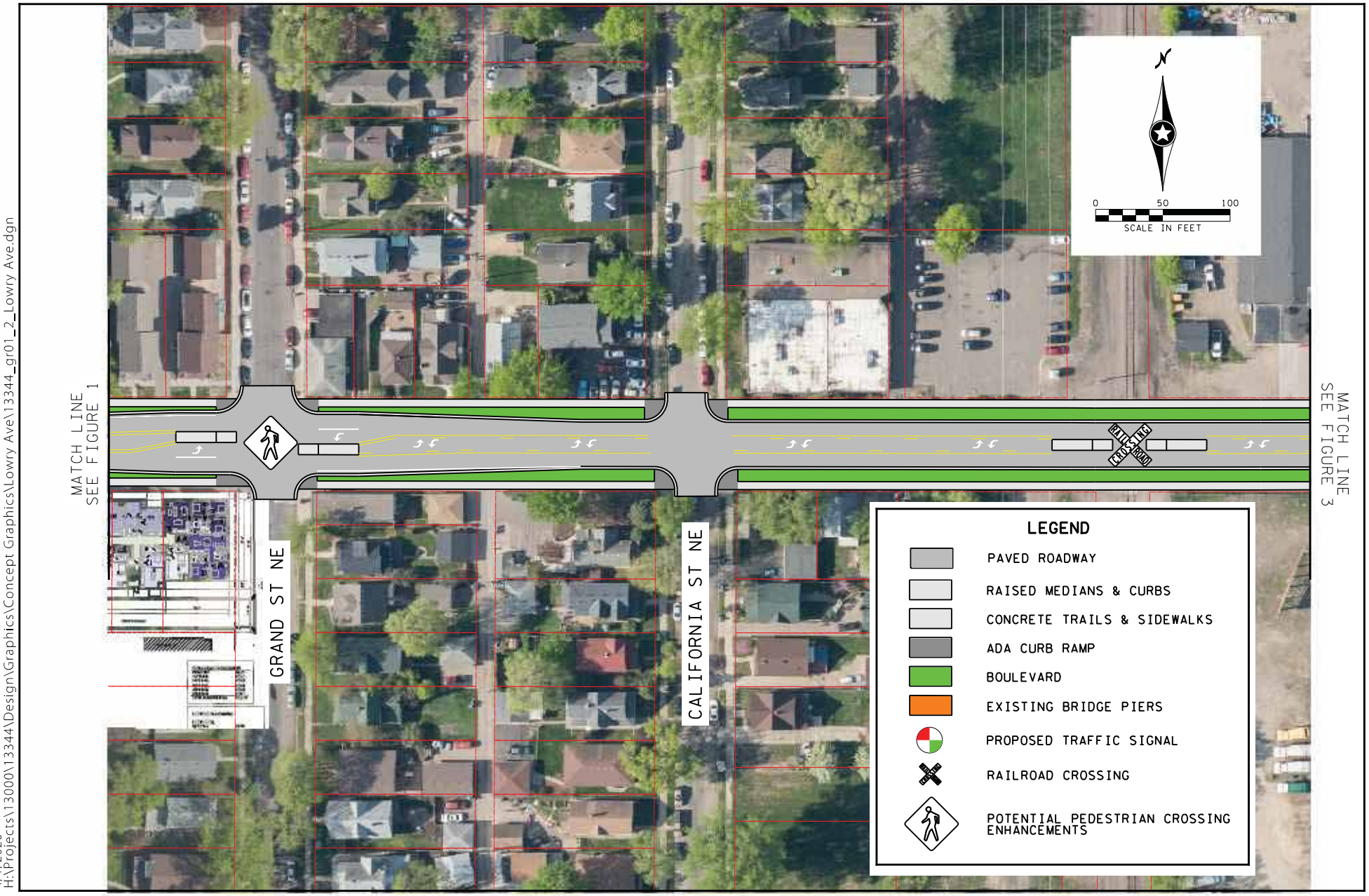
Hennepin County Improvements

CSAH 153 (Lowry Ave) from CSAH 23 (Marshall St NE) to Washington St NE
Minneapolis, MN

Figure 1

CSAH 153 (Lowry Ave NE) Reconstruction Project

Attachment 05 | Potential Layout



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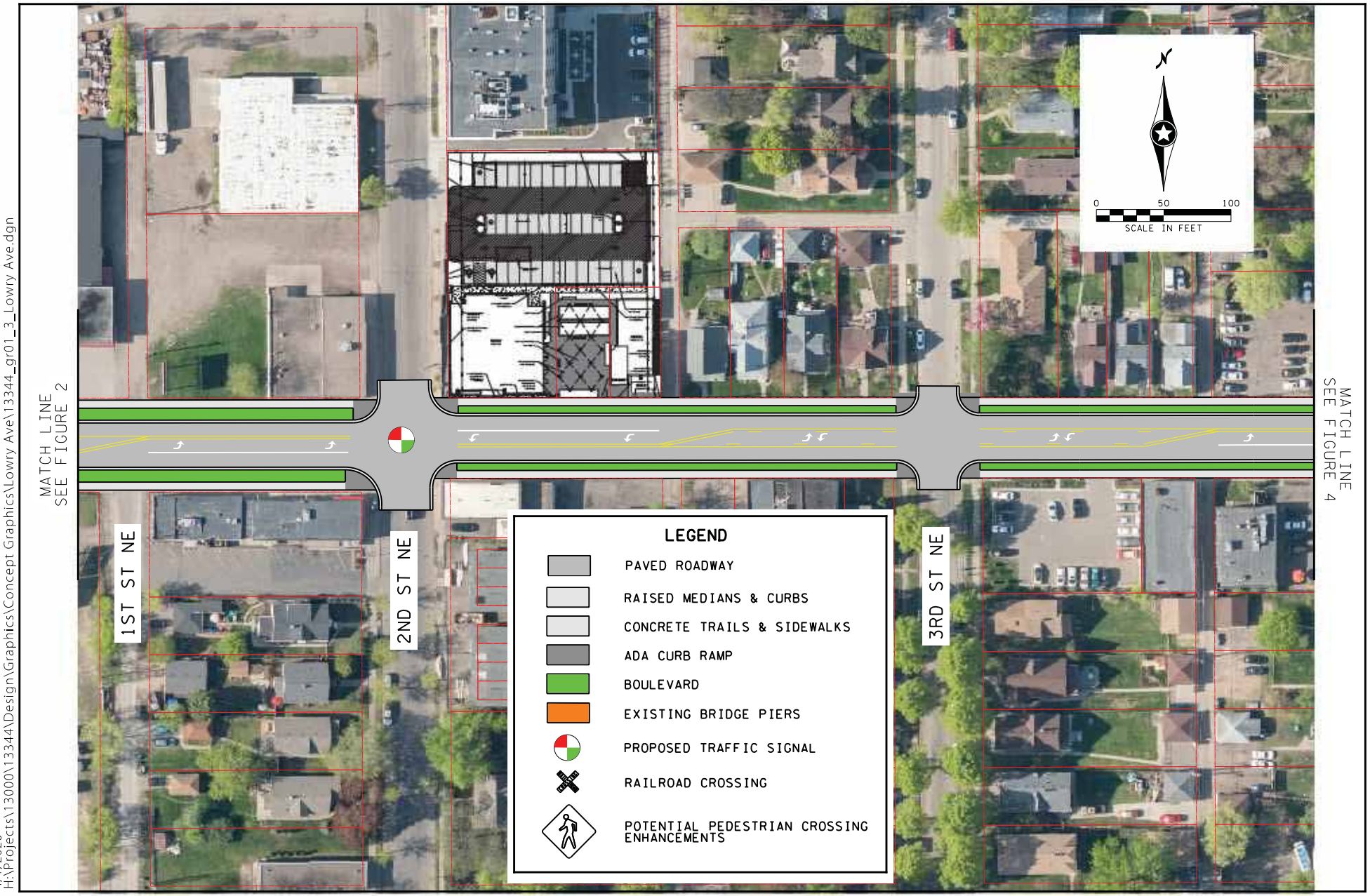
Hennepin County Improvements

CSAH 153 (Lowry Ave) from CSAH 23 (Marshall St NE) to Washington St NE
Minneapolis, MN

Figure 2

CSAH 153 (Lowry Ave NE) Reconstruction Project

Attachment 05 | Potential Layout



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4/1/2020
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Hennepin County Improvements

CSAH 153 (Lowry Ave) from CSAH 23 (Marshall St NE) to Washington St NE
Minneapolis, MN

Figure 3

CSAH 153 (Lowry Ave NE) Reconstruction Project

Attachment 05 | Potential Layout

Job #13344
4/1/2020
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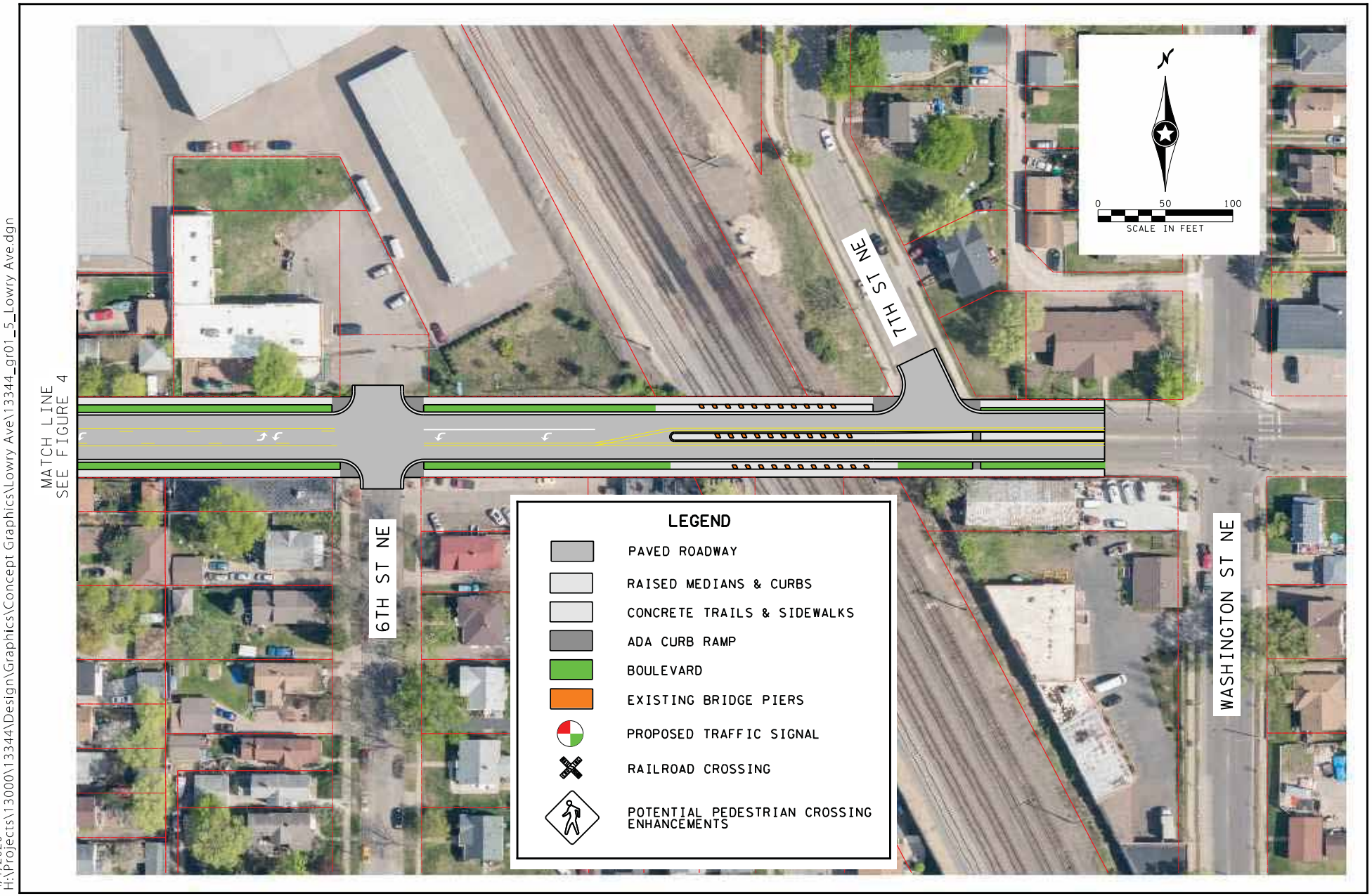
Hennepin County Improvements

CSAH 153 (Lowry Ave) from CSAH 23 (Marshall St NE) to Washington St NE
Minneapolis, MN

Figure 4

CSAH 153 (Lowry Ave NE) Reconstruction Project

Attachment 05 | Potential Layout



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Hennepin County Improvements

CSAH 153 (Lowry Ave) from CSAH 23 (Marshall St NE) to Washington St NE
Minneapolis, MN

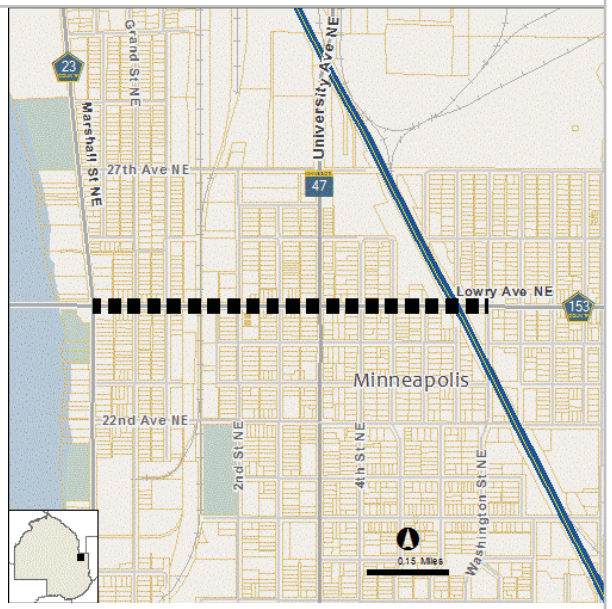
Figure 5

CSAH 153 (Lowry Ave NE) Reconstruction Project

Attachment 06 | 2020-2024 Hennepin County Transportation Capital Improvement Program

Project Name: 2140800 CSAH 153 - Reconst Lowry Ave fr Marshall St to Washington
Major Program: Transportation Provisional Projects
Department: Transportation Provisional Roads & Bridges Projects

Funding Start: Beyond 2024
Funding Completion: Beyond 2024



Summary:

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

Purpose & Description:

The existing roadway (last reconstructed in 1962) is nearing the end of its service life and warrants replacement. Routine maintenance activities (such as overlays and crackseals) are no longer effective in preserving assets. The roadway was originally constructed as concrete pavement, causing premature surface cracking at joints after the completion of each pavement overlay. The sidewalk is located adjacent to the roadway, includes various obstructions within the walking route (such as fire hydrants, utility poles, and signs), and includes many pedestrian ramps that do not meet current ADA design standards. These sidewalk characteristics result in poor accommodations for people walking, especially those with limited mobility. Furthermore, there is an existing Burlington Northern Santa Fe (BNSF) Railroad bridge that extends over Lowry Avenue NE (CSAH 153) near 7th Street NE. The bridge structure is not adequate; only providing enough space underneath for one vehicle lane in each direction, causing an unnecessary convergence of vehicle lanes.

Community Works completed the Lowry Avenue NE Framework Plan in 2015 that identified corridor needs in terms of mobility and development potential. There were two main themes that ensued from the study. First, the need to create a more pedestrian friendly environment, and second, to make significant improvements at both the University Avenue NE (TH 47) and Central Avenue NE (TH 65) intersections.

The proposed project will include new pavement, curb, storm water utilities, sidewalk, ADA accommodations, and traffic signals. It is anticipated that a boulevard area will be constructed to accomplish the following: provide space for streetscaping elements, separate pedestrians from the roadway, and provide adequate space for signs and snow storage. Staff is currently analyzing various roadway configurations to determine the recommended environment to accommodate users. Additionally, this project would include improvements to the University Avenue (TH 47) intersection, which was identified as a priority from the Lowry Avenue NE Framework Plan. This project is Phase 2 (or 2) of capital improvements recommended for the Lowry Avenue NE corridor.

This is a provisional project dependent upon the availability of funding.

Revenue for this project has not yet been entered into the CIP.

EXPENSE	Budget To-Date	12/31/19 Act & Enc	Balance	2020 Budget	2021	2022	2023	2024	Beyond 2024	Total
Right of Way									1,430,000	1,430,000
Construction									5,100,000	5,100,000
Consulting									1,280,000	1,280,000
Contingency									2,550,000	2,550,000
Total									**10,360,000**	**10,360,000**

CSAH 153 (Lowry Ave NE) Reconstruction Project

Attachment 06 | 2020-2024 Hennepin County Transportation Capital Improvement Program

Project Name: 2140800 CSAH 153 - Reconst Lowry Ave fr Marshall St to Washington
Major Program: Transportation Provisional Projects
Department: Transportation Provisional Roads & Bridges Projects

Funding Start: Beyond 2024
Funding Completion: Beyond 2024

Current Year's CIP Process Summary	Budget To-Date	2020 Budget	2021	2022	2023	2024	Beyond 2024	Total
Department Requested								
Administrator Proposed								
CBTF Recommended								
Board Approved Final								

Scheduling Milestones (major phases only):

Project's Effect on Annual Operating Budget:

Additional planning and design work is required to determine the impact to Transportation Department staff or annual operating costs anticipated by this project.

Environmental Impacts and Initiatives:

Changes from Prior CIP:

- No changes since the 2019-2023 Transportation Capital Improvement Program.

Board Resolutions / Supplemental Information:

This is a provisional project dependent upon the availability of funding.

$2,650,000 in county bonds that were previously programmed in the Lowry Avenue NE Community Works Capital Project (CP 1001648) will likely be requested in future years for the Lowry Avenue NE (CSAH 153) Phase II Project (CP 2140800). These funds are intended to complement CP 2140800 for bicycle, pedestrian, and drainage improvements to better accommodate future development opportunities along Lowry Avenue NE (CSAH 153) as recommended by the Lowry Avenue NE Corridor Plan and Implementation Framework (completed in 2015). This request for county bonds is being postponed until additional funding is secured.

Last Year's CIP Process Summary	Budget To-Date	2019	2020	2021	2022	2023	Beyond 2023	Total
Department Requested								
Administrator Proposed								
CBTF Recommended								
Board Approved Final								

CSAH 153 (Lowry Ave NE) Reconstruction Project

Attachment 07 | 2020-2024 Hennepin County Community Works Capital Improvement Program

Project Name: 1001648 Lowry Avenue NE Community Works
Major Program: Public Works
Department: Community Works

Funding Start: 2014
Funding Completion: 2020

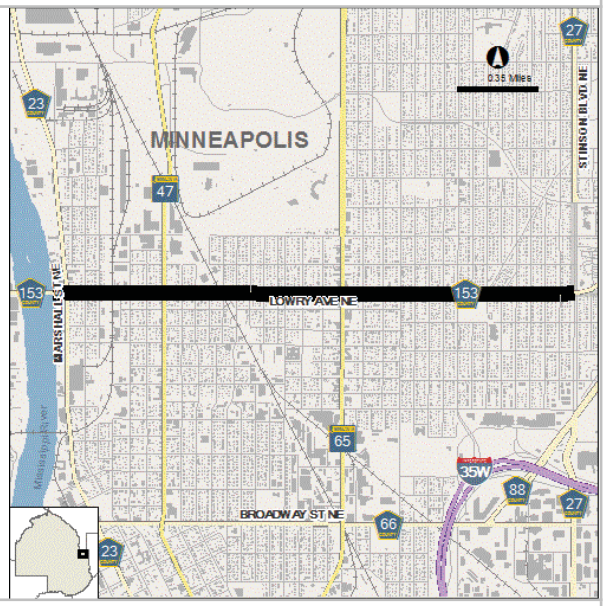
Summary:

The Lowry Avenue Community Works Northeast project encompasses the Lowry Avenue corridor segment in Northeast Minneapolis, east of the Mississippi River between Marshall Street and Stinson Boulevard. While Lowry Avenue forms the spine of the project, the study area expands several blocks north and south of Lowry Avenue at the study nodes of Marshall Street NE, 2nd Street NE, University Avenue NE, Washington Street NE, Monroe Street NE, Central Avenue NE and Johnson Street.

Purpose & Description:

The purpose of the Lowry Avenue Community Works Northeast project is to improve transportation options, offer housing choice, improve the natural environment, and support business growth at key intersections. To achieve these goals, Hennepin County created the "Lowry Avenue Northeast Plan and Implementation Framework" in 2014, which was adopted by both the Hennepin County Board and the Minneapolis City Council in 2015. This plan identifies the short-term need to redevelop the Lowry Avenue NE intersections of University and Central avenues and the long-term need to reconstruct the right-of-way to make it safer for pedestrians, bicyclists and vehicles. Pedestrians feel unsafe walking on the narrow back-of-curb sidewalks and semi-trucks using the University Avenue intersection experience difficulty navigating turns without encroaching on the sidewalk.

The project was awarded $7.0 million in federal funds in the 2018 Regional Solicitation for the reconstruction of Lowry Avenue NE from Washington Street NE to east of Johnson Street NE. This construction project is now in Transportation's CP 2140900 CSAH 153 and construction is expected in 2023.



REVENUE	Budget To-Date	12/31/19 Act & Enc	Balance	2020 Budget	2021	2022	2023	2024	Beyond 2024	Total
Property Tax	325,000	325,000								325,000
Bonds - GO	1,000,000	(60,235)	1,060,235	(430,000)						570,000
State - Other	350,000	350,000								350,000
Total	**1,675,000**	**614,765**	**1,060,235**	**(430,000)**						**1,245,000**

EXPENSE	Budget To-Date	12/31/19 Act & Enc	Balance	2020 Budget	2021	2022	2023	2024	Beyond 2024	Total
Land	1,000,000		1,000,000	(430,000)						570,000
Construction		945,000	(945,000)							
Consulting	675,000	294,960	380,040							675,000
Other Costs		336	(336)							
Total	**1,675,000**	**1,240,295**	**434,705**	**(430,000)**						**1,245,000**

CSAH 153 (Lowry Ave NE) Reconstruction Project

Attachment 07 | 2020-2024 Hennepin County Community Works Capital Improvement Program

Project Name: 1001648 Lowry Avenue NE Community Works
Major Program: Public Works
Department: Community Works

Funding Start: 2014
Funding Completion: 2020

Current Year's CIP Process Summary	Budget To-Date	2020 Budget	2021	2022	2023	2024	Beyond 2024	Total
Department Requested	1,675,000	(430,000)						1,245,000
Administrator Proposed	1,675,000	(430,000)						1,245,000
CBTF Recommended	1,675,000	(430,000)						1,245,000
Board Approved Final	1,675,000	(430,000)						1,245,000

Scheduling Milestones (major phases only):

Awarded $7.0 million in Regional Solicitation funding in 2018

Design planned in 2019-2022

Construction expected in 2023

Project's Effect on Annual Operating Budget:

Environmental Impacts and Initiatives:

Changes from Prior CIP:

No additional funds are required for 2020 or in future years, resulting in an overall budget reduction of $4,680,000 in bonds ($430,000 in prior years and $4,250,000 in future years) as compared to 2019.

Community Works and Transportation are partnering on the phased reconstruction of Lowry Avenue Northeast. Therefore, requests totaling $4,680,000 in bonds for the implementation of Lowry Avenue Community Works Northeast are or will be included in capital projects as follows:

- $430,000 in prior years bonds in CP 2140900 CSAH 153 Reconst Lowry Ave from Washington NE to Johnson; and
- $1,600,000 in bonds in future years in CP 2140900 CSAH 153 Reconst Lowry Ave from Washington NE to Johnson; and
- $2,650,000 in bonds may be requested in future years in CP 2140800 CSAH 153 Reconst Lowry Ave from Marshall St to Washington NE as other project funding is identified.

Board Resolutions / Supplemental Information:

Resolution 13-0358R2 (adopted November 19, 2013) approved Agreement A131292 with Stantec, Inc. for planning and design services to update the 2002 Lowry Avenue Corridor Plan for the Lowry Avenue corridor in Northeast Minneapolis. The planning process evaluated opportunities for bicycle and pedestrian improvements along the Northeast corridor, with a focus on infrastructure improvements and redevelopment opportunities at six intersections along Lowry Avenue Northeast: Marshall Street Northeast, 2nd Street Northeast, University Avenue Northeast, Washington Street Northeast, Monroe Street Northeast, and Central Avenue Northeast.

Resolution 15-0403 (adopted October 20, 2015) adopted the Lowry Avenue Northeast Corridor Plan and Implementation Framework.

Resolution 17-0338 (adopted September 7, 2017) approved Agreement A177721 with the City of Minneapolis to provide for reimbursement of 50% of eligible costs associated with property acquisition for right-of-way purposes at the intersection of Lowry Avenue Northeast and Central Avenue.

In September 2017, Lowry Avenue was reclassified as an A-Minor roadway making it eligible for regional solicitation.

Resolution 18-0218 (adopted June 26, 2018) authorized Transportation to submit an application for $7,000,000 in federal funding through the Regional Solicitation for the CP 2140900 CSAH 153 (Lowry Avenue) from Washington Street NE to Johnson Street NE in Minneapolis.

"Budget to Date" includes $350,000 of County Program Aid which is categorized as a "State" funding source. County Program Aid is a general purpose state aid and is used by the county as an off-set to county levied property tax.

Last Year's CIP Process Summary	Budget To-Date	2019	2020	2021	2022	2023	Beyond 2023	Total
Department Requested	1,675,000		500,000	1,100,000			2,650,000	5,925,000
Administrator Proposed	1,675,000		500,000	1,100,000			2,650,000	5,925,000
CBTF Recommended	1,675,000		500,000	1,100,000			2,650,000	5,925,000
Board Approved Final	1,675,000		500,000	1,100,000			2,650,000	5,925,000

HENNEPIN COUNTY
LOWRY AVENUE COMMUNITY WORKS

Plan Summary

Lowry Avenue Northeast corridor plan and implementation framework

Project partners

Hennepin County Public Works

City of Minneapolis

Minnesota Department of Transportation

Mississippi Watershed Management Organization

Minneapolis Parks and Recreation Board

Metro Transit

Audubon Neighborhood Association

Bottineau Neighborhood Association

Holland Neighborhood Improvement Association

Concerned Citizens of Marshall Terrace

Windom Park Citizens in Action

Minneapolis Park and Recreation Board

Transforming a key roadway into a great urban place

In 2014, Hennepin County produced a plan and implementation framework to revise and update the 2002 Lowry Avenue corridor plan. People who live, work, play or worship in the corridor provided intensive input so that the plan could reflect current community priorities and environmental needs in the following areas:

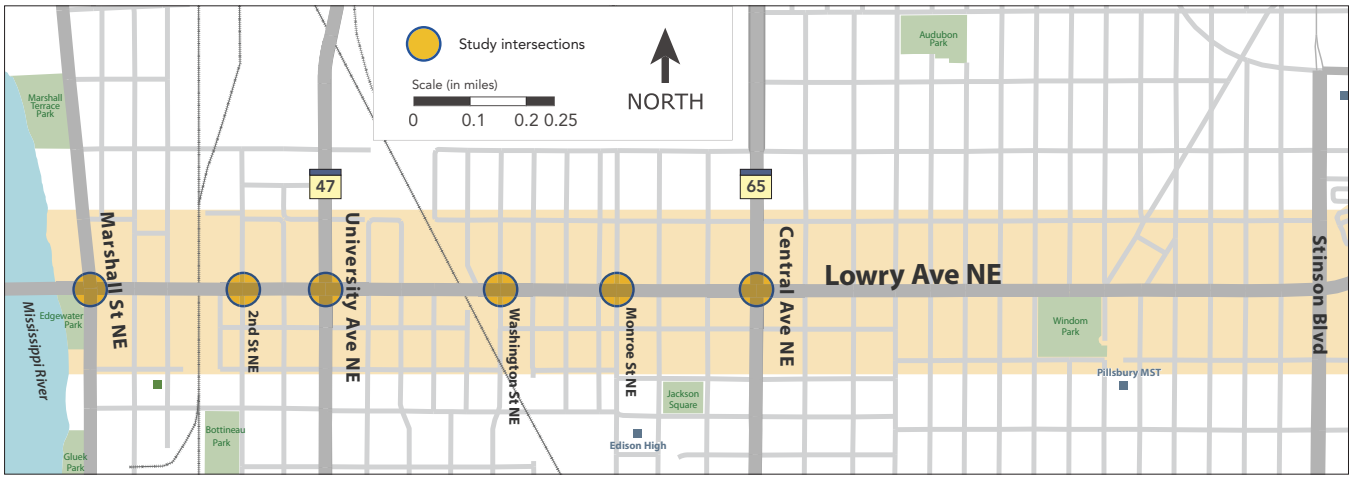
- Redevelopment of six key intersections along Lowry Avenue Northeast
- Improvements for pedestrians and bicyclists
- Streetscape improvements
- Stormwater treatment, storage and retention

The plan focuses on accommodating all modes of transportation—including bicycle, pedestrian, truck, transit, and parking—within a limited right-of-way, in a manner that supports the businesses and residents of the corridor and encourages investment and development.

Read or download the full corridor plan at ***www.hennepin.us/lowry***, where you can also learn more about the project and subscribe to email updates.

www.hennepin.us/LOWRY

Lowry Avenue Northeast project area



Key highlight: vision for development

The corridor plan shows how areas at six key intersections could change over time—if land becomes available from willing sellers or through tax forfeiture. These redevelopment scenarios account for existing buildings' age and condition, land parcel size, and a market analysis for each location. Scenarios for two priority intersections are summarized here; the plan includes scerarios for all six.

Probable near-term developer interest along Lowry Avenue NE

Cross street	Retail	Office	Housing
Marshall Street NE	High	Medium	High
Central Avenue NE	High	Medium	Medium
University Avenue NE	Medium	Low	Medium
Second Avenue NE	Medium	Low	Medium
Monroe Street NE	Medium	Low	Medium
Washington Street NE	Low	Low	Low

Redevelopment Priority 1: Lowry Avenue NE and Central Avenue NE

To accommodate transportation improvements, additional property would be needed for slight roadway shifts in the intersection's northwest and southeast quadrants. Any property remaining after the roadway reconstruction will be available for new housing, parking and businesses.

Additional mixed-use redevelopment in the southeast quadrant could be phased in as more property becomes available for sale, adding to the area's current reinvestment synergy.

Development at this active neighborhood node can build on Central Avenue's revival south of the intersection. Amenities to complement new housing and businesses include wider sidewalks, bicycle parking and transit shelters.

Redevelopment Priority 2: Lowry Avenue and University Avenue NE

Roadway shifts will improve this intersection—a nexus for semi-truck traffic—for all modes of traffic

Relocation proposed for businesses in the intersection's southern quadrants; portions not used for the roadway shift to be redeveloped as mixed-use buildings.

Potential for a mixed-use urban village with new housing choices, restaurants and businesses, developed by combining smaller parcel acquisitions into larger ones.

Key highlight: Lowry Avenue NE reconstruction and streetscape improvements

When Lowry Avenue's pavement needs replacement, a total reconstruction of the street between Marshall Street and Stinson Boulevard may be pursued. The corridor plan recommends that reconstruction along the entire avenue —not just at key intersections—include wider sidewalks and boulevards, as well as three travel lanes west of Central Avenue, and two travel lanes plus two bicycle lanes east of Central Avenue.

Through the planning process, community stakeholders identified broad themes for a streetscape design that honors the corridor's history, people and unique features, and uses industrial materials (wood, brick, metal and concrete), bright colors and bold paving patterns. These enhancements will also require funding commitments for ongoing maintenance of individual elements.

The streetscape for Lowry Avenue NE includes both aesthetic and environmental improvements.

Greening opportunities in the corridor include:

- rainwater storage and treatment
- solar and other forms of clean energy
- plantings to mitigate air pollution, control runoff

Read or download the full corridor plan at www.***hennepin.us/lowry***, where you can also learn more about the project and subscribe to email updates.

v2--35-201-02-15_LowryAveNECorridor_ImplementationFramework-2015version.indd 1-2

Key highlight: Improvements for pedestrians and bicyclists

Walking and biking are critical transportation modes along Lowry Avenue Northeast, but bicycle lanes do not exist. Meanwhile, walking is hampered by narrow sidewalks that run directly along the roadside and are obstructed by utility poles, street signs and snow.

During the planning process, studies determined that it is feasible to convert space for motor vehicle travel and parking to pedestrian and bicycle use. The proposals shown here were selected as the preferred designs from a range of scenarios developed to allocate the right-of-way among pedestrian, bicycle and motor vehicle uses east and west of Central Avenue Northeast.

West of Central Avenue

Highlights include three travel lanes; wider sidewalks; boulevards with space for trees, snow storage, rainwater infiltration.

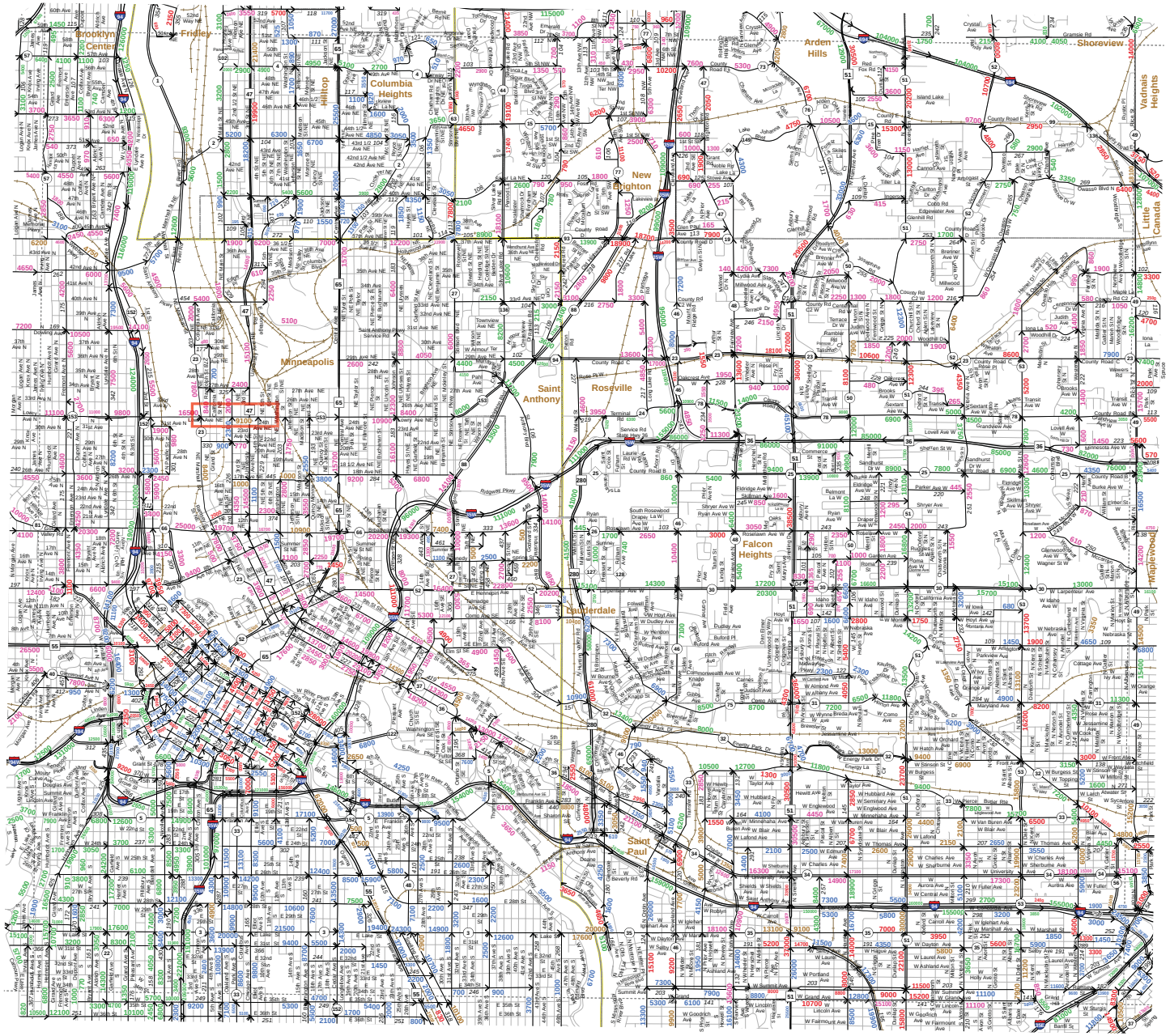
East of Central Avenue

Highlights include two travel lanes; east- and west-bound bicycle lanes; wider sidewalks; boulevards with space for trees, snow storage, rainwater infiltration

CSAH 153 (Lowry Ave NE) Reconstruction Project

Attachment 09 | MnDOT 50-Series Map

2015 Publication Traffic Volumes Metro Street Series - 3E



0 0.25 0.5 0.75 1 Mi.

Numerals Indicate Average Annual Daily Traffic (AADT) Volumes on Designated Roads

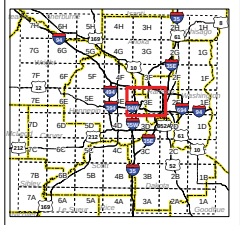
Traffic Volumes are Subject to Variability and Construction Effects
For More Info Visit:
http://www.dot.state.mn.us/traffic/data/coll-methods.html#cp

Minnesota Department of Transportation
Office of Transportation Data and Analysis
Traffic Volume Program
http://www.dot.state.mn.us/traffic/data/index.html

MAP LEGEND

AADT Year
- 2015 2014
- 2013 2012
- 2011 and older

- Interstate 94
- US Highway 169
- MN Highway 55
- CSAH 55
- MSAS 101
- County Road 55
- Other Roads
- Railroads
- Street Series Grid
- Cities
- COUNTIES
- Lakes
- Rivers
- Perennial Streams
- Ditches
- National Forests
- National Parks
- Tribal Gov'ts
- State Forests
- State Parks



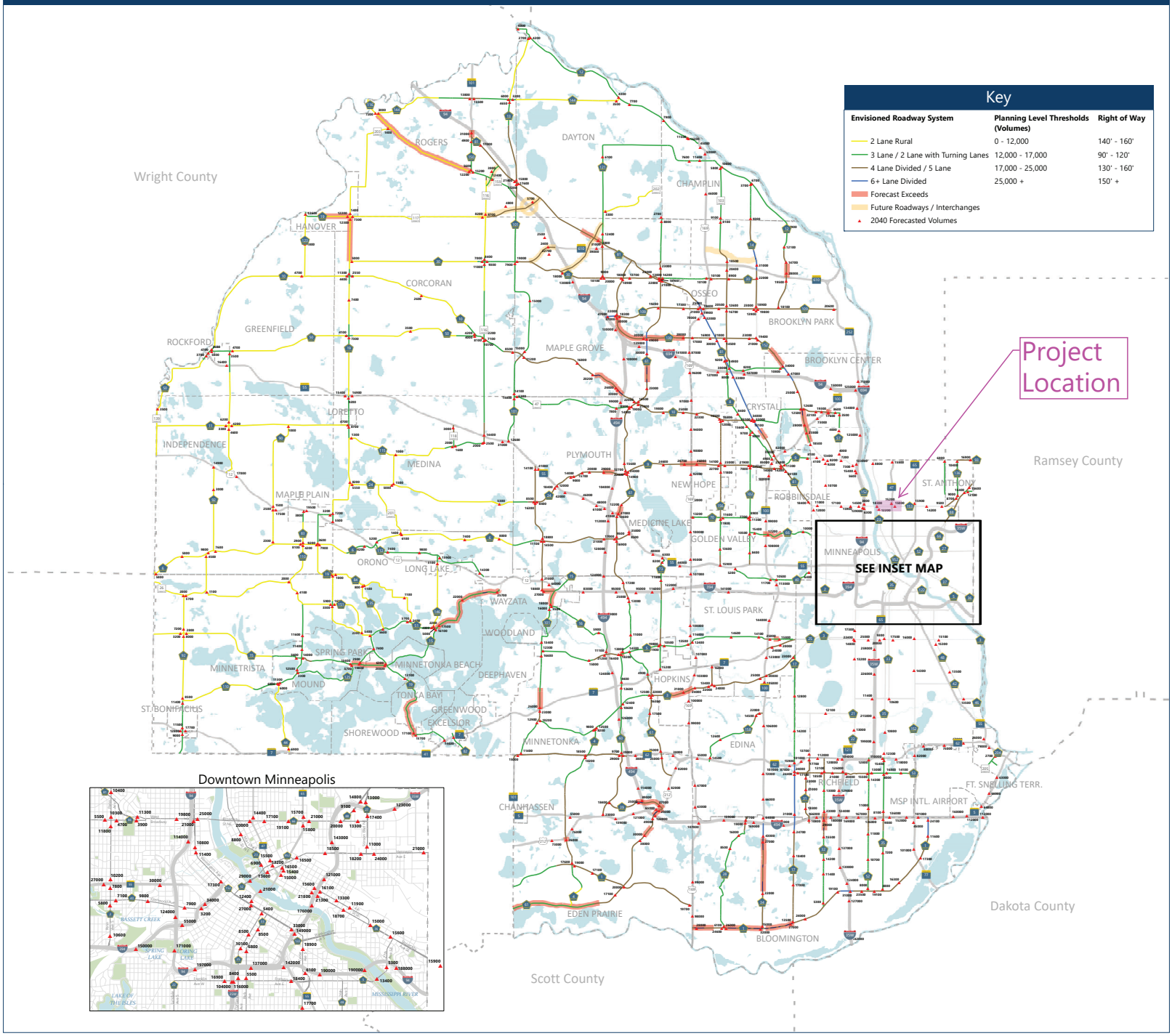
Map Source:
Minnesota Department of Transportation
Office of Transportation Data and Analysis
Traffic Volume Program
2015 AADT Product
http://www.dot.state.mn.us/traffic/data/data-products.html

To view this data using an online interactive map please visit: http://www.dot.state.mn.us/traffic/data/tma.html

Hennepin County 2040 Transportation Systems Plan

Attachment 10 | 2040 Forecast Traffic Volumes

HENNEPIN COUNTY
MINNESOTA



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Publication date: 2/3/2020

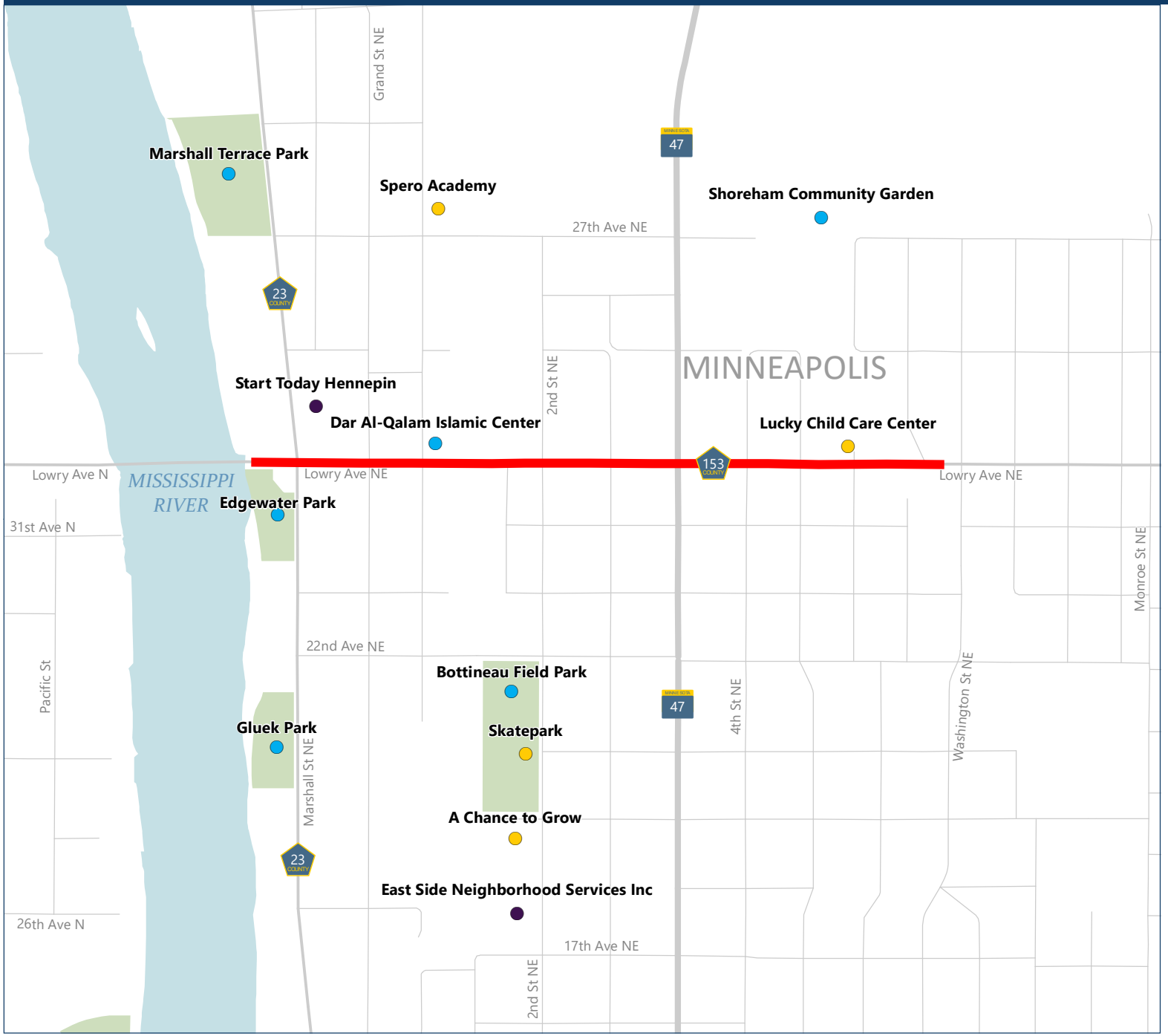
Data sources: SRF Consulting, Hennepin County Transportation Planning

N 0 5 10 Miles

CSAH 153 (Lowry Ave NE) Reconstruction Project

Attachment 11 | Socio-Economic Equity Map

HENNEPIN COUNTY
MINNESOTA



Key

- Project Location

Socio-Economic Equity Category

- Community Resource
- Disability
- Elderly
- Low-Income
- Youth

0 0.125 0.25 Miles

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.

Published date: 4/1/2020

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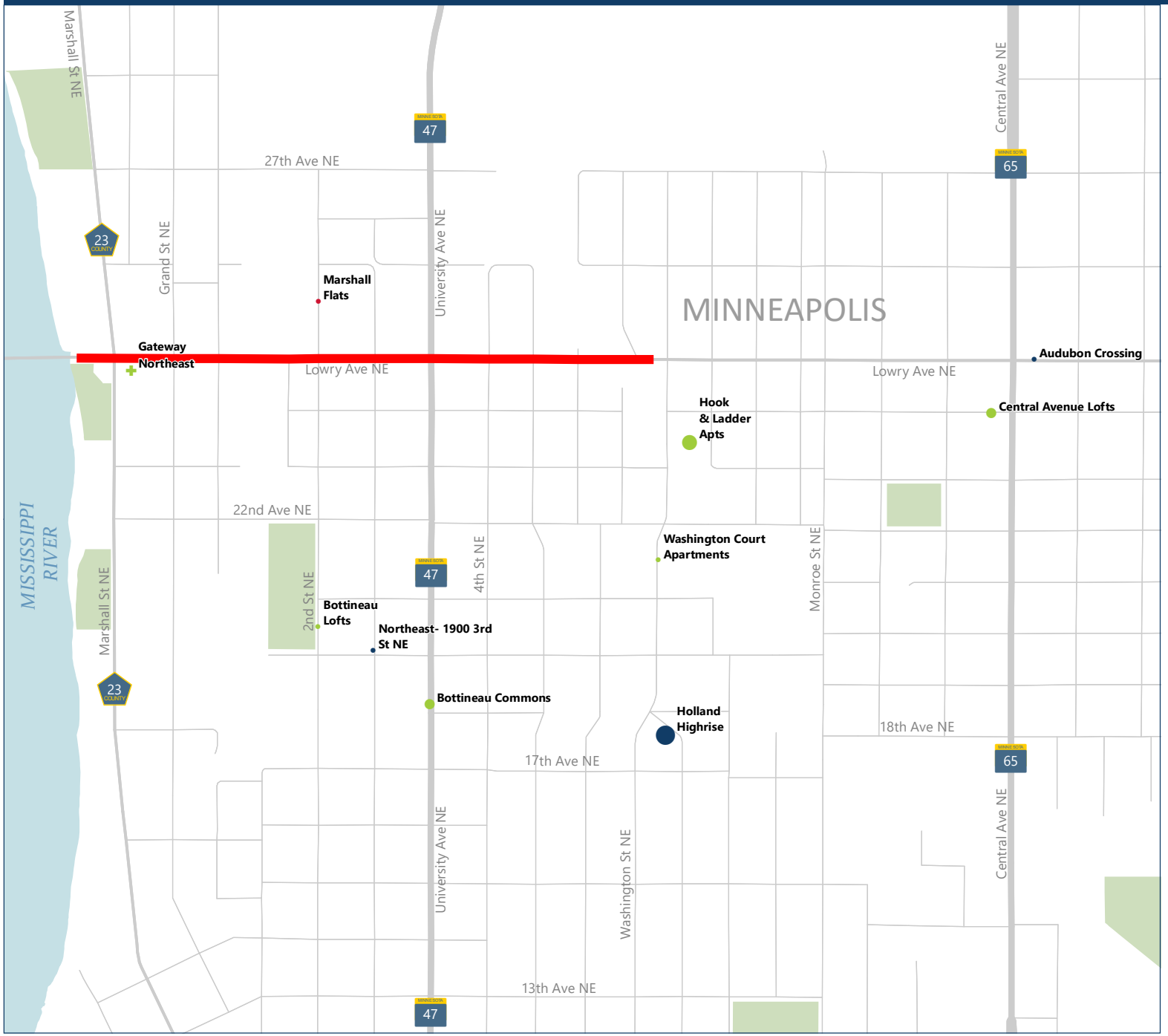
CSAH 153 (Lowry Ave NE) Reconstruction Project

Attachment 12 | Affordable Housing Access Map

HENNEPIN COUNTY
MINNESOTA



Key

- Project Location

Affordable Units

- 0 - 50
- 51 - 100
- 101 - 150
- 151 - 200
- 201 - 1500

Groups Served

- People with Disabilities
- Elderly
- Family
- Homeless
- Single People
- Multiple Groups
- No Information

Construction Status

- Complete
- Planned

0 0.15 0.3 Miles

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.

Published date: 4/29/2020

N

Hennepin

CSAH 153 (Lowry Ave NE) Reconstruction Project

Attachment 13 | StreetLight HCAADT Estimate

Table 1: HCAADT Estimates

Type of Travel	Zone Name	Average Daily Zone Traffic (StL Index)	HCAADT to Index Ratio	**Estimated** HCAADT
Commercial	CSAH 5 & W of I-35W	12085	0.1948	2350
Commercial	CSAH 9 & TH 169 Bridge	7766	0.1948	1500
Commercial	CSAH 152 & S of Plymouth Ave	5668	0.1948	1100
Commercial	CSAH 153 & W of TH 47	6647	0.1948	1300

Example calculation: 12085*0.1948 = 2354

Table 2: Reference Sites Countywide

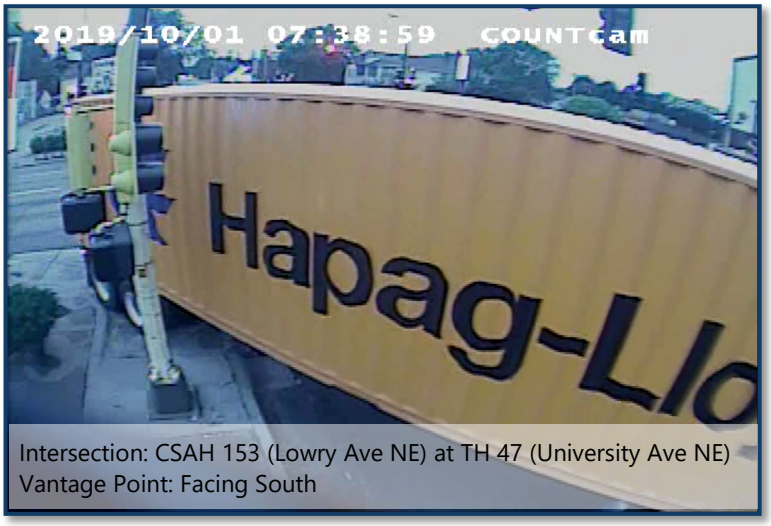
Type of Travel	Zone Name	Average Daily Zone Traffic (StL Index)	HCAADT	HCAADT to Index Ratio
Commercial	H008	4381	1050	0.2397
Commercial	H061	2966	700	0.2360
Commercial	H070	4362	870	0.1994
Commercial	H263	6122	1250	0.2042
Commercial	H267	14545	2850	0.1959
Commercial	H268	7033	1800	0.2559
Commercial	H275	9115	1200	0.1317
Commercial	H286	4932	590	0.1196
Commercial	H293	3632	1650	0.4543
Commercial	H390	6381	840	0.1316
Commercial	H427	9914	1850	0.1866
Commercial	H440	2780	830	0.2986
Commercial	H442	4060	840	0.2069
Commercial	H522	10852	1400	0.1290
Commercial	H527	8089	1050	0.1298
Commercial	H639	8521	1100	0.1291
Commercial	H706	15969	2150	0.1346
Commercial	H712	11034	1600	0.1450
Commercial	H718	25554	3400	0.1331
Commercial	H719	18112	3600	0.1988
Commercial	H732	5101	730	0.1431
Commercial	H741	28006	4700	0.1678
Commercial	H803	8825	2550	0.2890
Commercial	H829	3394	760	0.2239
Commercial	H847	5223	1200	0.2298
Commercial	H875	4416	670	0.1517

Average ratio 0.1948

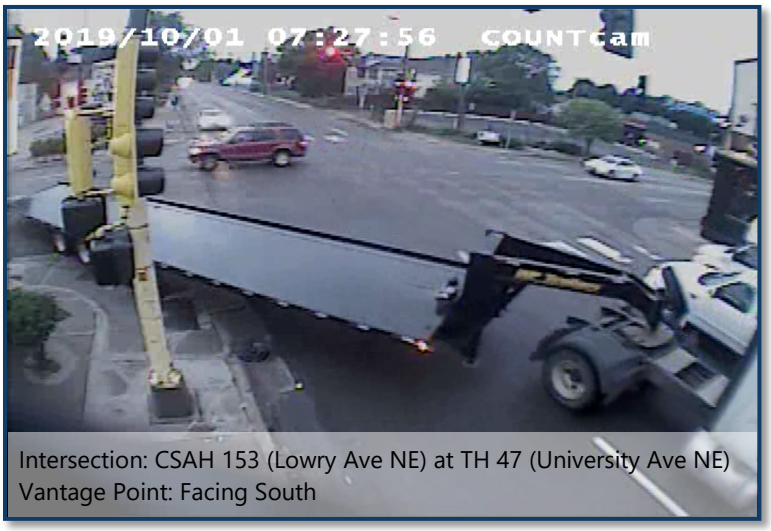
CSAH 153 (Lowry Ave NE) Reconstruction Project

Attachment 14 | Truck Turn Examples at TH 47 (University Ave NE)

Intersection: CSAH 153 (Lowry Ave NE) at TH 47 (University Ave NE)
Vantage Point: Facing South



Intersection: CSAH 153 (Lowry Ave NE) at TH 47 (University Ave NE)
Vantage Point: Facing South



Intersection: CSAH 153 (Lowry Ave NE) at TH 47 (University Ave NE)
Vantage Point: Facing South

CSAH 153 (Lowry Ave NE) Reconstruction Project

Attachment 15 | Minneapolis Street Lighting Plan

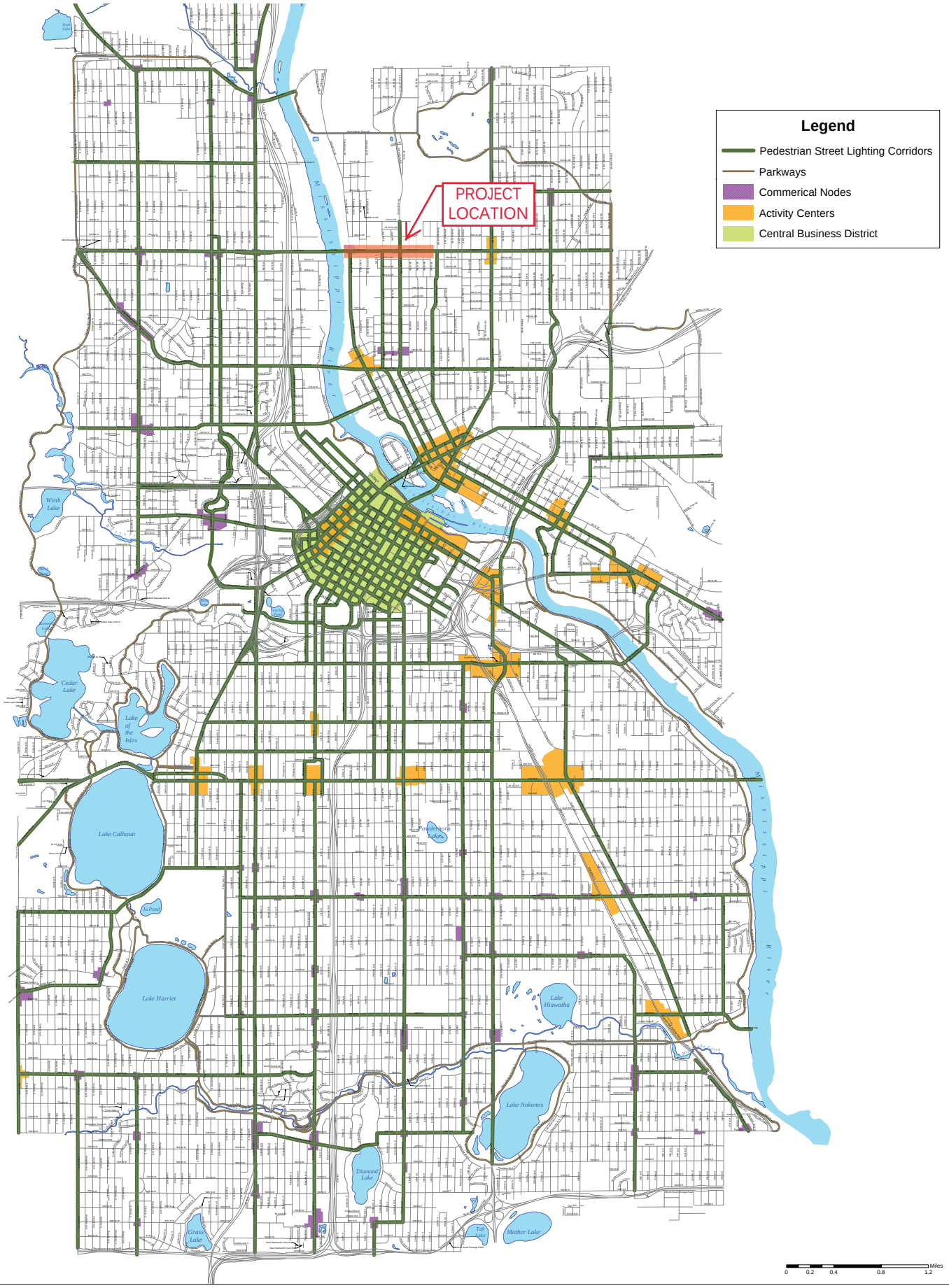


Figure 2: Minneapolis Street Lighting Plan

4/3/2015

CSAH 153 (Lowry Ave NE) Reconstruction Project

Attachment 16 | Crash Map and Detail Listing

HENNEPIN COUNTY
MINNESOTA

Key

- Major Intersection
- Crash Segment
- Project Location

0 0.125 0.25 Miles

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Published date: 3/19/2020

N

Hennepin

CSAH 153 (Lowry Ave NE) Reconstruction Project

Attachment 16 | Crash Map and Detail Listing

Intersection A | At CSAH 23 (Marshall St NE)

Incident ID	Roadway	Month	Day	Year	Hour	Sev	Num of Ks	Number of Veh	Basic Type	Contributing Factor	Latitude	Longitude
00524639	NE MARSHALL ST	12	13	2017	12	5	0	1	4		45.01299873	-93.27177385
00652024	NE MARSHALL ST	10	15	2018	11	3	0	2	9	99	45.01314045	-93.27175288
00343596	NE MARSHALL ST	4	20	2016	9	5	0	1	4		45.01315115	-93.271763
00340272	NE MARSHALL ST	4	5	2016	2	5	0	1	4	1	45.01317746	-93.27171612
00526063	NE MARSHALL ST	12	18	2017	10	5	0	2	7	99	45.01316541	-93.27177314
00606153	NE MARSHALL ST	6	22	2018	4	5	0	3	7	74	45.01317141	-93.27175302
00487942	NE MARSHALL ST	7	19	2017	12	5	0	2	7	11	45.01318291	-93.27181055
00379649	NE MARSHALL ST	9	16	2016	5	5	0	1	4		45.01319659	-93.27178202
00452264	NE MARSHALL ST	5	15	2017	7	3	0	2	5	71	45.01319084	-93.2717986
00666393	NE MARSHALL ST	12	7	2018	11	5	0	1	4		45.01319986	-93.27181024
00628364	NE MARSHALL ST	8	17	2018	9	5	0	1	4	10	45.01326322	-93.27170645
00448442	NE MARSHALL ST	4	29	2017	12	5	0	1	4	11	45.01327104	-93.27192474
00325102	NE MARSHALL ST	2	1	2016	4	5	0	2	5	99	45.01330897	-93.27178384
00425866	NE MARSHALL ST	2	28	2017	8	4	0	1	3	75	45.01330902	-93.27179901
00522011	LOWRY AVE NE	12	5	2017	9	5	0	1	3	99	45.01327792	-93.27239199
00468899	LOWRY AVE NE	6	11	2017	2	5	0	1	4		45.01315024	-93.27214243
00589163	LOWRY AVE NE	4	4	2018	6	5	0	2	10	1	45.01315028	-93.27212564
00473613	LOWRY AVE NE	6	30	2017	7	5	0	1	4		45.01309961	-93.27186051
00385406	LOWRY AVE NE	10	9	2016	7	3	0	5	5	7	45.01317436	-93.27183362
00632482	LOWRY AVE NE	9	4	2018	5	5	0	2	5	99	45.01318785	-93.27185048
00395118	LOWRY AVE NE	11	17	2016	5	5	0	2	8	1	45.01315943	-93.27178319
00607463	LOWRY AVE NE	6	28	2018	4	3	0	1	4	1	45.01315124	-93.27177538
00652795	LOWRY AVE NE	10	17	2018	1	4	0	2	10	99	45.01315293	-93.27179154
00320715	LOWRY AVE NE	1	16	2016	9	5	0	2	10	1	45.01314233	-93.27174947
00598656	LOWRY AVE NE	5	21	2018	10	5	0	2	6	2	45.01314406	-93.27173611
00361002	LOWRY AVE NE	7	2	2016	12	5	0	1	4		45.01316246	-93.27171741
00533148	LOWRY AVE NE	1	6	2018	12	5	0	1	4	70	45.01314939	-93.27171975
00520065	LOWRY AVE NE	11	27	2017	5	5	0	1	4		45.01314417	-93.27169262
00446544	LOWRY AVE NE	4	20	2017	7	3	0	2	7	74	45.01316752	-93.27166092
00370250	LOWRY AVE NE	8	9	2016	3	0	0	0	90		45.01314797	-93.2715951
00451980	LOWRY AVE NE	5	13	2017	11	5	0	2	9	2	45.01314571	-93.27157037
00470522	LOWRY AVE NE	6	17	2017	8	5	0	2	7	4	45.01315391	-93.27154584
00357672	LOWRY AVE NE	6	19	2016	11	5	0	4	7	99	45.0131562	-93.27145747
00365177	LOWRY AVE NE	7	20	2016	4	5	0	2	5	99	45.0131569	-93.27134666
00452938	LOWRY AVE NE	5	17	2017	4	0	0	0	90		45.01315576	-93.27132315
00364262	LOWRY AVE NE	7	16	2016	6	5	0	1	3	99	45.01313343	-93.27111291
00449611	LOWRY AVE NE	5	4	2017	8	5	0	1	3	99	45.01311665	-93.27102243
00672406	LOWRY AVE NE	12	29	2018	7	5	0	2	5	74	45.01321604	-93.27101452
00346723	LOWRY AVE NE	5	4	2016	4	5	0	1	4		45.01316134	-93.27058447
00450887	LOWRY AVE NE	5	9	2017	5	5	0	2	5	73	45.01307923	-93.26544676

Subtotal: 30

CSAH 153 (Lowry Ave NE) Reconstruction Project

Attachment 16 | Crash Map and Detail Listing

Intersection B | At Grand St NE

Incident ID	Roadway	Month	Day	Year	Hour	Sev	Num of Ks	Number of Veh	Basic Type	Contributing Factor	Latitude	Longitude
00330848	LOWRY AVE NE	2	21	2016	1	5	0	2	5	99	45.01314105	-93.27027876
00568723	LOWRY AVE NE	2	23	2018	7	5	0	2	10	63	45.01314416	-93.27018817
00316700	LOWRY AVE NE	1	4	2016	11	5	0	1	4	1	45.01314608	-93.27016797
00389000	LOWRY AVE NE	10	24	2016	11	5	0	2	9	2	45.01316634	-93.270153
00408741	LOWRY AVE NE	12	26	2016	3	5	0	1	4		45.01315136	-93.27014224
00427223	NE GRAND ST	3	6	2017	1	3	0	2	10	2	45.01315646	-93.27018487
00603496	NE GRAND ST	6	11	2018	1	4	0	2	10	99	45.01319308	-93.27018235
00424463	NE GRAND ST	2	21	2017	6	4	0	1	1	70	45.01321448	-93.270165
00420552	NE GRAND ST	2	3	2017	2	5	0	1	4	70	45.01322265	-93.27023555
00408215	NE GRAND ST	12	23	2016	11	4	0	2	9	1	45.0130883	-93.2701663
00635302	NE GRAND ST	9	16	2018	7	3	0	2	10	99	45.01314491	-93.27019321

Subtotal: 11

Segment C | From 150' East of Grand St NE to 150' West of 2nd St NE

Incident ID	Roadway	Month	Day	Year	Hour	Sev	Num of Ks	Number of Veh	Basic Type	Contributing Factor	Latitude	Longitude
00332908	LOWRY AVE NE	3	2	2016	9	5	0	2	10	10	45.01321405	-93.26962769
00386550	LOWRY AVE NE	10	14	2016	12	5	0	1	4	1	45.01321348	-93.26948203
00533308	LOWRY AVE NE	1	6	2018	1	5	0	2	10	2	45.01316502	-93.26891903
00331613	LOWRY AVE NE	2	24	2016	7	5	0	2	90	1	45.01313528	-93.26868714
00428805	LOWRY AVE NE	3	13	2017	9	5	0	2	5	99	45.01317953	-93.26848258
00383403	LOWRY AVE NE	10	2	2016	2	4	0	3	7	70	45.01314618	-93.26645097
00543523	CALIFORNIA ST NE	2	6	2018	10	5	0	2	10	99	45.01312476	-93.26900278
00457233	CALIFORNIA ST NE	6	5	2017	11	5	0	2	5	99	45.01319699	-93.26899976
00569693	CALIFORNIA ST NE	2	27	2018	8	5	0	1	4		45.01319581	-93.26899304
00489131	NE 1ST ST	7	24	2017	12	5	0	2	10	2	45.01312828	-93.26709725

Subtotal: 10

Intersection D | At 2nd St NE

Incident ID	Roadway	Month	Day	Year	Hour	Sev	Num of Ks	Number of Veh	Basic Type	Contributing Factor	Latitude	Longitude
00374484	LOWRY AVE NE	8	26	2016	4	5	0	2	5	1	45.01314137	-93.26630656
00431779	LOWRY AVE NE	3	27	2017	3	5	0	2	10	63	45.01315341	-93.26624954
00597192	LOWRY AVE NE	5	14	2018	6	5	0	2	5	99	45.01314629	-93.26624278
00654040	LOWRY AVE NE	10	23	2018	5	5	0	2	10	74	45.01314753	-93.26621929
00444394	LOWRY AVE NE	4	10	2017	4	5	0	2	10	1	45.01315831	-93.26618912
00599273	LOWRY AVE NE	5	23	2018	9	5	0	2	7	90	45.01316524	-93.26609849
00364073	2ND ST NE	7	15	2016	6	5	0	3	10	2	45.01314622	-93.26624001
00338409	2ND ST NE	3	26	2016	8	4	0	2	7	99	45.01317006	-93.26625969
00347823	2ND ST NE	5	9	2016	1	5	0	2	7	1	45.01317599	-93.26626979
00424453	2ND ST NE	2	21	2017	4	0	0	0	90		45.01318554	-93.26627991
00430070	2ND ST NE	3	17	2017	8	5	0	3	7	70	45.01318766	-93.26623948
00527344	2ND ST NE	12	22	2017	7	5	0	2	10	2	45.01318518	-93.2662329
00539466	2ND ST NE	1	23	2018	2	4	0	1	4		45.01322845	-93.26624317
00542587	2ND ST NE	2	3	2018	9	5	0	2	9	1	45.01322501	-93.26618607

Subtotal: 14

CSAH 153 (Lowry Ave NE) Reconstruction Project

Attachment 16 | Crash Map and Detail Listing

Segment E | From 150' East of 2nd St NE to 150' West of TH 47 (University Ave NE)

Incident ID	Roadway	Month	Day	Year	Hour	Sev	Num of Ks	Number of Veh	Basic Type	Contributing Factor	Latitude	Longitude
00443926	LOWRY AVE NE	4	8	2017	12	0	0	0	90		45.01313863	-93.26576595
00635673	LOWRY AVE NE	9	18	2018	8	5	0	2	5	1	45.0131616	-93.26477887
00318828	LOWRY AVE NE	1	11	2016	7	5	0	2	10	90	45.01315407	-93.26472169
00332999	LOWRY AVE NE	3	2	2016	5	4	0	2	10	2	45.01314456	-93.26471493
00346939	LOWRY AVE NE	5	5	2016	5	5	0	2	10	90	45.01314982	-93.26472173
00519211	LOWRY AVE NE	11	23	2017	12	5	0	2	9	2	45.01315222	-93.26471476
00360165	LOWRY AVE NE	6	28	2016	4	4	0	2	7	1	45.01314352	-93.26435906
00431803	LOWRY AVE NE	3	26	2017	2	5	0	1	4	70	45.01326701	-93.26414137
00448591	LOWRY AVE NE	4	29	2017	8	4	0	2	8	70	45.01315048	-93.26389236
00596721	LOWRY AVE NE	5	11	2018	11	3	0	2	90	99	45.01312284	-93.26371718
00635284	LOWRY AVE NE	9	16	2018	5	5	0	1	4	1	45.01317494	-93.26368953
00469830	LOWRY AVE NE	6	14	2017	11	5	0	1	4		45.01317391	-93.26357348
00620704	LOWRY AVE NE	7	14	2018	12	0	0	0	90		45.01314064	-93.26353975
00384023	LOWRY AVE NE	10	4	2016	2	5	0	2	5	2	45.01315831	-93.26339517
00424834	3RD ST NE	2	23	2017	1	3	0	1	3	71	45.01314148	-93.26472169

Subtotal: 14

CSAH 153 (Lowry Ave NE) Reconstruction Project

Attachment 16 | Crash Map and Detail Listing

Intersection F | At TH 47 (University Ave NE)

Incident ID	Roadway	Month	Day	Year	Hour	Sev	Num of Ks	Number of Veh	Basic Type	Contributing Factor	Latitude	Longitude
00596614	UNIVERSITY AVE NE	5	11	2018	2	5	0	2	9	99	45.01304213	-93.26321024
00471852	UNIVERSITY AVE NE	6	22	2017	5	5	0	1	4		45.0130581	-93.26319264
00662086	UNIVERSITY AVE NE	11	21	2018	7	3	0	2	8	99	45.01305259	-93.26321703
00368348	UNIVERSITY AVE NE	8	2	2016	12	4	0	3	7	99	45.0130775	-93.26320033
00362330	UNIVERSITY AVE NE	7	8	2016	7	4	0	2	9	75	45.01309968	-93.26323065
00602481	UNIVERSITY AVE NE	6	6	2018	5	4	0	2	90	1	45.01310612	-93.26318703
00358296	UNIVERSITY AVE NE	6	21	2016	5	5	0	2	7		45.01311615	-93.26313335
00432367	UNIVERSITY AVE NE	3	30	2017	6	5	0	2	8	1	45.01311654	-93.26314678
00501607	UNIVERSITY AVE NE	9	16	2017	3	4	0	2	10	99	45.01311602	-93.26318707
00600367	UNIVERSITY AVE NE	5	28	2018	10	5	0	2	10	70	45.01312148	-93.26318374
00636524	UNIVERSITY AVE NE	9	21	2018	2	5	0	2	7	1	45.0131129	-93.26317698
00319453	UNIVERSITY AVE NE	1	12	2016	3	5	0	2	5	99	45.01312587	-93.26315348
00629948	UNIVERSITY AVE NE	8	23	2018	5	5	0	2	9	99	45.01313623	-93.26319073
00669270	UNIVERSITY AVE NE	12	18	2018	1	5	0	2	7	4	45.01313473	-93.26317983
00417985	UNIVERSITY AVE NE	1	24	2017	10	4	0	2	10	63	45.01314385	-93.26318061
00422664	UNIVERSITY AVE NE	2	4	2017	2	2	0	2	10	99	45.01314703	-93.26318152
00430500	UNIVERSITY AVE NE	3	20	2017	3	3	0	2	8		45.01314267	-93.26317658
00331449	UNIVERSITY AVE NE	2	23	2016	9	5	0	2	10	1	45.01315288	-93.26317711
00366399	UNIVERSITY AVE NE	7	25	2016	2	3	0	2	10	2	45.01316312	-93.26317386
00582470	UNIVERSITY AVE NE	3	9	2018	3	4	0	1	1	99	45.0131613	-93.26317385
00345805	UNIVERSITY AVE NE	4	30	2016	4	5	0	1	4		45.01317005	-93.26318396
00517940	UNIVERSITY AVE NE	11	17	2017	5	5	0	1	4		45.01317247	-93.26316718
00530073	UNIVERSITY AVE NE	12	30	2017	2	3	0	1	4		45.01317902	-93.2631714
00625898	UNIVERSITY AVE NE	8	6	2018	4	3	0	2	10	2	45.01317782	-93.26319573
00392447	UNIVERSITY AVE NE	11	6	2016	4	5	0	3	10	10	45.01319274	-93.26315384
00450983	UNIVERSITY AVE NE	5	10	2017	7	5	0	2	6	1	45.01318914	-93.26316726
00333427	UNIVERSITY AVE NE	3	4	2016	4	4	0	2	9	2	45.01320063	-93.26312696
00376347	UNIVERSITY AVE NE	9	3	2016	10	3	0	2	90	1	45.01319927	-93.26319247
00589268	UNIVERSITY AVE NE	4	7	2018	9	5	0	1	4		45.01319948	-93.2631438
00626863	UNIVERSITY AVE NE	8	10	2018	3	5	0	2	7	99	45.01319663	-93.2632284
00372396	UNIVERSITY AVE NE	8	18	2016	10	5	0	2	10	2	45.0132136	-93.26321774
00382270	UNIVERSITY AVE NE	9	27	2016	2	5	0	1	4		45.01322005	-93.26319091
00495322	UNIVERSITY AVE NE	8	20	2017	5	5	0	2	8	99	45.01322208	-93.26315398
00488848	UNIVERSITY AVE NE	7	23	2017	4	5	0	2	10	1	45.01323199	-93.26313388
00620208	UNIVERSITY AVE NE	7	11	2018	4	0	0	0	90		45.01326268	-93.26329295
00337245	UNIVERSITY AVE NE	3	21	2016	3	0	0	0	90		45.01327687	-93.26333891
00444620	UNIVERSITY AVE NE	4	11	2017	3	3	0	2	10	1	45.01326852	-93.26316091
00597772	UNIVERSITY AVE NE	5	17	2018	8	5	0	1	4		45.01326793	-93.26329323
00401716	UNIVERSITY AVE NE	12	9	2016	7	5	0	1	4	70	45.01328316	-93.26300652
00512066	UNIVERSITY AVE NE	10	27	2017	4	5	0	1	3	1	45.01334266	-93.26302694
00369284	LOWRY AVE NE	8	5	2016	5	5	0	1	4	1	45.01317495	-93.2639697
00621331	LOWRY AVE NE	7	16	2018	10	5	0	0	90		45.01322544	-93.26394979
00412203	LOWRY AVE NE	1	7	2017	11	5	0	1	4	99	45.01314143	-93.26360451
00490363	LOWRY AVE NE	7	29	2017	11	5	0	0	90	11	45.01318348	-93.26355338
00507438	LOWRY AVE NE	10	8	2017	2	0	0	0	90		45.01322362	-93.26339577
00319011	LOWRY AVE NE	1	11	2016	6	5	0	2	7	71	45.0131365	-93.26336722
00654045	LOWRY AVE NE	10	23	2018	6	5	0	1	4		45.01315892	-93.26333837
00412426	LOWRY AVE NE	1	8	2017	12	3	0	2	8	2	45.01310383	-93.2633079
00444393	LOWRY AVE NE	4	10	2017	5	5	0	2	10	99	45.01319952	-93.26331169
00433231	LOWRY AVE NE	4	4	2017	11	4	0	3	10	75	45.01316322	-93.26324978
00446658	LOWRY AVE NE	4	21	2017	9	5	0	2	90	99	45.01318062	-93.26324781
00328693	LOWRY AVE NE	2	12	2016	12	5	0	1	4		45.01314322	-93.26323415
00340292	LOWRY AVE NE	4	5	2016	4	5	0	3	6	99	45.01314612	-93.26323086

CSAH 153 (Lowry Ave NE) Reconstruction Project

Attachment 16 | Crash Map and Detail Listing

Intersection F | At TH 47 (University Ave NE) - Continued

Incident ID	Roadway	Month	Day	Year	Hour	Sev	Num of Ks	Number of Veh	Basic Type	Contributing Factor	Latitude	Longitude
00375364	LOWRY AVE NE	8	30	2016	4	5	0	1	3	1	45.01313022	-93.26322743
00396428	LOWRY AVE NE	11	21	2016	8	5	0	2	10	99	45.0131671	-93.26322293
00565567	LOWRY AVE NE	2	13	2018	8	4	0	3	7	99	45.01314653	-93.26321743
00623847	LOWRY AVE NE	7	27	2018	10	4	0	2	10	1	45.01316225	-93.26322731
00652987	LOWRY AVE NE	10	19	2018	10	5	0	2	7	4	45.01315924	-93.26322085
00333859	LOWRY AVE NE	3	6	2016	2	4	0	2	9	99	45.01314557	-93.2632073
00457981	LOWRY AVE NE	6	7	2017	7	5	0	2	10	2	45.01316213	-93.26319934
00524208	LOWRY AVE NE	12	12	2017	6	5	0	1	4	1	45.01316881	-93.2632041
00586751	LOWRY AVE NE	3	31	2018	2	4	0	2	10	63	45.01314657	-93.26319496
00361805	LOWRY AVE NE	7	6	2016	2	5	0	2	7	70	45.01314746	-93.26318722
00588623	LOWRY AVE NE	4	4	2018	2	5	0	2	10	99	45.01314964	-93.26318889
00629025	LOWRY AVE NE	8	20	2018	2	5	0	2	7	1	45.01314382	-93.26319391
00533263	LOWRY AVE NE	1	6	2018	11	3	0	2	7	70	45.0131582	-93.26315704
00527041	LOWRY AVE NE	12	21	2017	10	4	0	2	9	2	45.01313679	-93.26314687
00338617	LOWRY AVE NE	3	27	2016	9	5	0	2	7	1	45.01317851	-93.26313028
00379129	LOWRY AVE NE	9	14	2016	4	4	0	2	8	90	45.01316545	-93.26311343
00402875	LOWRY AVE NE	12	9	2016	6	5	0	1	4		45.01314846	-93.26311319
00635962	LOWRY AVE NE	9	19	2018	3	5	0	2	10	1	45.0131654	-93.26313157
00470979	LOWRY AVE NE	6	19	2017	11	5	0	1	4		45.01314598	-93.26310326
00489893	LOWRY AVE NE	7	27	2017	4	5	0	1	4		45.0131881	-93.2631001
00412156	LOWRY AVE NE	1	7	2017	8	5	0	2	90	90	45.01316169	-93.2630542
00581066	LOWRY AVE NE	3	4	2018	8	5	0	2	7	99	45.01317032	-93.26306644
00333183	LOWRY AVE NE	3	3	2016	4	5	0	1	4		45.01314606	-93.26303605
00453487	LOWRY AVE NE	5	19	2017	4	5	0	2	10	1	45.01315616	-93.26300594
00495541	LOWRY AVE NE	8	21	2017	3	5	0	1	4		45.01318307	-93.26298758
00424267	LOWRY AVE NE	2	20	2017	10	5	0	2	10	99	45.01305868	-93.26293498
00409896	LOWRY AVE NE	12	30	2016	5	5	0	2	7		45.01321012	-93.26284837
00583470	LOWRY AVE NE	3	14	2018	6	5	0	2	7	1	45.01316226	-93.26283236
00588092	LOWRY AVE NE	4	4	2018	6	5	0	2	10	1	45.01315678	-93.26273729
00514386	LOWRY AVE NE	11	4	2017	12	5	0	1	4		45.0132073	-93.26251948
00542213	LOWRY AVE NE	2	3	2018	1	0	0	0	90		45.01312594	-93.26218785

Subtotal: 72

CSAH 153 (Lowry Ave NE) Reconstruction Project

Attachment 16 | Crash Map and Detail Listing

Intersection G | At 4th St NE

Incident ID	Roadway	Month	Day	Year	Hour	Sev	Num of Ks	Number of Veh	Basic Type	Contributing Factor	Latitude	Longitude
00493829	LOWRY AVE NE	8	14	2017	2	0	0	0	90		45.01325933	-93.26197557
00424882	LOWRY AVE NE	2	23	2017	5	3	0	1	1	1	45.01317076	-93.26183749
00331660	LOWRY AVE NE	2	25	2016	2	5	0	2	90	75	45.01317054	-93.26170984
00326001	LOWRY AVE NE	2	3	2016	4	5	0	3	9	1	45.01318491	-93.26167633
00372547	LOWRY AVE NE	8	18	2016	6	5	0	3	6	2	45.01316409	-93.26162928
00508742	LOWRY AVE NE	10	14	2017	3	5	0	2	10	64	45.01316538	-93.26164062
00625348	LOWRY AVE NE	8	3	2018	3	5	0	1	4	1	45.013163	-93.26158563
00594450	LOWRY AVE NE	5	1	2018	7	5	0	2	10	2	45.01312424	-93.26156746
00509145	4TH ST NE	10	16	2017	12	4	0	0	1		45.01317005	-93.26162931
00333753	4TH ST NE	3	6	2016	12	5	0	1	4	1	45.01320402	-93.26164955
00495607	4TH ST NE	8	21	2017	4	5	0	1	4	1	45.01319502	-93.26160078
00508760	4TH ST NE	10	14	2017	6	5	0	2	7	1	45.01321465	-93.26156236
00526332	4TH ST NE	12	19	2017	8	5	0	2	10	2	45.01320736	-93.2616194

Subtotal: 12

Segment H | From 4th St NE to Washington St NE

Incident ID	Roadway	Month	Day	Year	Hour	Sev	Num of Ks	Number of Veh	Basic Type	Contributing Factor	Latitude	Longitude
00456615	LOWRY AVE NE	6	2	2017	12	5	0	0	90	99	45.01319346	-93.26335867
00362310	LOWRY AVE NE	7	8	2016	2	5	0	0	90		45.01320364	-93.26307667
00604418	LOWRY AVE NE	6	15	2018	7	5	0	2	7	1	45.01315886	-93.26039855
00453492	LOWRY AVE NE	5	19	2017	5	4	0	2	10	1	45.01316215	-93.26039361
00364245	LOWRY AVE NE	7	16	2016	3	5	0	2	5	68	45.01316344	-93.26021901
00542635	LOWRY AVE NE	2	4	2018	4	0	0	0	90		45.01314397	-93.25981263
00417872	LOWRY AVE NE	1	24	2017	10	3	0	1	4	10	45.01309773	-93.25973184
00622877	LOWRY AVE NE	7	23	2018	3	5	0	2	10	1	45.01315646	-93.25921836
00593388	LOWRY AVE NE	4	25	2018	1	5	0	2	5	1	45.01318013	-93.25835018
00620100	LOWRY AVE NE	7	11	2018	1	5	0	1	4		45.01315785	-93.25809015
00499045	LOWRY AVE NE	9	5	2017	11	5	0	1	3	99	45.01317219	-93.25807007
00392652	LOWRY AVE NE	11	7	2016	12	5	0	2	7	1	45.01318574	-93.25771636
00343035	LOWRY AVE NE	4	18	2016	12	5	0	2	6	90	45.0131855	-93.25723404
00506083	NE 5TH ST	10	4	2017	8	5	0	2	10	2	45.01314181	-93.26040767
00532321	NE 5TH ST	1	3	2018	5	2	0	1	1	99	45.01315673	-93.2604077
00621814	NE 5TH ST	7	18	2018	6	3	0	2	10	70	45.01319789	-93.26038706
00403176	6TH ST NE	12	13	2016	10	5	0	1	4	11	45.01308713	-93.25931873
00607980	NE 5TH ST	6	30	2018	10	3	0	0	2		45.01314662	-93.26041704

Subtotal: 15

Project Total: 178

CMF / CRF DETAILS

CMF ID: 269

PROVIDE A LEFT-TURN LANE ON BOTH MAJOR-ROAD APPROACHES

DESCRIPTION:

PRIOR CONDITION: *NO PRIOR CONDITION(S)*

CATEGORY: INTERSECTION GEOMETRY

STUDY: *SAFETY EFFECTIVENESS OF INTERSECTION LEFT- AND RIGHT-TURN LANES*, HARWOOD ET AL., 2002

Star Quality Rating:	★★★★★

Crash Modification Factor (CMF)	
Value:	0.53
Adjusted Standard Error:	0.04
Unadjusted Standard Error:	0.04

Crash Reduction Factor (CRF)	
Value:	47 *(This value indicates a **decrease** in crashes)*
Adjusted Standard Error:	4
Unadjusted Standard Error:	4

Applicability	
Crash Type:	All
Crash Severity:	All
Roadway Types:	Not Specified
Number of Lanes:	
Road Division Type:	
Speed Limit:	
Area Type:	Urban
Traffic Volume:	
Average Traffic Volume:	
Time of Day:	
If countermeasure is intersection-based	

CMF / CRF DETAILS

CMF ID: 271

PROVIDE A LEFT-TURN LANE ON BOTH MAJOR-ROAD APPROACHES

DESCRIPTION:

PRIOR CONDITION: *NO PRIOR CONDITION(S)*

CATEGORY: INTERSECTION GEOMETRY

STUDY: *SAFETY EFFECTIVENESS OF INTERSECTION LEFT- AND RIGHT-TURN LANES*, HARWOOD ET AL., 2002

Star Quality Rating:	★★★★★

Crash Modification Factor (CMF)	
Value:	0.58
Adjusted Standard Error:	0.04
Unadjusted Standard Error:	0.03

Crash Reduction Factor (CRF)	
Value:	42 *(This value indicates a **decrease** in crashes)*
Adjusted Standard Error:	4
Unadjusted Standard Error:	3

Applicability	
Crash Type:	All
Crash Severity:	All
Roadway Types:	Not Specified
Number of Lanes:	
Road Division Type:	
Speed Limit:	
Area Type:	Urban
Traffic Volume:	
Average Traffic Volume:	
Time of Day:	
If countermeasure is intersection-based	

CMF / CRF DETAILS

CMF ID: 308

INCREASE TRIANGLE SIGHT DISTANCE

DESCRIPTION:

PRIOR CONDITION: *NO PRIOR CONDITION(S)*

CATEGORY: ROADSIDE

STUDY: *HANDBOOK OF ROAD SAFETY MEASURES*, ELVIK, R. AND VAA, T., 2004

Star Quality Rating:	★★★

Crash Modification Factor (CMF)	
Value:	0.89
Adjusted Standard Error:	0.15
Unadjusted Standard Error:	

Crash Reduction Factor (CRF)	
Value:	11 *(This value indicates a **decrease** in crashes)*
Adjusted Standard Error:	15
Unadjusted Standard Error:	

Applicability	
Crash Type:	All
Crash Severity:	O (property damage only)
Roadway Types:	Not specified
Number of Lanes:	
Road Division Type:	
Speed Limit:	
Area Type:	Not specified
Traffic Volume:	
Average Traffic Volume:	
Time of Day:	
If countermeasure is intersection-based	

CMF / CRF DETAILS

CMF ID: 1420

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]

Crash Modification Factor (CMF)	
Value:	0.51
Adjusted Standard Error:	
Unadjusted Standard Error:	0.031

Crash Reduction Factor (CRF)	
Value:	49 *(This value indicates a **decrease** in crashes)*
Adjusted Standard Error:	
Unadjusted Standard Error:	3.1

Applicability	
Crash Type:	All
Crash Severity:	All
Roadway Types:	Not specified
Number of Lanes:	
Road Division Type:	
Speed Limit:	
Area Type:	
Traffic Volume:	
Average Traffic Volume:	
Time of Day:	All
If countermeasure is intersection-based	

CMF / CRF DETAILS

CMF ID: 2841

CONVERTING FOUR-LANE ROADWAYS TO THREE-LANE ROADWAYS WITH CENTER TURN LANE (ROAD DIET)

DESCRIPTION: CONVERSION OF ROAD SEGMENTS FROM A FOUR-LANE TO A THREE-LANE CROSS-SECTION WITH TWO-WAY LEFT-TURN LANES (ALSO KNOWN AS ROAD DIETS).

PRIOR CONDITION: FOUR-LANE UNDIVIDED ROADWAY

CATEGORY: ROADWAY

STUDY: *COMPARISON OF EMPIRICAL BAYES AND FULL BAYES APPROACHES FOR BEFORE-AFTER ROAD SAFETY EVALUATIONS*, PERSAUD ET. AL, 2010

Star Quality Rating:	[VIEW SCORE DETAILS]

Crash Modification Factor (CMF)	
Value:	0.53
Adjusted Standard Error:	
Unadjusted Standard Error:	0.02

Crash Reduction Factor (CRF)	
Value:	47 *(This value indicates a **decrease** in crashes)*
Adjusted Standard Error:	
Unadjusted Standard Error:	2

Applicability	
Crash Type:	All
Crash Severity:	All
Roadway Types:	Not Specified
Number of Lanes:	4
Road Division Type:	Undivided
Speed Limit:	
Area Type:	Suburban
Traffic Volume:	
Average Traffic Volume:	
Time of Day:	All
If countermeasure is intersection-based	

CMF / CRF DETAILS

CMF ID: 4177

CHANGING LEFT TURN PHASING FROM PROTECTED-PERMISSIVE TO FLASHING YELLOW ARROW (FYA)

DESCRIPTION: CMFS ARE CALCULATED THE INTERSECTION LEVEL AND NOT THE TREATED APPROACH(ES) LEVEL.

PRIOR CONDITION: ALL TREATED APPROACHES HAD PROTECTED-PERMISSIVE LEFT TURN

CATEGORY: INTERSECTION TRAFFIC CONTROL

STUDY: *EVALUATION OF SAFETY STRATEGIES AT SIGNALIZED INTERSECTIONS*, SRINIVASAN, ET AL., 2011

IMAGE: *VIEW THE COUNTERMEASURE IMAGE.*

Star Quality Rating:	[VIEW SCORE DETAILS]

Crash Modification Factor (CMF)	
Value:	0.806
Adjusted Standard Error:	
Unadjusted Standard Error:	0.146

Crash Reduction Factor (CRF)	
Value:	19.4 *(This value indicates a **decrease** in crashes)*
Adjusted Standard Error:	
Unadjusted Standard Error:	14.6

Applicability	
Crash Type:	Left turn
Crash Severity:	All
Roadway Types:	Not Specified
Number of Lanes:	
Road Division Type:	
Speed Limit:	
Area Type:	Urban
Traffic Volume:	
Average Traffic Volume:	
Time of Day:	Not specified

CMF / CRF DETAILS

CMF ID: 4270

CHANGE PERMISSIVE LEFT-TURN PHASING TO PROTECTED/PERMISSIVE

DESCRIPTION: TREATMENT GROUP INCLUDES INTERSECTIONS WHERE SIGNAL PHASES WERE CHANGED FROM PERMISSIVE TO PROTECTED/PERMISSIVE.

PRIOR CONDITION: PERMISSIVE PHASTING

CATEGORY: INTERSECTION TRAFFIC CONTROL

STUDY: *EVALUATION OF SAFETY STRATEGIES AT SIGNALIZED INTERSECTIONS*, SRINIVASAN, ET AL., 2011

Star Quality Rating:	[VIEW SCORE DETAILS]

Crash Modification Factor (CMF)	
Value:	0.862
Adjusted Standard Error:	
Unadjusted Standard Error:	0.05

Crash Reduction Factor (CRF)	
Value:	13.8 *(This value indicates a **decrease** in crashes)*
Adjusted Standard Error:	
Unadjusted Standard Error:	5

Applicability	
Crash Type:	Left turn
Crash Severity:	All
Roadway Types:	Not specified
Number of Lanes:	
Road Division Type:	
Speed Limit:	
Area Type:	Urban
Traffic Volume:	
Average Traffic Volume:	
Time of Day:	Not specified
If countermeasure is intersection-based	

CMF / CRF DETAILS

CMF ID: 9299

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]

Crash Modification Factor (CMF)	
Value:	0.766
Adjusted Standard Error:	
Unadjusted Standard Error:	0.069

Crash Reduction Factor (CRF)	
Value:	23.4 *(This value indicates a **decrease** in crashes)*
Adjusted Standard Error:	
Unadjusted Standard Error:	6.9

Applicability	
Crash Type:	All
Crash Severity:	All
Roadway Types:	Principal Arterial Other
Number of Lanes:	1-4
Road Division Type:	
Speed Limit:	25mph to 65mph
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	

5 BRIEFS --- ISSUE

Traffic Signals

The introduction to this issue brief provides an overview of traffic signals (purpose, warrants for signal installation, advantages, disadvantages, and factors to consider) followed by an introduction to the contents of this issue brief (crash reduction factors, presentation of the crash reduction factors, and using the tables).

Purpose of Traffic Signals

Traffic signals are used to assign vehicular and pedestrian right-of-way. They are used to promote the orderly movement of vehicular and pedestrian traffic and to prevent excessive delay to traffic.

Traffic signals should not be installed unless one of the warrants specified by the *Manual on Uniform Traffic Control Devices* (MUTCD) has been satisfied. The satisfaction of a warrant is not in itself justification for a signal. A traffic engineering study must be conducted to determine whether the traffic signal should be installed. The installation of a traffic signal requires sound engineering judgment, and must balance the following, sometimes conflicting, goals:

- Moving traffic in an orderly fashion.
- Minimizing delay to vehicles and pedestrians.
- Reducing crash-producing conflicts.
- Maximizing capacity for each intersection approach.

Where Should a Signal Be Installed?

The MUTCD lists eight warrants for the placement of traffic signals. Readers are encouraged to review Part 4 of the MUTCD for more specific information regarding signal warrants. Access management considerations and the spacing of signals on arterial roadways are critical elements of system efficiency and operational safety. The basic question that must be answered is, “Will this intersection operate better with or without a traffic signal?”

Advantages of Signals

Traffic signals that are properly located and operated are likely to:

- Provide for orderly movement of traffic.
- Increase traffic capacity of the intersection.
- Reduce the frequency of certain types of crashes (e.g. right-angle crashes).
- Provide for continuous or nearly continuous movement of traffic along a given route.
- Interrupt heavy traffic to permit other traffic, vehicular or pedestrian, to cross.

Disadvantages of Signals

Traffic control signals are often considered a panacea for all traffic problems at intersections. This belief has led to the installation of traffic control signals at many locations where they are not needed and where they may adversely affect the safety and efficiency of vehicular, bicycle, and pedestrian traffic.

Even when justified by traffic and roadway conditions, traffic control signals can be ill designed, ineffectively placed, improperly operated, or poorly maintained. Unjustified or improper traffic control signals can result in one or more of the following disadvantages:

U.S.Department of Transportation
Federal Highway Administration

Safe Roads for a Safer Future
Investment in roadway safety saves lives

FHWA-SA-10-005

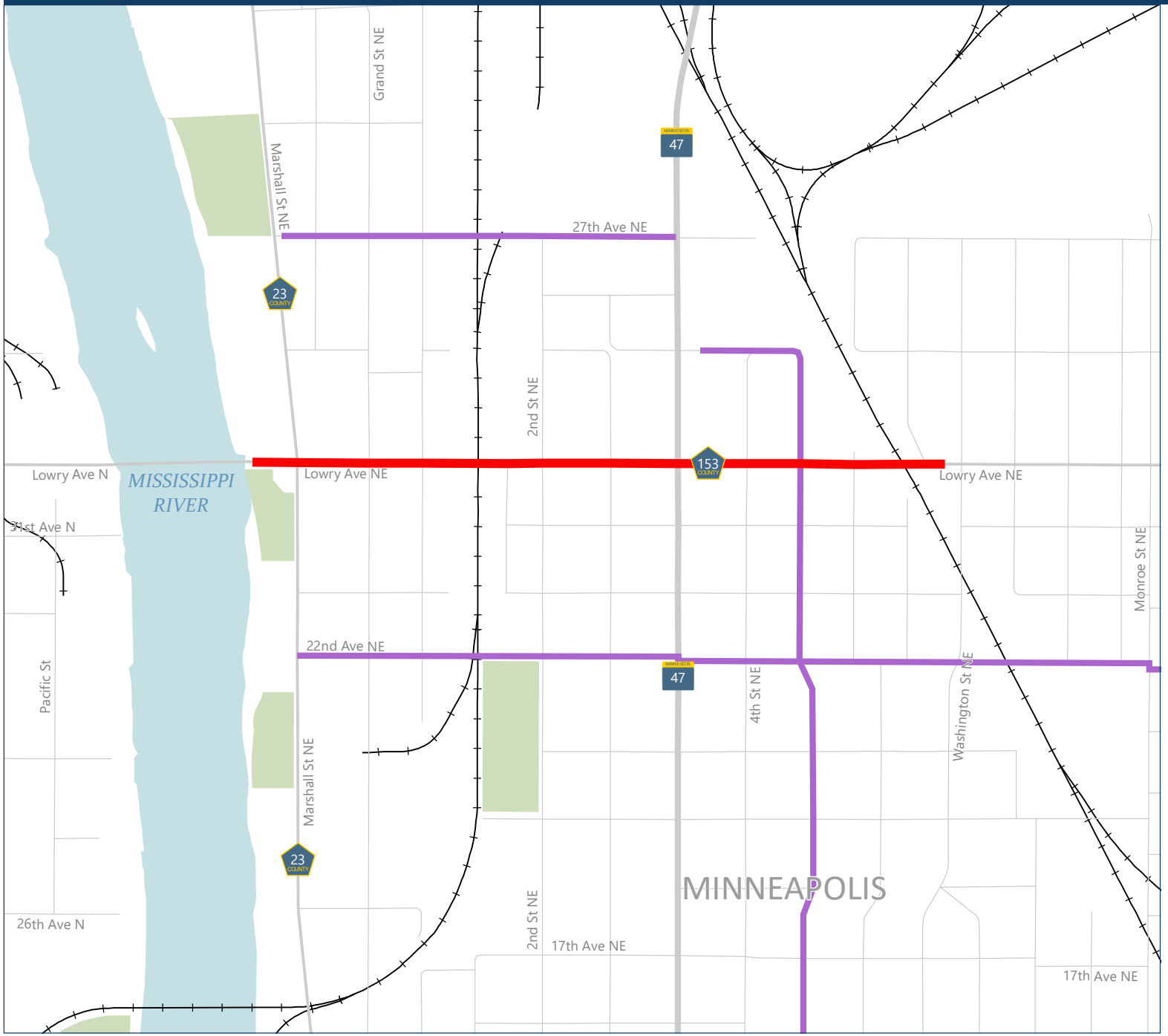
Countermeasures	Crash Severity	Control	Area Type	Configuration	All Crashes	Left-Turn Crashes	Rt-Angle Crashes	Rear-end Crashes	Sideswipe Crashes	Other Crashes	Major/Minor Daily Traffic Volume (vehicles/day)
SIGNAL HARDWARE COUNTERMEASURES											
Remove unwarranted signals	All	Signal	Urban		***24*** *(9)* [21]		***24*** *(10)* [21]	*29 (20)* [21]		d 30 [5]	
	All	Signal	Urban							e 22 [5]	
	All	Signal	Urban							g 31 [5]	
	Fatal/Injury	Signal	Urban		53 [5]						
	PDO	Signal	Urban		24 [5]						
	Pedestrian	*Signal*	*Urban*	*One-lane one-way streets excluding major arterials*	*18(30)* [21]						
Replace signal lenses with optical lenses	All	Signal			17 [7]	10 [4]	10 [4]	10 [4]		a 20 [4]	
COMBINATION SIGNAL AND OTHER COUNTERMEASURES											
Install left-turn lane and add turn phase	All	Signal			58 [7]						
Install signals and add channelization	Fatal/Injury	No Signal					67 [4]		54 [4]	b 35 [4]	
	PDO	No Signal				24 [4]	63 [4]			a 27 [4]	

Note: Any CRF with a reference of 21 is added to this version of the Intersection Safety Issue Brief 5.

CSAH 153 (Lowry Ave NE) Reconstruction Project

Attachment 18 | Multimodal Connections Map

HENNEPIN COUNTY
MINNESOTA



Key

Project Location

Multimodal Connections

On-street bikeway

Off-street bikeway

0 0.125 0.25 Miles

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.

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Hennepin

CSAH 153 (Lowry Ave NE) Reconstruction Project

Attachment 19 | MnDOT Support Letter

PLACEHOLDER

CSAH 153 (Lowry Ave NE) Reconstruction Project

Attachment 20 | Minneapolis Support Letter

PLACEHOLDER