Application

13862 - 2020 Roadway Spot Mobility

14164 - CSAH 19 Spot Mobility and Safety 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 19 Spot Mobility & Safety Project
Primary County where the Project is Located	Hennepin
Cities or Townships where the Project is Located:	Hanover, Corcoran
Jurisdictional Agency (If Different than the Applicant):	

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

The project includes reconstructing the intersection of CSAH 19, CR 117, and CR 203 within the cities of Hanover and Corcoran. CSAH 19 is classified as an A-Minor Connector.

The project objectives are to improve the safety and mobility for people walking, biking, rolling, and driving through the intersection. Attachment 2 provides a project location map.

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 public engagement, data analysis, and design process. See Attachment 3 for existing condition photos, and Attachment 4 for the potential layout.

-Roadway improvements such as intersection lighting, intersection design, intersection control, and traffic control devices. It is anticipated that a roundabout be considered as part of the design process in an effort to promote traffic calming by managing vehicle speeds in the area.

-Safety improvements such as reconstructing the intersection, installation of medians to reduce pedestrian and bicyclist crossing distance and manage traffic speed.

-Pedestrian & bicyclist improvements such as ADA compliant ramps and trail connections, high-visibility crosswalk markings, and raised medians are especially important as the LIRT is located adjacent to CSAH 19.

CSAH 19 is a significant regional corridor, providing

a river crossing that connects Hennepin County and Wright County. The Lake Independence Regional Trail (LIRT) parallels CSAH 19 and crosses the project location. See Attachment 5 for the Crow Hassan Park Map. The proposed project location is a 4-legged intersection that operates under 3-way stop control. The intersection is configured to serve the heavy peak directional trips on the west and south approaches.

The Hennepin County Roadway Safety Plan update is currently in progress, however risk factors have been identified for rural intersections that have a relatively high potential for a severe crash. The three risk factors include Total Entering ADT (>= 2,000), Volume Cross Product (>= 1,000,000), and Leg Configuration (4-Legged). The CSAH 19 intersection exceeds the Total Entering ADT (22,300), Volume Cross Product (89,300,000), and Leg Configuration (4-Legged). See Attachment 6.

(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 19, at CR 117 in Hanover & Corcoran, reconstruct intersection
Project Length (Miles) *to the nearest one-tenth of a mile*	0.2

Project Funding

Are you applying for competitive funds from another source(s) to implement this project?	Yes
If yes, please identify the source(s)	HSIP
Federal Amount	$2,712,000.00
Match Amount *Minimum of 20% of project total*	$678,000.00
Project Total	$3,390,000.00

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

Match Percentage 20.0%

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: Roadway Projects

County, City, or Lead Agency Hennepin County

Functional Class of Road A-Minor Connector

Road System CSAH

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

Road/Route No. 19

i.e., 53 for CSAH 53

Name of Road CSAH 19

Example; 1st ST., MAIN AVE

Zip Code where Majority of Work is Being Performed 55341

(Approximate) Begin Construction Date 06/06/2025

(Approximate) End Construction Date 11/24/2025

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

From:
(Intersection or Address)

To:
(Intersection or Address)

DO NOT INCLUDE LEGAL DESCRIPTION

Or At CR 117

Miles of Sidewalk (nearest 0.1 miles) 0

Miles of Trail (nearest 0.1 miles) 0.1

Miles of Trail on the Regional Bicycle Transportation Network (nearest 0.1 miles) 0.1

Primary Types of Work Reconstruct intersection, Trail, Curb and Gutter, ADA, Lighting

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 (P2.17-2.19)

This project will reconstruct an intersection along a vital route that connects users in Hennepin County and Wright County across the Crow River. The intersection includes two crossings for pedestrians and bicyclists on the LIRT. The reconstructed intersection will provide improved crossings for people walking and biking.

B. Safety (2.20-2.23)

This project will address the traffic safety issues with the existing intersection control and geometry. The improvement will provide people biking and walking safer trail crossings and more clearly assign right-of-way.

Deferring the reconstruction will leave an intersection with a unique intersection control at a high risk for a severe right angle crash or a high speed crash with a trail crossing.

The recent crash history (Attachment 7) demonstrates a statistically significant crash issue at the intersection. Out of the 9 crashes reported from 2016-2018, 5 were right-angle related (56%); whereas a typical rural intersection typically experiences a lower percentage of right-angle related crashes (41%). (Attachment 8)

One of the right angle crashes was an A severity. The critical crash rate index is 1.51, indicating a statistically significant crash history.

2019 Crash data shows 5 crashes total, 4 of which are right angle, including an A severity.

C. Access to Destinations (P2.24-2.37)

CSAH 19 is a regionally significant A-Minor Connector that connects Hennepin County and Wright County across the Crow River. The LIRT also parallels CSAH 19. The project location also abuts Crow Hassan Park Reserve, a regional park destination.

D. Competitive Economy (P2.38-2.41)

The project location includes the cities of Hanover and Corcoran. HCAADT for rural CSAHs average 8.6%, and urban CSAHs average 3.6% (Attachment 9). CSAH 19 has a HCAADT of 12.4%, exceeding average HCAADTs for both rural and urban CSAHs. Freight traffic utilizes CSAH 19 to cross the Crow River and access I-94 to the north, and TH 55 and TH 12 to the south.

E. Healthy and Equitable Communities (P2.42-2.47)

The project will promote active living by providing people walking and biking with safer trail crossings, more clearly assign right of way, and accommodate older travelers walking and biking with shorter crossing distances. Vehicle/trail conflicts will also occur at lower speeds with the project. The safer trail crossings will provide access to the Crow Hassan Park Reserve, LIRT, and access to Hanover.

F. Leveraging Transportation Investments to Guide Land Use (P2.48-2.55)

The reconstructed intersection supports Strategy F5 and F6 by promoting walking and bicycling and connecting Hanover and residential developments to Crow Hassan Park Reserve and the LIRT by providing safer trail crossings.

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.

2020-2024 Hennepin County Transportation CIP (Attachment 10)

County Roadway Safety Plan (CRSP) - Intersection Risk Factors (Attachment 6)

List the applicable documents and pages:

The CRSP determined that rural intersections with three or more risk characteristics have two to five times the average severe crash density. The project location has three risk characteristics, putting it at higher risk for a severe rural intersection crash (Attachment 11).

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.

Requirements - Roadways Including Multimodal Elements

Specific Roadway Elements

CONSTRUCTION PROJECT ELEMENTS/COST ESTIMATES	Cost

Mobilization (approx. 5% of total cost)	$128,000.00
Removals (approx. 5% of total cost)	$107,000.00
Roadway (grading, borrow, etc.)	$297,000.00
Roadway (aggregates and paving)	$525,000.00
Subgrade Correction (muck)	$0.00
Storm Sewer	$363,000.00
Ponds	$0.00
Concrete Items (curb & gutter, sidewalks, median barriers)	$243,000.00
Traffic Control	$128,000.00
Striping	$75,000.00
Signing	$45,000.00
Lighting	$80,000.00
Turf - Erosion & Landscaping	$181,000.00
Bridge	$0.00
Retaining Walls	$0.00
Noise Wall (not calculated in cost effectiveness measure)	$0.00
Traffic Signals	$0.00
Wetland Mitigation	$0.00
Other Natural and Cultural Resource Protection	$0.00
RR Crossing	$0.00
Roadway Contingencies	$653,000.00
Other Roadway Elements	$0.00
Totals	**$2,825,000.00**

Specific Bicycle and Pedestrian Elements

CONSTRUCTION PROJECT ELEMENTS/COST ESTIMATES	**Cost**
Path/Trail Construction	$175,000.00
Sidewalk Construction	$38,000.00
On-Street Bicycle Facility Construction	$0.00
Right-of-Way	$0.00
Pedestrian Curb Ramps (ADA)	$40,000.00
Crossing Aids (e.g., Audible Pedestrian Signals, HAWK)	$0.00
Pedestrian-scale Lighting	$0.00
Streetscaping	$181,000.00

Wayfinding	$0.00
Bicycle and Pedestrian Contingencies	$131,000.00
Other Bicycle and Pedestrian Elements	$0.00
Totals	**$565,000.00**

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	$3,390,000.00
Construction Cost Total	$3,390,000.00
Transit Operating Cost Total	$0.00

Congestion within Project Area:

Free-Flow Travel Speed:	52

The free-flow travel speed is the black number

Peak Hour Travel Speed: 46

The peak hour travel speed is the red number

Percentage Decrease in Travel Speed in Peak Hour Compared to Free-Flow (calculation): 11.54%

Upload the "Level of Congestion" map: 1589569971351_Attachment 12 Level of Congestion.pdf

Congestion on adjacent Parallel Routes:

Adjacent Parallel Corridor CR 116

Adjacent Parallel Corridor Start and End Points:

Start Point: TH 55

End Point: CR 159

Free-Flow Travel Speed: 44

The Free-Flow Travel Speed is black number.

Peak Hour Travel Speed: 35

The Peak-Hour Travel Speed is red number.

Percentage Decrease in Travel Speed in Peak Hour Compared to Free-Flow (calculation): 20.45%

Upload the "Level of Congestion" map: 1589569971339_Attachment 13 Level of Congestion on Parallel Route CR 116.pdf

Principal Arterial Intersection Conversion Study:

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

(100 Points)

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

(90 Points)

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

(80 Points)

Not listed as a priority in the study: Yes

(0 Points)

Congestion Management and Safety Plan IV:

Proposed at-grade project that reduces delay at a CMSP opportunity area:

(100 Points)

Not listed as a CMSP priority location: Yes

(0 Points)

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:	
None of the tiers:	Yes

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:

The CSAH 19 Spot Mobility and Safety Project is 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. See Attachment 14 for the Socio-Economic Conditions Map. The following describes the how these communities will be engaged with throughout the duration of the project.

Engagement efforts completed to date

Hennepin County has previously engaged with the City of Hanover on a proposed change in traffic control at the project location to improve safety for all users at this location. As of May 2020, county staff has not begun any public engagement activities as they relate to this project. The Spot Mobility and Safety project will impact all user groups, therefore, it will be critical to communicate the project impacts, schedule, road closures, and detour routes as part of the public engagement process. The Socio-Economic Equity Map (Attachment 15) identifies sites within the project area that are likely destinations for populations of youth, elderly, and low-income, along with people living with disabilities.

Engagement efforts anticipated for the design stage

Public engagement strategies during design will target residents and services likely impacted by the project. A project website will be created to publish the latest information in terms of project scope, schedule, and upcoming engagement events. The project team will include staff from the county's Communications and Engagement Team to encourage the use of plain language and to ensure best practices are followed. To minimize potential communication barriers, public engagement tools will rely on visualizations and renderings to

highlight improvements for people biking, driving, and walking.

Engagement efforts anticipated for the construction stage

County staff will work with the Cities of Hanover and Corcoran to determine anticipated impacts to people biking, driving and walking while construction activities are taking place. Detailed Temporary Traffic Control Plans for people biking and people walking will be followed to ensure access to these sites during construction. Construction inspection crews will visit local businesses and services frequently to ensure that reasonable accommodations are being provided. Additionally, any temporary detour routes 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:

The proposed project location is a 4-legged intersection with a 3-way stop control. The intersection is configured to serve the heavy peak directional trips crossing the Crow River, and can be confusing to motorists and to pedestrians and bicyclists on the trail due to the 3-way stop control. The Lake Independence Regional Trail (LIRT) parallels CSAH 19, and crosses the east and north legs of the intersection. Bicyclists crossing on the north leg may also mistake the intersection as a 4-way stop, and assume northbound traffic must stop.

The LIRT connects pedestrians and bicyclists to the Hanover bike and pedestrian bridge, which crosses the Crow River, connecting Hennepin County and Wright County. The proposed project will reduce conflicts between people driving, and reduce conflicts for people walking and biking by creating higher visibility trail crossings and clearly assigning right-of-way. A detailed description of how this project will benefit disadvantaged and minority populations is included below. Attachment 15 identifies specific destinations within the project area that attract each population group.

Nearby community resource destinations

There are four identified community resource destinations within the project area. These resources include Hanover City Park and baseball fields, Riverside County Park, Crow-Hassan Park Reserve, and Hassan Meadow Park. Although they may not have a defined customer base, community resources offer benefits to low-income populations, people of color, youth populations, people with disabilities, and elderly populations.

Benefits for youth populations

Two sites were identified to benefit youth

populations within the project area, including Children's Country Preschool and Treehouse Child Care. The project will ensure safer crossing conditions for people walking and biking through the project area to these sites.

Benefits for elderly populations

One location for elderly populations was identified within the project area, the Bridgewater at Hanover, an assisted living facility. Improving mobility and safety is especially important for populations who rely on vehicles, including dial-a-ride services, for their transportation needs.

Benefits for low-income populations

One location for low-income populations was identified within the project area, the Hanover Area Food Shelf. The project will reduce conflict points between bicyclists, pedestrians and drivers which is enhance safety, particularly for those who do not have access to a motor vehicle.

(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:

The CSAH 19 Spot and Mobility Safety project will avoid any long-term negative impacts as the project is anticipated to be benefit all users. The proposed project will have a positive safety benefit for motorists, pedestrians, and bicyclists by more clearly assigning right-of-way, reducing the number of intersection conflicts, and reducing conflicting speeds between vehicles and trail users. However, the project will likely have short-term negative impacts on users during construction.

The county has a specialized communications team within its Public Works business line who are responsible for phone hotline, project website inquiries during each phase of the project. This team will respond to inquiries made by residents, business owners, community services, and employees who work in the area. Additionally, the project team will develop relationships with nearby education centers to coordinate construction activities with arrival/dismissal operations. Any significant impacts will be communicated with the public using multiple strategies, including a project website, mailings, and social media. A description of how negative impacts will be minimized is included below.

Negative impacts to accessibility

Impacts to existing sidewalk and bicycle facilities are anticipated during construction activities. 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 residential areas and community resources will be most critical. Bicycle and pedestrian crossings will still be provided during construction.

Negative impacts to mobility

Temporary traffic control measures (pavement markings, signs, and jersey barriers) will be installed as part of the project to ensure safe travel during construction. All transportation modes will be provided with proper signage and/or pavement markings to ensure all users have clear and safe detour routes. Staff will distribute detailed maps to the community that identifies the location and timing of detour routes.

(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):	
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:	Yes

(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	1589570321002_Attachment 14 Socio-Economic Conditions Map.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
Corcoran	878.0	0.35	35.0	12.263
Greenfield	453.0	0.18	8.0	1.446
Rogers	1175.0	0.47	20.0	9.377

Total Project Length

Total Project Length 0.2

Project length entered on the Project Information - General form.

Housing Performance Score

Total Project Length (Miles) or Population 2506.0

Total Housing Score 23.086

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:

A detailed description of how this project will improve access to affordable housing locations is included below, including number of bedrooms, affordability limit based on area median income (AMI), etc. Attachment 16 identifies specific affordable housing sites within a 1/2 mile of the project location.

Total number of affordable sites within project area: 4

Number of existing sites: 4

Number of sites under construction: 0

Number of planned sites identified: 0

Location 1: Cornerstone Village

Affordable Units: 42

Bedrooms per unit: 1-3

50% AMI: 42

LIHTC

Location 2: Cornerstone Village II

Affordable Units: 48

Bedrooms per unit: 1-3

50% AMI: 48

LIHTC

Location 3: Countryside Cottages of St. Michael

Affordable Units: 16

Bedrooms per unit: NA

60% AMI: 16

Location 4: Ridgedrive Apartments

Affordable Units: 42

Bedrooms per unit: NA

60% AMI: 42

(Limit 2,100 characters; approximately 300 words)

Upload map: 1589571387209_16 Affordable Housing Access Map.pdf

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

14.0	9.0	5.0	1139	1139	5695.0	5695.0	For the existing conditions, the current three-way stop is not something that can be analyzed via the HCM. Therefore, we used Simtraffic in order to get a delay value per vehicle. Then under build conditions, the standard MOE report used for Regional Solicitation does not calculate roundabout delays. Therefore, we pulled the HCM 6th Edition Roundabout report to get a delay per vehicle.	158715758 1903_CR 117-CSAH 19 Operations.pdf
						5695		

Vehicle Delay Reduced

Total Peak Hour Delay Reduced	5695.0
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):
2.65	2.9	-0.25
0	0	0
3	**3**	**0**

Total

Total Emissions Reduced: -0.25

Upload Synchro Report 1587157775731_CR 117-CSAH 19 Operations.pdf

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

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

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

Total Parallel Roadway

Emissions Reduced on Parallel Roadways 0

Upload Synchro Report

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

New Roadway Portion:

Cruise speed in miles per hour with the project: 0

Vehicle miles traveled with the project: 0

Total delay in hours with the project: 0

Total stops in vehicles per hour with the project: 0

Fuel consumption in gallons: 0

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

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

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

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

Measure A: Benefit of Crash Reduction

	CMF IDs 4699, 4700, 4705, and 4707. (Attachment 18)
Crash Modification Factor Used:	GDOT 12-01 report 'Evaluation of Current Practice for Illumination at Roundabouts: Safety and Illumination of Roundabouts'. (Attachment 19)

(Limit 700 Characters; approximately 100 words)

Rationale for Crash Modification Selected:	CMF IDs 4699, 4700, 4705, and 4707 are for converting an intersection into a roundabout, but vary in terms of applying to different crash types and severities. Individual crashes have a maximum of 2 CMFs applied, consistent with the HSIP guidelines. CMF ID 4699 is applicable to converting a high speed rural 4 leg intersection into a roundabout, and is applicable to all crash types and all severities. CMF ID 4700 is applicable to all crash types, and crash severities A, B, and C. CMF ID 4705 is applicable to angle crash types of all severities. CMF ID 4707 is applicable to angle crash types of severities A, B, and C. GDOT 12-01 report 'Evaluation of Current Practice for Illumination at Roundabouts: Safety and Illumination of Roundabouts' found roundabouts with full illumination had 73% fewer crashes when compared to unilluminated roundabouts.
(Limit 1400 Characters; approximately 200 words)	
Project Benefit ($) from B/C Ratio	$7,106,174.00
Total Fatal (K) Crashes:	0
Total Serious Injury (A) Crashes:	1
Total Non-Motorized Fatal and Serious Injury Crashes:	0
Total Crashes:	11
Total Fatal (K) Crashes Reduced by Project:	0
Total Serious Injury (A) Crashes Reduced by Project:	1
Total Non-Motorized Fatal and Serious Injury Crashes Reduced by Project:	0
Total Crashes Reduced by Project:	4

Worksheet Attachment

Upload Crash Modification Factors and B/C Worksheet in PDF form.

1589425031945_2020_BC_Worksheet CSAH 19 Overall BC.pdf

Measure A: Multimodal Elements and Existing Connections

Response:

There is currently a trail crossing on the north and east approaches. The 3-way stop traffic control is confusing to trail users as it is unclear who is granted the right-of-way. Normally, trail users crossing the mainline are required to yield to people driving, however, this intersection has similar characteristics as an All-Way Stop.

The existing intersection has a total of 32 vehicle conflict points and 24 pedestrian conflict points. A reconstructed intersection as a T-intersection would have 9 vehicle conflict points and 4 pedestrian conflict points. A roundabout would have 8 vehicle conflict points and 8 pedestrian conflict points. (Attachment 20)

In addition to a reduction in conflict points, vehicular/pedestrian conflicts will also occur at a lower speed. Vehicles traveling north on CSAH 19 have a speed limit of 50mph. A roundabout is typically designed to have a 20-25mph entry speed, much lower than the existing 50mph conflict. The risk for a pedestrian fatality increases with speed, with a 10% chance of death at an impact speed of 23mph, 75% at 50mph, and 90% at 58mph. (Attachment 21)

If a roundabout design is supported, specific attention will be given to designing the approaches (in terms of length, width, and alignment) as this will be key to managing the behaviors of people driving through the area.

Roundabouts also include splitter islands that provide pedestrians with a refuge island, and only need to cross one lane of traffic at a time. Lower speeds in the roundabout's circulatory roadway

also provide drivers and pedestrians time to react to one another. Median crossing islands and roundabouts are strategies in FHWA's Proven Safety Countermeasures (Attachment 22) and MnDOT's Best Practices for Pedestrian/Bicycle Safety guide (Attachment 23). Pedestrian refuge islands are a safety countermeasure in FHWA's Safe Transportation for Every Pedestrian program (Attachment 24).

Other proposed improvements include upgrading lighting to LEDs to improve intersection illumination.

(Limit 2,800 characters; approximately 400 words)

Measure A: Multimodal Elements and Existing Connections

Response:

Similar to the safety benefits for pedestrians, bicyclists will also benefit from a reconstructed intersection. As stated previously for pedestrian safety improvements, the existing intersection has a total of 32 vehicle conflict points and 24 pedestrian/bike conflict points. A reconstructed intersection as a T-intersection would have 9 vehicle conflict points and 4 pedestrian/bike conflict points. A roundabout would have 8 vehicle conflict points and 8 pedestrian conflict points.

In addition to a reduction in conflict points, vehicular/pedestrian conflicts will be more predictable and will also occur at a lower speed. The existing 3-way stop control is not easily understood by people using the trail crossings, especially on the north approach. Southbound vehicles are required to stop, however, northbound through-moving vehicles are not. Vehicles traveling north on CSAH 19 currently have a speed limit of 50mph. A roundabout entry speed is typically designed for 20-25mph.

Roundabouts also include splitter islands that provide bicyclists with a refuge island, and a bicyclist only needs to cross one lane of traffic at a time. Lower speeds in the roundabout's circulatory roadway also provide drivers and bicyclists time to react to one another.

This design will allow for further crossing enhancements such as crossing beacons, additional signage, or pavement markings to further increase the visibility of people crossing.

The Lake Independence Regional Trail (LIRT), which parallels and follows CSAH 19 through the intersection, is a Tier 2 RBTN (Attachment 25). The LIRT near the project location has a connection to the trail system in the Crow Hassan Park Reserve.

The reconstructed intersection would also include ADA improvements, consistent with the Hennepin County ADA Transition Plan.

A reconstructed intersection will provide bicyclists and pedestrians with a safer and more comfortable crossings at the intersection, and will serve trail users destined to the Crow Hassan Park Reserve or the Crow River pedestrian bridge.

(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

1589572581326_Attachment 04 Potential Layout and Figures.pdf

Please upload attachment in PDF form.

Layout has not been started

0%

Anticipated date or date of completion

06/06/2023

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

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) — Yes

100%

Signature Page

Please upload attachment in PDF form.

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

50%

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

0%

Anticipated date or date of executed Agreement

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:

Meeting with partner agencies:

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.

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.

Yes

25%

No outreach has led to the selection of this project.

0%

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

The proposed project originated from safety concerns from residents, and was reviewed by Hennepin County's Safety & Operations Committee which proposed evaluating a change in intersection control. The project location was also identified through the County Roadway Safety Plan (CRSP) process, and was discussed at the Hennepin County CRSP Workshop.

Measure A: Cost Effectiveness

Total Project Cost (entered in Project Cost Form): $3,390,000.00

Enter Amount of the Noise Walls:	$0.00
Total Project Cost subtract the amount of the noise walls:	$3,390,000.00
Enter amount of any outside, competitive funding:	$0.00
Attach documentation of award:	
Points Awarded in Previous Criteria	
Cost Effectiveness	$0.00

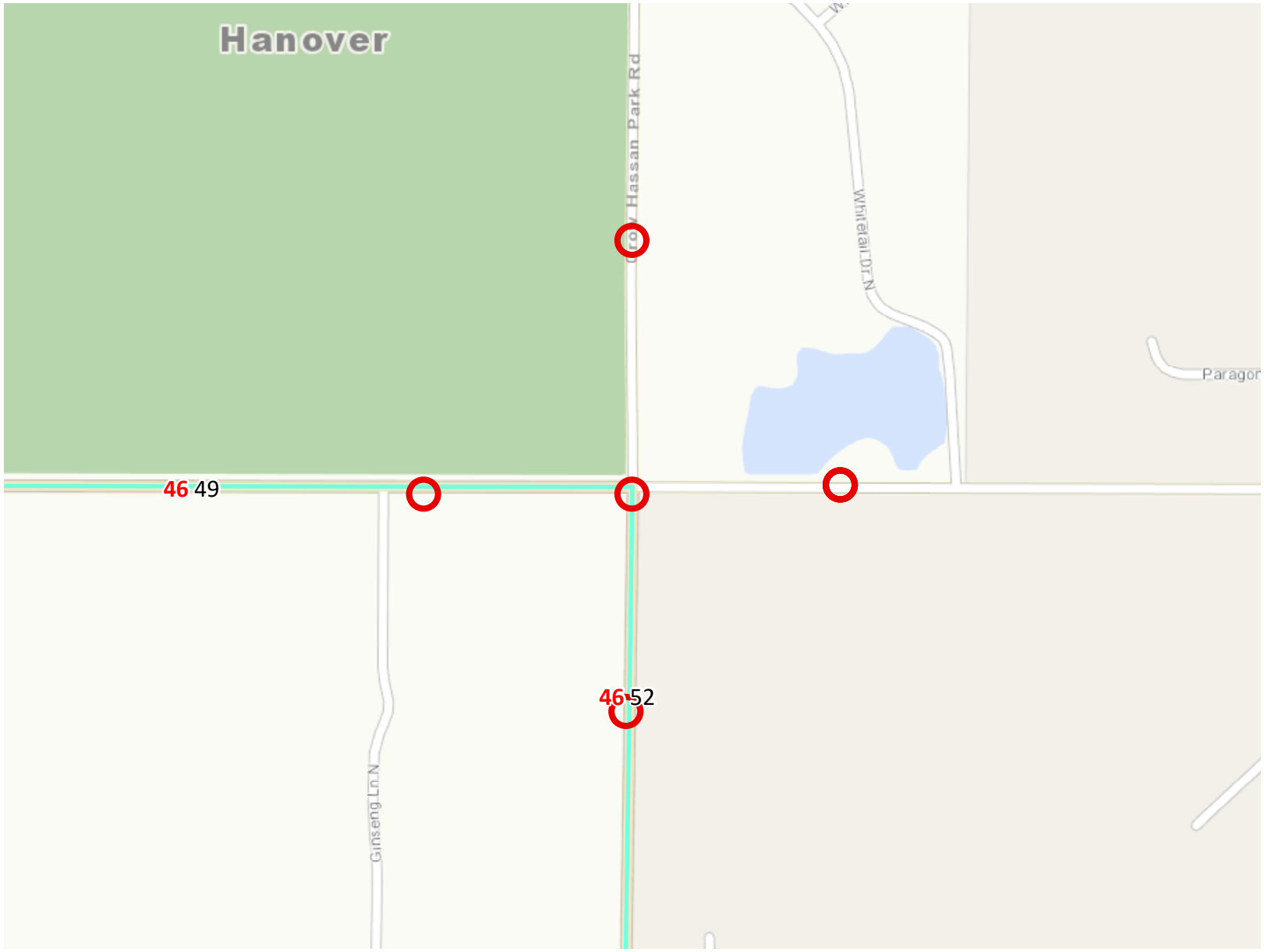
Other Attachments

File Name	Description	File Size
00 List of Attachments.pdf	00 List of Attachments	57 KB
01 Project Narrative.pdf	01 Project Narrative	127 KB
02 Project Location.pdf	02 Project Location	214 KB
03 Existing Conditions Photos.pdf	03 Existing Conditions Photos	2.2 MB
04 Potential Layout and Figures.pdf	04 Potential Layout and Figures	6.7 MB
05 Crow Hassan Park Map.pdf	05 Crow Hassan Park Map	1.9 MB
06 CRSP Intersection Risk Factors.pdf	06 CRSP Intersection Risk Factors	1.1 MB
07 Crash Listing and Crash Map.pdf	07 Crash Listing and Crash Map	1.2 MB
08 Intersection Crash Distribution.pdf	08 Intersection Crash Distribution	1.6 MB
09 AADT HCAADT.pdf	09 AADT HCAADT	1.4 MB
10 Hennepin County Transportation CIP.pdf	10 Hennepin County Transportation CIP	1.2 MB
11 CRSP Risk Factor Crash Distribution.pdf	11 CRSP Risk Factor Crash Distribution	1.2 MB
12 Level of Congestion.pdf	12 Level of Congestion	1.8 MB
13 Level of Congestion on Parallel Route CR 116.pdf	13 Level of Congestion on Parallel Route CR 116	1.8 MB
14 Socio-Economic Conditions Map.pdf	14 Socio-Economic Conditions Map	1.8 MB
15 Socio-Economic Equity Map.pdf	15 Socio-Economic Equity Map	276 KB
16 Affordable Housing Access Map.pdf	16 Affordable Housing Access Map	1.7 MB
17 Synchro Reports.pdf	17 Synchro Reports	2.0 MB
18 Crash Modification Factors.pdf	18 Crash Modification Factors	1.2 MB
19 GDOT 12-01 Roundabout Safety and Illumination Excerpt.pdf	19 GDOT 12-01 Roundabout Safety and Illumination Excerpt	1.2 MB
20 Conflict Points.pdf	20 Conflict Points	4.9 MB
21 AAA Impact Speed and a Pedestrians Risk of Severe Injury or Death.pdf	21 AAA Impact Speed and a Pedestrians Risk of Severe Injury or Death	1.6 MB
22 FHWA Proven Safety Countermeasures.pdf	22 FHWA Proven Safety Countermeasures	1.3 MB
23 SAFETY MnDOT Minnesotas Best Practices for Pedestrian Bicycle Safety Handbook.pdf	23 SAFETY MnDOT Minnesotas Best Practices for Pedestrian Bicycle Safety Handbook	2.7 MB
24 FHWA Safe Transportation for Every Pedestrian.pdf	24 FHWA Safe Transportation for Every Pedestrian	1.6 MB
25 Regional Bicycle Transportation Network Map.pdf	25 Regional Bicycle Transportation Network Map	1.2 MB
26 Letters of Support.pdf	26 Letters of Support	1.3 MB

Attachment 12

Level of Congestion

Roadway Spot Mobility & Safety | Map ID: 1586888826945



Project Points

A Minor Arterials

A Minor Arterials Planned

Principal Arterials

Principal Arterials Planned

0 0.05 0.1 0.2 0.3 0.4 Miles

Created: 4/14/2020
LandscapeRSA1

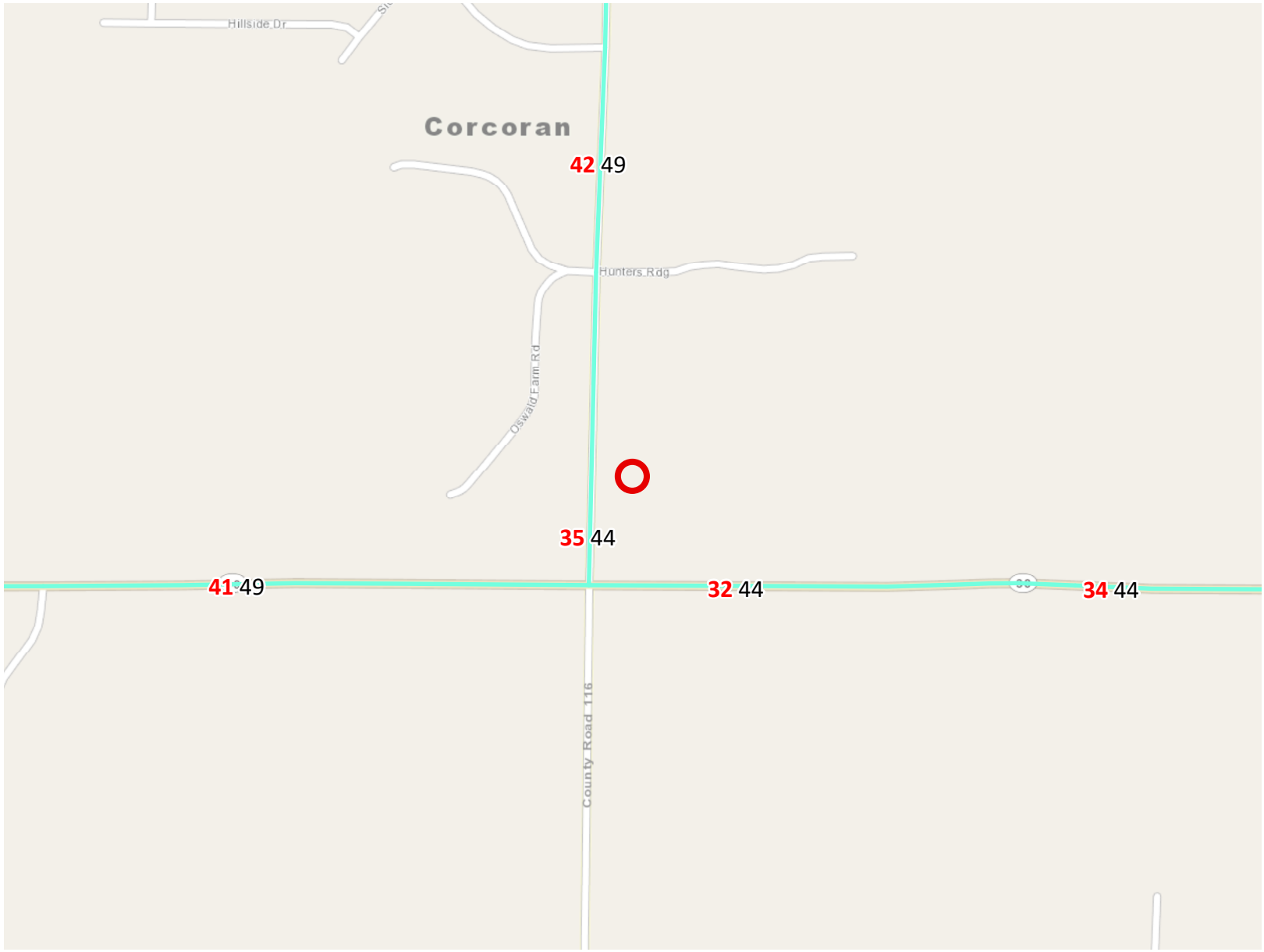
For complete disclaimer of accuracy, please visit
https://giswebsite.metc.state.mn.us/gissite/notice.aspx

METROPOLITAN COUNCIL

Attachment 13

Level of Congestion

Roadway Spot Mobility & Safety | Map ID: 1586889349691



Project Points

A Minor Arterials

A Minor Arterials Planned

Principal Arterials

Principal Arterials Planned

0 0.075 0.15 0.3 0.45 0.6 Miles

Created: 4/14/2020
LandscapeRSA1

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

METROPOLITAN COUNCIL

Attachment 14

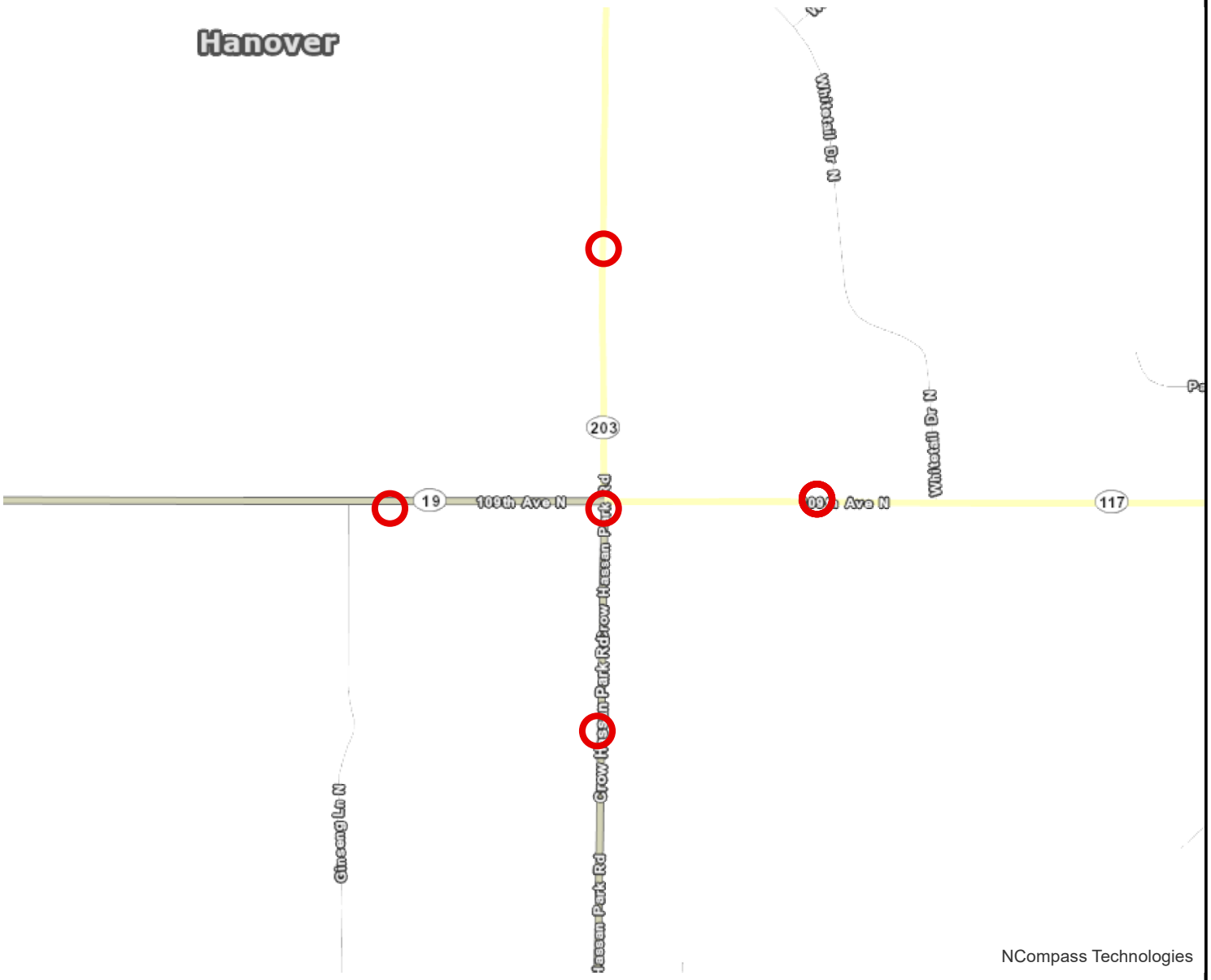
Socio-Economic Conditions

Roadway Spot Mobility & Safety | Map ID: 1586888826945

Results

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:
(0 to 12 Points)

Tracts within half-mile:
26909 27102



Points

Area of Concentrated Poverty

Area of Concentrated Povertry > 50% residents of color

Above reg'l avg conc of race/poverty

0 0.05 0.1 0.2 0.3 0.4 Miles

Created: 4/14/2020
LandscapeRSA2

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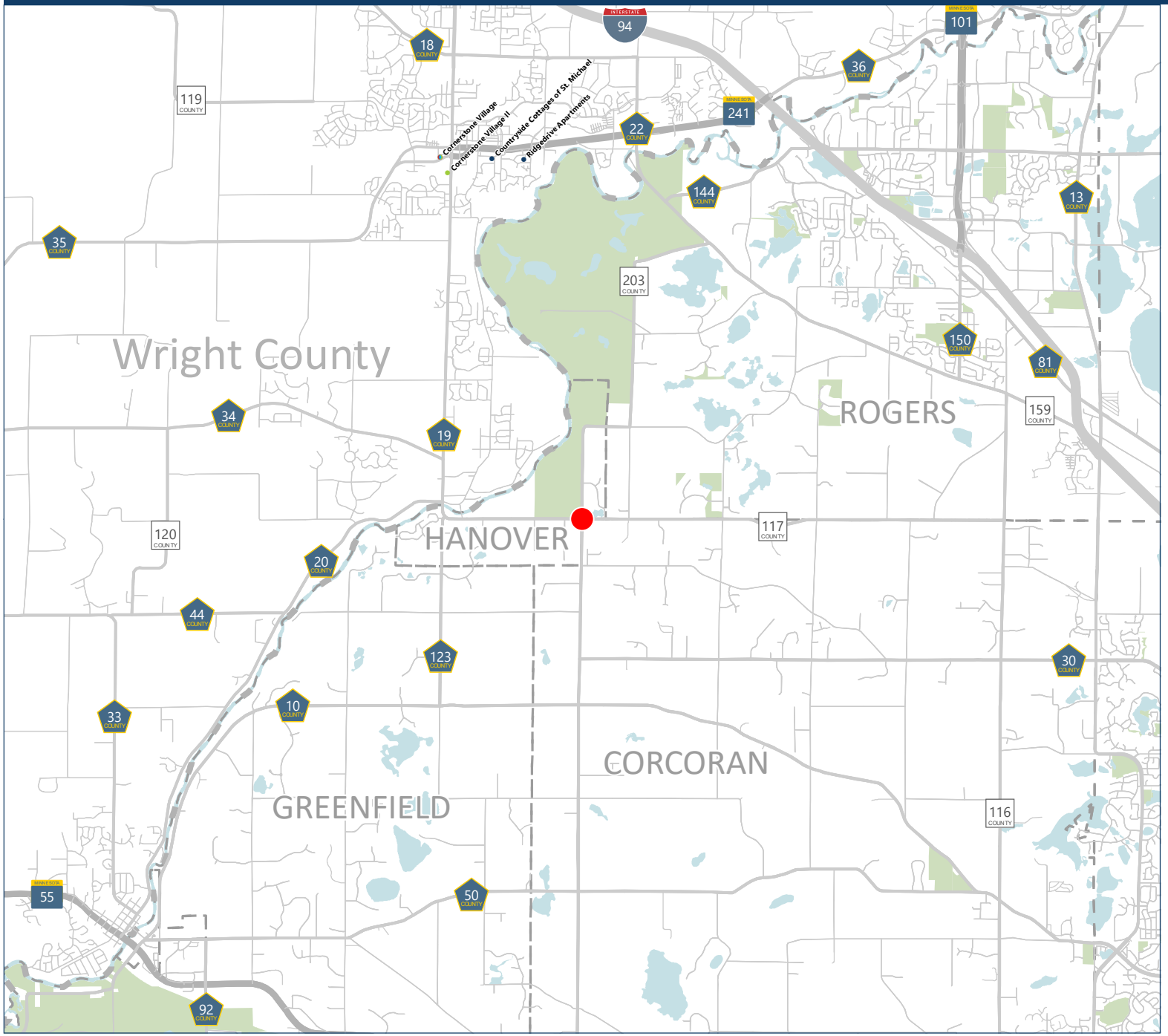
METROPOLITAN COUNCIL

CSAH 19 Spot Mobility & Safety Project

Attachment 16 | Affordable Housing Access Map

HENNEPIN COUNTY
MINNESOTA



Key

Project Location

Construction Status

- Complete
- Planned

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

0 1.25 2.5 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: 5/14/2020

N

Hennepin

Regional Economy

Roadway Reconstruction/Modernization Project: CSAH 019 Spot Mobility & Safety Project | Map ID: 1589571096111

Results

WITHIN ONE MI of project:
Postsecondary Students: 0

Totals by City:

Corcoran
Population: 878
Employment: 32
Mfg and Dist Employment: 0

Greenfield
Population: 453
Employment: 55
Mfg and Dist Employment: 8

Rogers
Population: 1175
Employment: 72
Mfg and Dist Employment: 9

Project Points
Project
Manfacturing/Distribution Centers
Job Concentration Centers

0 0.075 0.15 0.3 0.45 0.6 Miles

Created: 5/15/2020
LandscapeRSA5

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

METROPOLITAN COUNCIL

3: CSAH 19 & CR 117 & CR 203

Direction	All
Future Volume (vph)	1139
Total Delay / Veh (s/v)	0
CO Emissions (kg)	1.86
NOx Emissions (kg)	0.36
VOC Emissions (kg)	0.43

3: CSAH 19 & CR 117 & CR 203 Performance by approach

Approach	EB	WB	NB	SB	All
Denied Del/Veh (s)	3.1	0.1	2.9	0.1	2.7
Total Del/Veh (s)	17.5	7.6	0.5	8.2	14.3

Total Network Performance

Denied Del/Veh (s)	2.7
Total Del/Veh (s)	27.0

Intersection: 3: CSAH 19 & CR 117 & CR 203

Movement	EB	EB	WB	NB	NB	SB
Directions Served	LT	R	LTR	UL	TR	TR
Maximum Queue (ft)	494	431	65	4	6	67
Average Queue (ft)	76	149	29	0	0	29
95th Queue (ft)	322	416	52	3	5	53
Link Distance (ft)	1192		1460		707	559
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)		150		325		
Storage Blk Time (%)		15				
Queuing Penalty (veh)		19				

Network Summary

Network wide Queuing Penalty: 19

3: CSAH 19 & CR 117 & CR 203

Direction	All
Future Volume (vph)	1139
Total Delay / Veh (s/v)	0
CO Emissions (kg)	2.03
NOx Emissions (kg)	0.40
VOC Emissions (kg)	0.47

Intersection	
Intersection Delay, s/veh	9.0
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	940	83	141	74
Demand Flow Rate, veh/h	968	88	147	75
Vehicles Circulating, veh/h	95	142	143	196
Vehicles Exiting, veh/h	176	148	95	33
Ped Vol Crossing Leg, #/h	0	0	1	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	10.6	3.8	4.2	3.8
Approach LOS	B	A	A	A

Lane	Left	Bypass	Left	Left	Left
Designated Moves	LT	R	LTR	LTR	LTR
Assumed Moves	LT	R	LTR	LTR	LTR
RT Channelized		Yield			
Lane Util	1.000		1.000	1.000	1.000
Follow-Up Headway, s	2.609		2.609	2.609	2.609
Critical Headway, s	4.976	825	4.976	4.976	4.976
Entry Flow, veh/h	143	1252	88	147	75
Cap Entry Lane, veh/h	1252	0.971	1194	1193	1130
Entry HV Adj Factor	0.974	801	0.947	0.961	0.983
Flow Entry, veh/h	139	1216	83	141	74
Cap Entry, veh/h	1220	0.659	1130	1146	1111
V/C Ratio	0.114	11.8	0.074	0.123	0.066
Control Delay, s/veh	3.9	B	3.8	4.2	3.8
LOS	A	5	A	A	A
95th %tile Queue, veh	0		0	0	0

3: CSAH 19 & CR 117 & CR 203

Direction	All
Future Volume (vph)	1333
Total Delay / Veh (s/v)	0
CO Emissions (kg)	0.93
NOx Emissions (kg)	0.18
VOC Emissions (kg)	0.22

3: CSAH 19 & CR 117 & CR 203 Performance by approach

Approach	EB	WB	NB	SB	All
Denied Del/Veh (s)	3.1	0.2	3.3	0.1	2.9
Total Del/Veh (s)	15.3	104.9	3.9	68.6	16.0

Total Network Performance

Denied Del/Veh (s)	2.9
Total Del/Veh (s)	18.7

Intersection: 3: CSAH 19 & CR 117 & CR 203

Movement	EB	WB	NB	NB	SB
Directions Served	LT	LTR	UL	TR	TR
Maximum Queue (ft)	84	302	59	8	116
Average Queue (ft)	35	117	6	0	40
95th Queue (ft)	73	257	28	4	95
Link Distance (ft)	1192	1460		707	559
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)			325		
Storage Blk Time (%)					1
Queuing Penalty (veh)					0

Network Summary

Network wide Queuing Penalty: 0

3: CSAH 19 & CR 117 & CR 203

Direction	All
Future Volume (vph)	1334
Total Delay / Veh (s/v)	0
CO Emissions (kg)	2.23
NOx Emissions (kg)	0.43
VOC Emissions (kg)	0.52

Intersection	
Intersection Delay, s/veh	17.4
Intersection LOS	C

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	198	125	1081	45
Demand Flow Rate, veh/h	204	131	1124	46
Vehicles Circulating, veh/h	51	1093	44	1136
Vehicles Exiting, veh/h	1130	75	51	88
Ped Vol Crossing Leg, #/h	0	0	1	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	3.7	13.1	20.7	9.9
Approach LOS	A	B	C	A

Lane	Left	Bypass	Left	Left	Left
Designated Moves	LT	R	LTR	LTR	LTR
Assumed Moves	LT	R	LTR	LTR	LTR
RT Channelized		Yield			
Lane Util	1.000		1.000	1.000	1.000
Follow-Up Headway, s	2.609		2.609	2.609	2.609
Critical Headway, s	4.976	160	4.976	4.976	4.976
Entry Flow, veh/h	44	1310	131	1124	46
Cap Entry Lane, veh/h	1310	0.971	453	1319	433
Entry HV Adj Factor	0.974	155	0.954	0.962	0.989
Flow Entry, veh/h	43	1272	125	1081	45
Cap Entry, veh/h	1275	0.122	432	1268	428
V/C Ratio	0.034	3.8	0.289	0.852	0.106
Control Delay, s/veh	3.1	A	13.1	20.7	9.9
LOS	A	0	B	C	A
95th %tile Queue, veh	0		1	12	0

3: CSAH 19 & CR 117 & CR 203

Direction	All
Future Volume (vph)	1139
Total Delay / Veh (s/v)	0
CO Emissions (kg)	1.86
NOx Emissions (kg)	0.36
VOC Emissions (kg)	0.43

3: CSAH 19 & CR 117 & CR 203 Performance by approach

Approach	EB	WB	NB	SB	All
Denied Del/Veh (s)	3.1	0.1	2.9	0.1	2.7
Total Del/Veh (s)	17.5	7.6	0.5	8.2	14.3

Total Network Performance

Denied Del/Veh (s)	2.7
Total Del/Veh (s)	27.0

Intersection: 3: CSAH 19 & CR 117 & CR 203

Movement	EB	EB	WB	NB	NB	SB
Directions Served	LT	R	LTR	UL	TR	TR
Maximum Queue (ft)	494	431	65	4	6	67
Average Queue (ft)	76	149	29	0	0	29
95th Queue (ft)	322	416	52	3	5	53
Link Distance (ft)	1192		1460		707	559
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)		150		325		
Storage Blk Time (%)		15				
Queuing Penalty (veh)		19				

Network Summary

Network wide Queuing Penalty: 19

3: CSAH 19 & CR 117 & CR 203

Direction	All
Future Volume (vph)	1139
Total Delay / Veh (s/v)	0
CO Emissions (kg)	2.03
NOx Emissions (kg)	0.40
VOC Emissions (kg)	0.47

Intersection	
Intersection Delay, s/veh	9.0
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	940	83	141	74
Demand Flow Rate, veh/h	968	88	147	75
Vehicles Circulating, veh/h	95	142	143	196
Vehicles Exiting, veh/h	176	148	95	33
Ped Vol Crossing Leg, #/h	0	0	1	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	10.6	3.8	4.2	3.8
Approach LOS	B	A	A	A

Lane	Left	Bypass	Left	Left	Left
Designated Moves	LT	R	LTR	LTR	LTR
Assumed Moves	LT	R	LTR	LTR	LTR
RT Channelized		Yield			
Lane Util	1.000		1.000	1.000	1.000
Follow-Up Headway, s	2.609		2.609	2.609	2.609
Critical Headway, s	4.976	825	4.976	4.976	4.976
Entry Flow, veh/h	143	1252	88	147	75
Cap Entry Lane, veh/h	1252	0.971	1194	1193	1130
Entry HV Adj Factor	0.974	801	0.947	0.961	0.983
Flow Entry, veh/h	139	1216	83	141	74
Cap Entry, veh/h	1220	0.659	1130	1146	1111
V/C Ratio	0.114	11.8	0.074	0.123	0.066
Control Delay, s/veh	3.9	B	3.8	4.2	3.8
LOS	A	5	A	A	A
95th %tile Queue, veh	0		0	0	0

3: CSAH 19 & CR 117 & CR 203

Direction	All
Future Volume (vph)	1333
Total Delay / Veh (s/v)	0
CO Emissions (kg)	0.93
NOx Emissions (kg)	0.18
VOC Emissions (kg)	0.22

3: CSAH 19 & CR 117 & CR 203 Performance by approach

Approach	EB	WB	NB	SB	All
Denied Del/Veh (s)	3.1	0.2	3.3	0.1	2.9
Total Del/Veh (s)	15.3	104.9	3.9	68.6	16.0

Total Network Performance

Denied Del/Veh (s)	2.9
Total Del/Veh (s)	18.7

Intersection: 3: CSAH 19 & CR 117 & CR 203

Movement	EB	WB	NB	NB	SB
Directions Served	LT	LTR	UL	TR	TR
Maximum Queue (ft)	84	302	59	8	116
Average Queue (ft)	35	117	6	0	40
95th Queue (ft)	73	257	28	4	95
Link Distance (ft)	1192	1460		707	559
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)			325		
Storage Blk Time (%)					1
Queuing Penalty (veh)					0

Network Summary

Network wide Queuing Penalty: 0

3: CSAH 19 & CR 117 & CR 203

Direction	All
Future Volume (vph)	1334
Total Delay / Veh (s/v)	0
CO Emissions (kg)	2.23
NOx Emissions (kg)	0.43
VOC Emissions (kg)	0.52

Intersection	
Intersection Delay, s/veh	17.4
Intersection LOS	C

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	198	125	1081	45
Demand Flow Rate, veh/h	204	131	1124	46
Vehicles Circulating, veh/h	51	1093	44	1136
Vehicles Exiting, veh/h	1130	75	51	88
Ped Vol Crossing Leg, #/h	0	0	1	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	3.7	13.1	20.7	9.9
Approach LOS	A	B	C	A

Lane	Left	Bypass	Left	Left	Left
Designated Moves	LT	R	LTR	LTR	LTR
Assumed Moves	LT	R	LTR	LTR	LTR
RT Channelized		Yield			
Lane Util	1.000		1.000	1.000	1.000
Follow-Up Headway, s	2.609		2.609	2.609	2.609
Critical Headway, s	4.976	160	4.976	4.976	4.976
Entry Flow, veh/h	44	1310	131	1124	46
Cap Entry Lane, veh/h	1310	0.971	453	1319	433
Entry HV Adj Factor	0.974	155	0.954	0.962	0.989
Flow Entry, veh/h	43	1272	125	1081	45
Cap Entry, veh/h	1275	0.122	432	1268	428
V/C Ratio	0.034	3.8	0.289	0.852	0.106
Control Delay, s/veh	3.1	A	13.1	20.7	9.9
LOS	A	0	B	C	A
95th %tile Queue, veh	0		1	12	0

Traffic Safety Benefit-Cost Calculation - Worksheet A

Highway Safety Improvement Program (HSIP) Reactive Project

DEPARTMENT OF TRANSPORTATION

A. Roadway Description

Route	CSAH 19	**District**	Metro	**County**	Hennepin
Begin RP		**End RP**		**Miles**	
Location	CSAH 19 at 109th Ave N, Hanover & Corcoran				

B. Project Description

Proposed Work	Reconstruct Intersection		
Project Cost*	$3,390,000	**Installation Year**	2024
Project Service Life	20 years	**Traffic Growth Factor**	0.5%

** exclude Right of Way from Project Cost*

C. Crash Modification Factor

	Fatal (K) Crashes	**Reference**	CMF 4700, GDOT 12-01
	Serious Injury (A) Crashes		
0.03	**Moderate Injury (B) Crashes**	**Crash Type**	GDOT for All, CMF .11 for All Types; A, B, and C Severities.
0.03	**Possible Injury (C) Crashes**		
	Property Damage Only Crashes		www.CMFclearinghouse.org

D. Crash Modification Factor (optional second CMF)

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

E. Crash Data

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

Crash Severity	GDOT for All, CMF .11 for All Types	< optional 2nd CMF >
K crashes	0	
A crashes	0	
B crashes	1	
C crashes	1	
PDO crashes	0	

F. Benefit-Cost Calculation

$1,939,436	**Benefit (present value)**	**B/C Ratio = 0.58**
$3,390,000	**Cost**	

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

F. Analysis Assumptions

Crash Severity	Crash Cost
K crashes	$1,360,000
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	0.5%
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	0.97	0.32	$67,921
C crashes	0.97	0.32	$35,578
PDO crashes	0.00	0.00	$0
			$103,499

H. Amortized Benefit

Year	Crash Benefits	Present Value
2024	$103,499	$103,499
2025	$104,016	$102,783
2026	$104,536	$102,072
2027	$105,059	$101,366
2028	$105,584	$100,665
2029	$106,112	$99,968
2030	$106,643	$99,277
2031	$107,176	$98,590
2032	$107,712	$97,908
2033	$108,250	$97,231
2034	$108,792	$96,558
2035	$109,336	$95,891
2036	$109,882	$95,227
2037	$110,432	$94,569
2038	$110,984	$93,914
2039	$111,539	$93,265
2040	$112,096	$92,620
2041	$112,657	$91,979
2042	$113,220	$91,343
2043	$113,786	$90,711
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 = $1,939,436

Traffic Safety Benefit-Cost Calculation - Worksheet B

Highway Safety Improvement Program (HSIP) Reactive Project

DEPARTMENT OF TRANSPORTATION

A. Roadway Description

Route	CSAH 19	**District**	Metro	**County**	Hennepin
Begin RP		**End RP**		**Miles**	
Location	CSAH 19 at 109th Ave N, Hanover & Corcoran				

B. Project Description

Proposed Work	Reconstruct Intersection		
Project Cost*	$3,390,000	**Installation Year**	2024
Project Service Life	20 years	**Traffic Growth Factor**	0.5%

** exclude Right of Way from Project Cost*

C. Crash Modification Factor

	Fatal (K) Crashes	**Reference**	CMF 4699, GDOT 12-01
	Serious Injury (A) Crashes		
	Moderate Injury (B) Crashes	**Crash Type**	GDOT for All, CMF .26 for All Types; All Severities.
	Possible Injury (C) Crashes		
0.07	**Property Damage Only Crashes**		www.CMFclearinghouse.org

D. Crash Modification Factor (optional second CMF)

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

E. Crash Data

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

Crash Severity	GDOT for All, CMF .26 for All Type	< optional 2nd CMF >
K crashes	0	
A crashes	0	
B crashes	0	
C crashes	0	
PDO crashes	3	

F. Benefit-Cost Calculation

$209,080	**Benefit (present value)**	**B/C Ratio = 0.07**
$3,390,000	**Cost**	

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

F. Analysis Assumptions

Crash Severity	Crash Cost
K crashes	$1,360,000
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 0.5%

Project Service Life 20 years

G. Annual Benefit

Crash Severity	Crash Reduction	Annual Reduction	Annual Benefit
K crashes	0.00	0.00	$0
A crashes	0.00	0.00	$0
B crashes	0.00	0.00	$0
C crashes	0.00	0.00	$0
PDO crashes	2.79	0.93	$11,158
			$11,158

H. Amortized Benefit

Year	Crash Benefits	Present Value
2024	$11,158	$11,158
2025	$11,213	$11,080
2026	$11,269	$11,004
2027	$11,326	$10,928
2028	$11,382	$10,852
2029	$11,439	$10,777
2030	$11,497	$10,702
2031	$11,554	$10,628
2032	$11,612	$10,555
2033	$11,670	$10,482
2034	$11,728	$10,409
2035	$11,787	$10,337
2036	$11,846	$10,266
2037	$11,905	$10,195
2038	$11,965	$10,124
2039	$12,024	$10,054
2040	$12,084	$9,985
2041	$12,145	$9,916
2042	$12,206	$9,847
2043	$12,267	$9,779
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 = $209,080

Traffic Safety Benefit-Cost Calculation - Worksheet C

Highway Safety Improvement Program (HSIP) Reactive Project

DEPARTMENT OF TRANSPORTATION

A. Roadway Description

Route	CSAH 19	**District**	Metro	**County**	Hennepin
Begin RP		**End RP**		**Miles**	
Location	CSAH 19 at 109th Ave N, Hanover & Corcoran				

B. Project Description

Proposed Work	Reconstruct Intersection		
Project Cost*	$3,390,000	**Installation Year**	2024
Project Service Life	20 years	**Traffic Growth Factor**	0.5%

** exclude Right of Way from Project Cost*

C. Crash Modification Factor

	Fatal (K) Crashes	**Reference**	CMF 4707, GDOT 12-01
0.02	**Serious Injury (A) Crashes**		
	Moderate Injury (B) Crashes	**Crash Type**	GDOT for All, CMF .09 for Angle; A,B, and C Severities.
0.02	**Possible Injury (C) Crashes**		
	Property Damage Only Crashes		www.CMFclearinghouse.org

D. Crash Modification Factor (optional second CMF)

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

E. Crash Data

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

Crash Severity	GDOT for All, CMF .09 for Angle; A	< optional 2nd CMF >
K crashes	0	
A crashes	1	
B crashes	0	
C crashes	1	
PDO crashes	0	

F. Benefit-Cost Calculation

$4,814,628	**Benefit (present value)**
$3,390,000	**Cost**

B/C Ratio = 1.43

Proposed project expected to reduce 1 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	0.5%
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	0.98	0.33	$221,159
B crashes	0.00	0.00	$0
C crashes	0.98	0.33	$35,776
PDO crashes	0.00	0.00	$0
			$256,934

H. Amortized Benefit

Year	Crash Benefits	Present Value
2024	$256,934	$256,934
2025	$258,219	$255,157
2026	$259,510	$253,392
2027	$260,808	$251,639
2028	$262,112	$249,899
2029	$263,422	$248,170
2030	$264,739	$246,454
2031	$266,063	$244,749
2032	$267,393	$243,056
2033	$268,730	$241,375
2034	$270,074	$239,705
2035	$271,424	$238,047
2036	$272,781	$236,401
2037	$274,145	$234,766
2038	$275,516	$233,142
2039	$276,894	$231,529
2040	$278,278	$229,928
2041	$279,670	$228,337
2042	$281,068	$226,758
2043	$282,473	$225,189
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 = $4,814,628

Traffic Safety Benefit-Cost Calculation - Worksheet D

Highway Safety Improvement Program (HSIP) Reactive Project

DEPARTMENT OF TRANSPORTATION

A. Roadway Description

Route	CSAH 19	**District**	Metro	**County**	Hennepin
Begin RP		**End RP**		**Miles**	
Location	CSAH 19 at 109th Ave N, Hanover & Corcoran				

B. Project Description

Proposed Work	Reconstruct Intersection		
Project Cost*	$3,390,000	**Installation Year**	2024
Project Service Life	20 years	**Traffic Growth Factor**	0.5%

** exclude Right of Way from Project Cost*

C. Crash Modification Factor

	Fatal (K) Crashes	**Reference**	CMF 4705, GDOT 12-01
	Serious Injury (A) Crashes		
	Moderate Injury (B) Crashes	**Crash Type**	GDOT for All, CMF .17 for Angle; All Severities.
	Possible Injury (C) Crashes		
0.05	**Property Damage Only Crashes**		www.CMFclearinghouse.org

D. Crash Modification Factor (optional second CMF)

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

E. Crash Data

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

Crash Severity	GDOT for All, CMF .17 for Angle; A	< optional 2nd CMF >
K crashes	0	
A crashes	0	
B crashes	0	
C crashes	0	
PDO crashes	2	

F. Benefit-Cost Calculation

$143,030	**Benefit (present value)**	**B/C Ratio = 0.05**
$3,390,000	**Cost**	

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

F. Analysis Assumptions

Crash Severity	Crash Cost
K crashes	$1,360,000
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 0.5%

Project Service Life 20 years

G. Annual Benefit

Crash Severity	Crash Reduction	Annual Reduction	Annual Benefit
K crashes	0.00	0.00	$0
A crashes	0.00	0.00	$0
B crashes	0.00	0.00	$0
C crashes	0.00	0.00	$0
PDO crashes	1.91	0.64	$7,633
			$7,633

H. Amortized Benefit

Year	Crash Benefits	Present Value
2024	$7,633	$7,633
2025	$7,671	$7,580
2026	$7,709	$7,528
2027	$7,748	$7,476
2028	$7,787	$7,424
2029	$7,826	$7,372
2030	$7,865	$7,321
2031	$7,904	$7,271
2032	$7,944	$7,221
2033	$7,983	$7,171
2034	$8,023	$7,121
2035	$8,063	$7,072
2036	$8,104	$7,023
2037	$8,144	$6,974
2038	$8,185	$6,926
2039	$8,226	$6,878
2040	$8,267	$6,831
2041	$8,308	$6,783
2042	$8,350	$6,736
2043	$8,391	$6,690
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 = $143,030

Overall B/C and Crash Reduction

Overall Benefit-Cost Calculation

Benefit Calculation

Worksheet	Benefit
WorksheetA	$ 1,939,436
WorksheetB	$ 209,080
WorksheetC	$ 4,814,628
WorksheetD	$ 143,030
Overall Benefit	$ 7,106,174

7,106,174 **Benefit (present value)**
3,390,000 **Cost**

B/C Ratio = 2.10

Crash Reduction

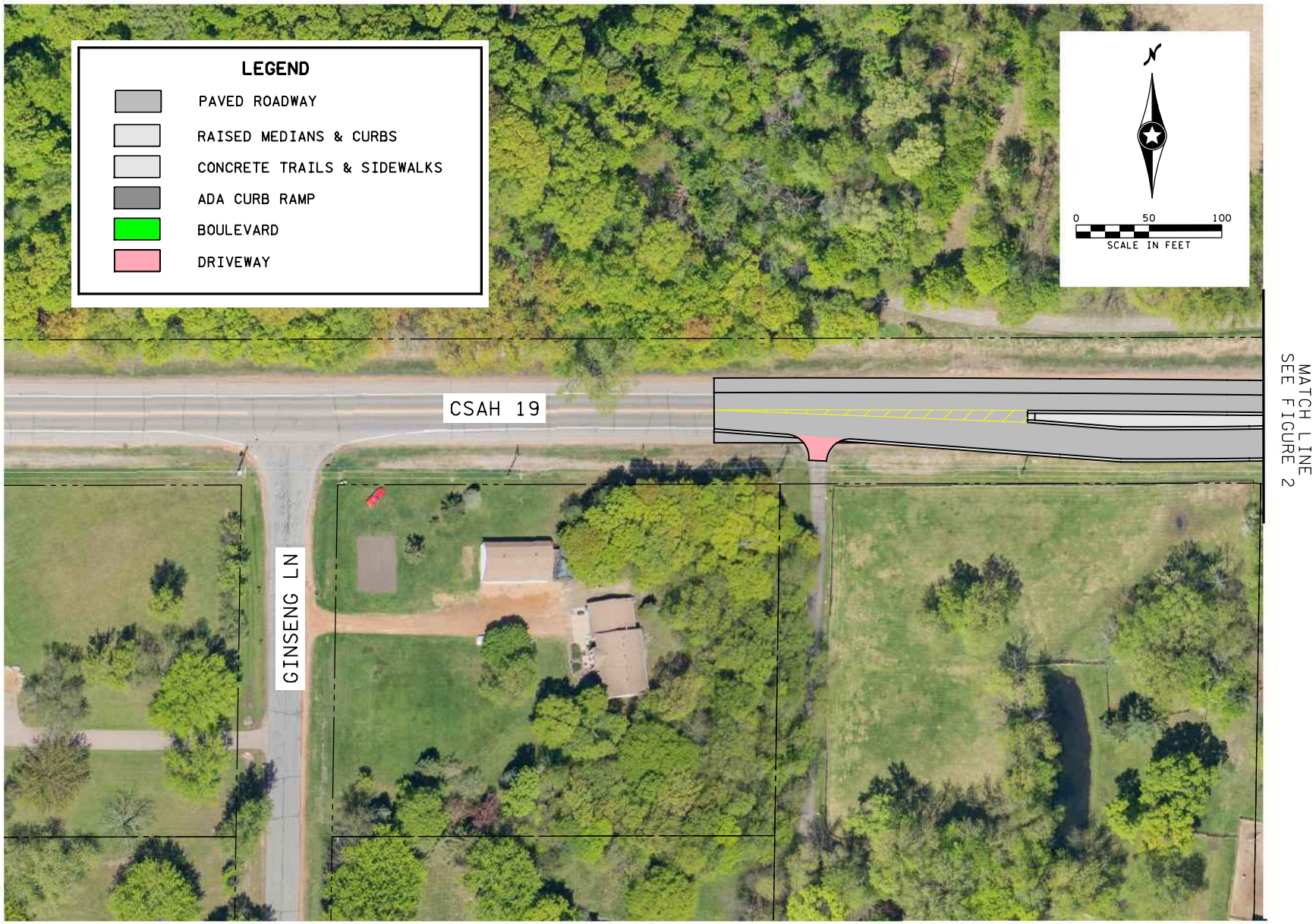
WorksheetA Proposed project expected to reduce 1 crashes annually, 0 of which involving fatality or serious injury.
WorksheetB Proposed project expected to reduce 1 crashes annually, 0 of which involving fatality or serious injury.
WorksheetC Proposed project expected to reduce 1 crashes annually, 1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

	Annual Reduction	K or A
WorksheetA	1	0
WorksheetB	1	0
WorksheetC	1	1
WorksheetD	1	0
Overall Reduction	4	1

2016-2018 Crash Data

INCIDENTID	RTESYS	RTENUM	MEASURE	LOCALID	MONTH	DATE	YEAR	DAY	HOUR	SEV	MOC	FHE	LIGHTCOI	WEATHERPRI	RDWYSUF	ROUTE_ID	BASIC_TYPE
347768	4	19	21.913	16005195	5	9	2016	Mon	7	5	12	10	1	1	1	0400006594720019-I	7
353577	7	117	0	16006430	6	2	2016	Thu	18	4	5	10	1	1	1	0700006594720117-I	10
354733	4	19	21.894	16006671	6	7	2016	Tue	8	5	12	10	1	1	1	0400006594720019-I	7
357413	7	203	0.013	16007285	6	17	2016	Fri	18	2	90	10	1	3	2	0700006594720203-I	90
587916	4	19	21.906	18003904	4	3	2018	Tue	21	5		35	4	4	3	0400006594720019-I	3
590858	4	19	21.899	18004354	4	14	2018	Sat	16	5	14	10	1	4	3	0400006594720019-I	90
596155	7	117	0.007	18005412	5	9	2018	Wed	11	5	90	10	1	2	2	0700006594720117-I	90
624999	4	19	21.909	18009520	7	29	2018	Sun	17	5	5	10	1	1	1	0400006594720019-I	10
661356	7	203	0.005	18005189	11	19	2018	Mon	7	5	12	10	1	1	1	0700006594720203-I	7

Attachment 04



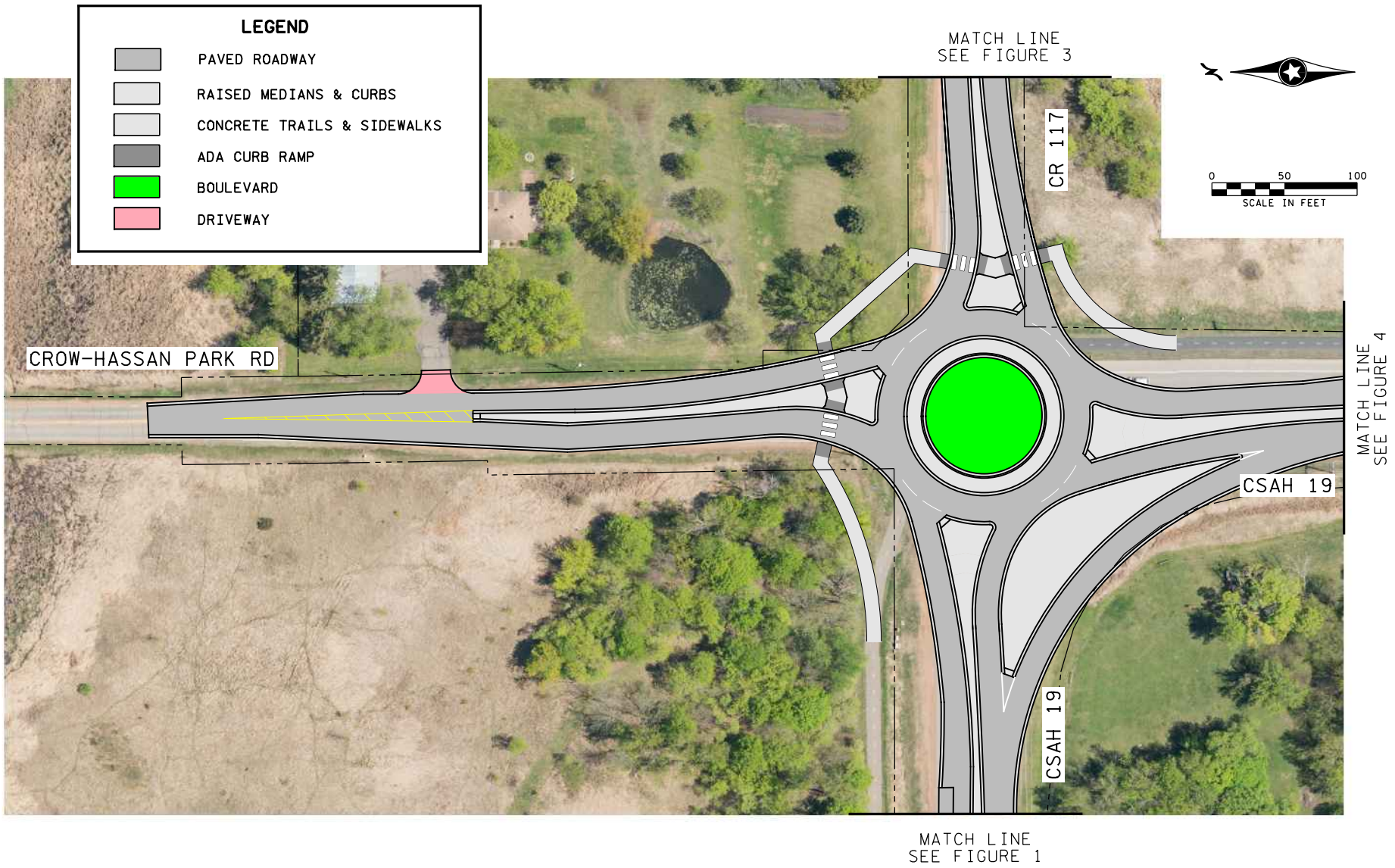
Job #13344
4/22/2020
H:\Projects\13000\13344\Design\Graphics\Concept Graphics\CSAH 19_1 (Roundabout)\13344_gr05_1_CSAH 19_1.dgn

Hennepin County Improvements

CSAH 19 Spot Mobility

Hanover & Corcoran, MN

Figure 1



Job #13344
4/22/2020
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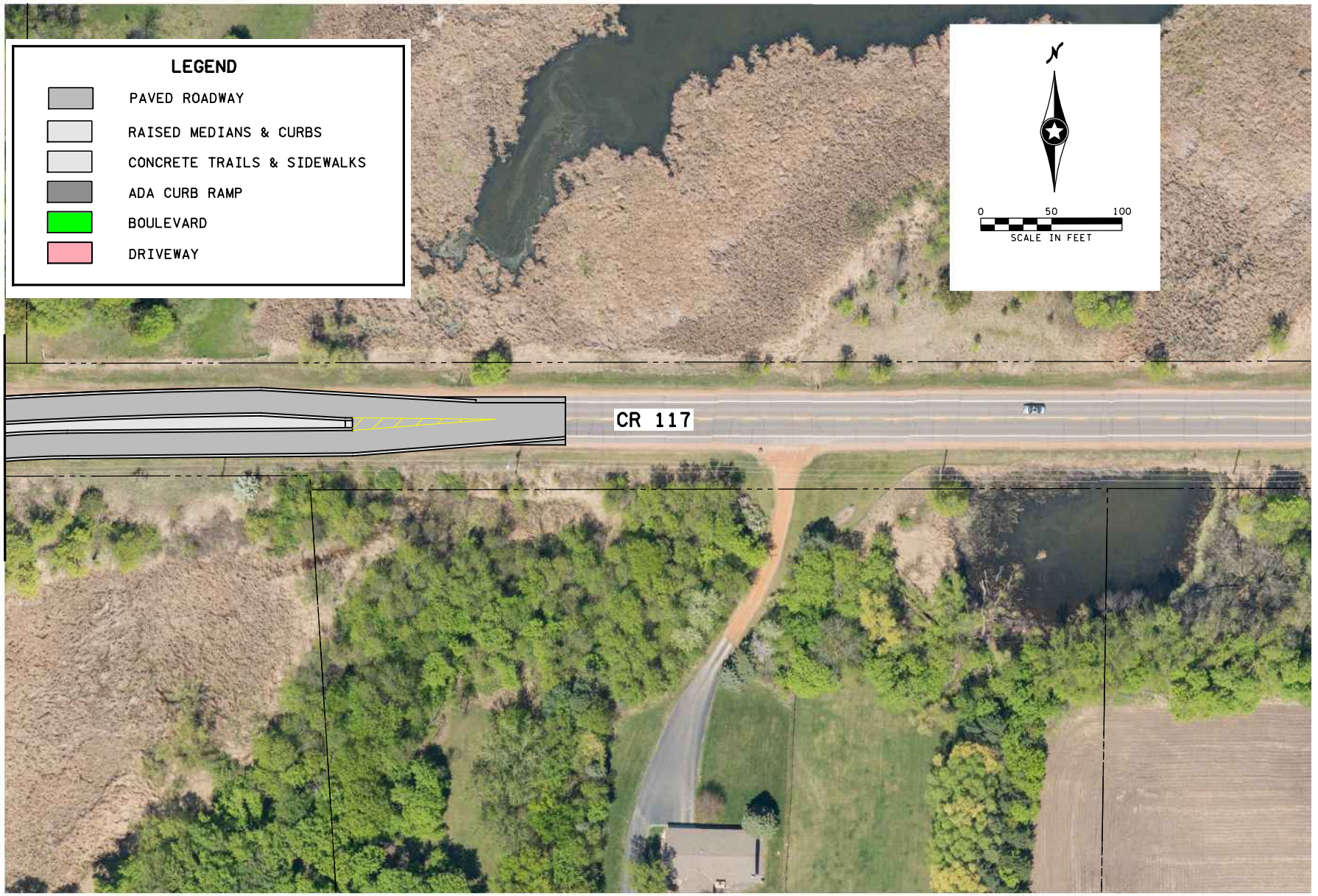
Hennepin County Improvements

CSAH 19 Spot Mobility

Hanover & Corcoran, MN

Figure 2



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4/22/2020
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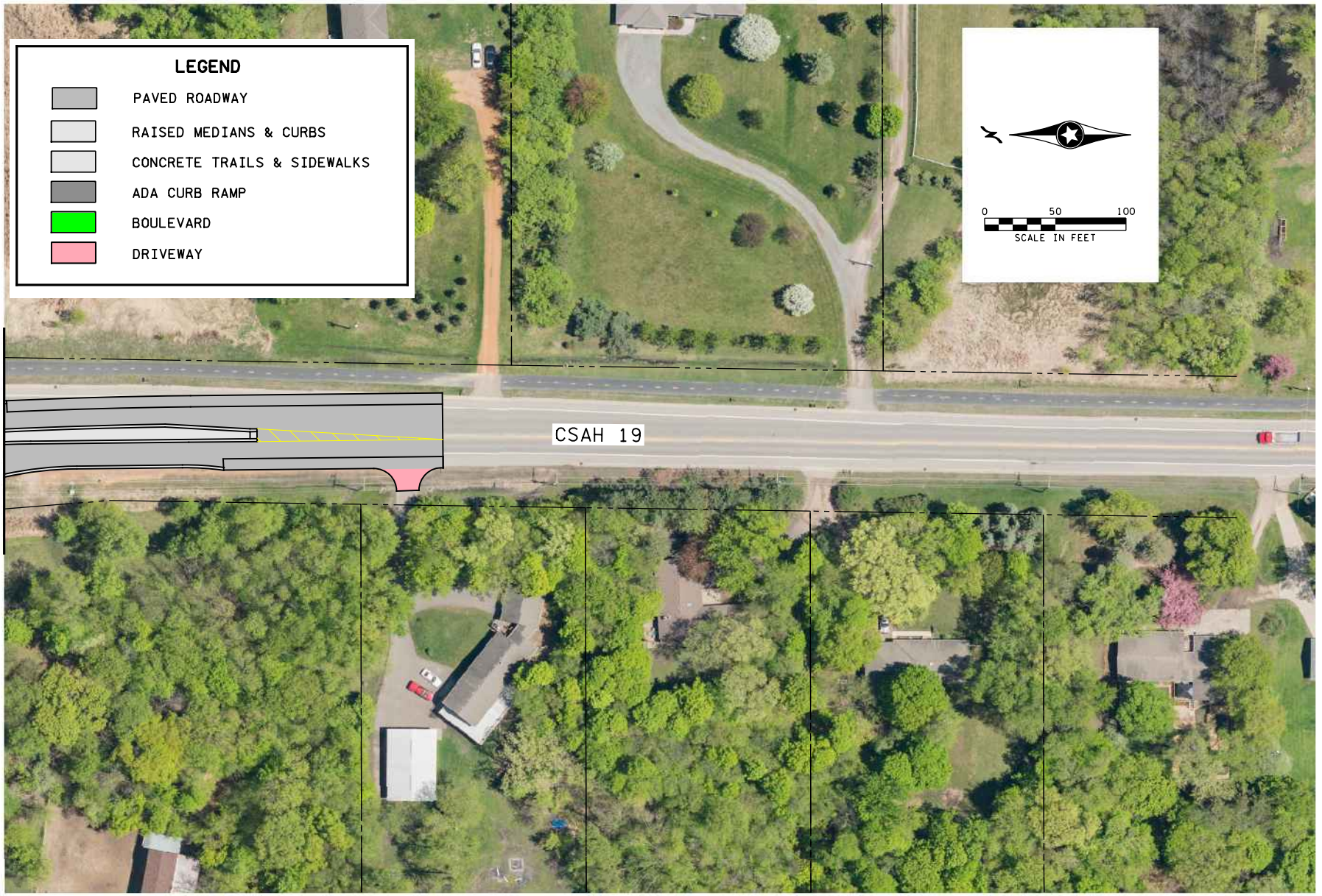
Hennepin County Improvements

CSAH 19 Spot Mobility

Hanover & Corcoran, MN

Figure 3



Job #13344
4/22/2020
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Hennepin County Improvements

CSAH 19 Spot Mobility

Hanover & Corcoran, MN

Figure 4

CSAH 19 Spot Mobility and Safety Project

List of Attachments

1. Project Narrative
2. Project Location Map
3. Existing Roadway Condition Photos
4. Potential Layout
5. Crow Hassan Park Map
6. CRSP Intersection Risk Factors
7. Crash Listing and Crash Map
8. Intersection Crash Distribution
9. Traffic HCAADT
10. CIP
11. CRSP Risk Factor Crash Distribution
12. Level of Congestion
13. Congestion on Parallel Route
14. Socio-Economic Conditions
15. Socio-Economic Equity Map
16. Affordable Housing Access Map
17. Synchro Reports
18. CMF
19. GDOT
20. Conflict Points
21. AAA
22. FHWA Proven Safety Countermeasures
23. MnDOT Best Practices
24. FHWA Safe Transportation for Every Pedestrian
25. RBTN
26. Letters of Support

CSAH 19 Spot Mobility and Safety Project

Attachment 01 | Project Narrative

HENNEPIN COUNTY
MINNESOTA

Project Name

CSAH 19 Safety Improvements at CR 117

City(ies)

Corcoran | Hanover | N/A | N/A

Commisioner Districts

7 | N/A | N/A

Capital Project Number

2191400

Project Category

Safety

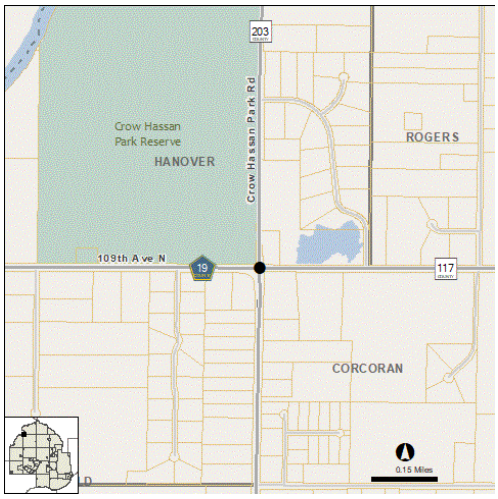
Scoping Manager

Jason Pieper

Scoping Form Revision Dates

4/23/2020

Project Map



Project Summary

Safety improvements at the intersection of CSAH 19 and 109th Avenue (County Road 117) in the cities of Corcoran and Hanover.

Roadway History

The existing intersection of CSAH 19 at 109th Avenue (County Road 117) experiences imbalanced traffic flows. During the morning peak period, a high percentage of eastbound vehicles turn right to continue southbound along CSAH 19. While in the afternoon peak period, a high percentage of northbound vehicles turn left to travel westbound towards the Crow River. In an effort to manage mobility and safety through the intersection, a three-way stop was implemented. In this condition, northbound vehicles are not required to stop. Additionally, a channelized right turn island is provided in the southwest quadrant that permits eastbound right-turning vehicles to merge onto CSAH 19 at a relatively high speed. These conditions are relatively uncommon along county roadways, causing confusion and discomfort for people driving, walking, biking, or rolling. Also, there is an existing crossing for the Lake Independence Regional Trail on the north approach that further complicates the intersection.

CSAH 19 was reconstructed in this area in the mid-2000s. However, this intersection was mainly left unchanged due to a lack of available right of way needed to realign CSAH 19 to better accommodate the predominant vehicle movements.

Project Description and Benefits

The proposed project would likely modify the existing intersection to better accommodate user activity in terms of mobility and safety. Further evaluation is needed to determine the preferred intersection geometry, intersection control, and trail crossing design. It is anticipated that fairly significant improvements are necessary to accommodate the traffic flows, while still providing a safe and comfortable crossing for the Lake Independence Regional Trail. The specific design for the intersection will be based on the results of a traffic study, along with input from impacted stakeholders.

Project Risks & Uncertainities

- Intersection experiences uneven traffic flows (eastbound right-turns in the AM / northbound left-turns in the PM)

Project Timeline

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

Project Delivery Responsibilities

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

Project Budget -		Project Level
Construction:	$	2,610,000
Cost Estimate Year:		2020
Construction Year:		2025
Annual Inflation Rate:		3.0%
Inflated Construction:	$	3,030,000
Design Services:	$	450,000
R/W Acquisition:	$	400,000
Other (Utility Burial):	$	-
Construction Services:	$	300,000
Contingency:	$	780,000
Total Project Budget:	**$**	**4,960,000**

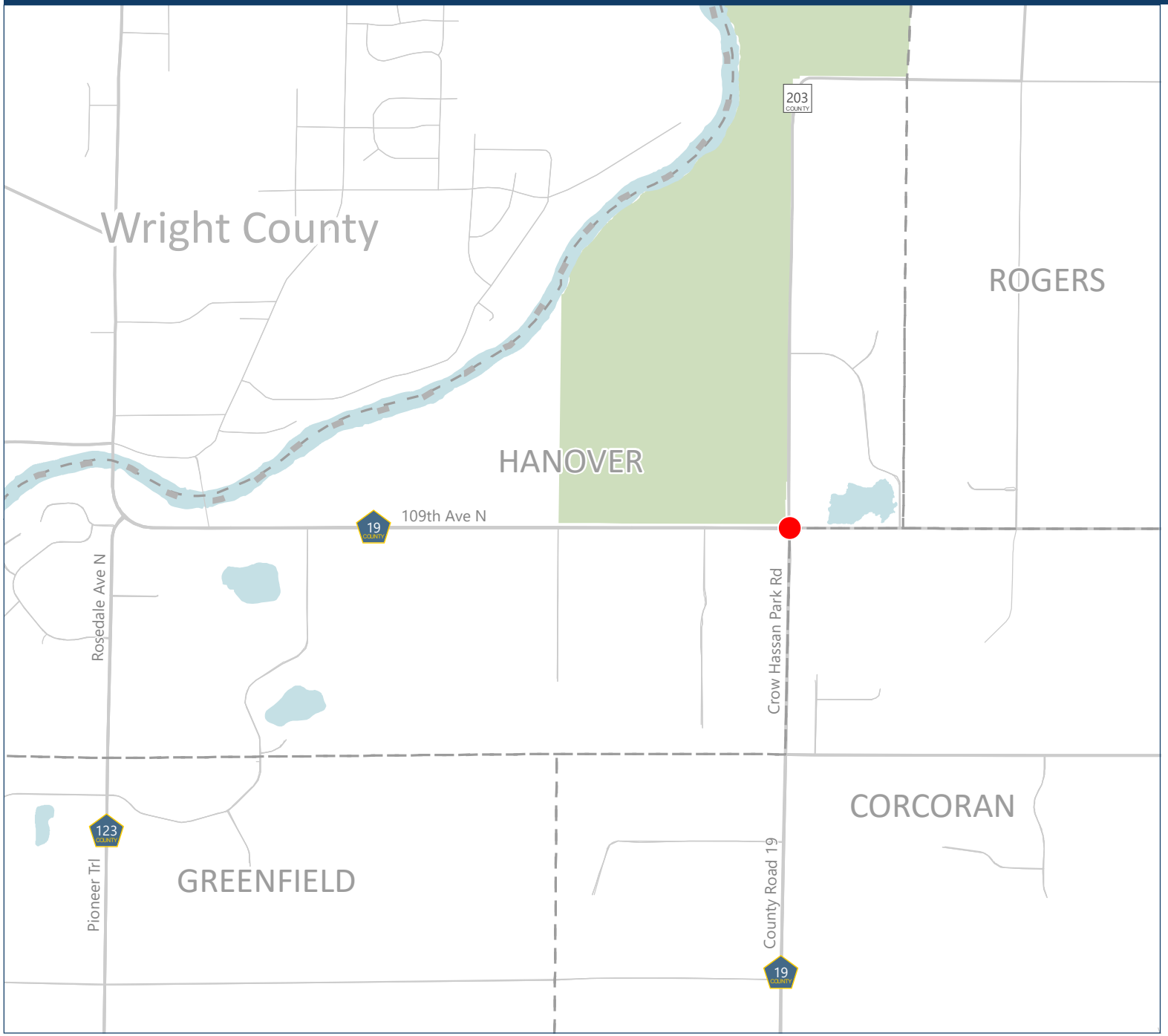
Funding Notes

- A portion of the project costs is eligible for the county's State Aid Municipal Account.

CSAH 19 Spot Mobility and Safety Project

Attachment 02 | Project Location Map

HENNEPIN COUNTY
MINNESOTA



Key

Project Location

0 0.25 0.5 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: 5/13/2020

N

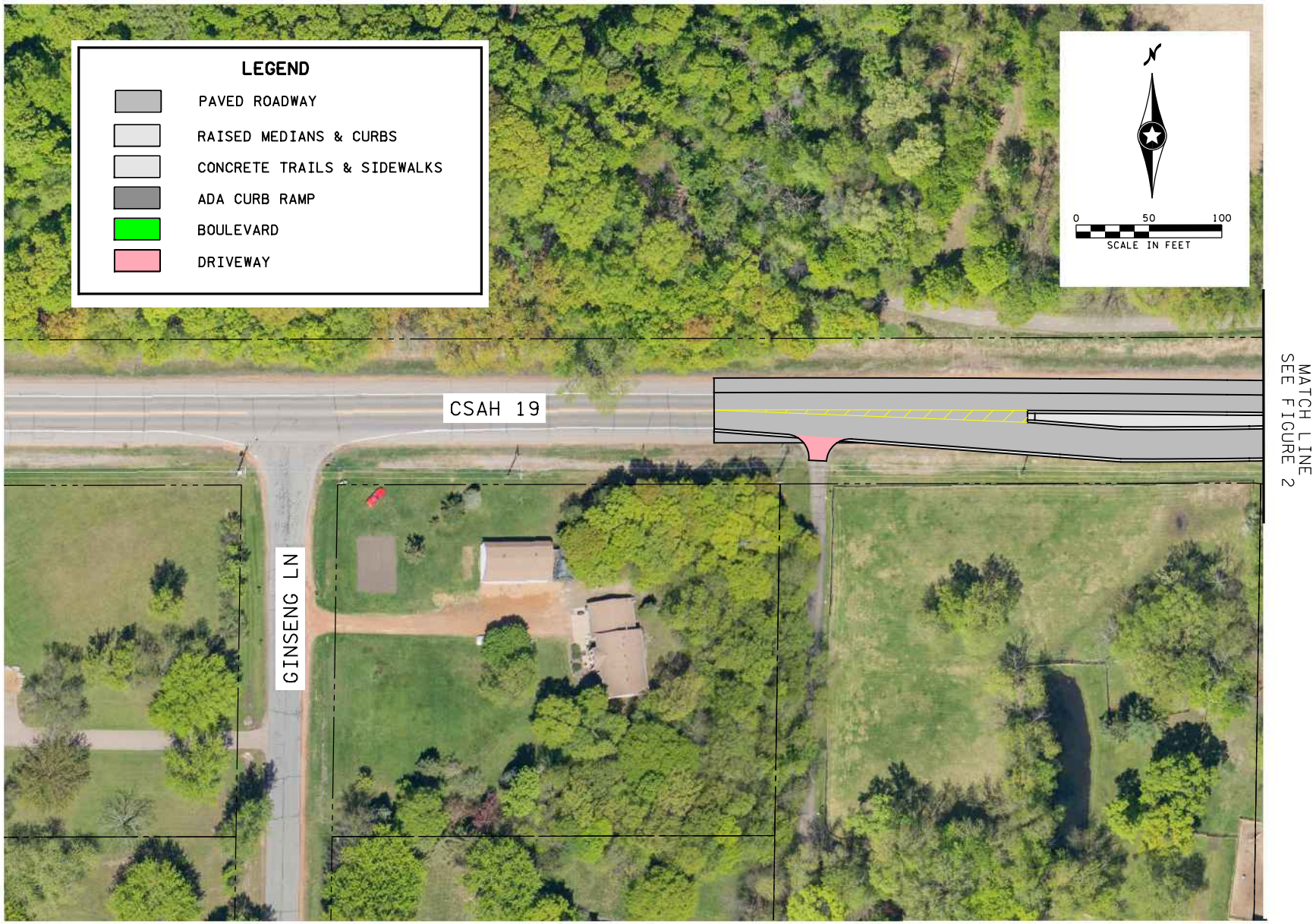
Hennepin

CSAH 19 Spot Mobility and Safety Project

Attachment 03 | Existing Roadway Condition Photos


TRAIL
CROSSING

Attachment 04



Job #13344
4/22/2020
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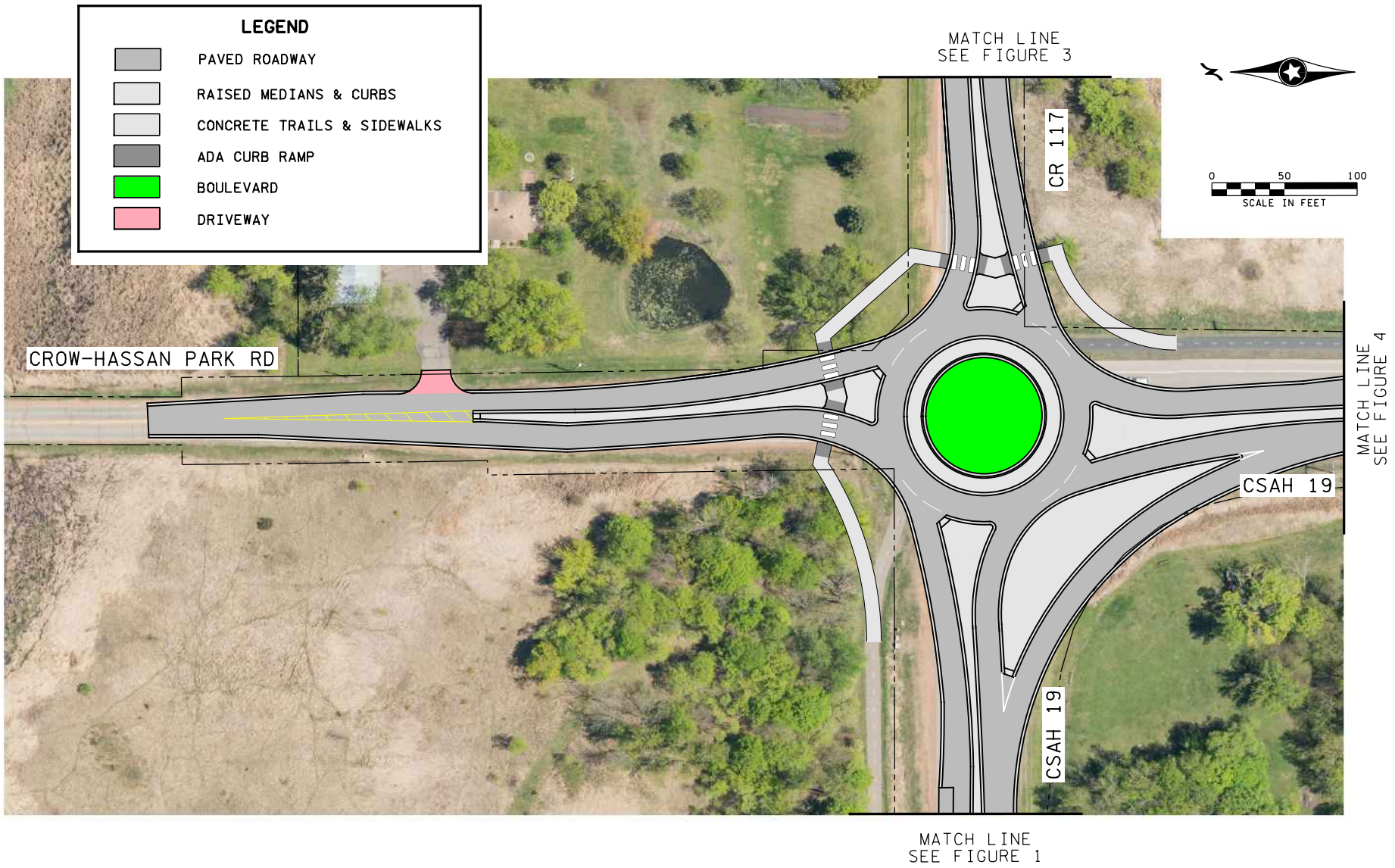
Hennepin County Improvements

CSAH 19 Spot Mobility

Hanover & Corcoran, MN

Figure 1



Job #13344
4/22/2020
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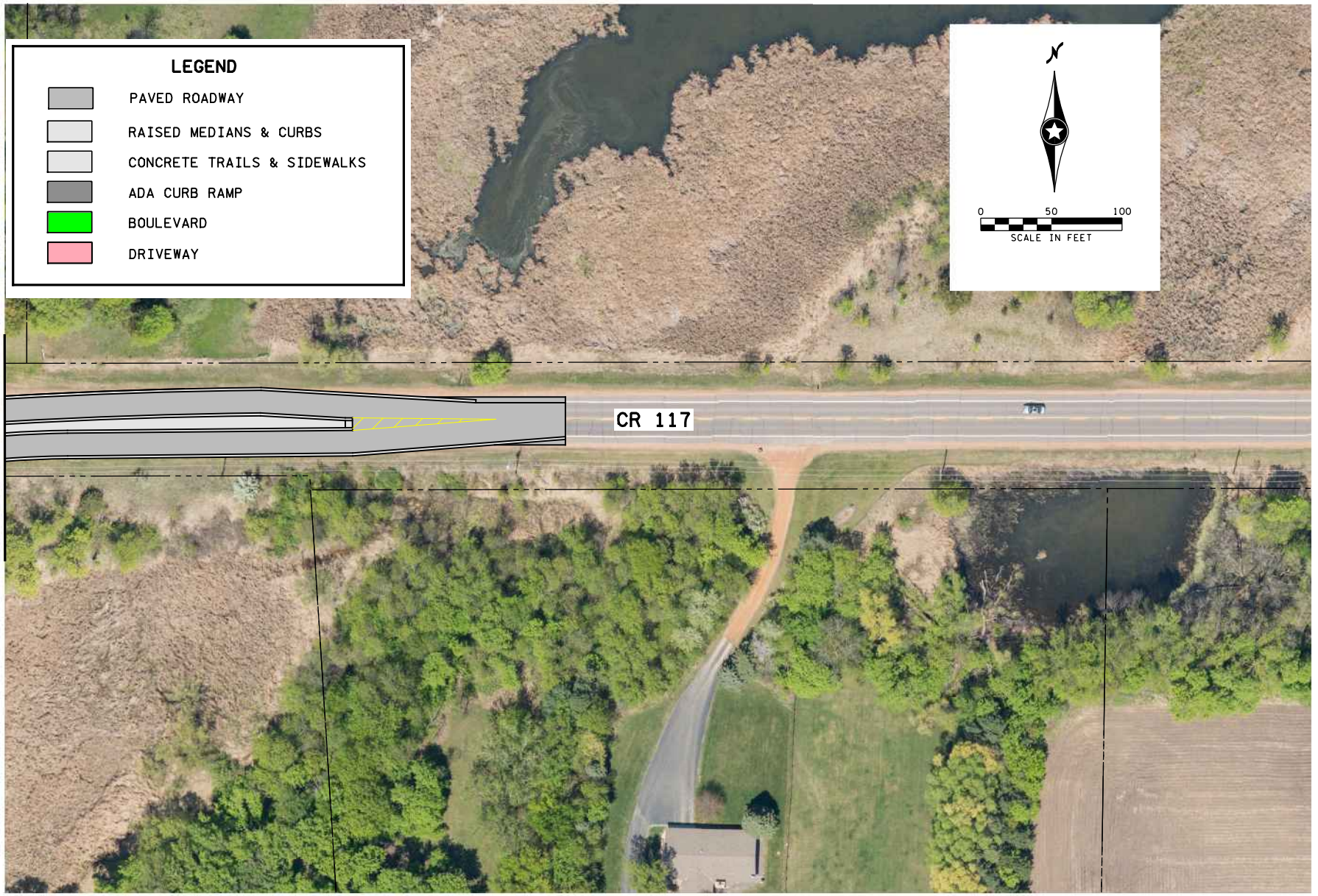
Hennepin County Improvements

CSAH 19 Spot Mobility

Hanover & Corcoran, MN

Figure 2



Job #13344
4/22/2020
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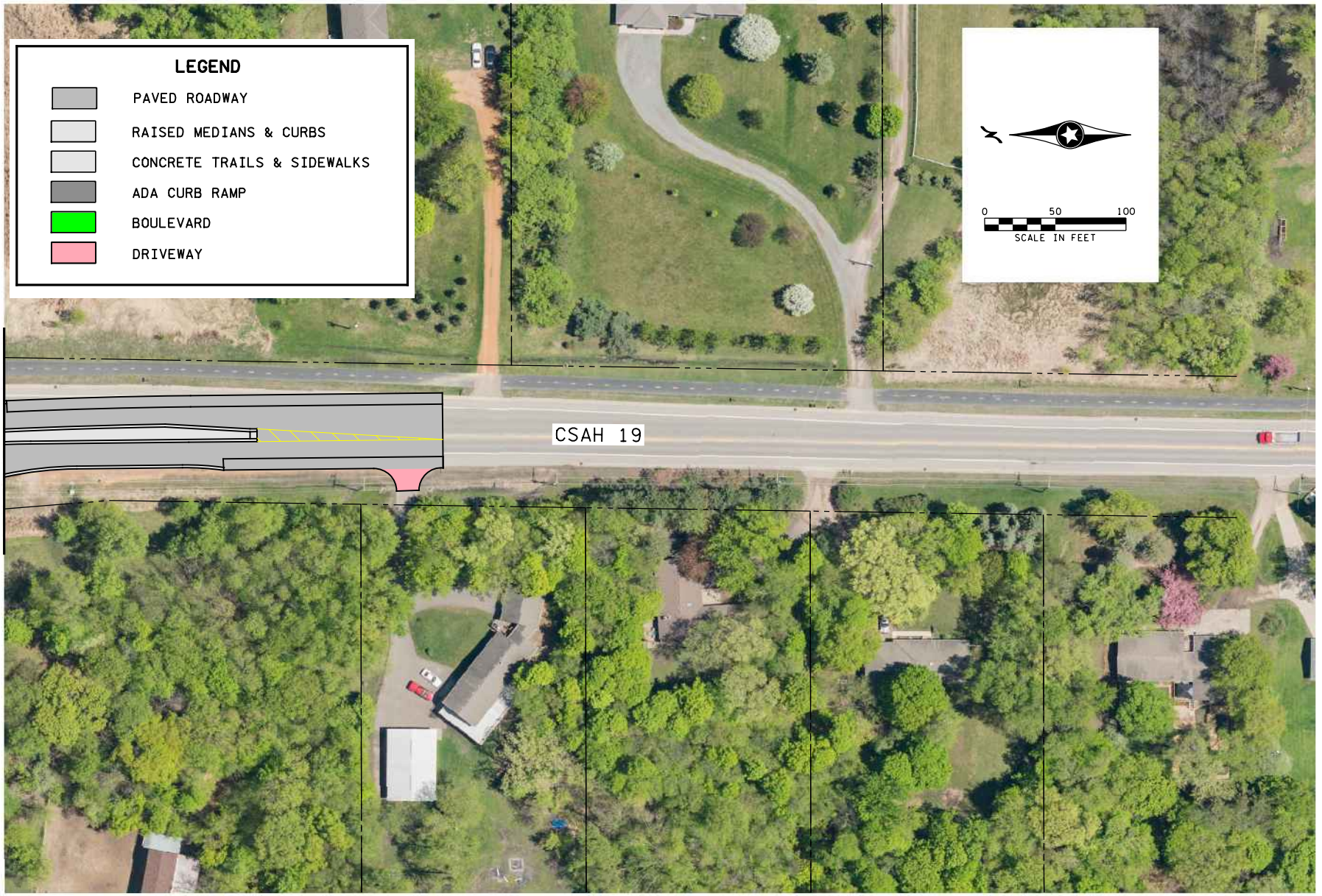
Hennepin County Improvements

CSAH 19 Spot Mobility

Hanover & Corcoran, MN

Figure 3



Job #13344
4/22/2020
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Hennepin County Improvements

CSAH 19 Spot Mobility

Hanover & Corcoran, MN

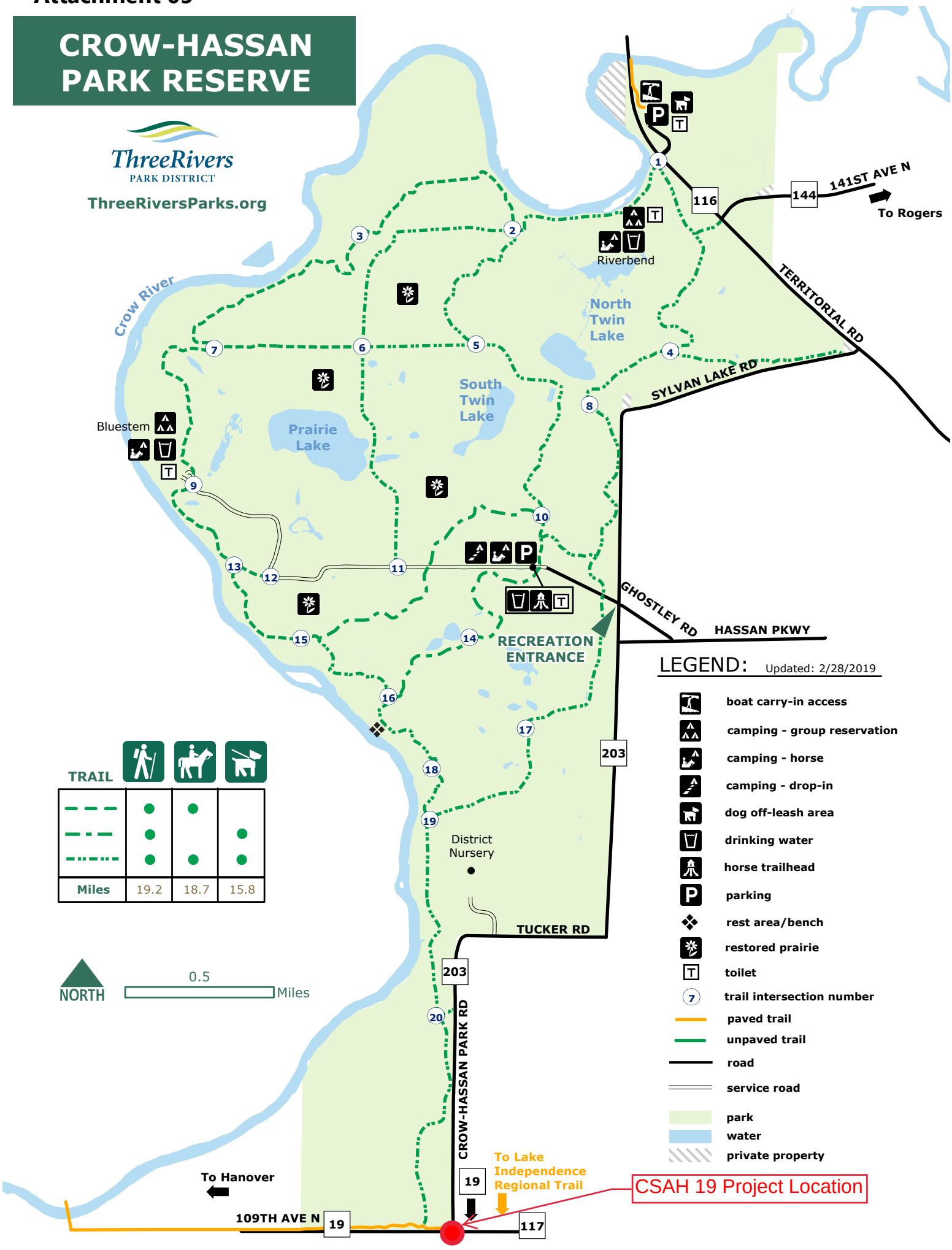
Figure 4

Attachment 05

CROW-HASSAN PARK RESERVE

ThreeRivers PARK DISTRICT

ThreeRiversParks.org



TRAIL			
Miles	19.2	18.7	15.8

NORTH 0.5 Miles

LEGEND: Updated: 2/28/2019

- boat carry-in access
- camping - group reservation
- camping - horse
- camping - drop-in
- dog off-leash area
- drinking water
- horse trailhead
- parking
- rest area/bench
- restored prairie
- toilet
- trail intersection number
- paved trail
- unpaved trail
- road
- service road
- park
- water
- private property

Attachment 06

Intersection Risk Factor by Type

Risk Factor	Rural Greater MN	Urban Greater MN	Urban Metro MN	Rural Metro MN*
Area Type			Urban Core	
Context Zone	Commercial, Industrial Mixed Use, Residential	Commercial		*Commercial, Industrial Mixed Use, Residential*
Intersection Type				
Design Type				
Traffic Control		Signal	Signal	
Major Entering ADT				
Minor Entering ADT				
Total Entering ADT [vpd]	≥ 2,000	≥ 12,000	≥ 15,000	*≥ 2,000*
Volume Cross Product [vpd^2]	≥ 1,000,000	≥ 30,000,000	≥ 30,000,000	*≥ 1,000,000*
Leg Configuration	X	X	X	*X*
Major Division Type		Curb OR Depressed OR Barrier OR Mixed		
Minor Division Type				
Major Surface Type				
Minor Surface Type				
Alignment Skew [degrees]	≥ 10	≥ 5		*≥ 10*
Adjacent Railroad Crossing	Present			*Present*
Adjacnet Curve	Horizontal / Vertical / Both			*Horizontal / Vertical / Both*
Adjacent Development	Present	Present	Present	*Present*
Presence of Street Parking				
Presence of Lighting				
Previous Stop	>5 Miles			*>5 Miles*
Major Approach Speed Limit	≥60	≥40		*≥60*
Minor Approach Speed Limit		≥35		
Speed Limit Source				
Presence of Flashers				
Signal Placement				
Major Approach Left Turn Phasing		Permitted + Permitted/Protected	Permitted + Permitted/Protected + Both	
Minor Approach Left Turn Phasing				
Presence of Flashing Yellow Arrow				
Right Turn on Red Allowed				
1st Major Approach Turn Lane Configuration	LTTR & TB	≥ 2 Left Turn OR ≥ 2 Thru Lane		*LTTR & TB*
Pedestrian Risk Factors				
Max Number of Lanes Crossed		≥ 5	≥ 4	
Presence of Sidewalk		Some & None		
Presence of Refuge Island			None	
Pedestrian Crossing Type		Markings	Markings	
Bike Facility				
Pedestrian Indicator Type				
Presence of Transit Stop			Present	
Presence of School Crosswalk				

* Rural Metro MN rely on Rural Greater MN Risk Factors due to insuffiecnt numbers of severe crashes

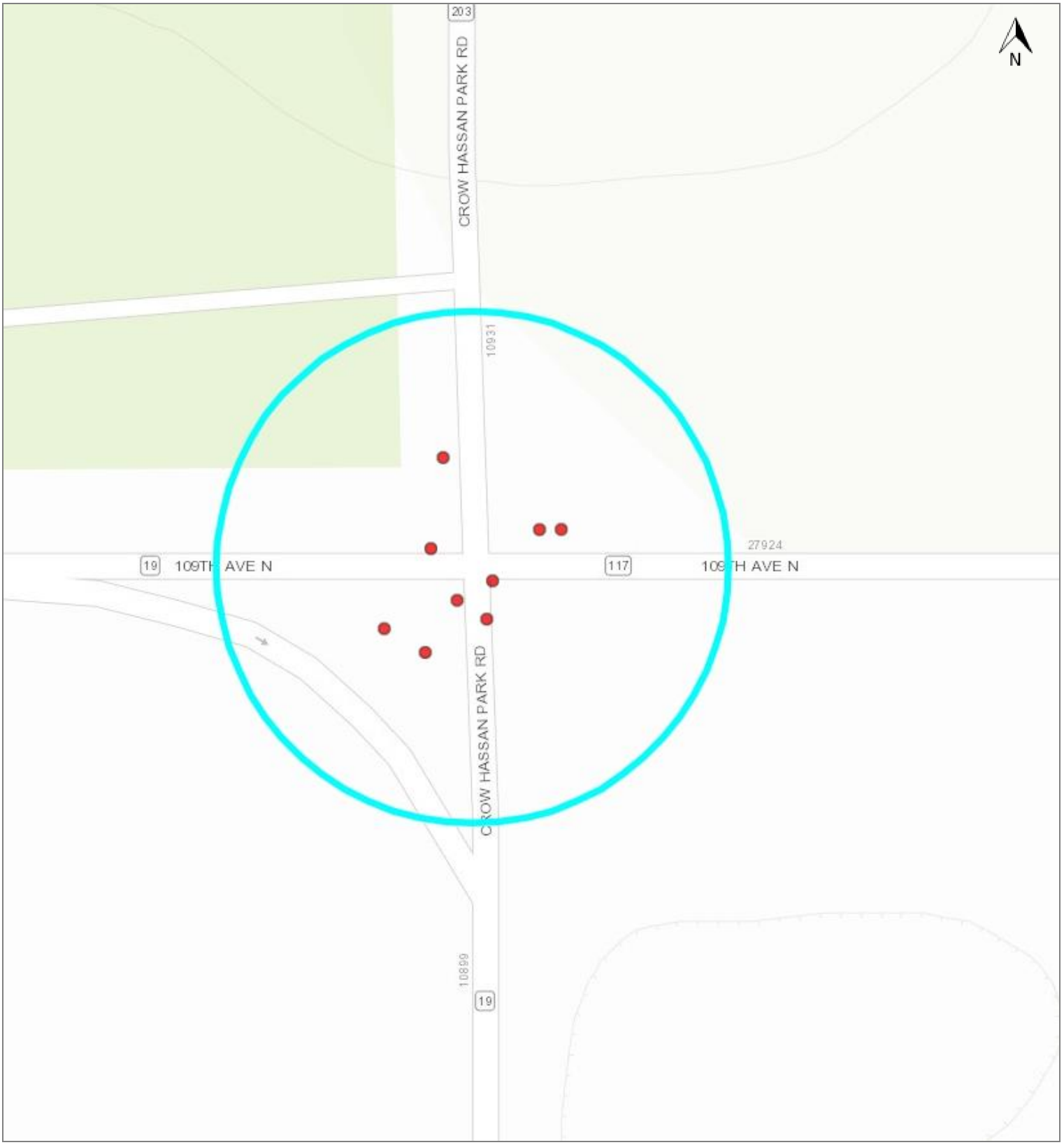
Attachment 07

2016-2018 Crash Data

INCIDENTID	RTESYS	RTENUM	MEASURE	LOCALID	MONTH	DATE	YEAR	DAY	HOUR	SEV	MOC	FHE	LIGHTCOI	WEATHERPRI	RDWYSUF	ROUTE_ID	BASIC_TYPE
347768	4	19	21.913	16005195	5	9	2016	Mon	7	5	12	10	1	1	1	0400006594720019-I	7
353577	7	117	0	16006430	6	2	2016	Thu	18	4	5	10	1	1	1	0700006594720117-I	10
354733	4	19	21.894	16006671	6	7	2016	Tue	8	5	12	10	1	1	1	0400006594720019-I	7
357413	7	203	0.013	16007285	6	17	2016	Fri	18	2	90	10	1	3	2	0700006594720203-I	90
587916	4	19	21.906	18003904	4	3	2018	Tue	21	5		35	4	4	3	0400006594720019-I	3
590858	4	19	21.899	18004354	4	14	2018	Sat	16	5	14	10	1	4	3	0400006594720019-I	90
596155	7	117	0.007	18005412	5	9	2018	Wed	11	5	90	10	1	2	2	0700006594720117-I	90
624999	4	19	21.909	18009520	7	29	2018	Sun	17	5	5	10	1	1	1	0400006594720019-I	10
661356	7	203	0.005	18005189	11	19	2018	Mon	7	5	12	10	1	1	1	0700006594720203-I	7

CSAH 19

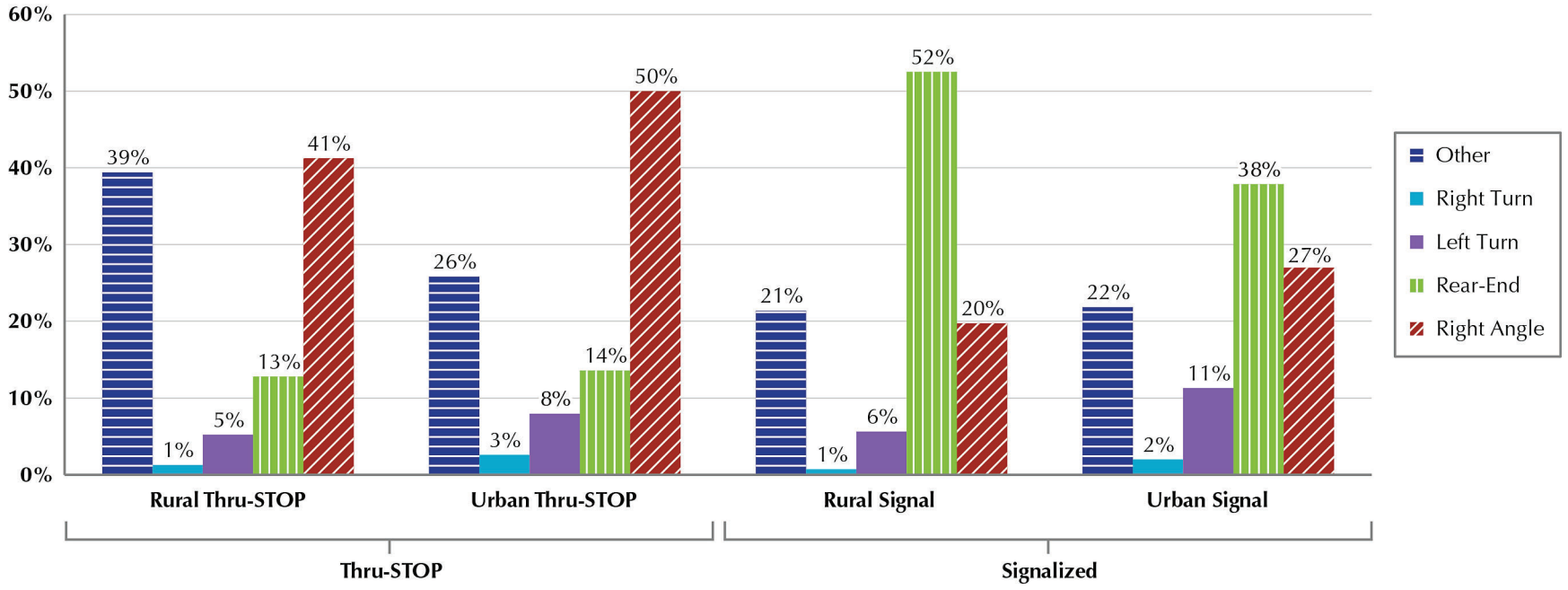
Map Version 1.0
May 2020



Notes: 2016-2018

05/12/2020MnCMAT 2.0.0

Intersection Crash Distribution by Control Type and Rural vs. Urban



Minnesota Crash Mapping Analysis Tool, 2009-2013

Highlights

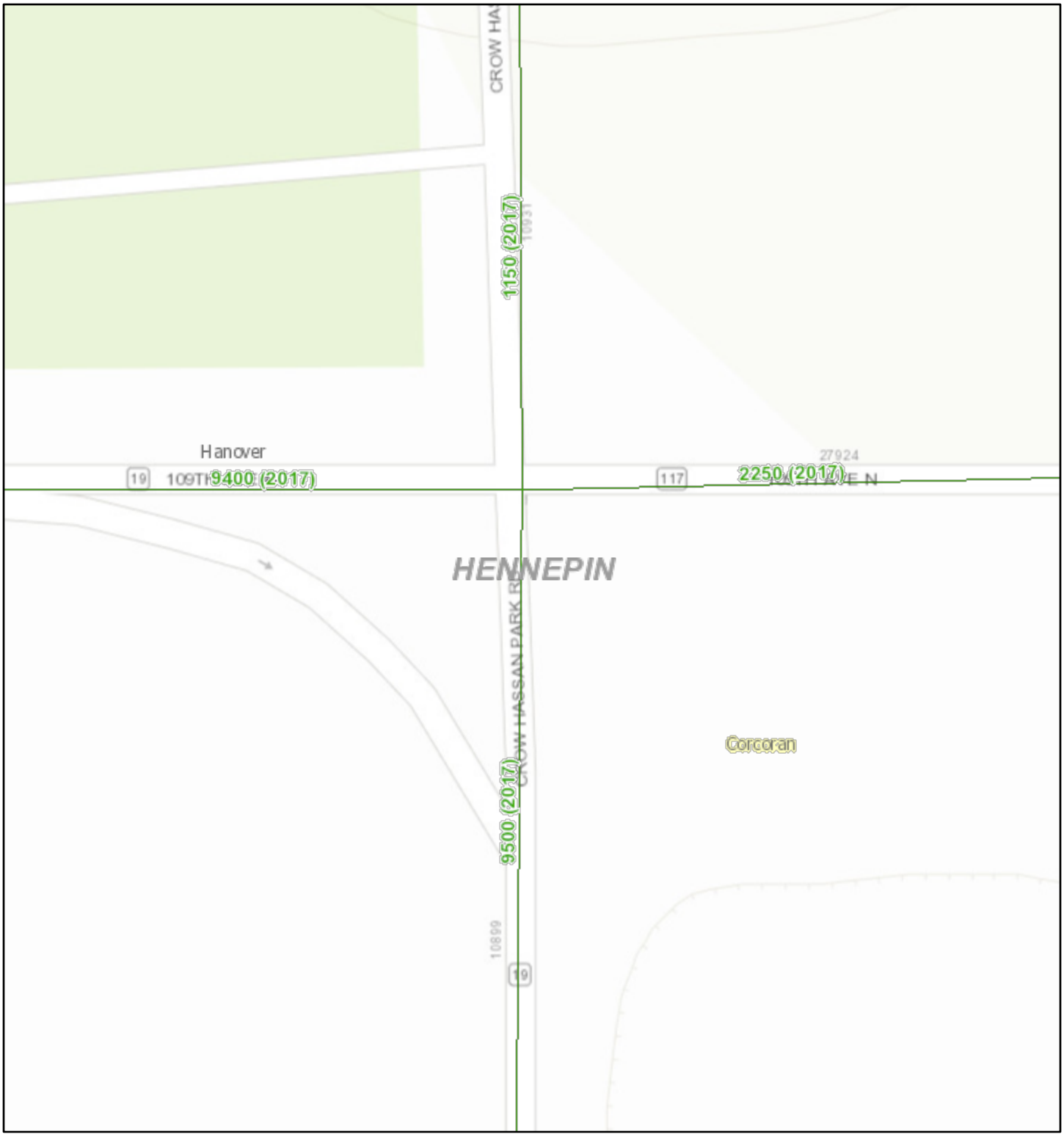
- The crash type distribution that can be expected at an intersection is primarily a function of the type of intersection control.
- At stop-controlled intersections, in both rural and urban areas, the most common types of crashes are right angle and rear-end collisions.
- At signalized intersections, the most common types of crashes are rear-end, right angle, and left turn collisions.

Key Points

- Traffic signals appear to reduce but not eliminate right angle crashes.
- Right turns present a very low risk of a crash (1% to 3% of intersection crashes).
- Left turns present a very low risk of a crash (5% to 11% of intersection crashes).
- Crossing conflicts present a very high risk of a crash (20% to 50% of intersection crashes).
- Rear-end conflicts present the highest risk of a crash (13% to 52% of intersection crashes).
- However, when severity is considered, a new picture emerges – see page A-21.

Attachment 09

CSAH 19 AADT



5/13/2020, 3:55:46 PM

1:1,128

0 0.01 0.01 0.02 mi

0 0.01 0.02 0.04 km

City Labels

Counties

Official AADT

Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

Web AppBuilder for ArcGIS

Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c)

HENNEPIN COUTNY
TRANSPORTATION PLANNING DIVISION

VEHICLE CLASSIFICATION DATA
CSAH 19 S. OF C.R. 117
TRUCK STATION

Site: 8
Monday, 8/5/2019 11:00 AM -
Wednesday, 8/7/2019 11:00 AM

Classification Grand Totals

Hourly Averages

N.B.

Interval Start	Total	Motor Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axle Double	5 Axle Double	>6 Axle Double	<6 Axle Multi	6 Axle Multi	>6 Axle Multi
12:00 AM	19.5	0.0	15.0	3.5	0.0	0.0	0.5	0.0	0.0	0.0	0.5	0.0	0.0	0.0
1:00 AM	10.5	0.0	9.0	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2:00 AM	9.5	0.0	6.0	2.0	0.0	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3:00 AM	4.5	0.0	2.0	2.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0
4:00 AM	14.5	0.0	8.0	4.5	0.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0
5:00 AM	43.5	0.0	21.0	12.0	2.0	5.0	2.0	0.0	0.5	1.0	0.0	0.0	0.0	0.0
6:00 AM	98.0	2.5	49.0	23.5	3.0	16.0	2.0	0.5	0.5	1.0	0.0	0.0	0.0	0.0
7:00 AM	143.0	2.5	72.5	47.0	2.0	14.5	2.0	0.0	1.0	1.0	0.5	0.0	0.0	0.0
8:00 AM	133.5	3.0	63.0	40.0	3.0	15.5	3.0	0.0	4.0	2.0	0.0	0.0	0.0	0.0
9:00 AM	156.5	1.5	66.5	52.5	6.5	18.5	6.5	1.0	2.5	1.0	0.0	0.0	0.0	0.0
10:00 AM	145.5	1.0	62.0	48.5	2.5	16.0	5.5	1.5	6.5	1.5	0.0	0.5	0.0	0.0
11:00 AM	173.0	1.0	78.0	55.0	4.0	18.0	7.5	0.0	5.0	4.0	0.5	0.0	0.0	0.0
12:00 PM	198.0	1.0	97.5	61.0	2.0	18.5	7.0	1.0	4.5	4.0	1.5	0.0	0.0	0.0
1:00 PM	234.0	3.0	119.5	73.0	3.0	17.5	5.0	0.0	8.5	4.0	0.5	0.0	0.0	0.0
2:00 PM	349.0	2.0	182.0	113.0	6.0	25.5	6.5	0.0	8.5	5.5	0.0	0.0	0.0	0.0
3:00 PM	611.5	6.0	347.0	179.5	7.5	49.0	6.5	1.0	9.0	6.0	0.0	0.0	0.0	0.0
4:00 PM	961.5	5.5	602.5	263.0	5.5	61.0	3.0	2.0	14.0	4.0	0.5	0.5	0.0	0.0
5:00 PM	859.0	8.0	556.5	219.5	7.0	47.5	4.0	1.0	10.5	2.0	2.0	0.5	0.0	0.5
6:00 PM	439.0	4.0	280.0	115.0	1.0	29.0	0.5	0.0	6.0	3.5	0.0	0.0	0.0	0.0
7:00 PM	233.5	4.0	147.0	65.5	0.0	10.5	2.5	0.0	3.0	0.5	0.5	0.0	0.0	0.0
8:00 PM	184.5	1.5	115.5	50.0	0.0	11.5	0.0	0.0	5.5	0.0	0.5	0.0	0.0	0.0
9:00 PM	131.0	0.0	93.5	28.0	0.0	7.5	0.5	0.0	1.5	0.0	0.0	0.0	0.0	0.0
10:00 PM	76.5	0.0	56.0	17.0	0.5	2.0	0.0	0.0	0.5	0.5	0.0	0.0	0.0	0.0
11:00 PM	49.5	0.0	39.0	8.5	0.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Daily Average	5278.5	46.5	3088.0	1485.0	55.5	387.5	64.5	8.0	93.0	41.5	7.0	1.5	0.0	0.5

Study Grand Totals

	Total	Motor Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axle Double	5 Axle Double	>6 Axle Double	<6 Axle Multi	6 Axle Multi	>6 Axle Multi
N.B.	10557	93	6176	2970	111	775	129	16	186	83	14	3	0	1
		0.9%	58.5%	28.1%	1.1%	7.3%	1.2%	0.2%	1.8%	0.8%	0.1%	0.0%	0.0%	0.0%

ADJUSTMENT FACTOR	=	1.181		
SUM OF NORTHBOUND CLASSES ONLY	=	659		2019 HCAADT = 1050
SUM OF SOUTHBOUND CLASSES ONLY	=	599		HVY COMM % = 12.4%
SUM OF DAILY CLASS TOTAL	=	1258	/ADJUSTMENT FACTOR = 1065	
SUM OF DAILY NON COMMERCIAL	=	8856	/ADJUSTMENT FACTOR = 7499	

Vehicle Classification for County Road Pavement Design

The State Aid Equivalent Single Axel Load calculator consists of a two tab Microsoft Excel spreadsheet. The first tab is for use with the recently updated heavy commercial traffic default values. The second tab is for use with site specific heavy commercial traffic percentages. Any spreadsheet cell that is "yellow" requires the user to input a reasonable value. Please have your Excel security setting set to low or click on enable macros for the program to run.

- State Aid ESAL Calculator (Excel, 30 KB)

Below are updated percentage default values for the heavy commercial traffic using CSAH. The updated vehicle classification data contains 8 default values. These default values are based upon whether the road is rural or urban and the projected Annual Average Daily Traffic range. State Aid encourages counties to perform actual traffic counts whenever possible for the design of their pavements.

Rural/Urban CSAH Heavy Commercial Percentages

Rural AADT Range	CAR	2ASU	3+ASU	3ASEMI	4ASEMI	5+ASEMI	TT/BUS	TWINS	Total	Average HC PCT	Range HC PCT
1 - 300	86.72%	4.71%	2.24%	0.35%	0.71%	3.81%	1.45%	0.01%	100.00%	**13.3%**	9 - 38%
301 - 750	86.56%	3.44%	2.17%	0.39%	0.69%	5.32%	1.40%	0.03%	100.00%	**13.4%**	4.7 - 34.3%
751 - 1500	90.55%	3.69%	1.71%	0.33%	0.57%	2.10%	1.03%	0.02%	100.00%	**9.5%**	2.2 - 29.0%
1500>	91.39%	2.32%	1.24%	0.16%	0.32%	3.33%	1.23%	0.01%	100.00%	**8.6%**	2.1 - 19.1%

Urban AADT Range	CAR	2ASU	3+ASU	3ASEMI	4ASEMI	5+ASEMI	TT/BUS	TWINS	Total	Average HC PCT	Range HC PCT
1 - 300	95.60%	1.60%	0.40%	0.40%	0.40%	0.40%	1.20%	0.00%	100.00%	**4.4%**	*N/A
301 - 750	92.53%	3.70%	1.62%	0.14%	0.24%	1.23%	0.48%	0.07%	100.00%	**7.5%**	4.0 - 11.0%
751 - 1500	94.72%	2.14%	0.98%	0.19%	0.30%	0.94%	0.71%	0.02%	100.00%	**5.3%**	1.1 - 10.6%
1500>	96.44%	1.52%	0.46%	0.09%	0.12%	0.89%	0.47%	0.02%	100.00%	**3.6%**	0.6 - 3.7%

Note: Data from 2007 and 2008 County State Aid Study (Minnesota State University) and 1986 to 2002 vehicle class data (MnDOT). Urban is defined as the area within the boundaries of a city 5000 or more population and the Twin Cities metropolitan area.

*Data based on only one count, so there is no range.

For questions and information, please contact Joel Ulring at joel.ulring@state.mn.us or 651-366-3831.

MnDOT Vehicle Classification Scheme

Project Name: 2191400 CSAH 19 - Safety improvements at 109th Ave
Major Program: Transportation Provisional Projects
Department: Transportation Provisional Roads & Bridges Projects

Funding Start: Beyond 2024
Funding Completion: Beyond 2024

Summary:

Safety improvements at the intersection of CSAH 19 and 109th Avenue (County Road 117) in the cities of Corcoran and Hanover.

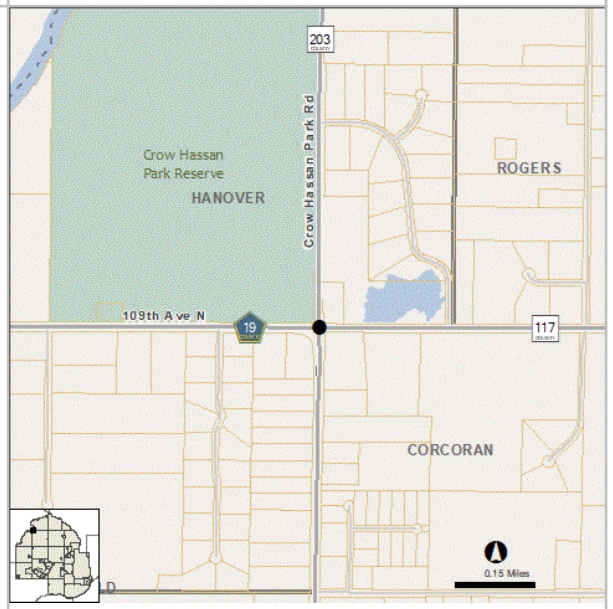
Purpose & Description:

The existing intersection of CSAH 19 at 109th Avenue (County Road 117) experiences imbalanced traffic flows. During the morning peak period, a high percentage of eastbound vehicles turn right to continue southbound along CSAH 19. While in the afternoon peak period, a high percentage of northbound vehicles turn left to travel westbound towards the Crow River. In an effort to manage mobility and safety through the intersection, a three-way stop was implemented. In this condition, northbound vehicles are not required to stop. Additionally, a channelized right turn island is provided in the southwest quadrant that permits eastbound right-turning vehicles to merge onto CSAH 19 at a relatively high speed. These conditions are relatively uncommon along county roadways, causing confusion and discomfort for people driving. Also, there is an existing crossing for the Lake Independence Regional Trail on the north approach that further complicates the intersection.

CSAH 19 was reconstructed in this area in the mid-2000s. However, this intersection was mainly left unchanged due to a lack of available right of way needed to realign CSAH 19 to better accommodate the predominant vehicle movements.

The proposed project would likely modify the existing intersection to better accommodate user activity in terms of mobility and safety. Further evaluation is needed to determine the preferred intersection control device, and if any realignments are justified. This project will proactively make improvements at an intersection where the recent crash history does not suggest a crash problem, as compared to similar intersections throughout Hennepin County. It is anticipated that fairly significant improvements are necessary to accommodate the traffic flows, while still providing a safe and comfortable crossing for the Lake Independence Regional Trail. The specific design for the intersection will be based on the results of a traffic study, along with input from impacted stakeholders.

This is provisional project dependent on the availability of funding.



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

EXPENSE	Budget To-Date	Act & Enc	Balance	2020 Budget	2021	2022	2023	2024	Beyond 2024	Total
Right of Way									240,000	240,000
Construction									800,000	800,000
Consulting									200,000	200,000
Contingency									580,000	580,000
Total									**1,820,000**	**1,820,000**

BOARD APPROVED: 2020 CAPITAL BUDGET AND 2020-2024 CAPITAL IMPROVEMENT PROGRAM

Project Name: 2191400 CSAH 19 - Safety improvements at 109th Ave
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):

Board Resolutions / Supplemental Information:

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.

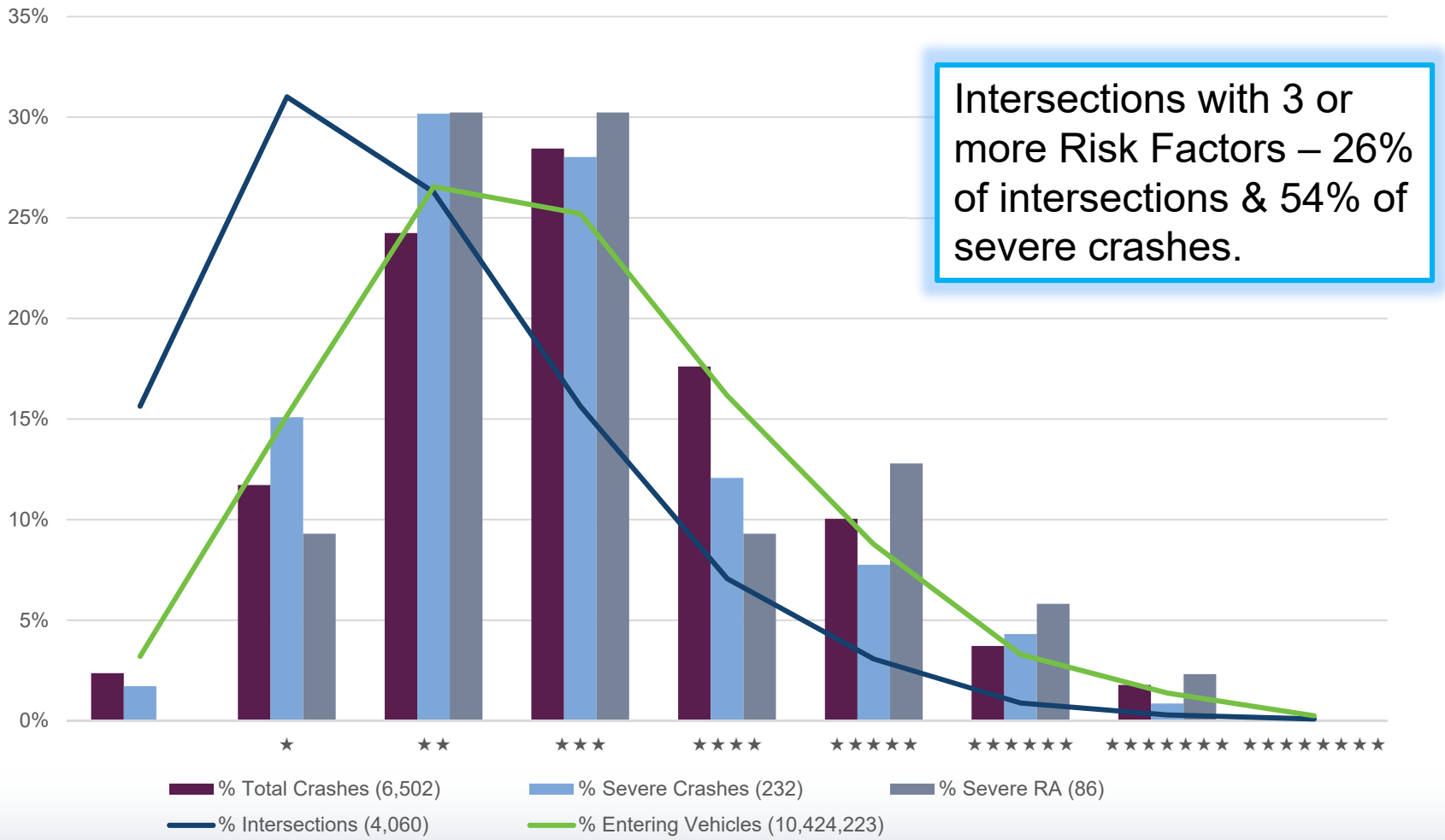
Environmental Impacts and Initiatives:

Changes from Prior CIP:

- New project introduced as a Provisional Project in the 2019-2023 Transportation Capital Improvement Program at the request of Transportation Project Delivery.

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								

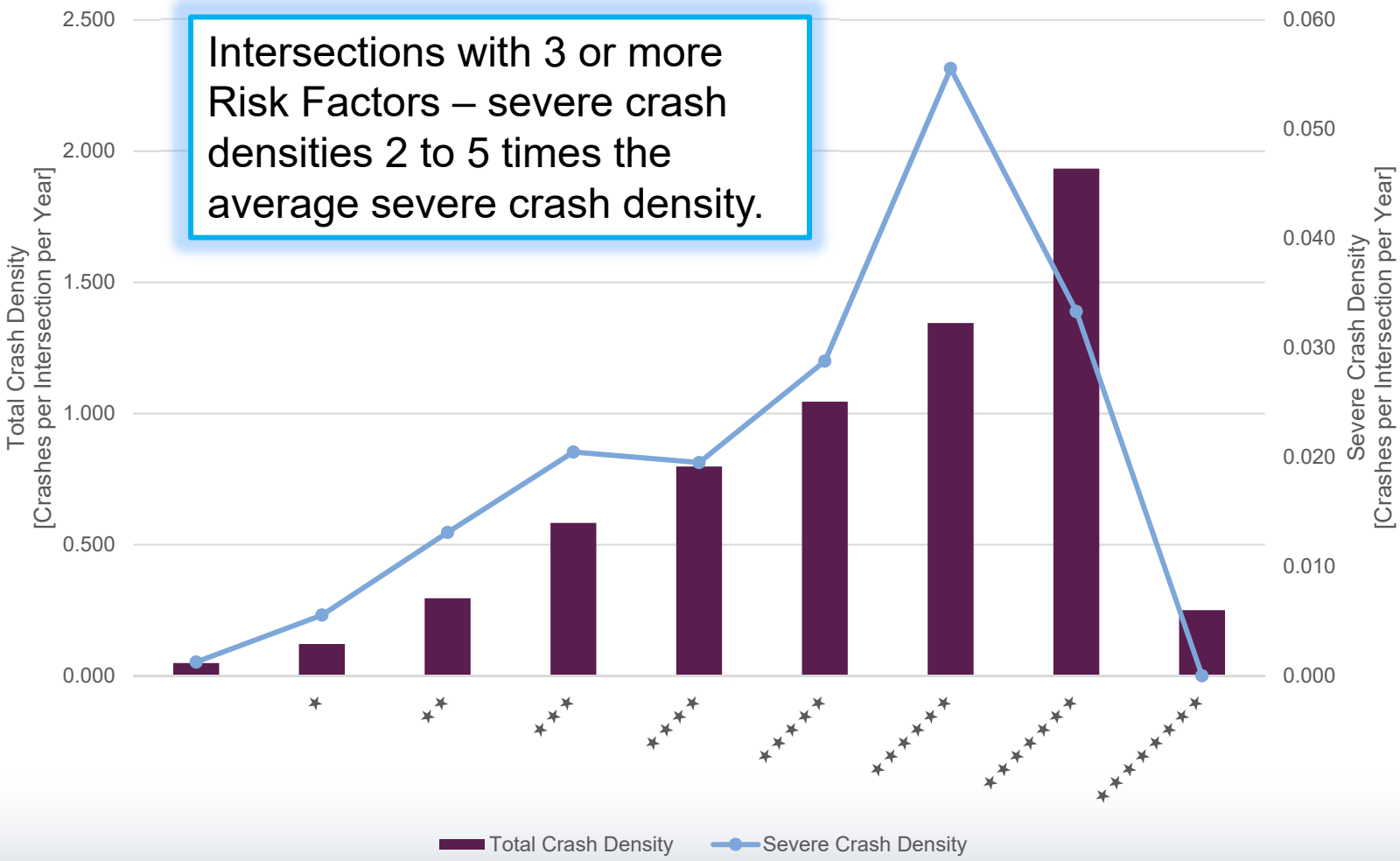
Crash Distribution Versus Systemic Risk Rating: Rural Greater and Metro Minnesota Intersections



Intersections with 3 or more Risk Factors – 26% of intersections & 54% of severe crashes.

COUNTY ROADWAY Safety Plan Toward ZERO Deaths

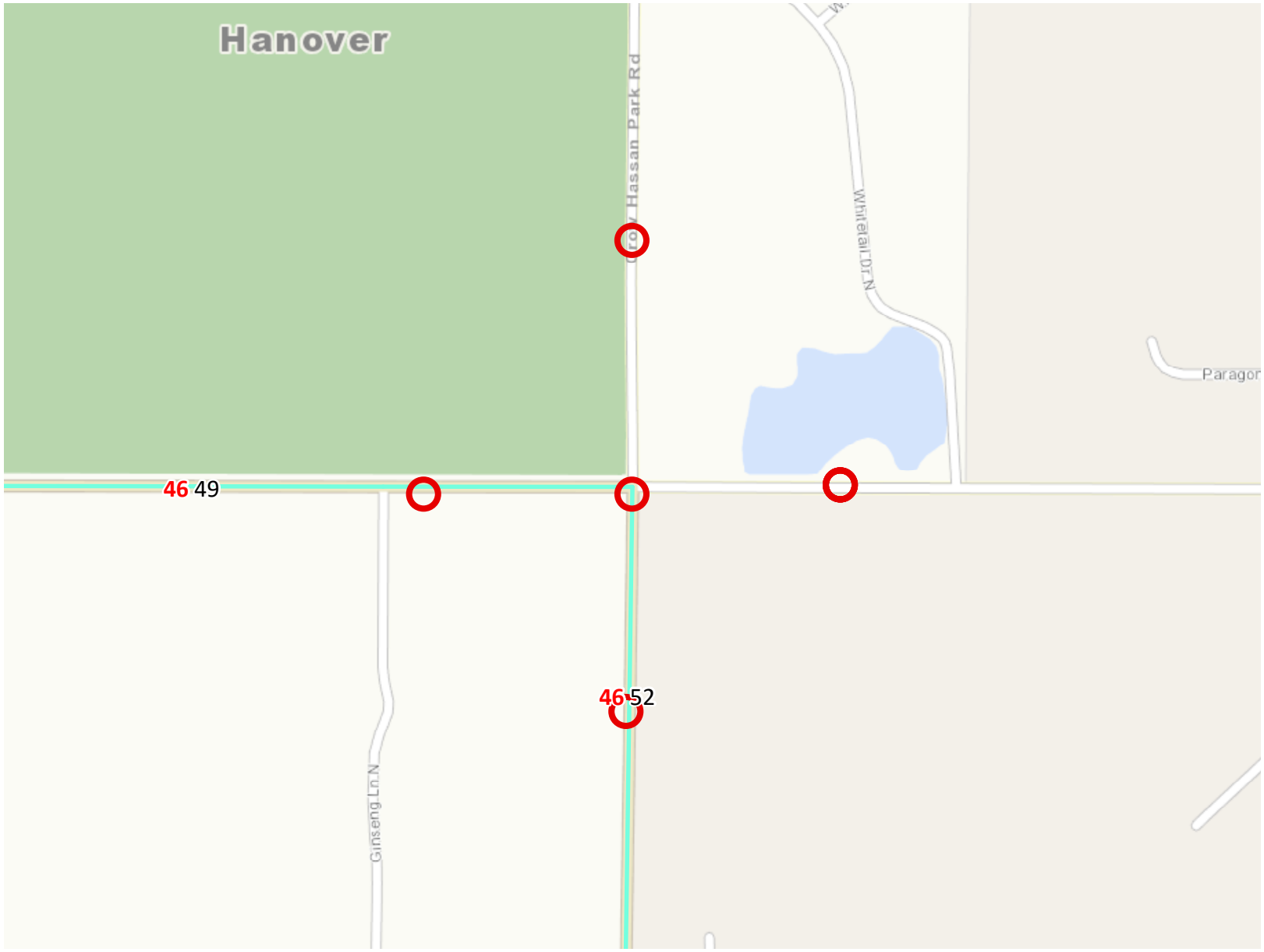
Crash Density Distribution Versus Systemic Risk Rating: Rural Greater and Metro Minnesota Intersections



Attachment 12

Level of Congestion

Roadway Spot Mobility & Safety | Map ID: 1586888826945



Project Points

A Minor Arterials

A Minor Arterials Planned

Principal Arterials

Principal Arterials Planned

0 0.05 0.1 0.2 0.3 0.4 Miles

Created: 4/14/2020
LandscapeRSA1

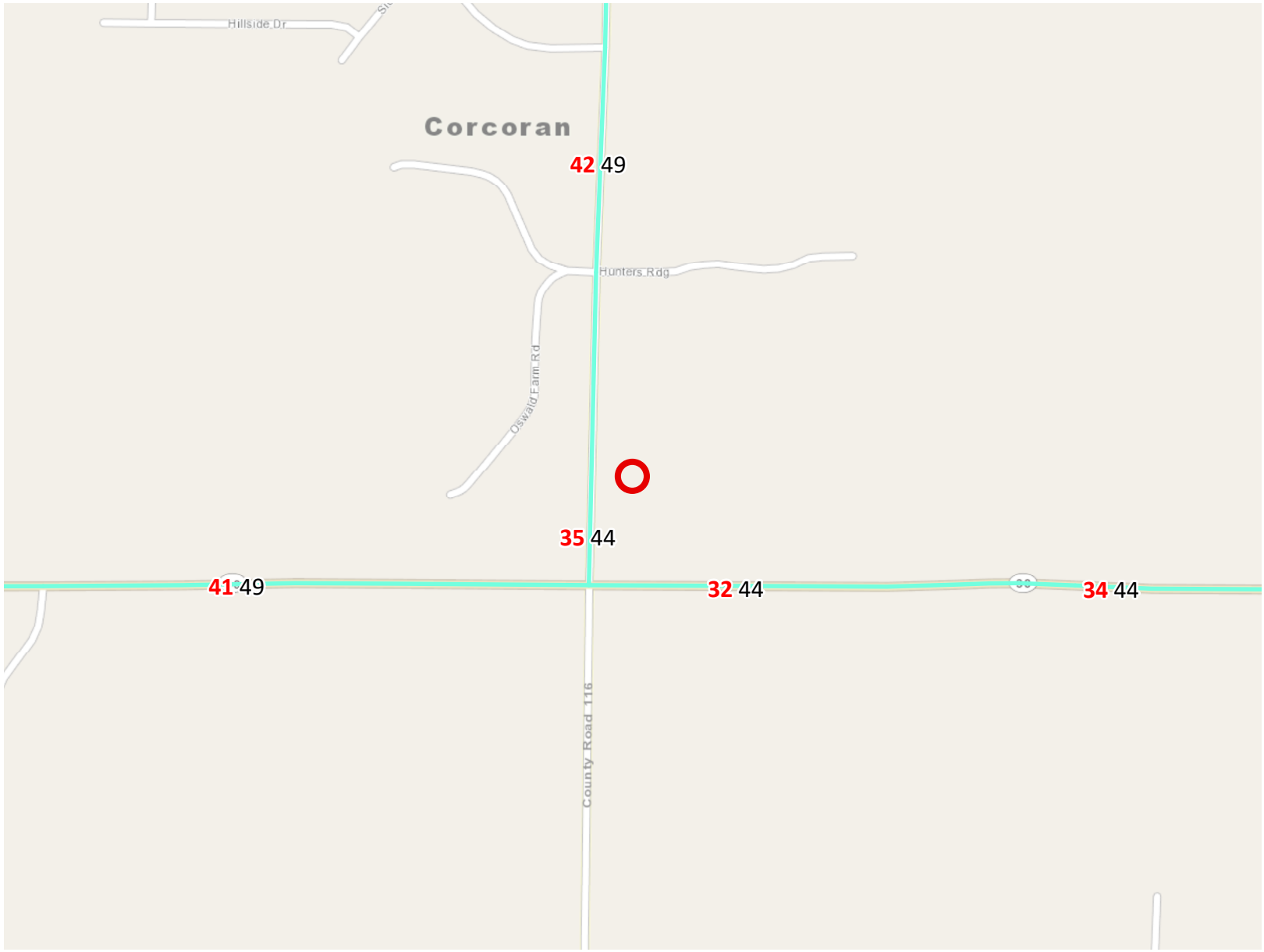
For complete disclaimer of accuracy, please visit
https://giswebsite.metc.state.mn.us/gissite/notice.aspx

METROPOLITAN COUNCIL

Attachment 13

Level of Congestion

Roadway Spot Mobility & Safety | Map ID: 1586889349691



Project Points

A Minor Arterials

A Minor Arterials Planned

Principal Arterials

Principal Arterials Planned

0 0.075 0.15 0.3 0.45 0.6 Miles

Created: 4/14/2020
LandscapeRSA1

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

METROPOLITAN COUNCIL

Attachment 14

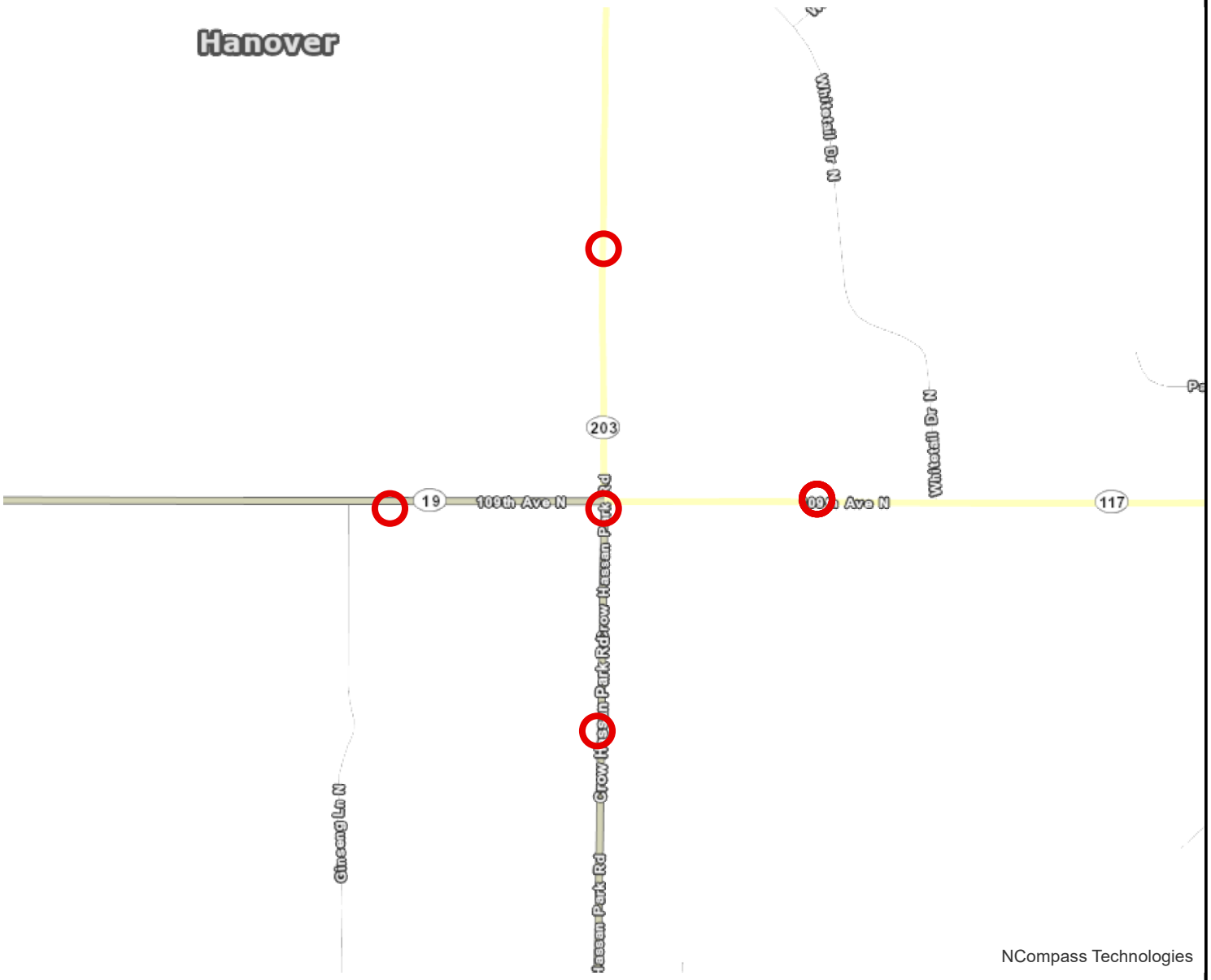
Socio-Economic Conditions

Roadway Spot Mobility & Safety | Map ID: 1586888826945

Results

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:
(0 to 12 Points)

Tracts within half-mile:
26909 27102



Points

Area of Concentrated Poverty

Area of Concentrated Povertry > 50% residents of color

Above reg'l avg conc of race/poverty

0 0.05 0.1 0.2 0.3 0.4 Miles

Created: 4/14/2020
LandscapeRSA2

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

METROPOLITAN COUNCIL

CSAH 19 Spot Mobility and Safety Project

Attachment 15 | Socio-Economic Equity Map

HENNEPIN COUNTY
MINNESOTA

Key

- Project Location

Socio-Economic Equity Category

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

0 0.4 0.8 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.

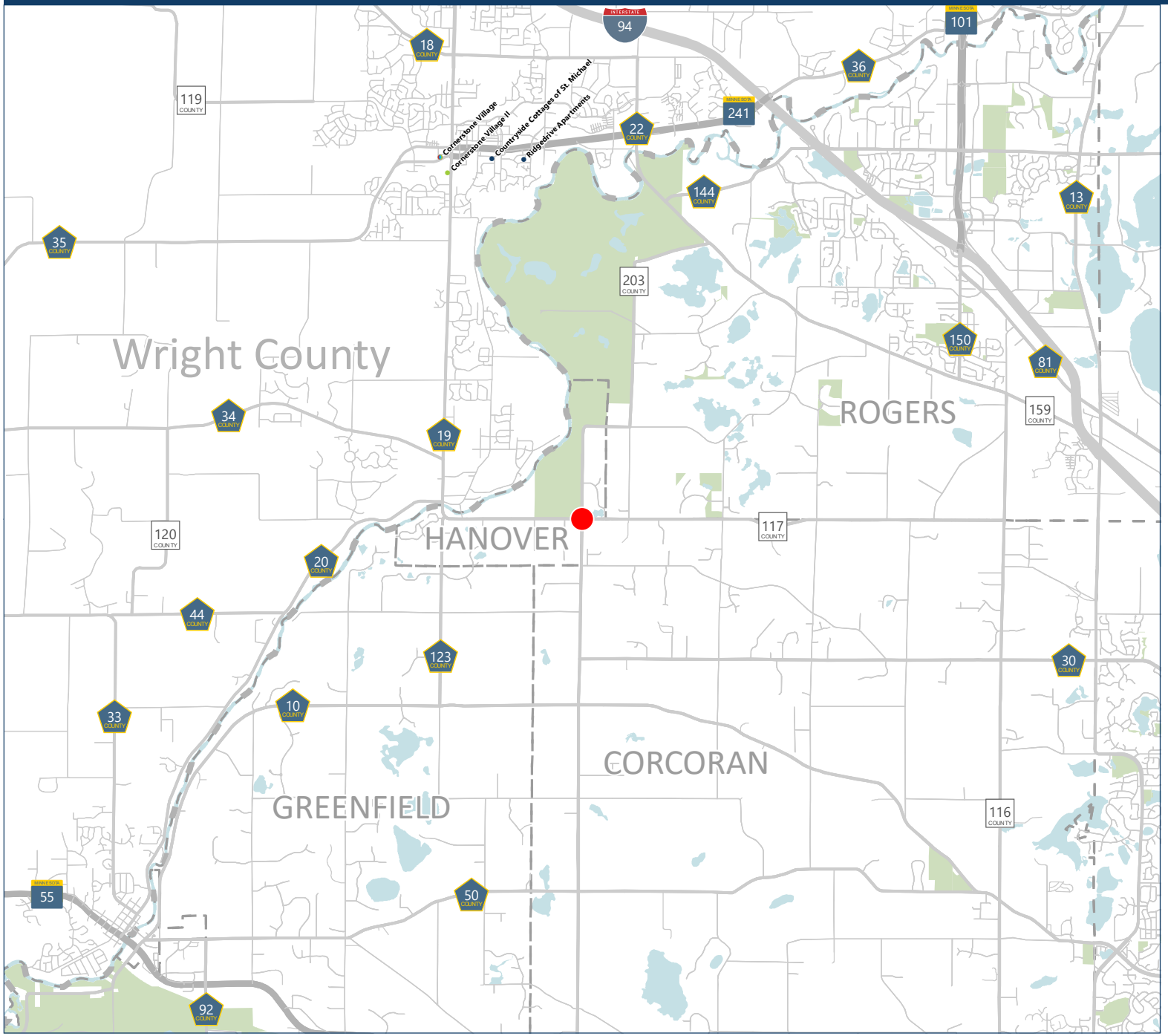
Published date: 5/13/2020

N

CSAH 19 Spot Mobility & Safety Project

Attachment 16 | Affordable Housing Access Map

HENNEPIN COUNTY
MINNESOTA



Key

Project Location

Construction Status

- Complete
- Planned

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

0 1.25 2.5 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: 5/14/2020

N

Hennepin

Regional Economy

Roadway Reconstruction/Modernization Project: CSAH 019 Spot Mobility & Safety Project | Map ID: 1589571096111

Results

WITHIN ONE MI of project:
Postsecondary Students: 0

Totals by City:

Corcoran
Population: 878
Employment: 32
Mfg and Dist Employment: 0

Greenfield
Population: 453
Employment: 55
Mfg and Dist Employment: 8

Rogers
Population: 1175
Employment: 72
Mfg and Dist Employment: 9

Project Points
Project
Manfacturing/Distribution Centers
Job Concentration Centers

0 0.075 0.15 0.3 0.45 0.6 Miles

Created: 5/15/2020
LandscapeRSA5

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

METROPOLITAN COUNCIL

3: CSAH 19 & CR 117 & CR 203

Direction	All
Future Volume (vph)	1139
Total Delay / Veh (s/v)	0
CO Emissions (kg)	1.86
NOx Emissions (kg)	0.36
VOC Emissions (kg)	0.43

3: CSAH 19 & CR 117 & CR 203 Performance by approach

Approach	EB	WB	NB	SB	All
Denied Del/Veh (s)	3.1	0.1	2.9	0.1	2.7
Total Del/Veh (s)	17.5	7.6	0.5	8.2	14.3

Total Network Performance

Denied Del/Veh (s)	2.7
Total Del/Veh (s)	27.0

Intersection: 3: CSAH 19 & CR 117 & CR 203

Movement	EB	EB	WB	NB	NB	SB
Directions Served	LT	R	LTR	UL	TR	TR
Maximum Queue (ft)	494	431	65	4	6	67
Average Queue (ft)	76	149	29	0	0	29
95th Queue (ft)	322	416	52	3	5	53
Link Distance (ft)	1192		1460		707	559
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)		150		325		
Storage Blk Time (%)		15				
Queuing Penalty (veh)		19				

Network Summary

Network wide Queuing Penalty: 19

3: CSAH 19 & CR 117 & CR 203

Direction	All
Future Volume (vph)	1139
Total Delay / Veh (s/v)	0
CO Emissions (kg)	2.03
NOx Emissions (kg)	0.40
VOC Emissions (kg)	0.47

Intersection	
Intersection Delay, s/veh	9.0
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	940	83	141	74
Demand Flow Rate, veh/h	968	88	147	75
Vehicles Circulating, veh/h	95	142	143	196
Vehicles Exiting, veh/h	176	148	95	33
Ped Vol Crossing Leg, #/h	0	0	1	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	10.6	3.8	4.2	3.8
Approach LOS	B	A	A	A

Lane	Left	Bypass	Left	Left	Left
Designated Moves	LT	R	LTR	LTR	LTR
Assumed Moves	LT	R	LTR	LTR	LTR
RT Channelized		Yield			
Lane Util	1.000		1.000	1.000	1.000
Follow-Up Headway, s	2.609		2.609	2.609	2.609
Critical Headway, s	4.976	825	4.976	4.976	4.976
Entry Flow, veh/h	143	1252	88	147	75
Cap Entry Lane, veh/h	1252	0.971	1194	1193	1130
Entry HV Adj Factor	0.974	801	0.947	0.961	0.983
Flow Entry, veh/h	139	1216	83	141	74
Cap Entry, veh/h	1220	0.659	1130	1146	1111
V/C Ratio	0.114	11.8	0.074	0.123	0.066
Control Delay, s/veh	3.9	B	3.8	4.2	3.8
LOS	A	5	A	A	A
95th %tile Queue, veh	0		0	0	0

3: CSAH 19 & CR 117 & CR 203

Direction	All
Future Volume (vph)	1333
Total Delay / Veh (s/v)	0
CO Emissions (kg)	0.93
NOx Emissions (kg)	0.18
VOC Emissions (kg)	0.22

3: CSAH 19 & CR 117 & CR 203 Performance by approach

Approach	EB	WB	NB	SB	All
Denied Del/Veh (s)	3.1	0.2	3.3	0.1	2.9
Total Del/Veh (s)	15.3	104.9	3.9	68.6	16.0

Total Network Performance

Denied Del/Veh (s)	2.9
Total Del/Veh (s)	18.7

Intersection: 3: CSAH 19 & CR 117 & CR 203

Movement	EB	WB	NB	NB	SB
Directions Served	LT	LTR	UL	TR	TR
Maximum Queue (ft)	84	302	59	8	116
Average Queue (ft)	35	117	6	0	40
95th Queue (ft)	73	257	28	4	95
Link Distance (ft)	1192	1460		707	559
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)			325		
Storage Blk Time (%)					1
Queuing Penalty (veh)					0

Network Summary

Network wide Queuing Penalty: 0

3: CSAH 19 & CR 117 & CR 203

Direction	All
Future Volume (vph)	1334
Total Delay / Veh (s/v)	0
CO Emissions (kg)	2.23
NOx Emissions (kg)	0.43
VOC Emissions (kg)	0.52

Intersection	
Intersection Delay, s/veh	17.4
Intersection LOS	C

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	198	125	1081	45
Demand Flow Rate, veh/h	204	131	1124	46
Vehicles Circulating, veh/h	51	1093	44	1136
Vehicles Exiting, veh/h	1130	75	51	88
Ped Vol Crossing Leg, #/h	0	0	1	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	3.7	13.1	20.7	9.9
Approach LOS	A	B	C	A

Lane	Left	Bypass	Left	Left	Left
Designated Moves	LT	R	LTR	LTR	LTR
Assumed Moves	LT	R	LTR	LTR	LTR
RT Channelized		Yield			
Lane Util	1.000		1.000	1.000	1.000
Follow-Up Headway, s	2.609		2.609	2.609	2.609
Critical Headway, s	4.976	160	4.976	4.976	4.976
Entry Flow, veh/h	44	1310	131	1124	46
Cap Entry Lane, veh/h	1310	0.971	453	1319	433
Entry HV Adj Factor	0.974	155	0.954	0.962	0.989
Flow Entry, veh/h	43	1272	125	1081	45
Cap Entry, veh/h	1275	0.122	432	1268	428
V/C Ratio	0.034	3.8	0.289	0.852	0.106
Control Delay, s/veh	3.1	A	13.1	20.7	9.9
LOS	A	0	B	C	A
95th %tile Queue, veh	0		1	12	0

Attachment 18

CRASH MODIFICATION FACTORS CLEARINGHOUSE

CMF / CRF Details

CMF ID: 4699

Convert high-speed rural intersection (4 leg) to roundabout

Description: Convert a high speed rural 4 leg intersection into a roundabout

Prior Condition: 4 leg intersection

Category: Intersection geometry

Study: *A Statistical Analysis and Development of a Crash Prediction Model for Roundabouts on High-Speed Rural Roadways*, Isebrands, 2012

Star Quality Rating:	★★★★☆ [View score details]

Crash Modification Factor (CMF)	
Value:	0.26
Adjusted Standard Error:	
Unadjusted Standard Error:	

Crash Reduction Factor (CRF)	
Value:	74 *(This value indicates a **decrease** in crashes)*
Adjusted Standard Error:	

Unadjusted Standard Error:	

Applicability

Crash Type:	All
Crash Severity:	All
Roadway Types:	Not specified
Number of Lanes:	1
Road Division Type:	
Speed Limit:	40-65 mph
Area Type:	Rural
Traffic Volume:	
Time of Day:	

If countermeasure is intersection-based

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

Development Details

Date Range of Data Used:	
Municipality:	
State:	KS, MD, MN, OR, WA, WI

Country:	
Type of Methodology Used:	Before/after using empirical Bayes or full Bayes
Sample Size Used:	Site-years
Before Sample Size Used:	83 Site-years
After Sample Size Used:	83 Site-years

Other Details

Included in Highway Safety Manual?	No
Date Added to Clearinghouse:	May-01-2013
Comments:	

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

CMF / CRF Details

CMF ID: 4700

Convert high-speed rural intersection (4 leg) to roundabout

Description: Convert a high speed rural 4 leg intersection into a roundabout

Prior Condition: 4 leg intersection

Category: Intersection geometry

Study: *A Statistical Analysis and Development of a Crash Prediction Model for Roundabouts on High-Speed Rural Roadways*, Isebrands, 2012

Star Quality Rating:	★★★★☆ [View score details]

Crash Modification Factor (CMF)	
Value:	0.11
Adjusted Standard Error:	
Unadjusted Standard Error:	

Crash Reduction Factor (CRF)	
Value:	89 *(This value indicates a **decrease** in crashes)*
Adjusted Standard Error:	

Unadjusted Standard Error:	

Applicability

Crash Type:	All
Crash Severity:	A (serious injury),B (minor injury),C (possible injury)
Roadway Types:	Not specified
Number of Lanes:	1
Road Division Type:	
Speed Limit:	40-65 mph
Area Type:	Rural
Traffic Volume:	
Time of Day:	

If countermeasure is intersection-based

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

Development Details

Date Range of Data Used:	
Municipality:	
State:	KS, MD, MN, OR, WA, WI

Country:	
Type of Methodology Used:	Before/after using empirical Bayes or full Bayes
Sample Size Used:	Site-years
Before Sample Size Used:	83 Site-years
After Sample Size Used:	83 Site-years

Other Details

Included in Highway Safety Manual?	No
Date Added to Clearinghouse:	May-01-2013
Comments:	

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CMF / CRF Details

CMF ID: 4705

Convert high-speed rural intersection to roundabout

Description: Convert high-speed rural intersection to roundabout

Prior Condition: Stop controlled intersection (3 or 4 leg)

Category: Intersection geometry

Study: *A Statistical Analysis and Development of a Crash Prediction Model for Roundabouts on High-Speed Rural Roadways*, Isebrands, 2012

Star Quality Rating:	★★★☆☆ [View score details]

Crash Modification Factor (CMF)	
Value:	0.17
Adjusted Standard Error:	
Unadjusted Standard Error:	

Crash Reduction Factor (CRF)	
Value:	83 *(This value indicates a **decrease** in crashes)*
Adjusted Standard Error:	

Unadjusted Standard Error:	

Applicability

Crash Type:	Angle
Crash Severity:	All
Roadway Types:	Not specified
Number of Lanes:	1 to 2
Road Division Type:	
Speed Limit:	40-65 mph
Area Type:	Rural
Traffic Volume:	
Time of Day:	

If countermeasure is intersection-based

Intersection Type:	Roadway/roadway (not interchange related)
Intersection Geometry:	3-leg,4-leg
Traffic Control:	Roundabout
Major Road Traffic Volume:	
Minor Road Traffic Volume:	

Development Details

Date Range of Data Used:	
Municipality:	
State:	KS, MD, MN, OR, WA, WI

Country:	
Type of Methodology Used:	Simple before/after
Sample Size Used:	Site-years
Before Sample Size Used:	98 Site-years
After Sample Size Used:	98 Site-years

Other Details

Included in Highway Safety Manual?	No
Date Added to Clearinghouse:	May-01-2013
Comments:	

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

CMF / CRF Details

CMF ID: 4707

Convert high-speed rural intersection to roundabout

Description: Convert high-speed rural intersection to roundabout

Prior Condition: Stop controlled intersection (3 or 4 leg)

Category: Intersection geometry

Study: *A Statistical Analysis and Development of a Crash Prediction Model for Roundabouts on High-Speed Rural Roadways*, Isebrands, 2012

Star Quality Rating:	★★★☆☆ [View score details]

Crash Modification Factor (CMF)	
Value:	0.09
Adjusted Standard Error:	
Unadjusted Standard Error:	

Crash Reduction Factor (CRF)	
Value:	91 *(This value indicates a **decrease** in crashes)*
Adjusted Standard Error:	

Unadjusted Standard Error:	

Applicability

Crash Type:	Angle
Crash Severity:	A (serious injury),B (minor injury),C (possible injury)
Roadway Types:	Not specified
Number of Lanes:	1 to 2
Road Division Type:	
Speed Limit:	40-65 mph
Area Type:	Rural
Traffic Volume:	
Time of Day:	

If countermeasure is intersection-based

Intersection Type:	Roadway/roadway (not interchange related)
Intersection Geometry:	3-leg,4-leg
Traffic Control:	Roundabout
Major Road Traffic Volume:	
Minor Road Traffic Volume:	

Development Details

Date Range of Data Used:	
Municipality:	
State:	KS, MD, MN, OR, WA, WI

Country:	
Type of Methodology Used:	Simple before/after
Sample Size Used:	Site-years
Before Sample Size Used:	73 Site-years
After Sample Size Used:	73 Site-years

Other Details

Included in Highway Safety Manual?	No
Date Added to Clearinghouse:	May-01-2013
Comments:	

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

Attachment 19

GEORGIA DOT RESEARCH PROJECT 12-01
FINAL REPORT

EVALUATION OF CURRENT PRACTICE FOR ILLUMINATION AT ROUNDABOUTS: SAFETY AND ILLUMINATION OF ROUNDABOUTS (PHASE I)

Georgia Department of Transportation

OFFICE OF RESEARCH
15 KENNEDY DRIVE
FOREST PARK, GA 30297-2534

TECHNICAL REPORT STANDARD TITLE PAGE

1.Report No.: FHWA-GA-15-12-01	2. Government Accession No.:	3. Recipient's Catalog No.:
4. Title and Subtitle: Evaluation of Current Practice for Illumination at Roundabouts: Safety and Illumination of Roundabouts (Phase I)		5. Report Date: March 2014; Revised July 2015, March 2016 6. Performing Organization Code: Project No. 2006T40
7. Author(s): Michael Rodgers, Ph.D., Michael Hunter, Ph.D., Alexander Samoylov, Ph.D., Franklin Gbologah, Simon Berrebi		8. Performing Organ. Report No.: 1201
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16. Abstract: This report is for the first phase of a two-phase research program to develop recommended practices for GDOT for lighting rural roundabouts. Phase I of the study was designed to improve our understanding of the relationship between roundabout illumination and safety, particularly in rural areas. Such information is essential to developing a sound basis for determining if a rural roundabout should, or should not, be illuminated to the current Illuminating Engineering Society (IES) standard and, if not, whether safety objectives can be met with either unlit roundabouts or roundabouts illuminated at reduced levels. The report provides a summary of relevant literature; international practices for rural roundabout illumination, a safety analysis of nighttime roundabout crashes using data from Minnesota and Georgia and provides preliminary results regarding the cost effectiveness of unlit or partially lit roundabouts as rural safety treatments.		
17. Key Words: Roundabout, Illumination, International Standards, Roadway Safety, Roadway Design		18. Distribution Statement:
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considered (i.e. only on the State or U.S. highway system) and (c) the number of roundabouts available to analyze (sample size). These challenges limit the scope and nature of analyses that can be performed and affects the level of detail that the analysis can achieve.

Despite these challenges, the results indicate that lighting can provide significant benefits at roundabouts relative to unlit roundabouts. This study finds that the mean nighttime crash rate for roundabouts without lighting is significantly higher than what is experienced at lighted roundabouts. For the studied roundabouts the illuminated roundabouts had an approximately 62 percent lower crash rate compared to unlit roundabouts.

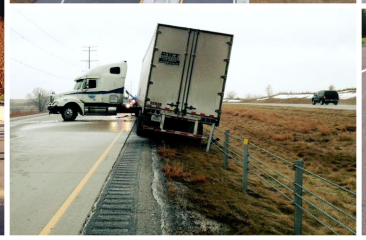
The results also show that different illumination levels or categories provide direct safety benefits compared to the unilluminated situation. Also, there are incremental benefits in changing from one illumination category to a higher one. The study finds average reduced crash rates of between 55 percent and 73 percent respectively for partial and full illumination when compared to unilluminated. Also, converting from partial to full illumination can provide average incremental safety benefit ranging from 39 percent reductions in nighttime crash rate.

The main difference between "Partial" and "Full" lighting is that the transition zones on the approaches are also illuminated under "Full" lighting while "Partial" lighting focuses on only the roundabout circle. In NCHRP 672 the minimum recommendation for transition zone length was increased from 260ft (*4*) to 400ft (*5*). It is fair to assume that this increase of more than 50 percent in the recommended minimum transition zone length would help roundabouts with full illumination to provide significantly higher safety performance than those with only partial illumination. However, this study finds that about 68 - 83 percent of benefits that can be gained from full illumination can be achieved with only partial illumination.

Last, the results further show that the provision of lighting at roundabouts can significantly impact both fatal and severe injury crashes. However, it is critical in considering these potential benefits of lighting to recall that these comparisons are for unlit to lit roundabouts. As seen throughout the literature roundabouts generally have very low crash rates compared to conventional intersections. The impact in frequency of incidents due to lighting may not be justified in terms of an overall safety program where funds may be needed to reduce more substantial risks to the public elsewhere. Making these decisions requires access to additional decision making tools, such as a Benefit to Cost Model to be provided in Phase 2.

Attachment 20

Traffic Safety Fundamentals Handbook

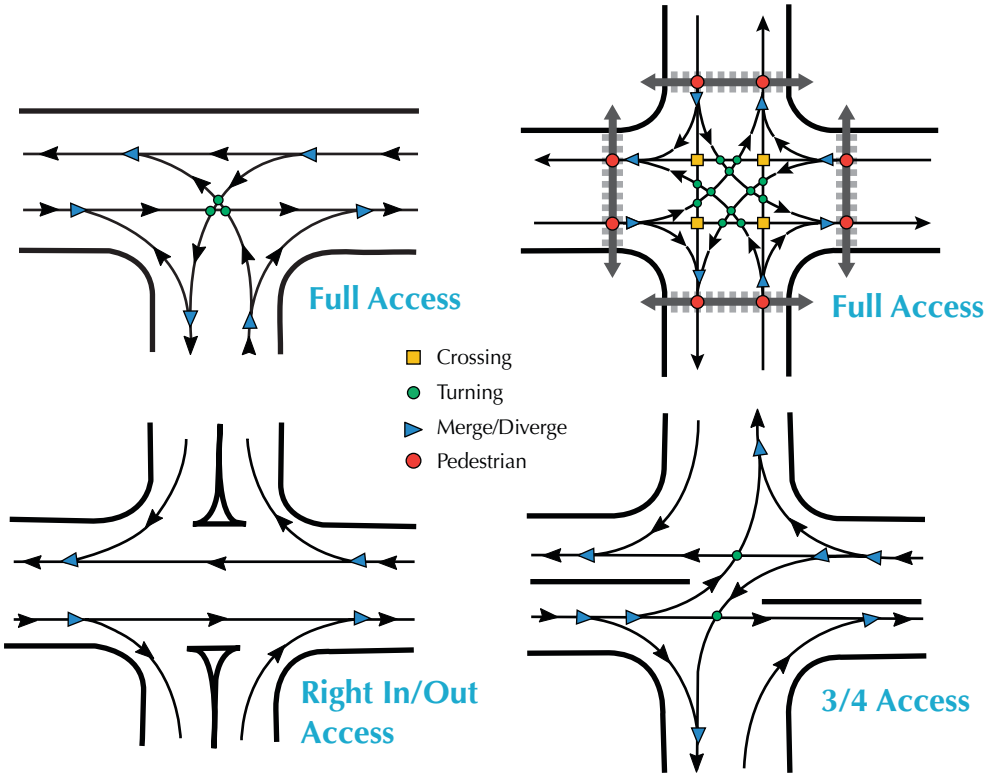


Minnesota Department of Transportation
Office of Traffic, Safety and Technology

Revised June 2015

Prepared by CH2M, Inc.

Intersections – Conflict Points
Traditional Design



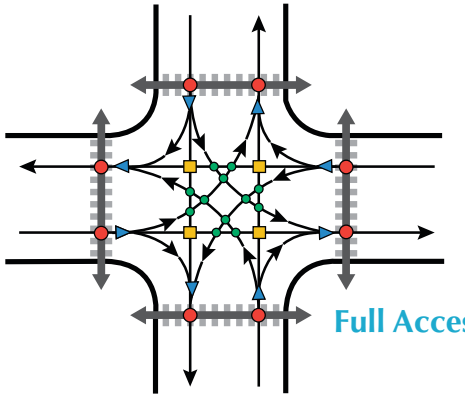
	Crossing	Turning	Merge/ Diverge	Total	Typical Crash Rate (crashes per mil. entering vehicles)
Full Access +	4	12	16	32	0.7
Full Access T	0	3	6	9	0.4
3/4 Access	0	2	8	10	0.5
Right In/Out Access	0	0	4	4	0.2

2013 MnDOT Crash Data Toolkit

Highlights

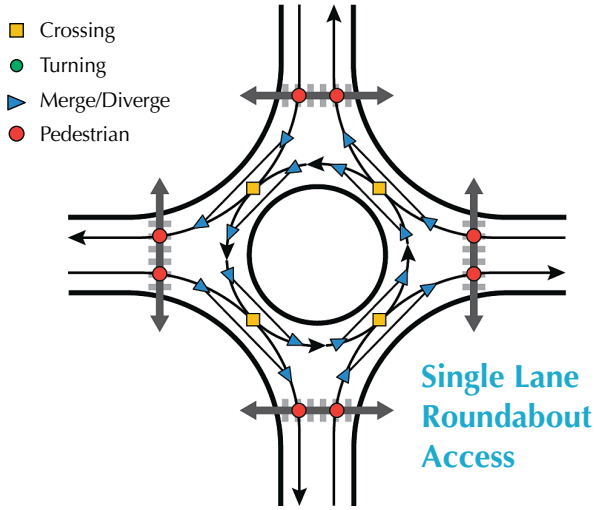
- A review of the safety research suggests that intersection crash rates are related to the number of conflicts at the intersection.
- Conflict points are locations in or on the approaches to an intersection where vehicle paths merge, diverge, or cross.
- The actual number of conflicts at an intersection is a function of the number of approaching legs ("T" intersection have fewer conflicts than four-legged intersections) and the allowed vehicle movements (intersections where left turns are prohibited/prevented have fewer conflicts than intersections where all movements are allowed).
- A preliminary review of intersection crash data indicates two key points:
  - Some vehicle movements are more hazardous than others. The data indicates that minor street crossing movements and left turns onto the major street are the most hazardous (possibly because of the need to select a gap from two directions of oncoming traffic). Left turns from the major street are less hazardous than the minor street movements, and right-turn movements are the least hazardous.
  - Crash rates and the frequency of serious crashes are typically lower at restricted access intersections (3/4 design and right in/out) than at similar 4-legged intersections. Prohibiting/preventing movements (especially the crossing movement) at an intersection will likely result in a substantial crash reduction.
  - Minnesota crash data clearly supports the notion that reducing conflicts, especially crossing conflicts, is associated with a reduction in crashes. Equivalent information about the effects on crash severity has not been generated. However, it appears reasonable to assume that any effort that prevents crossing maneuvers that contribute to right angle collisions should also reduce severity of any remaining crashes.

Intersections – Conflict Points New Design



Full Access

Multi-Lane Roundabout



Single Lane Roundabout Access

Full Access Typical Crash Rate 0.7 – Average crash rate for high volume/low speed signalized intersection

	Crossing	Turning	Merge/ Diverge	Total	Typical Crash Rate (crashes per mil. entering vehicles)
Full Access	4	12	16	32	0.7 [1]
Single Lane Roundabout	4	0	16	20	0.3 [3]
Multi-Lane Roundabout	N/A	N/A	N/A	N/A	1.4 [3]

[1] 2010-2012 rural MN state highway intersection crash data.

[2] NCHRP 15–30 Preliminary Draft

[3] Estimated based on a limited sample of MnDOT data

Note: Count of conflicts in dispute, although there are many.

N/A – Not Available

2013 MnDOT Crash Data Toolkit

Highlights

- Roundabouts have been implemented at a sufficient number of intersections in Minnesota and around the country, such that follow-up studies have documented a Proven effectiveness of reducing both the frequency and severity of crashes. More information regarding roundabouts can be found in *Roundabouts: An Informational Guide* (Report No. FHWA-RD-00-067) at **www.tfhrc.gov/safety/00-0675.pdf**.
- Based on the observed safety and operational benefits documented at single lane roundabouts, highway agencies have begun to implement multi-lane roundabouts at several high-volume intersections to replace traditional traffic signal control. Studies of these installations indicate that, similar to single lane roundabouts, multi-lane roundabouts improve traffic operations and reduce intersection delay. However, it has been determined that multi-lane roundabouts have a greater number of conflicts than single lane design (current research has not been able to agree on the exact number) and this appears to have resulted in an increase in the number of property damage and minor injury crashes and have a crash rate almost twice the average for high volume/low speed signal-controlled intersections in Minnesota.
- Research documented in FHWA's CMF Clearinghouse is consistent with Minnesota's experience with conflict reduction efforts resulting in crash reduction. The CMF Clearinghouse indicates the conversion to a single lane roundabout has a crash reduction factor (CRF) in the range of 25% to 65% for all severities and approximately 85% for severe crashes. This research also indicates that conversion to a multi-lane roundabout has resulted in an overall increase in crashes but the CRF for severe crashes is still in the range of 60% to 70%.

Report No. K-TRAN: KSU-02-4
FINAL REPORT

OPERATIONAL PERFORMANCE OF KANSAS ROUNDABOUTS: PHASE II

Eugene R. Russell
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Kansas State University
Manhattan, Kansas

MAY 2005

K-TRAN

A COOPERATIVE TRANSPORTATION RESEARCH PROGRAM BETWEEN:
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KANSAS STATE UNIVERSITY
THE UNIVERSITY OF KANSAS

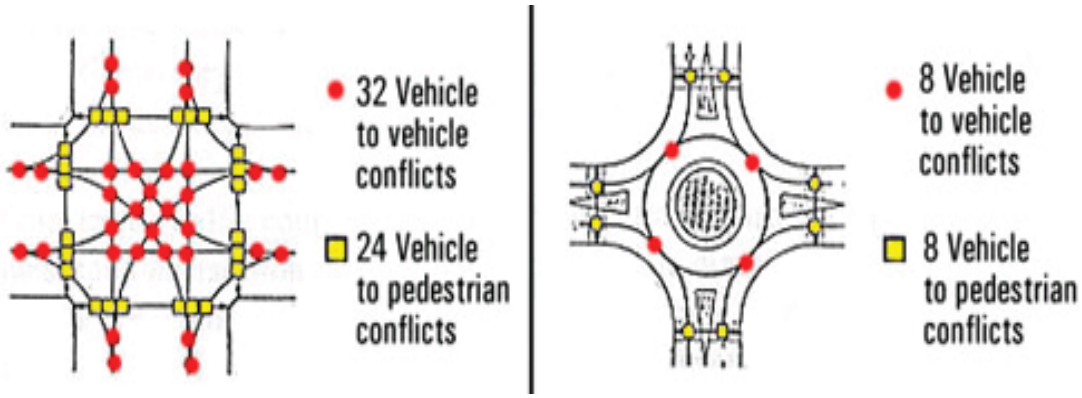

FIGURE 2.3: Figure Showing the Reduction of Conflict Points in a Roundabout When Compared to a Four-Legged Intersection

- Pedestrians need only cross one direction of traffic at a time at each approach as they traverse roundabouts, as compared with un-signalized intersections. The conflict locations between vehicles and pedestrians are generally not affected by the presence of a roundabout, although conflicting vehicles come from a more defined path at roundabouts (and thus pedestrians have fewer places to check for conflicting vehicles). In addition, the speeds of motorists entering and exiting a roundabout are reduced with good design. As with other crossings requiring acceptance of gaps, roundabouts still present visually impaired pedestrians with unique challenges.

Modern roundabouts improve the safety of intersections by reducing potential conflict points, by eliminating or altering crash types and by reducing speed differentials of conflicting movements at intersections, and by forcing drivers to decrease speeds as they proceed into and through the intersection. [FHWA, 2000]

As stated by Jaquemart [1998]:

> "The high capacity and fluidity achieved by the modern roundabout are two main reasons for its success. The substantial reduction in injury accidents has been the primary reason for great success of modern roundabouts in France, Germany, Australia and UK The fact that drivers do not have to wait as long at roundabouts as at signalized intersections makes the roundabouts friendlier to both the driver and to the environment"

Attachment 21

Car crashes rank among the leading causes of death in the United States

Impact Speed and a Pedestrian's Risk of Severe Injury or Death

September 2011

AAA Foundation for Traffic Safety

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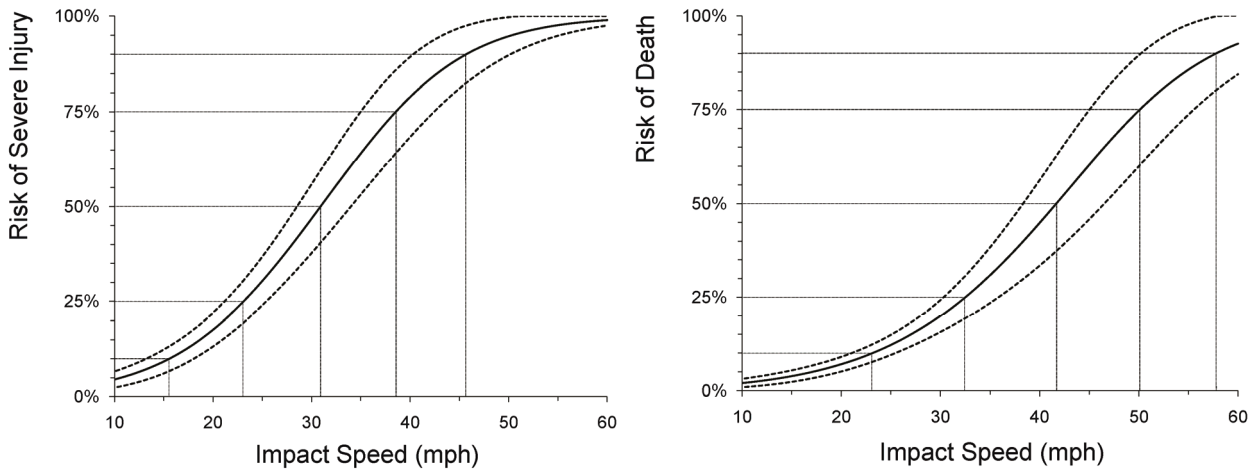

Figure 1. Risk of severe injury (left) and death (right) in relation to impact speed in a sample of 422 pedestrians aged 15+ years struck by a single forward-moving car or light truck model year 1989–1999, United States, 1994–1998. Risks are adjusted for pedestrian age, height, weight, body mass index, and type of striking vehicle, and standardized to the distribution of pedestrian age and type of striking vehicle for pedestrians struck in the United States in years 2007–2009. Dotted lines represent point-wise 95% confidence intervals. Serious injury is defined as AIS score of 4 or greater and includes death irrespective of AIS score.

The average adjusted, standardized risk of death reached 10% at an impact speed of 23 mph, 25% at 32 mph, 50% at 42 mph, 75% at 50 mph, and 90% at 58 mph. Risk of death increased approximately linearly with speed for speeds between 32 mph and 50 mph, with an average increase of 2.8 percentage points (95% CI: 2.2 – 3.4) for each 1 mph increase in impact speed for speeds within this range.

Risks were higher for pedestrians struck by light trucks than for pedestrians struck by cars (Figure 2, top panel). The average adjusted, standardized risk of severe injury for a pedestrian struck at any given speed by a light truck was approximately equal to the average risk if struck by a car travelling 6.3 mph faster (95% CI: 2.1 – 10.6 mph). The average risk of death for a pedestrian struck at any given speed by a light truck was approximately equal to the average risk if struck by a car travelling 4.1 mph faster (95% CI: -1.4 – 9.5 mph).

Risks were also higher for older pedestrians than for younger pedestrians (Figure 2, bottom panel). The average adjusted, standardized risk of severe injury for a 70-year-old pedestrian struck at any given speed was approximately equal to the average risk for a 30-year-old struck by a vehicle travelling 9.3 mph faster (95% CI: 5.3 – 13.4 mph). The average risk of death for a 70-year-old pedestrian struck at any given speed was approximately equal to the average risk for a 30-year-old pedestrian struck by a vehicle travelling 10.4 mph faster (95% CI: 5.4 – 15.4 mph).

U.S. Department of Transportation
Federal Highway Administration
1200 New Jersey Avenue, SE
Washington, DC 20590
202-366-4000

Safety

Proven Safety Countermeasures

In 2008, FHWA began promoting certain infrastructure-oriented safety treatments and strategies, chosen based on proven effectiveness and benefits, to encourage widespread implementation by State, tribal, and local transportation agencies to reduce serious injuries and fatalities on American highways. This became known as the Proven Safety Countermeasures initiative. The list was updated in 2012 and again in 2017.

Under the leadership of U.S. Transportation Secretary Elaine L. Chao, this list of Proven Safety Countermeasures has now reached a total of 20 treatments and strategies that practitioners can implement to successfully address roadway departure, intersection, and pedestrian and bicycle crashes. Among the 20 Proven Safety Countermeasures are several crosscutting strategies that address multiple safety focus areas.

Transportation agencies are strongly encouraged to consider these research-proven safety countermeasures. Widespread implementation of the Proven Safety Countermeasures can serve to accelerate the achievement of local, State, and National safety goals.

Listen to the Recorded Webinar of the 2017 PSCi Rollout. The Webinar Transcript is also available. Download a two-page flyer that gives an overview of the initiative, or the 24-page booklet that has comprehensive information on all of the countermeasures.

Guidance Memorandums on Promoting the Implementation of Proven Safety Countermeasures:

2008 **2012** **2017**

Select any of the following icons to learn more about the specific countermeasure


Roadside Design Improvement at Curves


Reduced Left-Turn Conflict Intersections


Systemic Application of Multiple Low Cost Countermeasures at Stop-Controlled Intersections


Leading Pedestrian Interval


Local Road Safety Plan

USLIMITS2


Enhanced Delineation and Friction for Horizontal Curves


Longitudinal Rumble Strips and Stripes on Two-Lane Roads


Median Barrier


Safety Edge$_{SM}$


Backplates with Retroreflective Borders


Corridor Access Management


Dedicated Left- and Right-Turn Lanes at Intersections


Roundabouts


Yellow Change Intervals


Medians and Pedestrian Crossing Islands in Urban and Suburban Areas


Pedestrian Hybrid Beacon


Road Diet


Walkways


Road Safety Audit

Page last modified on January 24, 2020

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

Attachment 23

Minnesota's Best Practices for Pedestrian/Bicycle Safety

REPORT 2013-22

SEPTEMBER 2013

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Document Information and Disclaimer (4 of 4)

	Strategies	Pages	Crash Reduction/ Crash Features	Proven/Tried/ Experimental	Operational Effects (Mobility)	Candidate Locations	Design Features	Construction Costs
Pedestrian and Bicycle Considerations	Roundabouts	43-44	Lower speeds and medians for pedestrian refuge	Proven — Vehicles Tried — Pedestrians	Slows traffic entering roundabout	Arterials and major collectors	Splitter islands help pedestrians by separating entering and exiting traffic	more than $1,000,000
	Bicycle-friendly Edgeline Rumbles	45-47	30 – 35% of Road Departure Crashes	Proven	N/A	Lower volume rural roadways	48-foot strip with 12-foot gap	$3,000 per mile
	Speed Reduction Measures	48-51	Low-speed roads have higher crash rates and higher fraction of pedestrian crashes	Tried	Limited reduction of speed without changing driver's perceptions of roadway	School zones, speed transitions	Road diets, curb extensions and streetscaping help change driver's perceptions	Varies by strategy $250 to more than $1,000,000

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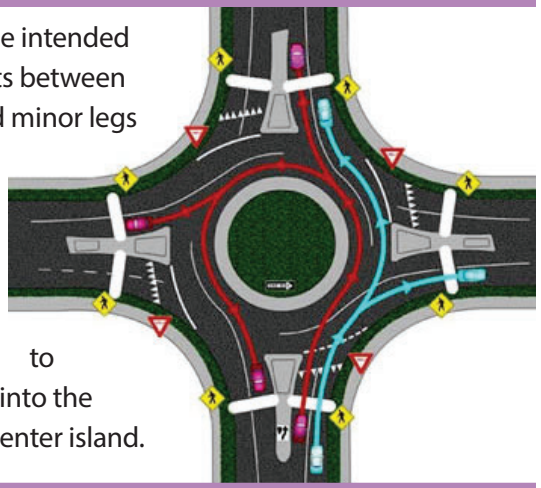
Roundabouts (1 of 2)

PEDESTRIAN AND BICYCLE CONSIDERATIONS

DESCRIPTION AND DEFINITION

Roundabouts are a design technique intended to control traffic and reduce conflicts between traffic movements on the major and minor legs approaching an intersection. Roundabouts, which provide an alternative to traffic signal control at an intersection, are usually built with a circular raised island and splitter medians on all approaches to help slow vehicles and direct traffic into the counterclockwise flow around the center island.



SAFETY CHARACTERISTICS

Roundabouts have demonstrated improved safety performance compared to traffic signal control, especially for the most severe types of crashes. In Minnesota, the most common type of severe intersection-related crash is an angle crash. The primary factors contributing to crash severity are speed and angle of impact. In roundabouts, vehicle speeds and impact angles are reduced because of the design features, and because it is virtually impossible to have a severe angle crash. Angle crashes still may occur, but at lower speeds and at shallower angles.

For pedestrians and bicyclists, expected safety benefits are related to reduced vehicle speeds, the presence of raised medians on all of the approaches, and the fact that gap selection is simplified because only one direction of traffic is crossed at a time and for a shorter crossing distance and with lower speeds.

PROVEN, TRIED AND EXPERIMENTAL

Roundabouts are considered to be a PROVEN effective strategy for reducing severe crashes involving vehicles (Crash Modifications Factors Clearinghouse). However, the safety performance of roundabouts in relation to pedestrian and bicycle crashes is yet to be determined. A number of studies (National Cooperative Highway Research Program [NCHRP] Reports 572 and 672), including one in Minnesota (Hourdos 2011), have concluded that the number of pedestrian and bicycle crashes is generally low at roundabouts—too low to be reliably diagnostic. As a result, the studies have attempted to use surrogate factors for crashes (delay, vehicle yielding rates, and observation of pedestrian crossing behavior) in order to estimate the effect of roundabouts on pedestrian and bicycle safety. The studies found (1) substantially reduced delay for pedestrian at roundabouts compared to signal-controlled intersections, and (2) vehicle yielding rates greater than those observed at uncontrolled intersections, but lower than at signal-controlled intersections. The observational studies of thousands of pedestrian/vehicle interactions identified no crashes, no near misses and only three close calls. The NCHRP and Hourdos research concluded that while substantial safety problems for non-motorists were not found at roundabouts, it is not proven that roundabouts are absolutely safe for pedestrians and bicyclists.

TYPICAL CHARACTERISTICS OF CANDIDATE LOCATIONS

The primary use of roundabouts is to control traffic at intersections where traditional strategies involving STOP signs or traffic signals cannot adequately address operational or safety deficiencies. As a result, the typical candidate

Roundabouts (2 of 2)

PEDESTRIAN AND BICYCLE CONSIDERATIONS

for the installation of a roundabout would be an intersection along an arterial with a frequency of angle and turning crashes along with traffic volumes and associated delay that are sufficiently high to suggest the need to improve either the quality of traffic operations or the level of intersection safety. In addition, when identifying potential candidate intersections for the installation of a roundabout, consideration should be given to the function of the minor road. In practice, roundabouts treat all approaching legs equally, so the key question is, does a roundabout make sense from the perspective of functional classification and traffic volume?

TYPICAL COSTS

The typical cost of a roundabout is approximately $1 million, not including right-of-way acquisition. Costs will vary depending on location and size of the roundabout. Long-term roundabout costs are typically less than costs for signal-controlled intersections because of fewer maintenance and energy requirements.

DESIGN FEATURES

For pedestrians crossing the legs of the roundabout, the key design features are as follows: the radius of the curves on the approaches and in the center that determine the operating speed around the circular island; the presence of the splitter island between the entering and exiting lanes; and the number of circulating lanes. For pedestrians the risk of being involved in a severe crash is expected to be lower at roundabouts than at other intersection controls because of the slower speeds and the splitter islands, which help pedestrians resolve conflicts with entering and exiting vehicles separately. In addition, the observational studies have found that vehicles in single-lane roundabouts have higher rates of yielding to pedestrians than vehicles in multi-lane roundabouts.

Special consideration should be given for visually-impaired pedestrians during the design of roundabouts, particularly multi-lane roundabouts. Some possible treatments to assist visually-impaired pedestrians include raised crosswalks or pedestrian hybrid beacons at the splitter islands.

For bicyclists using roundabouts, it is recommended that they use the full lane and not try to ride to the right side of the lane. While one-lane roundabouts are very easy for bicyclists to ride through, two-lane can be more difficult. However, the best practice is for the bicyclists to claim the appropriate traffic lane and negotiate the roundabout as would an automobile. One advantage of the roundabout is that motorized and non-motorized traffic move at similar speeds within the roundabout.

MnDOT's current practice is to provide bicycle slip ramps at roundabouts where bicyclist will likely be present. These slip ramps provide an opportunity for the bicyclists to access the sidewalk before entering the roundabout and transverse the roundabout on the sidewalk or a shared use path. More information on the design of bicycle slip ramps can be found in NCHRP Report 672, Roundabouts: An Informational Guide.

BEST PRACTICE

The characteristics of Roundabouts present a number of advantages for pedestrians and bicyclists – reduced vehicle operating speeds, reduced delays and median refuge islands on all approaches which results in only having to cross a single direction of traffic at one time.

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Attachment 24

Pedestrian Refuge Island

SAFE TRANSPORTATION FOR EVERY PEDESTRIAN

COUNTERMEASURE TECH SHEET

A pedestrian refuge island is a median with a refuge area that is intended to help protect pedestrians who are crossing a multilane road. This countermeasure is sometimes referred to as a crossing island, refuge island, or pedestrian island. The presence of a pedestrian refuge island at a midblock location or intersection allows pedestrians to focus on one direction of traffic at a time as they cross, and gives them a place to wait for an adequate gap in oncoming traffic before finishing the second phase of a crossing.

Refuge islands are highly desirable for midblock pedestrian crossings on roads with four or more travel lanes, especially where speed limits are 35 mph or greater and/or where annual average daily traffic (AADT) is 9,000 or higher. They are also a candidate treatment option for uncontrolled pedestrian crossings on 3-lane or 2-lane roads that have high vehicle speeds or volumes. When installed at a midblock crossing, the island should be supplemented with a marked high-visibility crosswalk.

The combination of a long crossing distance and multiple lanes of oncoming traffic can create an unsafe pedestrian environment.

A pedestrian refuge island can improve safety and comfort by providing pedestrians with the option of waiting in the median area before beginning the next stage of the crossing.

Pedestrian refuge islands can reduce pedestrian crashes by

32%

FEATURES:

- Median can enhance visibility of the crossing and reduce speed of approaching vehicles.
- Refuge area provides a place to rest and reduces the amount of time a pedestrian is in the roadway

OFTEN USED WITH:

- Crosswalk visibility enhancements
- Curb extensions (where road width allows)

U.S. Department of Transportation
Federal Highway Administration

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

EDC

June 2018, Updated | *FHWA-SA-18-062*

Pedestrian Refuge Island

EDC-4 STEP: https://www.fhwa.dot.gov/innovation/everydaycounts/edc_4/step.cfm

Asheville, NC. Photo: Lyubov Zuyeva, pedbikeimages.org

CONSIDERATIONS

The design must accommodate pedestrians with disabilities. Islands should be at least 4 feet wide (preferably 8 feet) and of adequate length to allow the anticipated number of pedestrians to stand and wait for gaps in traffic before crossing. The cut-through must include detectable warnings if island width is at least 6 feet.

Islands should be illuminated or highlighted with street lights, signs, and/or reflectors to ensure that they are visible to motorists. They can be constructed so that crossing pedestrians are directed to the right, so they can more easily view oncoming traffic after they are halfway through the crossing. If applicable, evaluate the impact of the island on bicycle facility design.

COST

The cost of a median island depends on its size and construction materials. The costs range from $2,140 to $41,170 per island, depending on the length of the island, with an average cost of $13,520. The average cost per square foot is approximately $10. Costs will be higher for concrete islands versus asphalt islands, though the lifespan of concrete is longer compared to the lifespan of asphalt. Cost reductions may be realized if the refuge island can be incorporated into planned roadway improvements or utility work.

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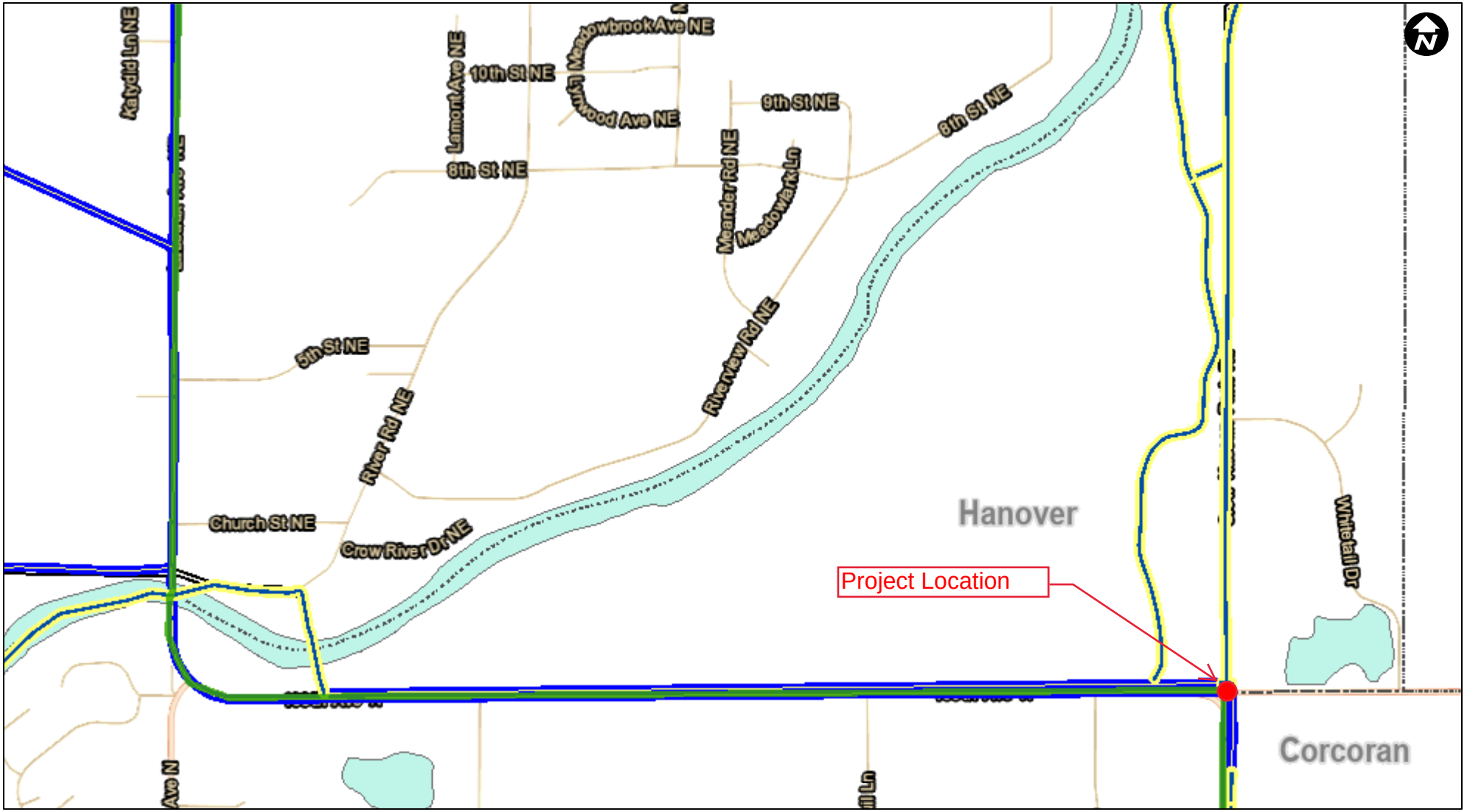
Attachment 25

Regn'l Bicycle Transportation Network



RBTN Tier 1 Alignments
RBTN Tier 1 Corridor Centerlines
RBTN Tier 1 Corridors
RBTN Tier 2 Alignments
RBTN Tier 2 Corridor Centerlines
RBTN Tier 2 Corridors

Destinations
Job Centers
Sports Ent Complex
Hi Visit Reg Parks
Higher Ed >2K
Major High Schools

Regional Bikeways Inventory
Existing
Planned
Programmed
Minnesota State Trails (DNR)

Regional Trails
Existing
Planned
Alternate

City and Township Boundaries
Lakes and Rivers

0 0.5 1 Miles

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Created: 4/15/2020

METROPOLITAN COUNCIL

Attachment 26

CITY OF CORCORAN

A Hidden Gem Waiting To Be Discovered

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April 24, 2020

Carla Stueve, P.E., P.T.O.E.
Director and County Highway Engineer
Hennepin County Transportation Project Delivery
7009 York Avenue South
Edina, MN 55435

Dear Ms. Stueve,

Please accept this letter on behalf of the City of Corcoran City Council in regard to the proposed funding request for improvements to the CSAH 19 and County Road 117/County Road 203 intersection. It is our understanding that the request is for Spot Mobility and Safety funding in program years 2024 and 2025.

The City of Corcoran supports the application for funding in order to modify the existing intersection to better accommodate user activity, especially during the morning and afternoon peak periods. Improvements are needed to address user safety and mobility from both an auto and pedestrian standpoint.

In addition to improvements to the above-mentioned intersection, it is requested that the project also include improvements at the CSAH 19 and County Road 30 intersection. This intersection will likely have downstream impacts if improvements are made to the CSAH 19 and County Road 117/County Road 203 intersection.

While the City of Corcoran supports improvements proposed by the County, and the seeking of grant funds, the City does not support the use of Corcoran funds for this specific project. This intersection has significant use by non-Corcoran users and has a relatively small impact on actual Corcoran residents.

Sincerely,

Brad Martens
City Administrator

April 21, 2020

Carla Stueve, P.E., P.T.O.E.
Transportation Project Delivery Director and County Engineer
Hennepin County Public Works
1600 Prairie Drive
Medina, MN 55340

Dear Ms. Stueve:

The City of Hanover hereby expresses its support for Hennepin County's federal funding applications to the Metropolitan Council's Regional Solicitation and MnDOT's Highway Safety Improvement Program (HSIP) for the proposed improvements at the CSAH 19 and County Road 117/County Road 203 intersection.

This project will involve modifications to the existing CSAH 19 at County Road 117/County Road 203 intersection to better accommodate user activity, especially during the morning and afternoon peak periods. It is anticipated that specific improvements will be determined as part of the design process and will incorporate proven strategies that address user safety and mobility. As proposed, this project will benefit people biking, driving, and walking in the area.

The City of Hanover acknowledges that majority of the traffic impact is from beyond the municipal boundaries of Hanover and Corcoran, and therefore, encourage Hennepin County to identify funding sources within county programs to fund the project. Furthermore, Hanover request collaboration in the design of the intersection, recognizing Hanover borders three legs of the intersection.

Thank-you for making us aware of this application and project, and the opportunity to provide support. The city looks forward to working with you on this project.

Sincerely,

Brian Hagen
Hanover City Administrator
763-496-5025
brianh@ci.hanover.mn.us

CITY OF HANOVER
COUNTIES OF WRIGHT AND HENNEPIN
STATE OF MINNESOTA

RESOLUTION NO 04-07-20-37

SUPPORTING HENNEPIN COUNTY 2020 APPLCAITIONS FOR FEDERAL FUNDING TOWARDS A CSAH 19 IMPROVEMENT PROJECT AT CSAH19/C.R.117/C.R.203

WHEREAS, Hennepin County intends to submit applications for federal funding dollars to be used towards an intersection improvement project located at CSAH 19/CR 117/CR 203; and

WHEREAS, This project will involve modifications to the existing CSAH 19 at County Road 117/County Road 203 intersection to better accommodate user activity, especially during the morning and afternoon peak periods. It is anticipated that specific improvements will be determined as part of the design process and will incorporate proven strategies that address user safety and mobility. As proposed, this project will benefit people biking, driving, and walking in the area; and

WHEREAS, the City of Hanover requests collaboration with Hennepin County in the design; and

WHEREAS, the City of Hanover requests that Hennepin County consider all county level funding sources for the project. Understanding that travel impacts are from beyond the borders of the cities of Hanover and Corcoran.

NOW THEREFORE, BE IT RESOLVED that the City Council of the City of Hanover, Minnesota, hereby expresses its support for Hennepin County's federal funding applications to the Metropolitan Council's Regional Solicitation and MnDOT's Highway Safety Improvement Program (HSIP) for the proposed improvements at the CSAH a19 and County Road 117/County Road 203 intersection.

BE IT FURTHER RESOVLED, that the City of Hanover requests the county to consider all potential funding sources within the county programs.

Approved by the City Council this 7th day of April, 2020.

APPROVED BY:

Chris Kauffman, Mayor

ATTEST:

Brian Hagen, City Administrator