US 169 Rural Safety & Mobility Interchange Project

MERIT CRITERIA

FY 2023 Rebuilding American Infrastructure with Sustainability and Equity (RAISE) Program

Rendering of Interchange project

Project Type: Rural Capital Project
Eligible Project Costs: $49,680,000
2023 RAISE Funds Requested: $25,000,000

Primary Contact:
Andrew J. Witter, P.E., Public Works Director
Sherburne County
13880 Business Center Drive NW, Suite 100, Elk River, MN 55330
(763) 765-3302 | Andrew.Witter@co.sherburne.mn.us

Supporting Information can be found at:
https://www.srfconsulting.com/sherburne-county-us-169/

SHERBURNE COUNTY

US 169 Rural Safety & Mobility Interchange Project

Submitted by Sherburne County

FY 2023 REBUILDING AMERICAN INFRASTRUCTURE WITH SUSTAINABILITY AND EQUITY (RAISE) PROGRAM

CONTENTS

FIGURES

TABLES

Merit Criteria

The Sherburne County US 169/CR 4 interchange project advances many of the Merit Criteria for RAISE Grants. This project includes an emphasis on reducing congestion and greenhouse gas emissions from the transportation system, expanding rural access to opportunity, improving roadway safety, and supporting the movement of non-motorized transportation options.

ELIMINATE	EXPAND	IMPROVE	SUPPORT
a multimodal bottleneck	rural access and opportunity	roadway safety	climate and racial equity

1. SAFETY

Road safety is a serious concern at the US 169/CR 4 intersection. The US 169/CR 4 interchange project is intended to address safety by providing a transportation system that provides facilities for various transportation modes. This portion of US 169 is one of the more dangerous road sections in the region, **ranking as the second most unsafe intersection in Central Minnesota. The intersection has a crash rate that is five times the statewide average and a serious crash rate that is six times the statewide average**. From 2015-2019 there were 101 crashes at the intersection, including 77 rear end collision, a direct result of queueing at the traffic signal. Figure 1 shows the intersection's crash history from 2015-2019.

A key focus of the project is to make the US 169/CR 4 intersection safer. The US Department of Transportation's Rural Opportunities to Use Transportation for Economic Success (ROUTES) initiative, seeks to address disparities in rural transportation infrastructure. Consistent with the goal of ROUTES, this project will address disparities by implementing design interventions that will reduce the number of fatalities and serious injury crashes along this portion of US 169.

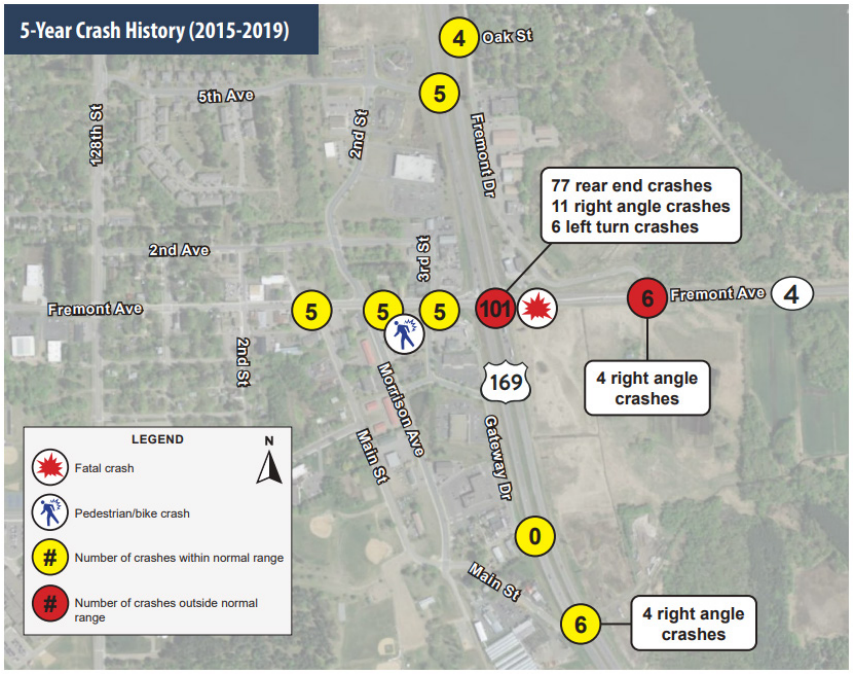
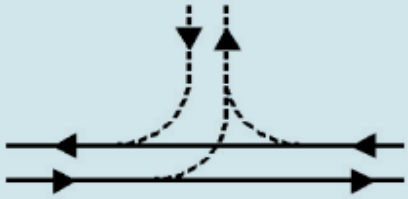


Figure 6 Five year crash history, 2015-2019

This project will incorporate the following design interventions to alleviate safety issues at the intersection of US 169 and CR 4:

- Replacing the signalized US 169 and CR 4 intersection with an interchange, overpass, and frontage road. The signal is the final remaining one along a 75 mile section of US 169. It is unexpected by drivers, traveling in excess of 65 miles per hour (mph), and is the primary driver of crashes in the area (77 rear end crashes). Removing the signal will reduce the number and severity of crashes by reducing congestion and removing the need to stop while traveling at high speeds.
- Building a multimodal trail crossing under US 169 on both sides of CR 4, providing separate walk/bike facilities, with limited potential conflict points with vehicles. Current facilities require pedestrians to traverse US 169, creating opportunity for conflict with high-speed vehicles traveling on a 65 mph posted speed limit roadway. Installation of the interchange will remove pedestrians and bicyclists from US 169, allowing them to safely pass though the underpass and eliminating opportunities for conflict with high-speed vehicles on US 169.
- Installing roundabouts on CR 4 at the intersection with the US 169 on/off ramps, allowing safe and free flow of traffic on and off US 169.

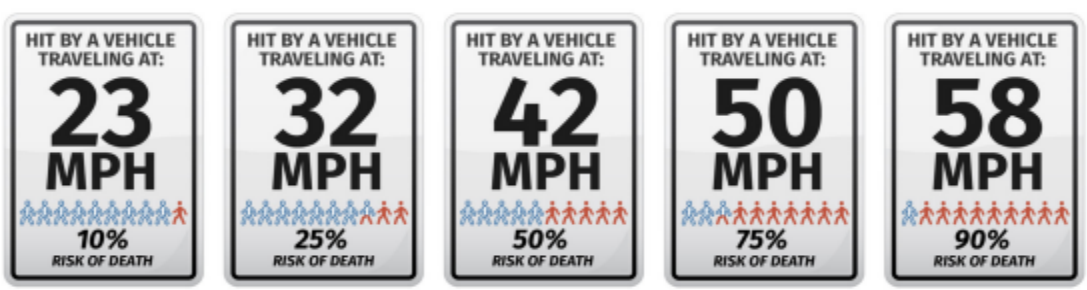
According to the MnDOT Access Management Manual, Right-in/Right-out/Left-in-only (3/4 Intersection) permits access between the highway and a parcel or lot via right-turn movements, and allows the left-turn movement from the highway into the parcel or lot. The left-turn movement returning to the highway is not permitted.



Right-in/Right-out/Left-in Only (3/4 Intersection)

- Removing six at-grade access points onto US 169 to control vehicles turning onto the high-speed roadway.
- Improving access points at 255th Avenue and 269th Avenue to restrict movement to allow right-in/right-out/left-in-only (¾ intersection), which controls traffic flow on and off of US 169 and prohibits left turns onto the roadway.
- Reconstructing the roadway with wider shoulders and rumble strips which will help to reduce run-off-the-road crashes.

According to the National Roadway Safety Strategy, 78 percent of vehicles involved in fatal pedestrian crashes were traveling on a roadway with a speed limit of greater than 35 miles per hour (mph).[1] Further, pedestrians hit by vehicles traveling at 58 mph have a 90 percent risk of death. The US 169/CR 4 Interchange Project will remove pedestrians from the high-speed US 169 (posted speed of 65 mph), greatly enhancing pedestrian safety.



1 *National Roadway Safety Strategy. United States Department of Transportation. https://www.transportation.gov/sites/dot.gov/files/2022-02/USDOT-National-Roadway-Safety-Strategy.pdf*

As shown in Table 1, below, the safety improvements included in this project are expected to result in reduced predicted crashes in the project area by 85 percent between 2025 and 2045. A difference that corresponds to a crash cost savings of over $45 million dollars.

Table 2 Table 1. Predicted Crash Reduction

Crash Severity	2025-2045 No Build	2025-2045 Build	Crash Reduction
Predicted Crashes per Year	651.1	95.6	555.5
Predicted Fatal Crash	1.8	0.0	1.8
Predicted Serious Injury Crash	5.8	0.1	5.7
Predicted Minor Injury Crash	47.1	1.8	45.2
Predicted Possible Injury Crash	168.8	5.8	162.9
Predicted Crash Costs	$47 million	$1.5 million	$45.5 million

> "The Sherburne County Sheriff's Office supports this initiative knowing we could provide a safer route, not only for motorists, but for pedestrians and bicyclists, alike."
>
> *Sherburne County Sheriff Joel Brott*

2. ENVIRONMENTAL SUSTAINABILITY

The Project addresses environmental sustainability criterion by including elements that consider climate change, prevent the unintended release of hazardous materials, improve stormwater management, and promote energy efficiency. Generally, the US 169/CR 4 interchange project will address environmental sustainability by increasing the efficiency of the roadway, reducing vehicle operation time and idling, and through the installation of stormwater management best practices, reducing water pollution from the roadway.

More specifically, the Project contains multimodal features that provide options for commuting and recreational, and leisure travel, and are expected to remove vehicles from the roadway and reduce vehicle miles traveled, leading to reduced greenhouse gas emissions. Further, the Project will ease the movement of freight, reduce truck idle time, and eliminate the need for heavy vehicles to slow, stop, and accelerate as they pass through Zimmerman. For vehicles moving along CR 4, installing roundabouts at intersections will reduce idle times and congestion and the associated emissions that result from stop-and-go traffic.

Transportation Related Air Pollution Reduction

The US 169/CR 4 interchange project supports the greenhouse gas reduction criteria identified in the NOFO and the State of Minnesota's Climate Action Plan. According to the Plan, Minnesota's largest source of emissions from the transportation sector are from combustion of fossil fuels in vehicles. The Climate Action Plan identifies the need to transform transportation systems to reduce the use of gasoline[2], calling for:

> Reducing surface transportation emissions by reducing the number of trips taken, making shorter trips, and increasing the efficiency of vehicles or traveling by foot or bike.

This project will result in a reduction of air pollution and greenhouse gas emissions from transportation by providing multimodal connections and improving the efficiency of the highway system. With current facilities, users do not have safe non-motorized transportation options, which makes them dependent on cars. Further, the key component of the project is replacing the US 169/CR 4 signalized intersection with an interchange. This will result in increased traffic speeds and reduced idle time, which will decrease operational time for general purposes, recreational, and heavy commercial vehicles, ultimately reducing the emissions from the transportation system.

Further, the US 169/CR 4 interchange project will provide a key connection in the regional trail system, reducing the

2 *Climate Solutions and Economic Opportunity: A foundation for Minnesota's state climate action planning. Minnesota Environmental Quality Board. https://www.leg.mn.gov/docs/2016/other/160864.pdf*

dependence on the automobile for transportation. The project will provide a key multimodal link between east and west Zimmerman across US 169, which is consistent with the following section from the State of Minnesota's Climate Actions plan:

Strengthen efforts to reduce reliance on single occupancy, internal combustion engine vehicles.

Water Management

The existing roadways include minimal stormwater management practices. Sediment and nutrients picked up along paved surfaces by runoff are discharged to surrounding wetlands, streams, and lakes. The US 169 and CR 4 intersection and nearby drainage is included within the Mississippi River-St. Cloud Watershed (HUC #07010203 – see Figure 2). This area's drainage joins downstream with Tibbets Brook, which is listed by the Minnesota Pollution Control Agency (MPCA) on the Impaired Waters List due to high E. coli bacteria.[3] Tibbets Brook leads to the Elk River, Lake Orono, and then to the Mississippi River, just upstream of the drinking water intake for the Twin Cities. Reducing pollution in Tibbets Brook has both local, regional, and national importance.

The project will incorporate stormwater management best practices that work to reduce nutrient loading and runoff volume. The planned practices meet Sherburne County and MnDOT standards and are recognized within the Sherburne County Local Water Management Plan as locally effective tools. Proposed improvements will address a variety of water quality concerns through sedimentation, water filtration, and infiltration of stormwater. These processes help to reduce sediment, phosphorus, E. coli, and other bacteria in the water. Watershed improvements have benefits that extend beyond jurisdictional boundaries, so any investment within the City of Zimmerman will have benefits that extend to downstream areas.

Figure 7 **Mississippi River-St. Cloud Watershed**

Tibbets Brook exceeds regional and federal standards for bacteria, which indicates that continued exposure to Tibbets Brook could be harmful to human health.

3. QUALITY OF LIFE

The Project supports quality of life for those living in the area and who pass through Zimmerman on a regular basis. It will contribute to regional and multimodal connectivity by providing alternate safe transportation choices for all people and improving the efficiency of the roadway. The Project provides pedestrian, bicycle, automobile, and freight enhancements that will benefit all members of the surrounding communities, including low-income populations, people of color, children, people with disabilities, older adults, and people without access to vehicles. The US 169/CR 4 interchange project completes a connection in the regional trail network, reduces congestion along US 169, and further implements County initiatives to extend fiber optic internet to the rural area.

3 *Minnesota's Impaired Waters List. Minnesota Pollution Control Agency. https://www.pca.state.mn.us/water/minnesotas-impaired-waters-list*

Bike and Pedestrian Improvements

The existing US 169/CR 4 intersection lacks trail and sidewalk facilities, which limits opportunities for Zimmerman residents to walk and bicycle. With the existing infrastructure, crossing US 169 is dangerous and difficult to navigate, especially for children and people with limited mobility. The current pedestrian facilities are limited to a four-stage crossing across US 169 on the north side of CR 4, with no sidewalk or trail facilities on the east side of US 169. The lack of safe pedestrian and bicycle facilities make Zimmerman residents dependent on cars for transportation and do not give residents the option to use non-motorized transportation modes.

Pedestrians and bicyclists need to travel through a four-stage crossing to cross US 169. The proposed project provides trail/sidewalk facilities under the US 169 bridge.

The US 169/CR 4 interchange project will incorporate a variety of multimodal transportation improvements that will work to increase active transportation usage and reduce vehicle dependence. In particular, the project includes a dedicated multi-use trail/sidewalk facility along both the north and south sides of CR 4 that crosses under the US 169 bridge. After completion, bicyclists and pedestrians will have access to dedicated crossings that will greatly reduce potential areas of conflict between pedestrians and bicyclists and vehicles, providing an overall safety benefit for all users.

Further, the CR 4 improvements will provide a critical trail link between the east and west areas of the City of Zimmerman that are bisected by US 169. The proposed trail across US 169 will connect Lake Fremont and Grams Park, a 114-acre regional park, to Zimmerman's downtown and the regional trail network. The proposed trail crossing will directly tie into the Great Northern Trail, significantly expanding access to regional trail facilities for residents of the City of Zimmerman and the surrounding rural communities.

In addition to safety benefits, trail facilities promote healthy lifestyles for people of all ages and backgrounds by providing easy access to safe, reliable infrastructure where they can recreate and exercise. Well-maintained and accessible systems are key elements of strong, safe, family-friendly communities and help to define community identity and appeal.

> "The built environment influences physical activity levels by contributing to safety and convenience of walking and bicycling. Poor accessibility contributes to sedentary behaviors that are associated with poor health outcomes such as obesity, diabetes, and cardiovascular disease."[4]

Improved Travel Time Reliability

US 169 serves as a Critical Rural Freight Corridor on the National Highway System and serves to connect Central Minnesota with the Twin Cities metropolitan area. It is a north/south US route out of the Twin Cities, serving numerous smaller communities, including the Mille Lacs Reservation (population 4,618), and the cities of Elk River (population 25,835), Zimmerman (population 5,228), Princton (population 4,819), Milaca (population 2,946), and others. Many residents of Sherburne County and beyond depend on the efficient function of US 169 to access job opportunities, healthcare, schools, recreation opportunities, places of worship, and everyday necessities.

4 *Use of Federal Funds for Bicycle and Pedestrian Efforts. US Department of Transportation. https://www.transportation.gov/mission/health/use-federal-funds-bicycle-pedestrian-efforts*

The existing signalized intersection at US 169/CR 4 creates major congestion and travel time reliability issues. It is common for mile-long backups to occur at the intersection during peak travel times, drastically slowing the flow of regional traffic that is passing through the City of Zimmerman. Congestion also limits and prevents easy access in and out of Zimmerman using US 169, the primary highway serving the community. Research has shown that traffic congestion negatively affects quality of life at both the household and regional level. "Households have both financial budgets and what is termed 'time budgets' that are both impacted by congestion. As vehicle operating and maintenance costs increase with rising congestion, the budget for some types of activities or expenditures decreases. The perceived 'quality of life' of a neighborhood is diminished as well, when the safety, reliability and the convenience of the transportation system decreases."

The US 169/CR 4 signal is the only remaining traffic signal on US 169 between the City of Rodgers and Lake Mille Lacs. According to the FHWA, intermittent disruptions of traffic flow by traffic control devices, such as the US 169 and CR 4 signal, can contribute to congestion and travel time variability even without the occurrence of a traffic influencing event (e.g. crash). The signalized intersection frequently creates reliability issues along US 169. Completion of this project will result in the full 75-mile corridor being signal free, allowing traffic to flow more freely. Removal of the traffic signal will reduce time spent idling, traffic delays, and emissions by allowing vehicles to move through the interchange more efficiently without stopping and accelerating. Installation of the interchange will also provide residents of Zimmerman easier and safer access to US 169.

SIGNAL-FREE TRAFFIC CORRIDOR: Converting the intersection to an interchange would **eliminate the last remaining traffic signal** on the 75-mile stretch of Hwy 169 between Rogers and Lake Mille Lacs.

4. IMPROVES MOBILITY AND COMMUNITY CONNECTIVITY

A key function of the US 169/CR 4 interchange project is to improve mobility and community connectivity. Currently, US 169 acts as a barrier to human movement, providing only an unsafe four-stage crossing for pedestrians and bicyclists. Specifically, there are no facilities in place to cross CR 4 and the only crossing facility for US 169 is a four-stage crossing located on the north side of CR 4. The nearest CR 4 crossing is located about 1,000 feet (almost 1/5th mile) west of the intersection.

The project will provide safe facilities for non-motorized travelers and provide efficient and safe crossing under US 169 for vehicles, pedestrians, and bicyclists. The project includes ADA-compliant pedestrian facilities along both sides of CR 4, that extend from the east side of US 169 into Zimmerman on the west of the highway. The pedestrian/bike improvements will include safe, well lit, crossing facilities that require pedestrians and bicyclists to cross no more than two lanes of traffic at a time.

Additionally, the proposed crossing will tie directly into the City of Zimmerman's multimodal infrastructure network, and will provide access to the Great Northern Trail from east of US 169 (see Figure 3). The Great Northern Trail runs north/south in Sherburne County, extending from Elk River to Zimmerman with plans to extend further north.

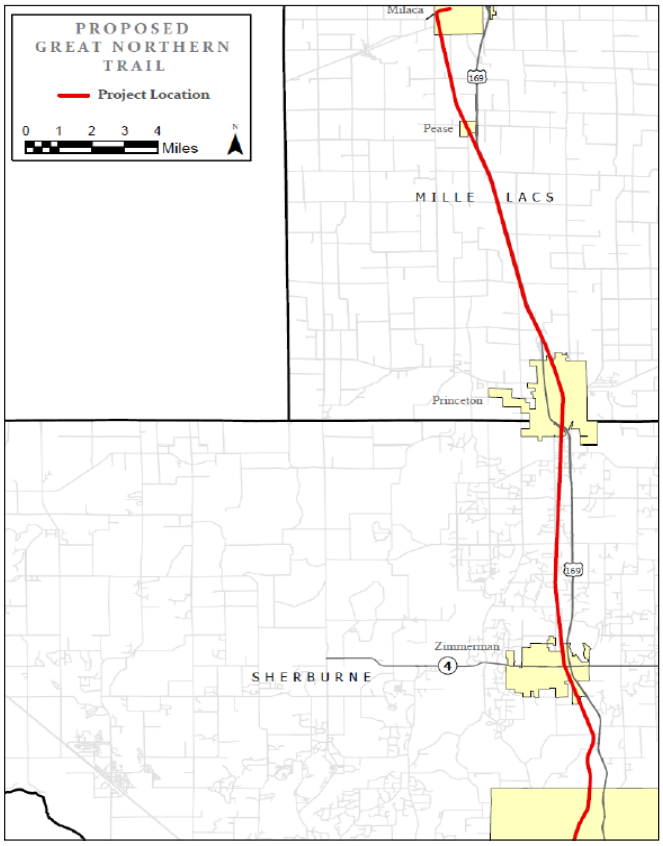


Figure 8 **Great Northern Trail**

Finally, as is discussed in detail in the Economic Competitiveness and Opportunity section, this project will contribute to improved freight movement along US 169. Replacing the signalized intersection with an interchange will allow freight to pass through Zimmerman without stopping and improve last mile freight access into Zimmerman by providing facilities with turning radii that will accommodate trucks.

5. ECONOMIC COMPETITIVENESS AND OPPORTUNITY

Freight Improvements

US 169 is a Critical Rural Freight Corridor and a part of the National Truck Network, extending north from the Twin Cities Metropolitan Area into Central Minnesota. Through Zimmerman, the roadway carries 3,950 trucks daily, which accounts for 14 percent of the total traffic volumes, exceeding typical truck percentages on most state highways. Commodities being hauled on US 169 include corn, soybeans, peas, dairy, cattle, hogs, and pigs, as well as nonmetallic minerals, farm products, food products, cut stone, and paper products. The Central Minnesota Freight Study projected that heavy commercial vehicle volumes would grow by 1.7 percent per year through 2034.[5] Without the project, these increased heavy commercial volumes will further intensify congestion and travel time reliability across this portion of US 169.

> US 169 serves as a critical trucking route in Central Minnesota and is the most heavily used non-interstate highway freight corridor in Sherburne County[6] According to 2020 counts, the road sees 3,950 heavy trucks per day, which is approximately 14 percent of total traffic.[7]

With the existing traffic volumes, the signalized intersection between US 169 and CR 4 limits freight mobility by creating timing, product quality, safety, and reliability issues for freight haulers. The congestion along this segment makes travel time unreliable, especially during peak hours, causing delays in freight delivery. According to the Federal Highway Administration, the trucking industry values transit travel time in the range of $25 – $200 per hour, and that delay costs are often passed on to consumers.[8] The project will improve freight movement efficiency along the US 169 corridor, reducing overall transit travel time.

5 *Central Minnesota Freight Study. Minnesota Department of Transportation. https://www.dot.state.mn.us/ofrw/freight/PDF/CentralMinnesotaFreightStudy.pdf*
6 *District 3 Freight Plan. Minnesota Department of Transportation. January 2020. https://www.dot.state.mn.us/ofrw/freight/PDF/d3plan/freight-plan.pdf*
7 *Traffic Mapping Application. Minnesota Department of Transportation. https://www.dot.state.mn.us/traffic/data/tma.html*
8 *Traffic Congestion and Reliability: Trends and Advanced Strategies for Congestion Mitigation. US Federal Highway Administration. https://ops.fhwa.dot.gov/congestion_report/chapter2.htm*

Additionally, freight traffic along this section of US 169 is often forced to interact with unsafe pavement conditions, narrow lanes, inadequate shoulders, and crash related delays. Trucks are also met with inadequate turning radii when entering and exiting US 169 from CR 4. As the county grows over the coming years, these congestions issues will increase significantly, creating additional delays at the intersection.

Replacing the signalized intersection at US 169 and CR 4 with an interchange will allow freight to pass through the City of Zimmerman without stopping and, by alleviating problematic turning radii and installing on and off ramps, will allow large trucks to enter and exit US 169 at the CR 4 intersection more easily.

Commuting Corridor

US 169 also serves as a key link between rural communities in Sherburne County and job opportunities in the Twin Cities Metropolitan Area. As the primary principal north/south arterial roadway through rural Sherburne County, residents depend on US 169 as a safe and reliable transportation option for a variety of multimodal transportation types.

On average, Zimmerman and Sherburne County residents spend more time commuting to their place of employment than the state average. Zimmerman residents commute 37 minutes to their place of employment, Sherburne County residents commute 32 minutes, whereas Minnesota residents commute only 24 minutes.[9]

Most employed City of Zimmerman and Sherburne County residents commute outside of the city or county to access their place of employment. Specifically, 94 percent (2,736 people) of employed Zimerman residents commute outside of the city for employment, while only 6 percent (169 people) live and work in Zimmerman. Approximately 79 percent (37,759) of Sherburne County's employed residents work outside the county.

Table 3 Commuting Patterns, City of Zimmerman and Sherburne County, 2019

	City of Zimmerman		Sherburne County	
	Count	Percent	Count	Percent
Work in the Area	1,312	100%	23,748	100%
Commute into the Area	1,143	87%	13,784	58%
Live and Work in the Area	169	13%	9,964	42%
Live in the Area	2,905	100%	47,723	100%
Commute out of the Area	2,736	94%	37,759	79%
Live and Work in the Area	169	6%	9,964	21%

Source: OnTheMap.ces.census.gov

Most people who commute out of Zimmerman and Sherburne County travel south to access their place of employment (see Figure 4). Those commuters are dependent on the function of US 169 to access job opportunities. The US 169/CR 4 interchange project will improve access to employment for residents of the City of Zimmerman and Sherburne County by allowing them to access US 169 more easily and safely. It will also reduce travel time reliability for those commuters by creating better traffic flow. These improvements will result in a reduction of commuting time for Sherburne County residents and provide a more safe and efficient connection to the major employment hubs in the Minneapolis/St. Paul metro area.

9 American Community Survey 2021 5-year Estimates. US Census Bureau. https://data.census.gov/cedsci/

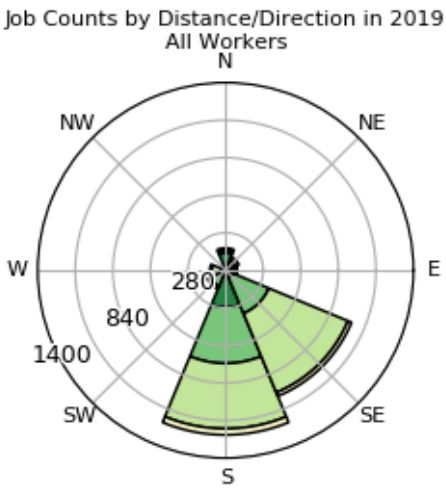


Figure 9 Distance and Direction of travel for Zimmerman Commuters, 2019

Commercial Development Access

The uncertain future of the intersection and poor access limit the potential sale and development of commercial property along US 169 in the City of Zimmerman. The US 169/CR4 intersection is located within the City's Development District No. 1 and provides access to seven Tax Increment Financing Districts (TIF).[10] An efficient road network and access to US 169 would support Sherburne County's economic vitality for existing commerce and planned commercial and industrial growth. The US 169/CR 4 interchange project will provide controlled and safe access on and off US 169 and will support future development of approximately 140 acres of commercially zoned land that is adjacent to the highway.

6. STATE OF GOOD REPAIR

Poor roadway condition adds to the limited mobility of freight vehicles, often limiting their ability to transport goods in a time efficient and high-quality manner and causing delivery drivers to travel at reduced speeds. Several freight facilities along the corridor have reported that their freight loads often shift or bounce along this segment, leading to damaged products and increased costs.

Sherburne County has extensive experience with managing roadway improvement projects and has worked with MnDOT on numerous highway improvement projects. In coordination with MnDOT, the County has identified the anticipated cost estimates to effectively operate and maintain the Project Corridor once it is constructed. MnDOT will be responsible for the operation and maintenance of the US highway and has dedicated funding available to ensure the roadway is properly maintained. MnDOT will operate and maintain the US 169/CR 4 interchange as it does the 12,000-mile state highway system. Long-term maintenance operations will be performed by MnDOT based upon its typical maintenance schedule for bituminous roadways.

The initial project design included in past grant applications required substantial right-of-way needs and footprint expansion. Since then, Sherburne County has participated in USDOT debriefs and has modified the project based on the feedback provided to better reflect updated priorities as identified in the Notice of Funding Opportunity. In particular, the project incorporates context sensitive design features to minimize the need to acquire additional right-of-way and fitting the project within the existing footprint of the roadway.

7. PARTNERSHIP AND COLLABORATION

Sherburne County is the project sponsor of this FY 2023 RAISE grant application. The County has been a proactive leader and advocate for this Project for several years, as demonstrated by several past BUILD, INFRA, and Rural application submittals. The County has extensive experience with procuring and developing transportation improvement projects including several state and federally funded projects. The County's 2040 Comprehensive Plan prioritizes major future transportation investments and identifies potential fiscal resources to advance these projects.

10 Redevelopment District No. 1. City of Zimmerman. https://zimmerman.govoffice.com/vertical/sites/%7BE3C534B1-3B55-4FDD-B367-44985F320A41%7D/uploads/%7BB7C17EEF-D2A3-4F60-B383-3B51B20DD97B%7D.PDF

Project Partners

Partners on this project include MnDOT and the City of Zimmerman. MnDOT is a dedicated partner in this project. MnDOT has established a firm commitment of investment towards improving the US 169 corridor and has participated in the NEPA environmental review process and development of the final design.

Sherburne County and MnDOT have successfully partnered on more than $170 million in roadway construction projects along this corridor, including the Corridor of Commerce project 169 Redefine through Elk River - involving the removal of five signals and construction of four grade separated interchanges.

Community Engagement

Sherburne County is committed to engaging residents and community members to share information and solicit feedback on the project. The project went through the Federal NEPA process including all associated public review. Additionally, the project website includes all pertinent information and the County has held two open houses (June 2022 and November 2022) to solicit feedback on the project from community members and businesses.

- June 14, 2022: Meeting attendees were asked to provide feedback on three preliminary design options. Approximately 45 people attended the meeting, and 130 comments were received. The design alternative included in this grant proposal received the most support from the public (see June 2022 Open House Summary).
- November 30, 2022: Meeting attendees were asked to review and provide feedback on the preferred project design. Approximately 85 people attended the meeting, and 50 comments were submitted (see November 2022 Open House Summary).

The County plans to hold at least one more open house in Summer 2023 to share final design details and to share with community members and businesses what can be expected during construction.

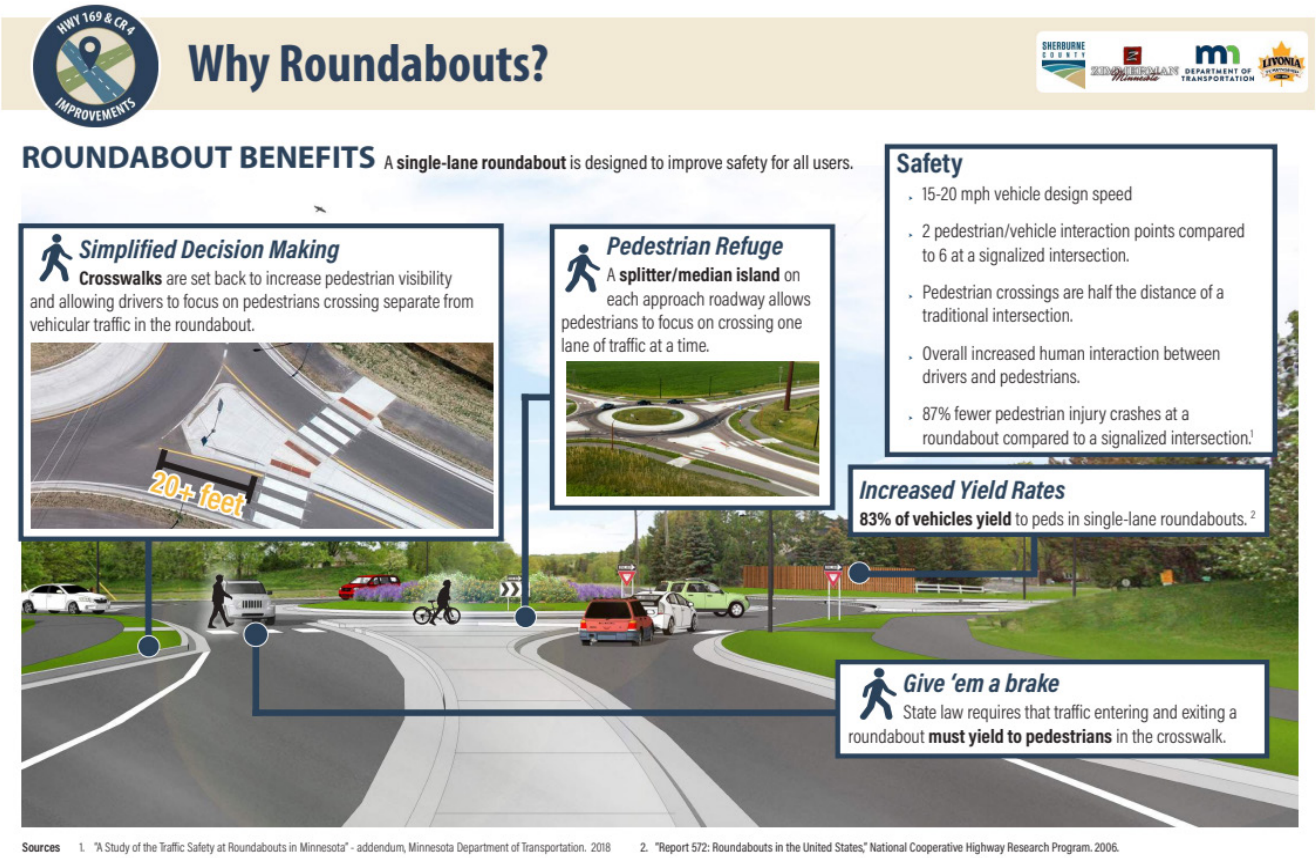


Figure 10 June 2022 Open House Example Information Board

8. INNOVATION

Innovative Technology

Intelligent Transportation Systems (ITS)

The Project will include Intelligent Transportation Systems (ITS) elements. ITS technologies advance transportation safety, mobility, and efficiency by integrating advanced technologies into transportation infrastructure or vehicles. ITS encompasses a broad range of electronic communication and sensing technologies but traditionally includes elements such as dynamic message signs, CCTV cameras, and vehicle detection. By deploying these ITS elements along US 169, the County can collect and share information such as travel times, alternate routes, and incidents. These enhance driver awareness and allow drivers to make informed decisions while traveling. They can also be used for incident management purposes such as identifying crashes, detecting queued traffic, and emergency response.

The US 169/CR 4 interchange project will explore installation of wireless dynamic message signs that provide real-time traffic advisory and route guidance information to road users. By providing information to road users in advance, congestion is reduced, and safety is improved when an incident occurs or in the event of poor road or weather conditions.

Fiber Optic Conduit Installation

Since 2018, the Sherburne County Public Works Department has installed conduit in strategic areas throughout the county as part of several road projects that are included within County Road improvement plans. The program allows the County to "dig once" and facilitate the expansion of broadband service for County residents, businesses, institutions, and public facilities. Updating broadband services concurrent with road projects allows the County to reduce overall project costs and construction disruptions. These efforts will be continued as a part of the US 169/CR 4 interchange project and will further goals to expand the communications network throughout the county.

Innovative Project Delivery

Civil Information Management (CIM) Software

During public engagement of this project, project designers used innovative Civil Information Management (CIM) software. The software uses embedded 3D visualization to allow designers to visualize impacts while completing preliminary modeling. This allows stakeholders and partners to better understand impacts and make more informed decisions about the corridor.

The US 169/CR 4 interchange project will continue to utilize CIM software to model and visualize the project and provide increased transparency for the public Transparency will enable owners, consultants, contractors, and stakeholders to work together to identify and complete design adjustments to ensure the best alternatives. This enables effective conflict detection, rapid design review, and will reduce project timelines and overall costs.

Best Value Procurement

Since 2007, public agencies in Minnesota have been encouraged to use the best value method to procure construction contracts. MnDOT and related transportation agencies utilize the best value procurement process to deliver high-quality projects faster and more cost effectively by awarding contracts based on quality rather than price alone. Sherburne County would prefer to utilize best value procurement which will help the Project deliver long-term benefits on an efficient schedule and budget. Sherburne County has participated in projects that have utilized the best value procurement process and will consider applying this procurement process for this Project.

Construction Manager/General Contractor Procurement

As the project sponsor, Sherburne County will lead the procurement process for the US 169/CR 4 interchange project. The County intends to utilize a Construction Manager/General Contractor (CM/GC) approach. Through the CM/GC process, Sherburne County would select a contractor to collaborate with the design and the County during the design phase to identify risks, provide cost projections, and refine the project schedule. This approach has been found to expedite design, reduce construction time, and limit project risks.

CM/GC has been utilized to complete the design and construction for other projects along US 169, including for interchange projects in the City of Elk River. Sherburne County and MnDOT are experienced with this approach and have

found it to be successful in enhancing designer-contractor collaboration, reducing project costs, and optimizing the project schedule. CM/GC has been identified by the FHWA Center for Accelerating Innovation as an Every Day Counts initiative for accelerating project delivery.[11]

Accelerated Bridge Construction

MnDOT has specifically identified the US 169/CR 4 interchange as a suitable candidate to employ Accelerated Bridge Construction (ABC) technologies to expedite construction. ABC techniques could be used to construct the CR 4 bridge over US 169 while minimizing traffic delays, road closures, and potentially reduce project costs. The FHWA Every Day Counts initiative has identified ABC technologies as an effective method to accelerate project delivery.

Implementing ABC methods presents unique challenges and opportunities. The advantages vary by project and location but can result in increased safety, less traffic disruption, higher bridge quality, fewer environmental impacts, and increased infrastructure value. Possible ABC techniques for the CR 4 bridge include:

- Slide-In Bridge Construction (SIBC) – To use SIBC, the bridge is constructed on temporary supports. Once complete, it is slid into place, tied into the approaches, and paved within 48-72 hours.
- Prefabricated Bridge Elements and Systems (PBES) – PBES utilizes non-traditional items such as full-depth bridge decks, prefabricated bridge deck pieces, and beam units which allow for expedited construction timelines and save the projects several months of construction time and cost. [12]

Innovative Financing

In 2018, the Sherburne County Board of Commissioners approved resolutions to implement a 0.5 percent sales tax to create a new, dedicated, non-federal transportation fund. Since its adoption, this funding source has generated approximately $6.5 million in tax revenue per year to fund specific high-priority transportation projects, including the US 169/CR 4 interchange project. This dedicated transportation funding source will allow the County to provide a local match to state and federal funding for critical infrastructure projects.

In addition, the County has secured $7 million in Federal Congressionally Directed Funding from Senator Klobuchar, Senator Smith, and Representative Emmer, with bipartisan support.

A RAISE grant award will fill a funding gap and enable the County to leverage existing non-federal and Federal funding to implement all safety and mobility improvements.

All supporting documents and the RAISE grant application narrative are also available to view at the following webpage:

https://www.srfconsulting.com/sherburne-county-us-169/

11 FHWA Center for Accelerating Innovation. Construction Manager/General Contractor. https://www.fhwa.dot.gov/innovation/everydaycounts/edc-2/cmgc.cfm

12 FHWA Center for Accelerating Innovation. Accelerated Bridge Construction. https://www.fhwa.dot.gov/innovation/everydaycounts/edc-2/abc.cfm