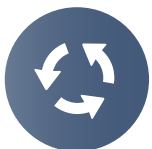




US Highway 8 Reconstruction Project

Submitted by Chisago County, Minnesota

MERIT CRITERIA



Safety



Mobility



Multimodal/ADA



Wildlife



Drainage



Fiber Optics

Project Name **US Highway 8 Reconstruction Project**

Project Type **Rural Capital - Road, Repair/Rehabilitation**

Total Eligible Cost **\$80.5M**

2023 RAISE Funds Requested **\$20M**

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Supporting Information can be found at:

<https://www.srfconsulting.com/chisago-county-mn-us-hwy-8-raise/>



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MERIT CRITERIA

Safety

The safety of all users using the transportation system is critically important towards achieving the goals of MnDOT’s [Towards Zero Deaths program](#). On September 30, 2018, a violent crash occurred at US 8 and East Viking Boulevard where two vehicles were totaled, and injuries reported. Figure 1 provided by the Washington County Sheriff depicts the condition of both vehicles at the scene and the devastating aftermath.

Minnesota’s [2014-2019 Strategic Highway Safety Plan \(SHSP\)](#) examines the distribution of severe crashes across roadway types and identifies specific design and engineering strategies that can reduce deaths. From 2008 to 2012, rural roadways in Minnesota accounted for 1,126 severe crashes at intersections, or 38 percent of the state total. Of these, over two-thirds (763) occurred on two-lane roads with speed limits of 45 mph or greater. The Project is a two-lane highway with a speed limit of 55 mph and has experienced an average of 39 crashes per year between 2017 to 2021, as well as a total of seven crashes involving freight vehicles and one bicycle crash at James Avenue intersection, during this time.

High Crash Corridor

The Project area experienced multiple crashes including fatalities and major incapacitating injuries. From 2017 to 2021, nearly 193 crashes occurred of which two were fatal crashes and approximately 3.5 percent involved a vehicle moving freight, such as a semi-truck. An average of 21 crashes per year occurred along the Project’s segments and 18 crashes per year occurred within the Project’s intersections. Figures 2 and 3 show the segment and Figures 4 and 5 show intersection crashes by year and type, respectively.



Figure 2 Segment Crashes by Year

CRASHES

193 crashes between 2017 and 2021



Figure 1 US 8 and E. Viking Blvd Crash – Washington County Sheriff

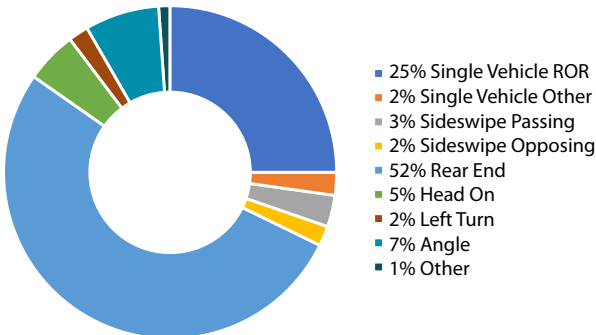


Figure 3 Segment Crashes by Severity

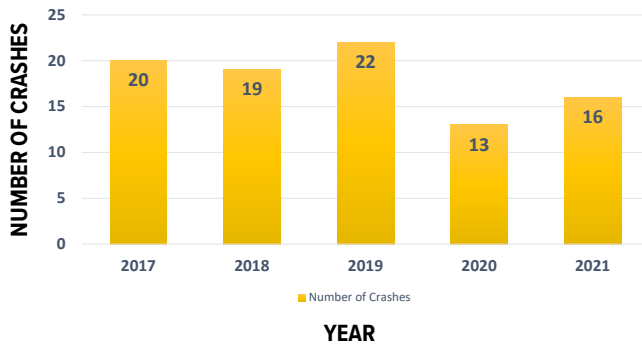


Figure 4 Intersection Crashes by Year

Two intersections along the Project, Greenway Avenue and Viking Boulevard, were identified as exceeding the critical crash rate (Table 1). Critical indexes above 1.00 indicate there is likely an existing safety concern at the intersection.

The existing geometry of the Project contributes to the safety issues which include:

- Transition from two to four lanes
- Number of access points (60) of which half are private commercial and residential driveways
- Lack of turn lanes
- Traffic turning onto US 8 with limited gaps
- Lack of passing lanes
- Lack of intersection capacity

With volumes along the Project expected to increase by six percent of the current traffic volumes over the next 20 years, traffic operations will become more difficult to manage, further increasing the number of potential crashes. A map of all crashes and their severity can be found in [Figure 6](#).

“ On a daily basis I see drivers taking risks, such as illegally passing on the shoulder, which often results in a serious crash.

– Sheriff Brandon Thyen, Chisago County Sheriff’s Office

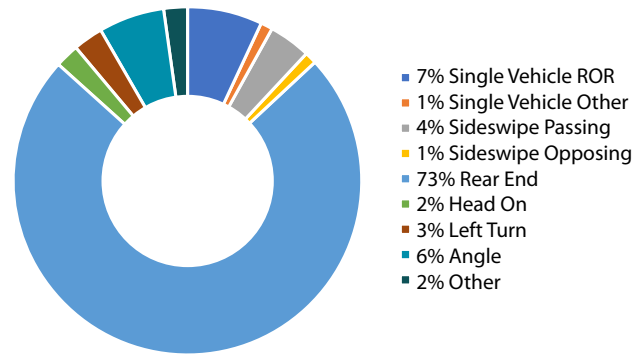


Figure 5 Intersection Crashes by Severity

Table 1 Actual & Critical Crash Rates

Location	Actual Crash Rate	Critical Crash Rate
TH 8 & Greenway Ave	0.74	0.61
TH 8 & Heath Ave	0.05	0.18
TH 8 & Pioneer Rd	0.32	0.61
TH 8 & Viking Blvd	0.99	0.66
TH 8 & Deer Garden Ln	0.03	0.20
TH 8 & Karmel Ave	0.12	0.24
TH 8 & Hale Ave N	0.05	0.19
TH 8 & James Ave	0.11	0.21
TH 8 & 276th St	0.00	0.21

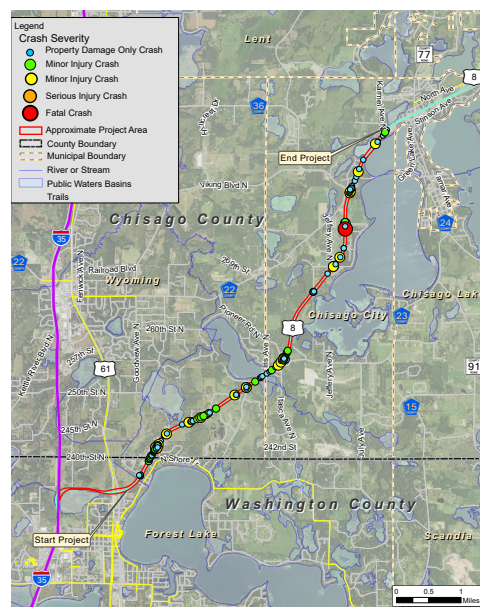


Figure 6 [Crashes along US 8 \(2017-2021\)](#)

The lack of turning and passing lanes in the existing corridor leads to unsafe driving conditions that are both illegal and dangerous. In absence of a left turn lane, vehicles must come to a complete stop in the middle of a high-speed corridor to make a left turn. This is a major safety concern which is being addressed by the proposed improvements in this Project. In absence of passing lanes, vehicles behind the stopped vehicle tend to pass using shoulders which results in otherwise avoidable crashes. The Project incorporates design elements such as construction of dedicated turn lanes, passing lanes, reduced conflict intersections (RCIs), roundabouts (RAB), and consolidation of access points that will enhance the safety of the corridor. The eight foot wide shoulders will provide room for vehicles to pull over in case of emergencies. The Project will result in a crash cost saving of \$111 million over the next 20 years as demonstrated in the [BCA Memo](#) [PDF].

Reducing Access Points within the Project Corridor



Figure 7 Private Access along the Project

The public and private intersections and access points along the Project corridor pose safety and mobility issues. Currently, 60 public and private access points exist along the Project corridor leading to as many as 11 accesses per mile in some segments. This far exceeds MnDOT's access management guidance for a principal arterial roadway which states a principal arterial should have full-movement and secondary intersections spaced at one mile and 1/2 mile, respectively. An inventory map of all existing accesses along the Project corridor is linked [here](#) and a table of summary of access spacing is [here](#). Most of these access points lack any traffic control and therefore, results in congestion due to limited gaps in traffic along US 8. The total number of access points will be reduced on the corridor by adding consolidated and/or off-street access points thereby improving the intersection safety and efficiency of thru traffic movement. The Project will close and redirect 40 residential direct accesses and 13 roadway access points.

Environmental Sustainability

The Project will avoid adverse environmental impacts to air and water quality, wetlands, and threatened and protected species in the region.

**US Highway 8 Reconstruction Project
incorporates Environmental Sustainability
in both Project Planning Efforts and Project
Elements.**

Climate Action Plan

In 2007, Minnesota passed the bi-partisan Next Generation Energy Act (NGEA) that established goals for the state to reduce greenhouse gas (GHG) emissions by 15% below 2005 levels by 2015, 30% by 2025, and 80% by 2050 compared to a 2005 baseline. MnDOT was the **first state agency** to apply the [Next Generation Energy Act GHG reduction goals](#) to all agency operations, including fleet fuel use and electricity. In 2020, MnDOT began quantifying GHG emissions as part of the environmental review process. Chisago County identifies Sustainability as one of the goals in the agency's 2016-2026 [Comprehensive Plan](#). The County aims to continue economic growth while protecting natural resource systems and providing a high quality of life. The Project is currently going through an extensive NEPA Environmental Review that will be completed by December 2023.

Environmental Justice Analysis

As part of the Project Development Process and in compliance with Executive Order (E.O.) 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, the Project underwent an Environmental Justice (EJ) Analysis. The data for the analysis was determined using the 2014-2018 American Community Survey 5-Year Estimates, field review, input from local agency partners, and extensive public outreach to identify locations of low-income and/or minority residents. The analysis found that the communities within the project area have a [low-income population present](#) adjacent to the south side of US 8 on the far west end of the project.

The EJ analysis found that the project would not result in disproportionately high and adverse human health or environmental effects on the low-income population. The proposed project improvements adjacent to block groups with the low-income

population is limited to pavement preservation within the existing right of way. It is not anticipated that the project would require right of way acquisition within block groups where the low-income population is present. The project will improve pavement condition, vehicular safety and mobility, and expand sidewalk/trail facilities.

Avoiding Adverse Environmental Impacts

The Project is near numerous water resources including jurisdictional ditches, the Sunrise River, Forest Lake, Comfort Lake, Lake Ellen, and Green Lake. One of the top priorities of the Project is to balance the environmental impacts with roadway enhancements and selecting a design alternative that reflects the same. An air quality analysis was conducted as part of the environmental assessment (EA) and it was found that the Project would not result in adverse air quality impacts.

The Project will minimize the stormwater runoff and its impacts on existing systems by performing a hydraulic analysis. In some

areas, smaller ditches or curb and gutter sections will be used to reduce impacts to wetlands and lakes. In addition, the maintenance associated with stormwater management system requires a significant amount of resources. The Project design goal is to minimize future maintenance, thereby, reducing energy use and enhancing financial sustainability of the transportation infrastructure through improved stormwater Best Management Practices (BMPs).

The Project will result in wetland impacts. As the design progresses, opportunities to minimize impacts to wetland and DNR Public Waters are being considered. Impacts to adjacent public waters have largely been minimized to the edge of the public waters. Time of year restrictions will be implemented during fish migration and spawning. Erosion control measures will be implemented during construction to minimize temporary impacts.

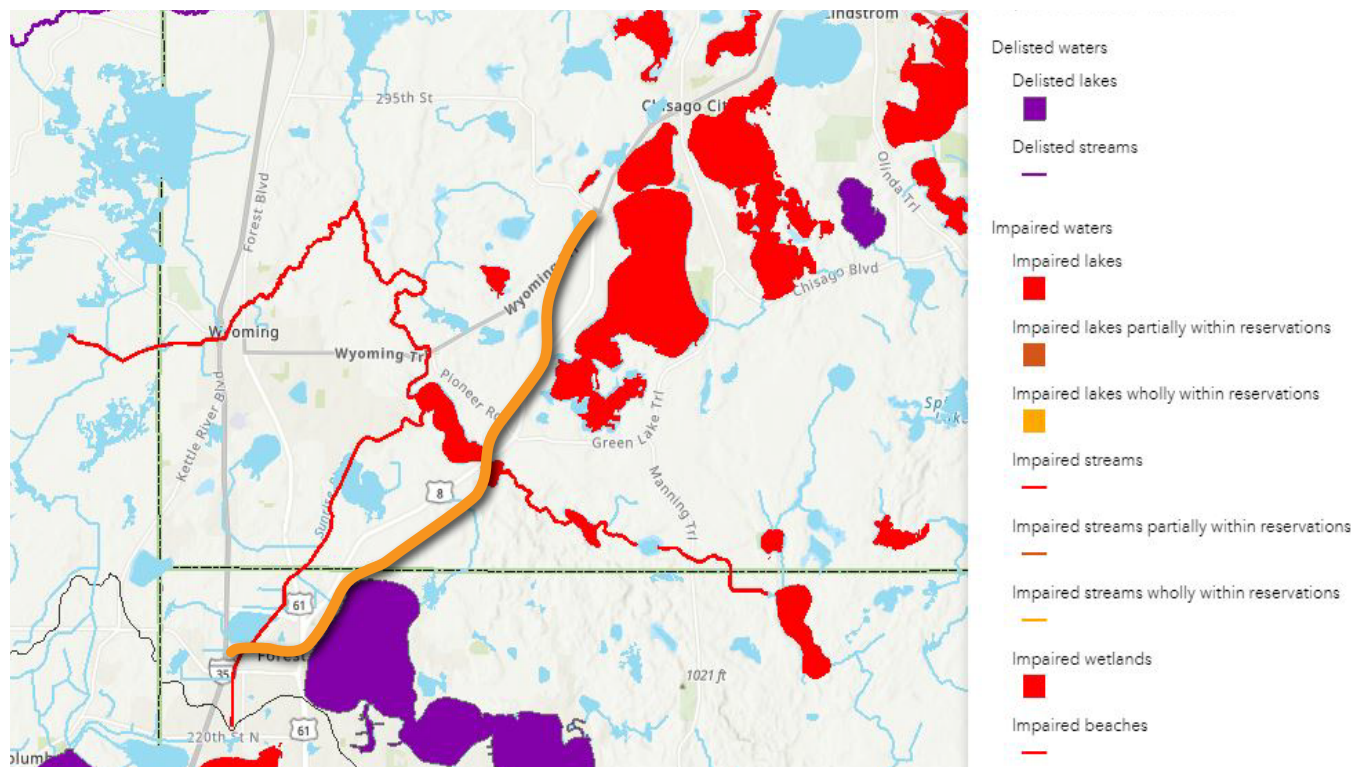


Figure 8 Impaired Waters

Avoidance and minimization measures will be implemented to avoid adverse impacts to threatened and protected species, including the northern long-eared bat (federally listed) and Blanding's turtle (state listed). The Department of Natural Resources (DNR) has reviewed the Project and recommended conservation measures. Conservation measures implemented for the northern long-eared bat include tree

clearing time of year restrictions (limited to the winter season). The Project will incorporate sloped curb sections to minimize impacts to Blanding's turtles (allow turtles to cross the road). Other measures, such as culvert sizing minimum requirements, will be incorporated into the design where appropriate to accommodate safe passage for small animal species under the road. Culvert-related conservation

measures will be determined as the design advances.

Reducing GHG Emissions

A greenhouse gas (GHG) analysis is currently underway as part of the EA. The analysis calculates operational emissions and construction emissions. Capacity issues along US 8 cause significant mobility and safety issues for travelers. The existing traffic volume currently causes operational concerns, especially at Greenway Road, Pioneer

Road, Viking Blvd and 270th Street intersections as seen via the links for the [AM](#) and [PM](#) peak hours. Up to 23,000 vehicles per day currently travel through Project segments, of which 2,300 are commercial vehicles. According to a recent traffic study, the Project area is currently near or at capacity while the 2040 no build forecasts are at, or exceeding capacity as seen in Table 2.

Table 2 Project Existing and Future Volume-to-Capacity

TH 8 Location	Facility Type	Capacity	Existing 2017 ADT	Forecasted 2040 ADT	1.3% Growth Rate Method	2017 Volume-to-Capacity	2040 Volume-to-Capacity
West of TH 61 (Forest Lake)	4-lane divided	32,000	21,900	29,500	1.30%	0.68	0.92
East of TH 61 (Forest Lake)	2-lane undivided rural	15,000	20,600	27,700	1.30%	1.37	1.85
West of CSAH 36 (Chisago City)	2-lane undivided rural	15,000	14,500	19,500	1.30%	0.97	1.30
East of CSAH 36 (Chisago City)	2-lane undivided rural	15,000	17,700	23,800	1.30%	1.18	1.59

Volume/Capacity Ratio ■ 0.85-1.00 Near Congested ■ 1.00+ Congested

An initial analysis found that the operational improvements along the Project will reduce vehicle hours traveled (VHT) by passenger cars as well as freight traffic in the project area by 0.3 percent leading to less idling and fewer GHG emissions per vehicle trip. Overall CO2 emissions will decrease by 0.3 percent in the Build scenario versus the No Build scenario in 2040. Providing safe and operationally efficient access to employment centers, commercial hubs, and recreation areas not only improves the economic competitiveness of the area, but also benefits the air quality for communities along the Project. Adding capacity to the roadway will reduce congestion and delay consequently reducing the burden associated with traveling on the corridor for commuting, recreation, and passing through purposes. As a result of the Project, users will benefit \$20.4 million from regional travel time cost savings over the next 20 years, as shown in the BCA. Moreover, the Project will consider financial and environmental sustainability through pavement preservation techniques wherever possible.

Enhancing the Multimodal Network

In addition to roadway improvements, the trail network will be expanded to connect to [SIRT](#) and will encourage use of active transportation through walking and biking. Construction of the 10 feet wide multiuse trail along the north side of US 8 will enhance the multimodal network for pedestrians, bicyclists, and individuals of all ages and abilities. An increase in these modes would reduce

the share of travel devoted to automobiles decreasing emissions and vehicle miles traveled (VMT). [Studies](#) have shown that there is a reduction of 5 to 15 percent of VMT when pedestrian or bicycle facilities are offered in lieu of automobile transportation..

Improving Resiliency and Disaster Preparedness

The Project will expand roadway capacity on US 8 which will improve mobility in the event of a disaster. The Project is adjacent to floodplain areas. Stormwater BMPs will be employed to improve drainage. Implementing BMPs temporarily detains a large portion of the runoff volume and releases it at a slow rate, which limits flooding. Floodplain impacts will also be mitigated as needed. The proposed improvements will prepare US 8 to construct and maintain a resilient infrastructure and efficiently manage traffic movement in case of an emergency.

Quality of Life

Increasing Transportation Choices and Equity for Individuals

Over the years, the travel demand on US 8 has grown considerably. Chisago County is viewed by many as a reasonable commuting distance to the Twin Cities, particularly due to connections to Interstate 35 and the growth of commercial development in the northern Twin Cities. In general, most of the existing population in the county resides in either small cities or unincorporated areas,

which has transformed to traditionally agricultural and resort-based communities into a commuter shed for the Twin Cities Metropolitan area. The Project will improve mobility and safety along the US 8 Corridor by reducing congestion, improving pedestrian and bicycle circulation, and developing access for multimodal transit network in the region, which in turn will improve the quality of life in Chisago County.

Currently, there are no existing separate pedestrian and bicycle facilities along the US 8 corridor. Pedestrians and bicyclists use the 10 feet wide shoulders next to the high-volume, high-speed two-lane rural section roadway. Moreover, there are right-turn lanes at many of the at grade intersections along US 8. There are no paved shoulders adjacent to the right-turn lanes and pedestrians and bicyclists share the right-turn lanes with vehicular traffic. There were 90 reported intersection crashes in a five-year period from 2017 to 2021 for nine public street intersections along US 8 in the project corridor. Of these, four crashes involved freight. One of the crashes resulted in severe injuries.

The construction of two new pedestrian underpasses and multiuse trail with ADA upgrades will enhance the regional trail network of SIRT in Chisago County and beyond. SIRT will run east to west across Chisago County to the Wisconsin border. Portions of the trail exist today east of the Chisago City. The trail provides important regional

recreational connections and a safe transportation alternative for pedestrians and bicyclists. It will connect to additional regional trails including the Sunrise Prairie Regional Trail and the Hardrock Creek Trail. This Project will construct a multiuse trail on the north side of US 8 along an off-street facility, which will serve to develop the east-west connection. The new underpasses and trail will enhance the multimodal mobility for commuting and recreating between several cities and parks in Minnesota and Wisconsin allowing access to diverse natural and cultural communities.



Chisago County is served by the Arrowhead Transit

service, which provides residents with curb-to-curb service. The rural transit operates Monday thru Friday from 6:00 a.m. to 5:30 p.m. by reservation along US 8. The Project will improve efficiency of Arrowhead Transit to Running Aces Park-n-Ride by reducing congestion by 3 percent and reducing delay by approximately 60 seconds. The construction of the new underpasses and multiuse trail under this Project will enhance the access to Arrowhead Transit service for pedestrians, bicyclists, and users of all ages and abilities through the transit stops and stations.

The Benefit Cost Analysis for the Project shows a cost saving of \$1.3 million in Quality of Life benefits, over 20 years, as shown in Table 3.

Table 3 Quality of Life Benefits

Annual Quality of Life (QoL) Benefits					Total Benefits	
Mobility Cost Savings	Mortality Cost Savings	Recreation Cost Savings	Cycling Facility Improvement Cost Savings	Congestion Cost Savings	QoL	7% Discount
\$493,792	\$872,380	\$1,696,490	\$502,473	\$15,157	\$3,580,292	\$1,266,515

Mobility and Community Connectivity

Improving Connectivity through Regional and Rural Mobility

US 8 serves a rich diversity of roadway users that includes commuters, vacationers, business patrons, and local community members. According to MnDOT's 2018 Streetlight Insight transportation study along the Project, 63 percent of personal vehicles passing through the corridor travel west to further destinations south towards the Twin Cities or further to the west, while 36 percent of commuters

travel through the Project corridor traveling north and further east to neighboring cities or the Wisconsin border. Personal trips with destinations along the Project corridor range between 37 to 64 percent of the total trips, depending on their origin (Figure 9). Of the total daily traffic on the Project corridor, 10 percent are freight.

Homeownership is relatively high in the communities within the Project area at approximately 75 percent. The average commute time to workplaces is nearly half an hour. This data suggests that community members are invested long-term in their communities and likely use US 8 on a regular basis. Further, the type and density

of adjacent development has generated a high level of short distance local trips, a demand for a high level of access, and high volumes of turning traffic. These characteristics combined with the large volume of through traffic have resulted in concerns for the quality of traffic operations, slower travel speeds for through vehicles traveling along the corridor, and long delays for local traffic on the minor street approaches to US 8. Improving the congestion and delay along the Project will improve connectivity to jobs, health care, and other critical destinations for all users.

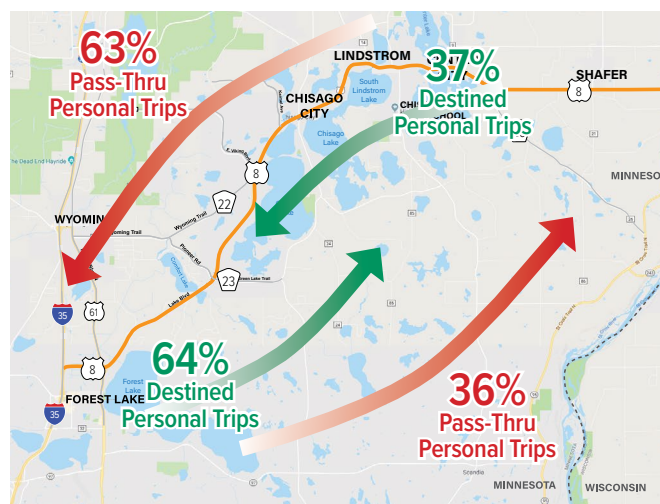


Figure 9 Personal Trips - Origin and Destinations

Bridging the Gap in Multimodal Connectivity

The Project bridges a significant gap in multimodal connectivity by constructing a multiuse trail that will enhance the regional trail network in Chisago County and beyond. The Project will also construct two new underpasses. Currently there are no existing separate pedestrian and bicycle facilities along the US 8 corridor. A 20-mile, multiuse trail known as the Swedish Immigrant Regional Trail (SIRT) is under development in the County. The SIRT is partially built east of the Project, and when [completed](#), will connect 20 miles across Chisago County from existing regional trails at I-35 to the Saint Croix National Scenic Riverway in Taylors Falls. The new trail and underpasses will support pedestrian and bicycle mobility for commuting and recreating between several cities and parks allowing access to diverse natural and cultural communities. Moreover, the trail will directly support the local rural economy by allowing visitors access to businesses, lakes, and recreation areas by foot or bicycle.

Economic Competitiveness and Opportunity



**WITHIN 2
MILES OF THE
PROJECT**



6,000 JOBS



**60 FREIGHT
DEPENDENT
BUSINESSES**

Significant Regional and National Transportation Network

The Project decreases transportation cost and improves access for all users including freight and commuters. US 8 is an important commuter and freight corridor, facilitating connections between the Minneapolis-St. Paul region via I-35, and rural communities in Minnesota and northern Wisconsin. This region provides connections to vital destinations which leads to the creation of an over-demand on the roadways. The Project would improve the roadway stress, alleviate congestion, and help in transportation needs for commuters and freight operation.



MnDOT designated US 8 as a part of the Minnesota Twin Trailer Network which is an approved statewide network for twin trailer combinations in addition to the National Truck Network. The designation implies that the highway can provide adequate geometrics for commercial truck drivers of such vehicle combinations. The proposed improvements will allow US 8 to better conform to this designation by improving intersection and roadway geometrics. The designation illustrates MnDOT's focus on US 8 as a key freight connector for the State of Minnesota as well as the key connection it provides to rural northern Wisconsin. The Project also connects freight vehicles to I-35 which is a key corridor to the Port of Duluth, Minneapolis-St. Paul, and other regional destinations.

As seen in MnDOT's 2018 Streetlight Insight Transportation study data (Figure 10), about 19 percent of all westbound and 41 percent of all eastbound commercial trips made along the Project corridor are locally destined, which emphasizes the local commercial importance of the corridor. The remaining 81 percent of commercial trips originating east of the Project corridor and 59 percent of commercial trips originating west of the Project corridor pass through, which signify the regional and inter-state commercial significance. The Project will improve traveling efficiency for these commercial vehicles accessing local businesses and regional destinations in Minnesota and Wisconsin.

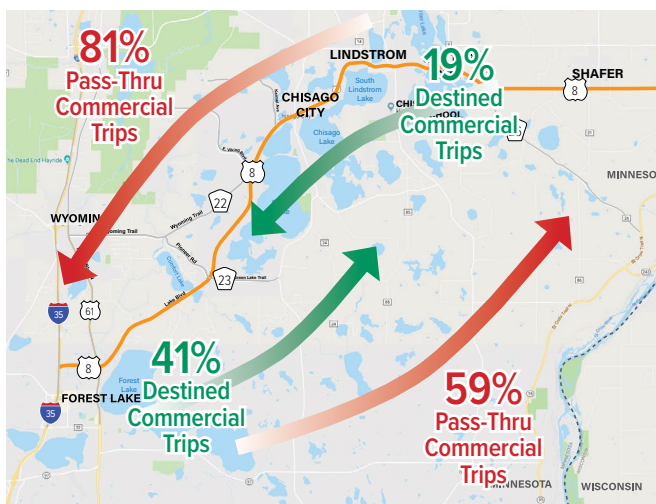


Figure 10 Commercial Trips - Origin and Destinations

Capacity issues exist along US 8 with current traffic volumes which hinders the mobility of freight and other motorists using the corridor. Based on 2019 MnDOT traffic data, existing annual average daily traffic (AADT) on US 8 ranges from 14,500 to 23,000 vehicles, and up to 2,300 commercial vehicles in certain segments. In portions of the Project, heavy commercial vehicles represent up to 14 percent of total daily traffic.¹ Projected traffic volumes will increase to 19,500 to 29,500 vehicles per day in 20 years. Based on the standard maximum daily capacity threshold of 15,000 vehicles per day for a two-lane, undivided rural highway, existing volumes already meet or exceed capacity of the roadway and projected volumes will nearly double the roadway's capacity. As the capacity is exceeded, congestion will slowdown freight movement and negatively impact local businesses while also causing significant safety concerns. Limited gaps in traffic inherently force drivers to consider dangerous maneuvers at the existing uncontrolled intersections and numerous other access points, all of which would be addressed by the Project.

Figure 11 illustrates the important of US 8 as a major freight connection by displaying existing daily heavy commercial vehicle volumes and associated freight generating businesses. Supporting freight movement along a critical rural transportation corridor, as the Project does, also achieves the objectives found in the US DOT's recently created ROUTES initiative.

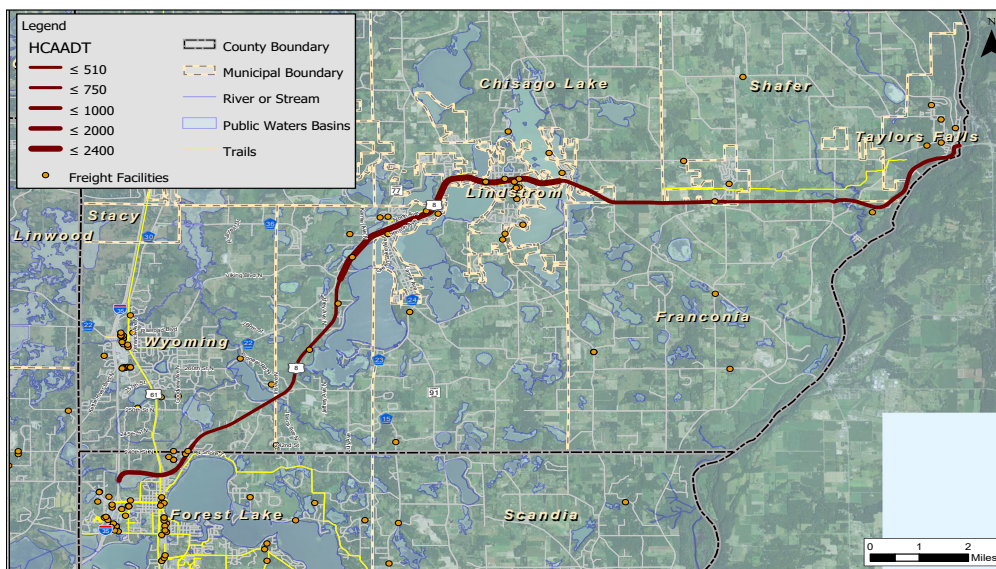


Figure 11 US 8 Freight Volume and Generators

“It is important that we prioritize safety and mobility along the Highway 8 interregional corridor. In addition to improving safety, this project is an opportunity to analyze ways that Highway 8 can continue to promote regional commerce and economic growth into the future..

– Congressman Pete Stauber (MN-08)

¹Auto and truck percentages were computed using MnDOT's Traffic Volume Mapping Tool for AADT and HCAADT numbers along the project length and dividing HCAADT with AADT

Increased Access to Employment and Economic Development of Rural Economies

US 8 is an important regional corridor that serves a variety of transportation needs between I-35 and areas of rural Minnesota and western Wisconsin. It is a critical link between rural community members along US 8 and job opportunities in the Minneapolis-St. Paul region. As a Principal Arterial roadway through a rural area, US 8 provides a safe and reliable travel option in absence of similar alternative routes available nearby.

The Project is the primary transportation route for goods and services for area businesses, as well as accessing jobs and recreation. US 8 serves a large volume of daily commuters and weekend recreational traffic (during summer months). A study of the U.S. Census' Longitudinal Economic-Household Dynamics (2017) was

conducted within two-miles of the Project and illustrated in Figure 12. It showed that the area is evenly split between people commuting to external jobs and those commuting to businesses along the Project, approximately 5,200 and 5,700, respectively. Of those commuting from the Project area, nearly 75 percent travel more than 10 miles to access their place of employment. More so, 35 percent travel over 25 miles to the south and west which illustrates the importance of job opportunities in Minneapolis-St. Paul for rural community members and their ability to access them safely and easily via the Project.

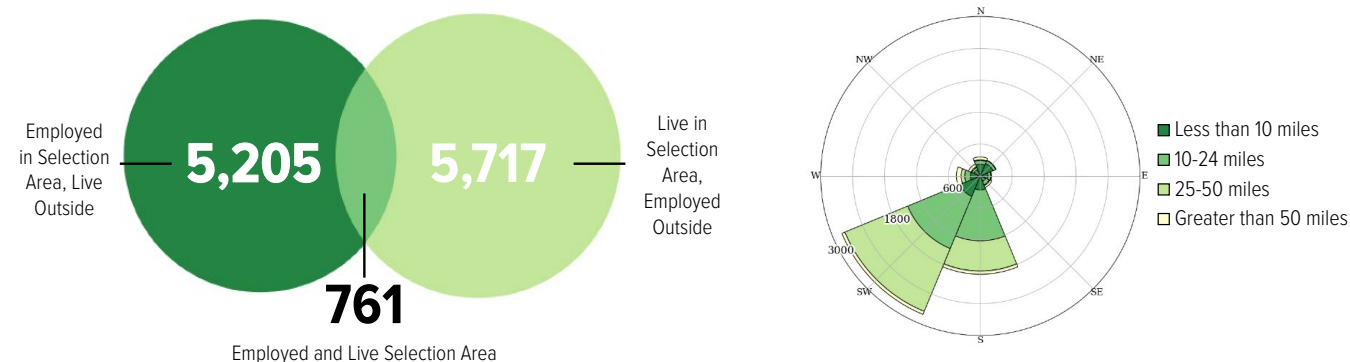


Figure 12 Commuter Job Flows and Distance/Direction from the Project (2017)

Locally, nearly 6,000 jobs exist within two-miles of the Project of which over 3,500 of those are distributed across 60 freight-dependent businesses that include manufacturing, warehousing, construction, and retail-trade, among others. Polaris Industries, Inc., a leading U.S. manufacturer of powersports equipment, operates a 300,000 square-foot research and development facility (Figure 13) less than two miles from the Project which has undergone several expansions and employs hundreds. Additionally, US 8 connects to regions in western Wisconsin that support frac sand mining operations with trucks hauling to nearby railroad facilities in the area.

Tourism is also critically important to the area, especially during the summer months when travelers primarily from the Twin Cities use US 8 to access nearby lakes, historic attractions, trails, and parks, including the Saint Croix National Scenic Riverway. Figure 14 shows parks, schools, and lake access points for boating, all of which draw both local and regional visitors. Data from 2015 illustrates the [region-wide economic impact](#) of the Saint Croix National Scenic Riverway located less than 10 miles east of the Project, with nearly 700,000

annual visitors and an economic benefit of \$38 million which supports over 400 local jobs. The main visitor center near Taylors Falls and broader park is primarily accessed via US 8. Recreational traffic was studied in 2019 along US 8 during Fridays and Sundays, with averages analyzed from April, June, and October 2017. The review indicated that peak travel flows extend the peak period for longer than off-peak recreational time periods, sometimes doubling it.



Figure 13 Polaris Main R&D Facility – Wyoming, MN

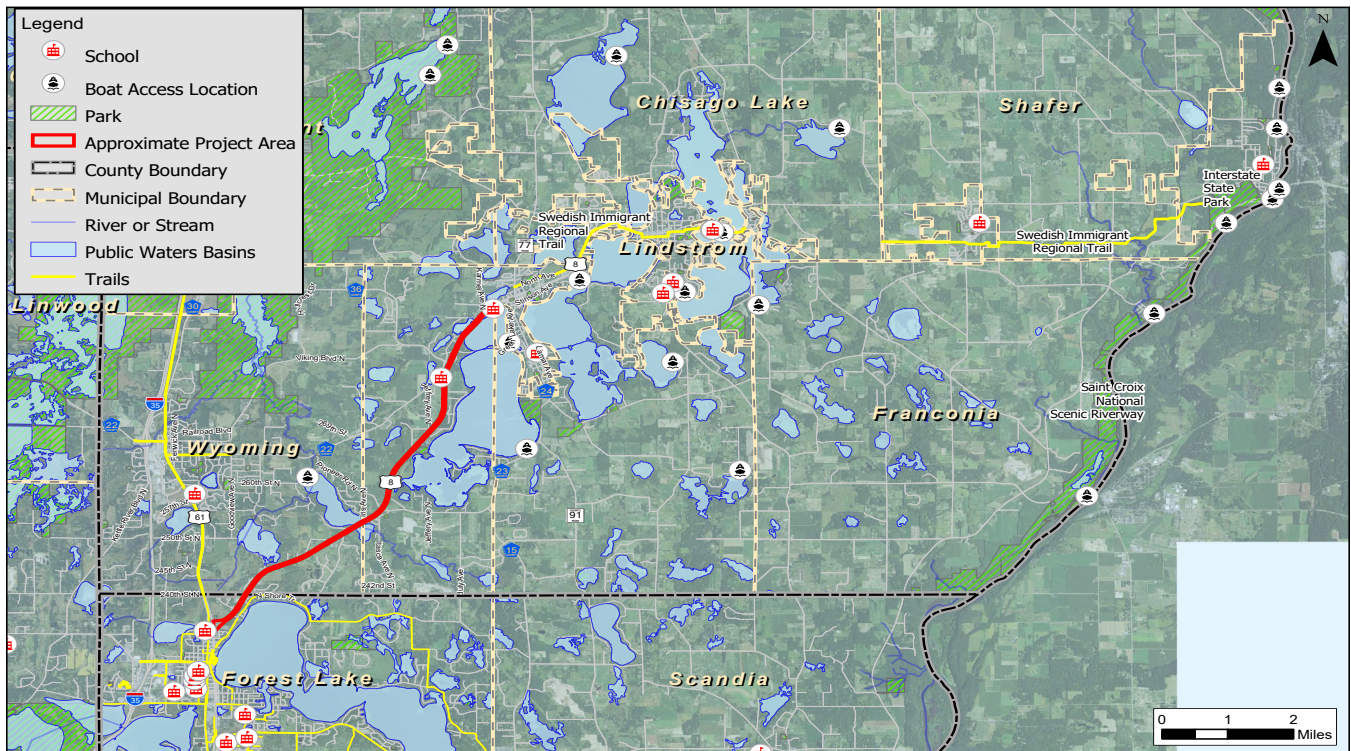


Figure 14 Project Destinations

State of Good Repair

US Highway 8 was originally constructed in the 1950's followed by a reconstruction in 1981. Multiple preventative maintenance techniques have been used including bituminous mill & overlay, crack repair, shoulder reconstruction, resurfacing, joint/edgeline sealing to maintain the pavement. A mill and overlay upgrade is planned for the Project segment in 2025.

Although the road surface is currently in acceptable condition, the Depression-Era sub-grade is deteriorating the road surface at a

quicker rate than typically expected. MnDOT uses [Ride Quality Index](#) (RQI for measuring the pavement roughness along the national highway system (NHS). The [2017 Pavement Condition Annual Report](#) found that US 8 is currently within the RQI "Good" along the Project corridor. However, it is projected to fall within the RQI "Fair" range (2.1 to 3.0) by 2026 (projected RQI = 2.9) and will deteriorate to "Poor" condition by 2038 (projected RQI = 2.0) considering the planned mill and overlay in 2025. If left unimproved, the condition of US 8 along the Project corridor will decrease to "Poor" by 2033 threatening future transportation network efficiency, safety, mobility, and in turn economic growth and competitiveness of the region.

Table 4 MnDOT Pavement Condition Ratings

Condition Categories (Metric)	RQL (# of yrs from current yr to ry RQI=2.5; if RQL≤2.5 then RSL=0)	Condition Categories (Metric)	RQI	PQI	SR
High	12+ years	Very Good	4.1 - 5.0	3.7 - 4.5	3.3 - 4.0
		Good	3.1 - 4.0	2.8 - 3.6	2.5 - 3.2
Moderate	4 to 11 years	Fair	2.1 - 3.0	1.9 - 2.7	1.7 - 2.4
Low	0 to 3 years	Poor	1.1 - 2.0	1.0 - 1.8	0.9 - 1.6
		Very Poor	0.1 - 1.0	0.1 - 0.9	0.1 - 0.8

US 8 Operation and Maintenance Plan

MnDOT will operate and maintain US 8 as part of its 14,000-mile state highway system. Long-term maintenance operations will be performed by MnDOT based upon its typical maintenance schedule for bituminous roadways. Table 5 presents key maintenance improvements that would be required during the lifecycle of the Project based on guidance from MnDOT's Metro District Materials and Pavements Department.

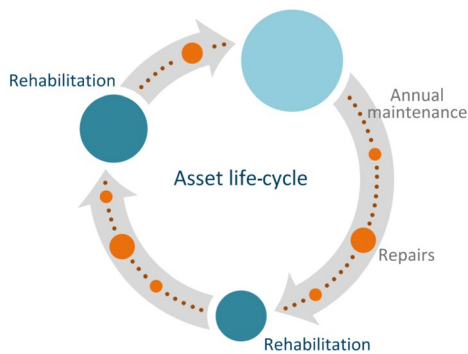
Table 5 Operation and Maintenance Schedule

Activity	Year	Cost (per lane-mile)	Total Cost
Annual Routine Maintenance	Annual	\$8,100	\$323,028
Thin (2-inch) bituminous mill and overlay	20	\$250,000	\$9,970,000
Medium (4-inch) bituminous mill and overlay	35	\$350,000	\$13,958,000

Operation and Maintenance Funding

Financial trends indicate that operation and maintenance revenues have slowed compared to previous decades. Consequently, MnDOT is committed to implementing timely investments in capital and preventative maintenance treatments to extend the service life of assets while reducing lifecycle costs. Ongoing operation and maintenance (O&M) costs on the state highway system are funded by taxes and fees from four main revenue sources²:

- State gas tax (motor fuel excise tax)
- State tab fees (motor vehicle registration tax)
- State motor vehicle sales tax
- Federal highway funds (highway user tax distributions, flexible highway account, and County State Aid Highway Fund).



MnDOT Transportation Asset Management Plan (TAMP)

MnDOT has a demonstrated history of fully funding maintenance improvements and has established the agency as a leader in asset management. MnDOT developed its first [Transportation Asset Management Plan \(TAMP\)](#) in accordance with the 2012 Moving Ahead for Progress in the 21st Century Act (MAP-21). MnDOT's TAMP expanded beyond minimum requirements per MAP-21 to include the entire state highway system as well as other infrastructure within the right-of-way corridor. MnDOT's TAMP was a national pilot project and serves as a guide for other states.

MnDOT applies the TAMP as a guide to analyze life-cycle costs, evaluate risks and develop mitigation strategies, establish asset condition performance measures and targets, and develop investment strategies. The TAMP will serve as a guide to ensure all necessary Project operation and maintenance is implemented.

Partnership and Collaboration

The Project is led by Chisago County with support and partnership from FHWA, MnDOT, Washington County, and more (see Figure 15). The partners also include three cities – Chisago City, Wyoming, and Forest Lake – that are involved in the planning and public engagement of the Project. The corridor serves a broader group of jurisdictions beyond these three cities as well which include Lindstrom, Stacy, and Center City, among others.

The County implemented a robust Public Involvement Plan, which may be found in [link](#). The Plan includes three major strategies that will be deployed throughout the progress of the Project: Consistent Communication, Tailored Involvement, and Coordination with Project Management and Advisory Groups. Consistent communication is achieved through various online and print resources such as local newsletters and city websites. Additional public and agency involvement include the use of online and in-person engagement tools. An [interactive mapping tool](#) is available at the Chisago County Project Website.

A US 8 Task Force along with advisory bodies comprised of staff from various government agencies including the Project Management Team, Technical Advisory Committee, Local Advisory Team, and Permitting Agencies gather to communicate critical milestones and share key knowledge. Pop up Engagement and Community Open Houses (virtual and in-person) were held from 2019 to 2021 to connect and engage with users of the roadway system. To-date

² MnDOT Transportation Asset Management Plan. Chapter 8 – Financial Plan and Investment Strategies. <http://www.dot.state.mn.us/assetmanagement/pdf/tamp/10ch8.pdf>

four pop-up events and three public open houses have been held to gather feedback and integrate stakeholder input into the Project's design. This includes safety issues and key access points for proposed traffic controls, intersection design, and access locations.

The virtual open house conducted this year is available to view via this [link](#). Letters of support from elected officials, public agencies, and private businesses can be found [here](#).

Agency Partners	Directly Impacted	Indirectly Impacted
<ul style="list-style-type: none"> Chisago County Washington County MnDOT FHWA Police/Fire/EMT City of Forest Lake City of Wyoming Chisago City Lindstrom, Center City, Shafer Forest Lake/Wyoming Chamber Chisago Lakes Chamber ABC Community County Sherriff Chisago Lake Township Chisago Lakes School District Minnesota State Highway Patrol & Commercial Vehicle Enforcement 	<ul style="list-style-type: none"> Property owners, business owners, and property managers along the corridor Residents who live on the corridor 	<ul style="list-style-type: none"> Area residents (Chisago City, Wyoming, Forest Lake, Lindstrom, Center City, Stacy) Vacationers/Recreators (Lake home residents, lake recreation, snowmobiling, golf, Interstate Park) Corridor Commuters Trucking and Freight Industry Institutions (Schools, Medical facilities, Religious congregations)

Figure 15 Project Partners

Chisago County's Small and Minority Business Development Programs

Chisago County is a strong supporter of Entrepreneurs and business enterprises, including Disadvantage Business Enterprise (DBE) and minority- or women-owned businesses. Several of these businesses are right on or next to the US 8 corridor and their employees are everyday active users of the corridor. The County actively seeks to grant small contracts well-suited for under-utilized businesses and hire from the local communities for the Project.

MnDOT's Equity and Inclusion Programs

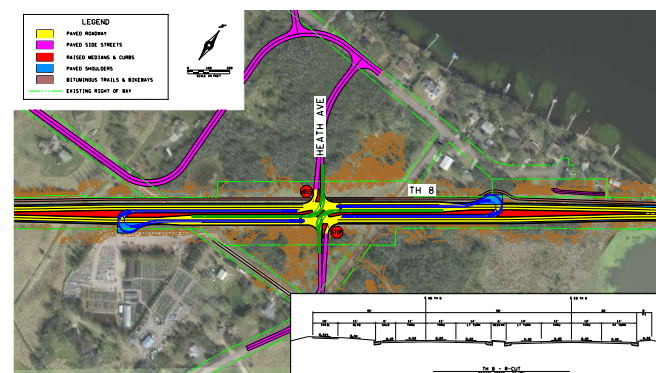
MnDOT has proactively developed a strong portfolio of several Equity and Inclusion Programs such as Disadvantage Business Enterprise (DBE), Targeted Group Business (TGB), Equal Employment Opportunity (EEO) Program, among others. MnDOT encourages and awards private business contracts to minority- or women-owned businesses. MnDOT has awarded more than \$173 million in prime contracts and goods purchases with under-utilized businesses in the past 5 years to mitigate its contracting disparity, increasing from \$19 million in FY16 to over \$38 million in FY20.

Innovation

Innovative Technology

Reduced Conflict Intersection (RCI)

RCIs, also referred to as restricted crossing U-turn (RCUT) intersections, have been identified through the FHWA's [Every Day Counts Initiative](#) as an innovative design with proven safety benefits. FHWA studies have determined that RCI intersections reduce crash occurrences by 28 to 44 percent. Furthermore, these intersections offer substantial cost savings and reduced construction time benefits compared to other types. The Project team evaluated [use of RCIs](#) in the preliminary design and will finalize the locations as the design progresses. The use of RCIs will address safety issues, capture cost savings compared to alternative intersection designs, and streamline the construction timeframe.



Broadband Deployment

The Project leverages the existing effort by MnDOT to deploy fiber along US 8. Conduits will be used for Broadband internet access and/or Intelligent Transportation Systems (ITS). Broadband can vastly improve the speed and reliability of internet service, which could benefit future businesses, employees, and residents who work and live near the Project. Fiber optic networks will guarantee quality internet speeds along the corridor and also serve as a reliable communication method for transportation applications such as traditional ITS as well as [connected and automated vehicles](#) (CAV). Intelligent signs may provide congestion, detour, and crash information to motorists to make an informed travel decision. By providing information to users in advance of a situation, they help to improve safety and reduce congestion when an incident occurs or in the event of poor road or weather conditions.

Rural internet access is a growing concern with rural communities far less likely to have access to reliable internet service. Fiber-optic rings can vastly improve internet service in rural areas and support economic development opportunities. Federal internet service standards have increased, and many rural areas have not been able to maintain quality internet access. Chisago County, in collaboration with MnDOT's ongoing effort, can resolve this issue by ensuring fiber optic internet access along the Project.

Intelligent Transportation Systems (ITS)



The Project final design will refine the Intelligent Transportation Systems (ITS) elements being incorporated. 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 the Project, the County can provide traveler information such as travel times, alternate routes,

and incident notifications. These enhance driver awareness and allow informed decision-making while traveling. These deployments can also be used for incident management purposes such as identifying crashes, detecting queued traffic, and emergency response.

The Project will explore installation of wireless dynamic message signs that provide real-time traffic advisory and route guidance to road users. By providing information to users in advance of a situation, they help to improve safety and reduce congestion when an incident occurs or in the event of poor road or weather conditions (especially frequent in Minnesota during the winter months).

Innovative Project Delivery

Civil Information Management Software

During public engagement, project designers used innovative Civil Information Management (CIM) software for preliminary modeling and visualization of the Project to understand and mitigate impacts. This allowed stakeholders and partners to make decisions through visuals in real-time. The Project will continue to utilize CIM software to model and visualize the project, as well as increase transparency of the project. The transparency will enable owners, consultants, contractors, and stakeholders to easily work together. The CIM software enables designers to make constant adjustments to the design to ensure the best alternatives. The software also uses embedded 3D visualization as part of the process which enables effective conflict detection, rapid design review, and validation. These efforts will reduce the project schedule and overall costs.

Intersection Control Evaluation (ICE)

Each intersection along the Project will undergo an Intersection Control Evaluation (ICE). The ICE will include a safety review to identify the average and critical crash rates, any geometric deficiencies, causes, and trends. Alternative operations and intersection controls will be considered. Safety strategies will be deployed as a result of the ICE include roundabouts, RCIs, reducing intersection skews, rumble or mumbles strips, and clear zone maintenance enhancements.

Best Value Procurement

Since 2007, public agencies in Minnesota have been explicitly enabled and 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. It is anticipated that best

value procurement will help the Project deliver long-term benefits on an efficient schedule and budget. Chisago County has utilized the best value procurement process for several transportation projects and will consider applying this procurement process to the Project.

Environmental Review and Permitting (Agency Liaisons)

The Project is currently completing an EA and it is anticipated that the review will be approved in Fall 2023 and issued FONSI in by December 2023. The Project will benefit from existing MnDOT programmatic agreements and agency liaisons to maximize the efficiency of environmental review and permitting processes. MnDOT has executed a programmatic agreement with FHWA and the State Historic Preservation Office (SHPO) to streamline the Section 106 review process. Additionally, MnDOT has established liaisons with the US Army Corps of Engineers (USACE) to directly manage the Section 404 permitting process for state highway projects.

Value Engineering Study

A [Value Engineering \(VE\) study](#) was commissioned by MnDOT for the US 8 reconstruction project in Fall 2020. The scope of the assignment was to perform a value engineering study following the SAVE International model. The alternatives' potential cost savings, performance, and stakeholder acceptance were compared with functions to assure that value was preserved or enhanced. The

recommendations of the VE study were categorized under the following FHWA Functional Benefits:

- Safety: Recommendations that mitigate or reduce hazards on the facility.
- Operations: Recommendations that improve real-time service and/or local, corridor, or regional levels of service of the facility.
- Environment: Recommendations that successfully avoid or mitigate impacts to natural and or cultural resources.
- Construction: Recommendations that improve work zone conditions, or expedite the project delivery.
- Right of Way: Recommendations that affect property ownerships or easements.

The project team “accepted” many of the initial recommendations, while others were “accepted for further review”.

Innovative Financing

Chisago County implemented both a 0.5 percent sales tax and \$10 per vehicle annual registration fee to create new, non-federal transportation revenue for county transportation maintenance and improvement projects. Both funds produce a total of \$3.7 million annually and could enable the County to provide additional funding should additional local match funds be required following an award of the grant.

SUPPORTING DOCUMENTS

Links to supporting documents are included throughout this narrative. All supporting documents and the RAISE grant application narrative are available to view at the following webpage: <https://www.srfconsulting.com/chisago-county-mn-us-hwy-8-raise/>