2019 BUILD Transportation
Discretionary Grant Rural Application

Chisago County

Trunk Highway 8 Reconstruction

from I-35 through Karmel Avenue Intersection

Project Type: Road – New Capacity
Total Project Costs: $49.7M (2018 dollars)
2019 BUILD Funds Requested: $25M

CONTACT INFORMATION
Joe Triplett, Director of Public Works/County Engineer
Chisago County
651-213-8797 | Joe.triplett@chisagocounty.us
Mailing: 313 N. Main Street (Room 400) Center City, MN 55012
Location: 31325 Oasis Road, Center City Minnesota 55012

Supporting Information can be found at:
https://www.srfconsulting.com/th8-build/

Table of Contents

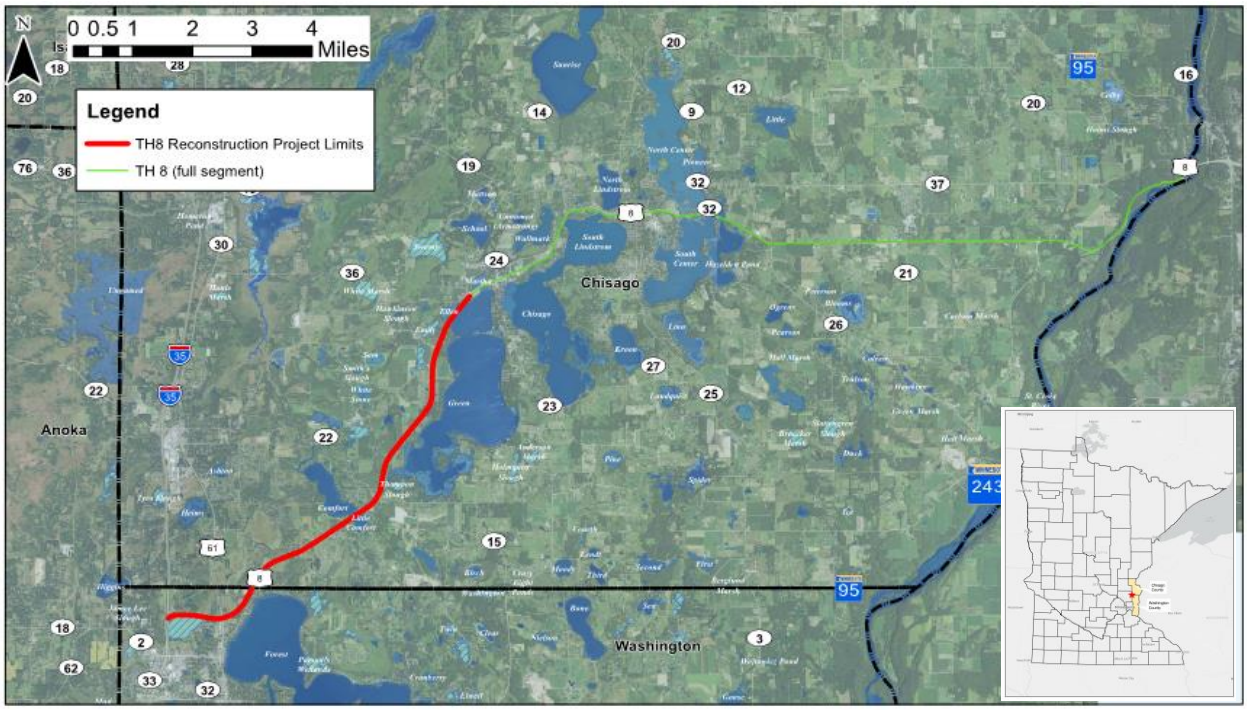
Project Narrative 1
I. Project Description 1
II. Project Location.. 7
III. Grant Funds, Sources and Uses of Project Funds 8
IV. Selection Criteria 10
a) Safety 10
b) State of Good Repair 12
c) Economic Competitiveness..... 13
d) Environmental Sustainability 17
e) Quality of Life 17
a) Innovation (innovative technologies, Innovative project delivery) 20
b) Partnership 21
V. Project Readiness 23
VI. Benefit Cost Analysis 27
VII. Supporting Documents 29

Project Narrative

I. Project Description

Chisago County, Minnesota is requesting $25 million of 2019 Rural BUILD Transportation Discretionary Grant funds to improve safety and mobility along Trunk Highway (TH) 8 from I-35 in the west to Karmel Avenue in the east. Figure 1 illustrates the 8-mile TH 8 Reconstruction Project location and study area, from hereafter known as the Project. The Project is located within rural Minnesota, approximately 20 miles north from the Twin Cities Metropolitan area and approximately 15 miles west of the Wisconsin border. It runs partially in Washington County on the western most section of the Project at I-35 while the majority of the Project runs within Chisago County. TH 8 is mostly a rural undivided, two-lane roadway with a posted speed limit of 55 miles per hour. At the western terminus of the 8-mile Project, near the signalized intersection of Greenway Avenue North, TH 8 currently transitions from an access-controlled, four-lane roadway to a two-lane rural highway. For the remainder of the Project up to Karmel Avenue, the roadway cross-section is a two-lane rural section with additional lanes at major intersections. The Project will reconstruct the section of state principal arterial from a 2-lane undivided roadway to a 4-lane divided roadway and will complete maintenance treatments along the existing 4-lane divided. The Project will also upgrade pedestrian curb ramps, cross walks, and multi-use trails.

Figure 1 Project Location



The Project is a vital interregional corridor that serves a variety of transportation needs for commuters in and across state lines, vacationers, business patrons, and rural community members. However, in recent years, the highway has become increasingly strained due to high levels of daily commuters, large trucks hauling freight, and spikes in weekend recreation traffic. In 2017, the Project from east of Forest Lake Boulevard North (TH 61) to Karmel Avenue was identified as near capacity or at capacity while future 2040 no build forecasts show the entire Project segment at or near capacity (I-35 to Karmel Avenue). A proliferation of secondary roads and private driveways provide direct access to TH 8, but long backups of traffic on this narrow two-lane highway regularly make ingress/egress a challenge for drivers who often compromise safety to make their maneuvers. Further, alternative parallel through routes are not available to help alleviate existing and future congestion along the Project. As a result, the need for capacity improvement is critical at both the intersection and corridor level. The Project experienced four fatal crashes within the past ten years (2008-2018) and experienced over 20 intersection and segment crashes over the past year. The majority of these crashes involved a rear end crash. One crash within the past five years involved a pedestrian.

The Project is identified as a corridor with transportation issues and opportunities in the Chisago County 2013 Transportation Plan Update. Opportunities include signalized intersections and trail updates. It is also identified as one of the corridors with the highest existing daily traffic in Chisago County. The Project is also identified in Minnesota Department of Transportation (MNDOT) 10-year Capital Highway Investment Plan (CHIP). A mill and overlay is budgeted along the Project totaling $6,500,000 in 2025. MnDOT has a long history with the Project. Over ten years ago, MnDOT identified that there were serious safety and capacity issues, as well as a lack of pedestrian and bicycle connection, along the length of the Project. They completed a transportation analysis and engaged the public to develop a Scoping Document in 2002 and completed the Highway 8 Corridor Study in 2008. Although a need was defined and supported, the Project was not funded in the early 2000's.

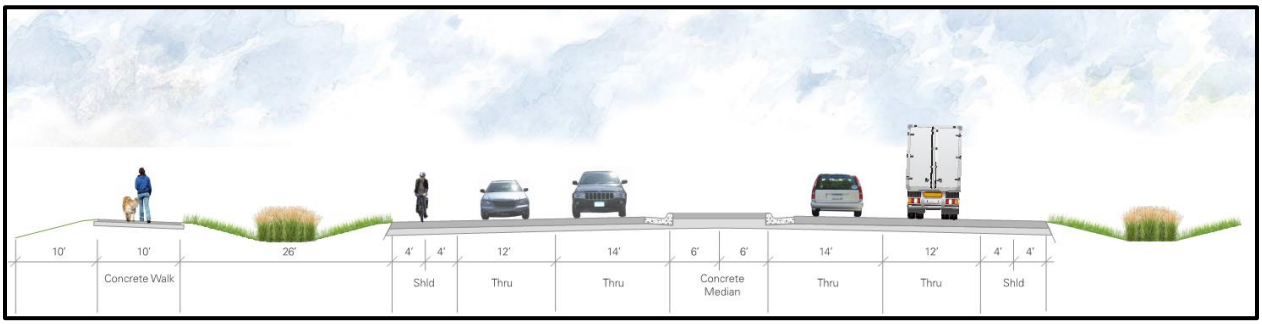
Proposed Improvements

The Project will include reconstructing TH 8 from I-35 to Karmel Avenue from a 2-lane to a 4-lane divided roadway with a median and 8' shoulders. Every effort will be made to reconstruct the roadway shifting north and/or south of the existing roadway in order to avoid and minimize property and natural resource impacts. The Project will also support the development of the Swedish Immigrant Regional Trail (SIRT) by connecting the western section as seen in Figure 21 on page 22. SIRT is partially built. When completed it will run 20-miles from the Chisago County border in the west to the east. It will support bicycle and pedestrian mobility and commuting between several cities and parks allowing access to diverse natural and cultural communities while expanding multi-modal transportation. The Project's section of the SIRT will be built on the north side of the roadway to accommodate pedestrians and bicycles. The trail's crosswalks and curb ramps will also be upgraded in order to meet current Americans with Disability Act (ADA) and Minnesota Public Right-of-Way Guidelines (PROWAG). The new

trail will also connect to other regional trails including the Sunrise Prairie Regional Trail, which is located north on I-35, and Hardwood Creek Trail, which is located south on I-35.

Figure 2 illustrates the typical section for the Project.

Figure 2 Project Typical Section



Private and public accesses will be closed and redirected to frontage or backage roads, when possible, to reduce vehicle conflict points and to improve traffic safety along the Project. Full access intersection improvements are proposed for the following seven intersections to include designated left- and right-turn lanes, and reduction of skews. Signalization of these intersections would only occur once signal warrants are met. Clear zone maintenance enhancements and additional safety features will be incorporated, as necessary. *Other intersecting treatments, such as roundabouts, will also be evaluated.* *

- Greenway Avenue*
- Heath Avenue
- Pioneer Road (CSAH 23) *
- 270th Street
- 276th Street
- Viking Boulevard (CSAH 36) *
- Karmel Avenue*

Figure 3 Clear Zone Maintenance

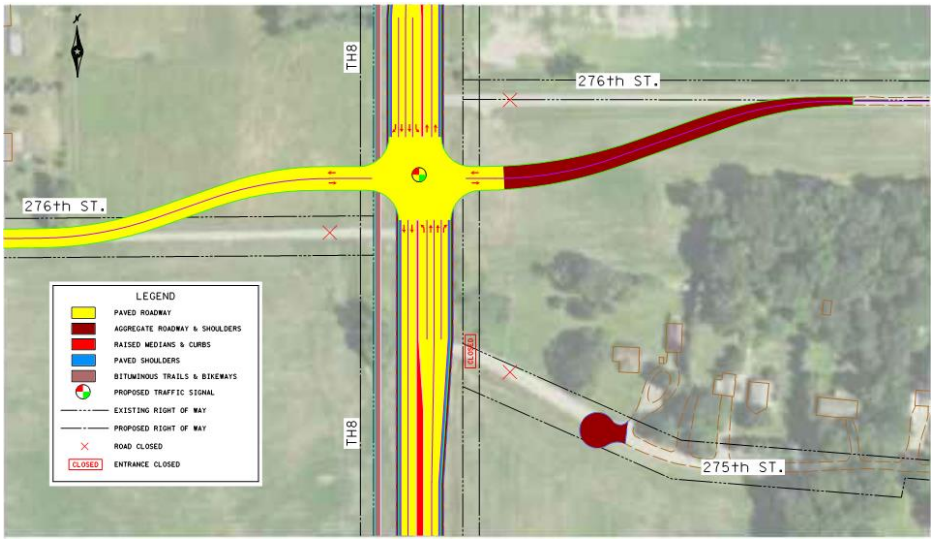
Figure 4 depicts the plan view of the signalized intersection and access management improvements at 275th street and 276th street including closing access to 275th street, adding a raised median and an additional lane to east and west bound on TH8, realigning the existing 276th street, and adding right- and left-turn lanes along TH 8. Figure 4 is one of seven plan views. Link includes plan views of all seven intersection improvements and one full view of the Project.

Current land use patterns within the study limits include agricultural, open space, commercial and residential uses. Right-of-way acquisition will be required for the TH 8 Reconstruction Project. Partial impacts to properties and full property takings will be included, as well as access re-routes to residential homes and local roads. In some cases, a partial take may put an existing

structure into non-conformity, however, this would be allowed. Since the Project follows the exiting roadway alignment, the solution is compatible with adjacent land uses and is not expected to cause a significant change in land use or lead to the development of any large-scale commercial, industrial, residential or other development.

Future stages of the Project will consider drainage and will incorporate design features to detain and filter stormwater runoff.

Figure 4 Plan View - Improvements at 275th St and 276th St



Project History

The Project is a continuation of MnDOT's two efforts including the 2002 MnDOT Scoping Document and the Highway 8 Corridor Study led by MnDOT and Chisago County to evaluate and improve the capacity and safety of TH 8 between Forest Lake and Taylors Falls.

In 2002, MnDOT worked with communities surrounding the 23-mile TH 8 Corridor to identify existing capacity and safety issues and develop the Highway 8 Corridor Study Scoping Document. The results of the transportation analysis and the community involvement resulted in identifying major issues along the Greenway-to-Karmel segment, which led to the Highway 8 Study Corridor Study in 2008. The study considered a range of roadway alternatives to address the growing TH 8 capacity, access, and safety problems between Greenway Avenue North and Karmel Avenue in the cities of Wyoming and Chisago.

The Study was completed in 2013 through 4 main steps: Project Initiation, Evaluation of Alternatives, Recommendation of Alternative to Advance and Preparation of an Environmental Assessment Worksheet (EAW). The Evaluation of Alternatives step was accomplished through a two-tier screening processes to assess five alternatives. The "Fatal Flaw" Evaluation and the Preliminary Summary of Potential Impact was developed as a result. The EAW was finalized in May 2013 and distributed to agencies.

As depicted in Figure 5, the Study identified and proposed a future configuration. The footprint of Alternative 5 as depicted in the 2013 EAW was used to guide future development. Unfortunately, the Alternative was not built following the Study as a result of lack of funding. Today, the County is ready to build with the support of the BUILD grant and non-federal funding. The Project is a high priority for the County due to the number of crashes that occured over the past five years, including 4 fatalities, and the majority of the Project that is at or near capacity.

Figure 5 Study Configuration from the 2013 Highway 8 Corridor Study

Purpose Statement

The project will accomplish the following:

- Increase mobility for rural populations, freight, and commuters
- Expand rural and out of state access to the Twin Cities economic hub
- Address significant safety issues
- Consolidate direct accesses to TH 8
- Remove barriers to efficient freight, transit, and emergency movement
- Improve existing and planned intersection controls
- Accommodate pedestrians, bicyclists, disability populations

Transportation Challenges

Challenge 1: Eliminate barriers to employment, residences, commercial hubs, recreation, and emergency response

The Project segment experiences congestion and delays at several intersections, which fluctuate by season. During a typical week, queuing along all legs of the intersections at TH 8 and Greenway Road, Pioneer Road, and Viking Boulevard occur during both AM and PM peak hours, which reduces mobility for all users (as seen in Figures 19 and 20 on pages 17 and 18). The Project will improve efficiency and mobility by upgrading to a 4-lane divided roadway to accommodate existing and future traffic volume demands and gap acceptance from side streets.

> *"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)

Barriers also include the lack of alternative transportation to support the needs of all roadway users. The Project will include enhanced accommodation for pedestrians and bicyclists by preserving a location for the Swedish Immigrant Trail on the north side of TH 8 and upgrading pedestrian curb ramps and cross walks to meet current ADA standards.

Challenge 2: Reduce Fatalities and Serious Injuries

The Project segment experienced significant safety issues including four fatalities in the past ten years due to limited shoulder width, full access intersections, sightline challenges from multiple public and private accesses. Within the past five years, the Project segment experienced over 20 crashes per year along the segment and at nine major intersections. Today, the intersection at TH 8 and Pioneer Road is identified with a critical index of 1.05. A critical index is the ratio of the observed crash rate to the critical crash rate. Critical indexes above 1.00 indicate there is likely an existing safety concern at the intersection. With volumes along the Project expected to increase by 6% over the next 20 years, traffic operations will become more difficult to manage, further increasing the number of potential crashes. The Project will result in an annual crash cost saving of $34,173,769 over the next 20 years as demonstrated in the BCA.

Challenge 3: Consolidate the number of secondary roads and private driveways

Figure 6 Private Access along the Project

Along the Project segment almost 60 public and private accesses exist. Under MnDOT's Access Management Guidelines, the majority of the Project does not meet guidelines. The only segment that meets the Guidelines for total accesses is between I-35 and Greenway Avenue. By closing access and consolidating the number of full-access intersections and frontage/backage road, safety and mobility will be improved. The Project will include improved spacing of primary intersections, which are widely spaced full-movement intersections considered for signalizations, and secondary intersections, which have lower traffic volumes and occur at the midpoint between primary intersections. Private driveways will be discouraged along the principal arterial route and will be provided by exception or deviation only. Link includes five access inventory maps of the Project and the Access Inventory Table.

II. Project Location

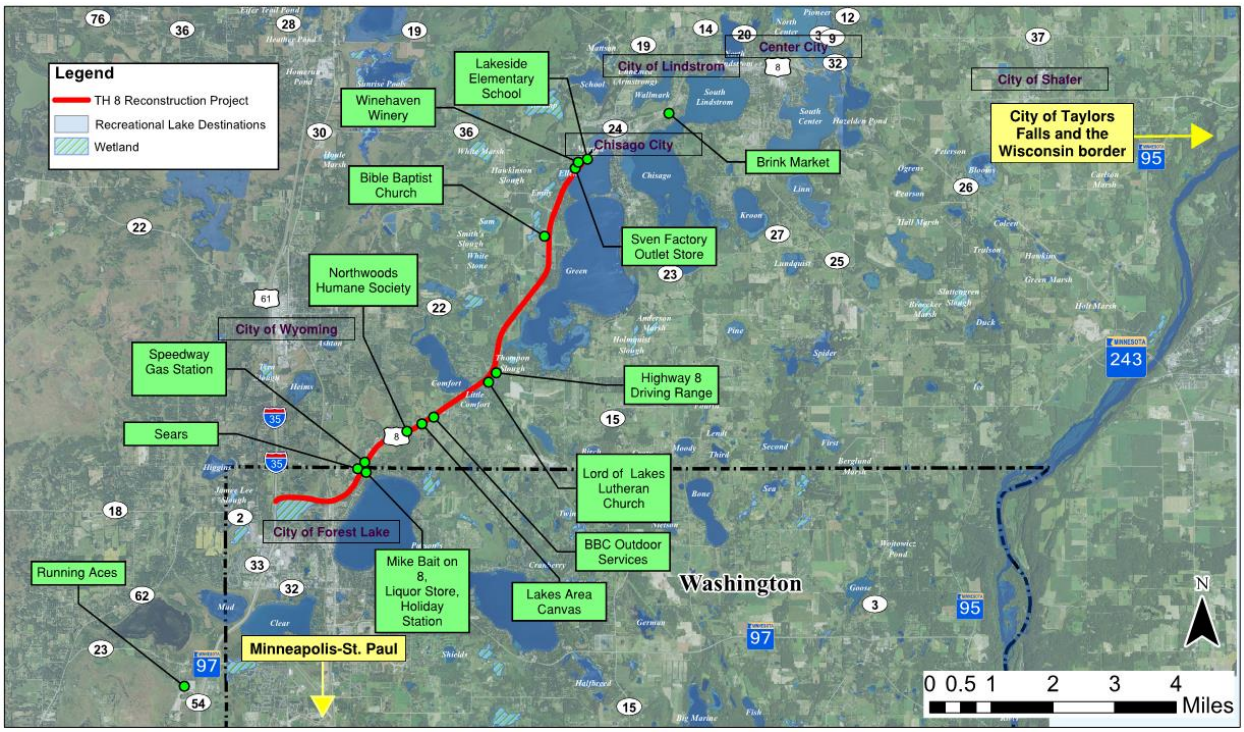
From its western terminus near Greenway Avenue North and the city limits of Forest Lake, TH 8 Reconstruction Project limits extend through the communities of Wyoming and Chisago City and terminates just west of and prior to the central business district of Chisago City (as see in Figure 7). The Project is located primarily within Chisago County, but ties into the existing four-lane roadway at its western terminus in Forest Lake (Washington County). TH 8 is an important regional transportation system for east-west travel between the Twin Cities and the northern regions of Wisconsin. In addition to project area communities, TH 8 also provides access to Wyoming, Stacy, Lindstrom, Center City and Shafer. As a part of the National Highway System (NHS), the main function as a non-freeway principal arterial roadway, is to accommodate the movements of through traffic along the corridor.

Based on the 2017 American Community Survey (ACS) 5-year estimate, the cities of Forest Lake, Wyoming and Chisago City have a population of 19,406, 7,793 and 5,008, respectively. Key community cultural components include lake access, historic town centers, small-town culture and local history.

The project area demographics indicate the following:

- 92 percent Caucasian
- 2.5 percent Hispanic or Latino population
- Less than 4 percent speak a language other than English
- County-wide, 'low-income' residents make up about 5 percent of population

Figure 7 Project Destinations



III. Grant Funds, Sources and Uses of Project Funds

Project Cost

Total Project Cost: $49,701,546 (2018 dollars)
BUILD Rural Grant Request Amount: $25,000,000 (50.4 percent of the total project cost)

Availability and Commitment of Funding Resources

The City is seeking $25,000,000 in BUILD Rural grant funds. The availability and commitment of the BUILD grant funding is the final piece to the total project funding package, which represents 50.4 percent of the total project cost. Although a local share is not required for Rural applicants, the County is committed to identifying the remaining $24,701,546 through various sources to include funding from State Legislature, Corridors Commerce and MnDOT. To date, $3,000,000 from the State Legislature has been invested in project development, final design, and planning to advance the delivery of the TH 8 Reconstruction Project. As this phase continues, the County will work with MnDOT to secure a funding commitment. The County has already received strong support from MnDOT to advance with the Project. A mill and overlay is budgeted in the Capital Highway Investment Plan (CHIP) for the Project totaling $6,500,000 in 2025, which will be transferred to fund the Project. The percent of contribution from Corridors of Commerce and State Legislature will be confirmed upon notification of award. Table 1 presents the project budget in 2018 dollars. A detailed construction cost estimate is available in Link

Table 1. BUILD Grant Project Costs and Proposed Funding Shares

Project Element	Total Project Cost by Project Element	Project Funding				Percent of Total Project Cost by Project Element
		Federal BUILD Funds	Non-Federal Local Funds			
			MnDOT	Legislature	Other *(County, Local, & Future Funding)*	
Design Engineering & Construction Administration	$5,260,000	$2,260,000	$0	$3,000,000	$0	10.6%
Right-of-Way Acquisition	$3,230,000	$3,230,000	$0	$0	$0	6.5%
Construction Cost	$30,070,546	$19,510,000	$6,500,000	$0	$4,060,546	60.5%
Miscellaneous Cost - Mobilization - Non-Quantified Minor Items - Temporary Pavement & Drainage - Construction Traffic Control - Landscaping	$5,113,000	$0	$0	$0	$5,113,000	10.3%
Contingencies	$5,278,000	$0	$0	$0	$5,278,000	10.6%
Utility Agreements	750,000	$0	$0	$0	$750,000	1.5%
Total Project Cost by Funding Type		**$25,000,000**	**$24,701,546**			
Percent of Total Cost by Funding		**50.4%**	**49.7%**			
Total Project Cost	$49,701,546					

IV. Selection Criteria

Primary Selection Criteria

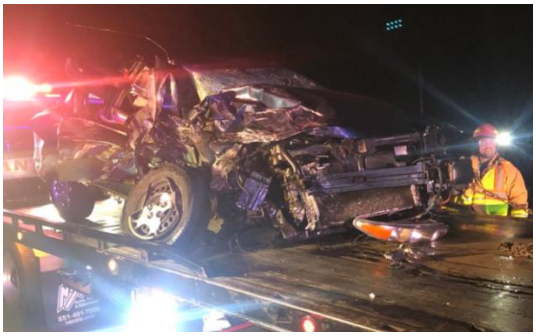
a) Safety

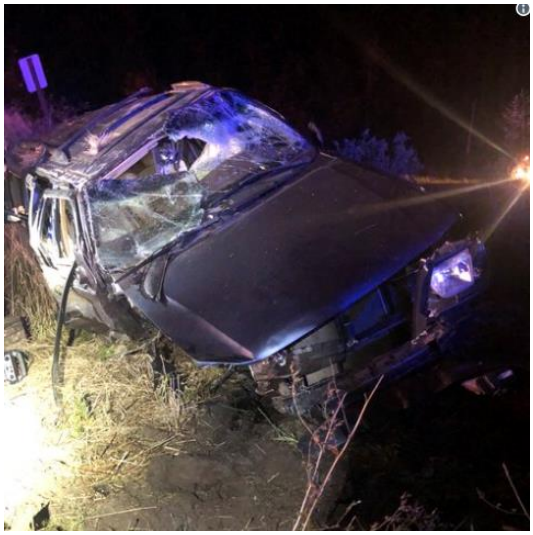
Improve Roadway and Intersection Safety

From 2008 to 2012, rural roadways in Minnesota accounted for 1,126 severe crashes involved intersection, or 38% of the state total. Of these, over two-thirds (763) occurred on two-lane roads with speed limits of 45 miles per hour or greater.

High Crash Corridor

Figure 8 Crash at TH 8 and East Viking Blvd (Sept 2018) from Washington County Police





The Project segment experienced multiple crashes including fatalities and major incapacitating injuries. In the past ten years, (2008-2018), four fatal crashes were reported. The fatal crashes included two right-angle crashes from drivers failing to yield, one head on crash and one rear end crash from distracted drivers. One crash involving a pedestrian was also reported between 2013 and 2017.

On September 30, 2018, a violent crash occurred at TH 8 and East Viking Boulevard where two vehicles were totaled, and injuries were reported. Figure 8, from the Washington County Police, depict the condition of both vehicles at the scene. Traffic was closed on TH 8 in the evening.

Although no segments had a crash rate greater than the critical crash rate, the intersection of TH 8 and Pioneer Road was identified with a critical crash rate index of 1.05 with 55% of crashes at the intersection were rear end crashes and 33% were right-angle crashes. Critical indexes above 1.00 indicate there is likely an existing safety concern at the intersection.

Figures 9 through 12 illustrate the number of crashes over a 5-year period (2014-2018) and the distribution of crash types. The crashes are organized by segment and intersection. With that being said, intersection crashes were not included in the segment crash data. Most crashes were rear end crashes. The segment crashes reveal a peak in 2014. The predominant crash type on segments was also rear end crashes. Rear end crash types may be attributed to distracted drivers and the number of conflict points and lack of access control along the Project.

There are just below 60 public and private access points along the Project. Of these access points, more than half are private commercial and residential driveways. As future traffic is expected to increase by 6% over the next 20 years, traffic operations will become more difficult

to manage, further increasing the number of potential crashes. The Project will result in an annual crash cost saving of $34,173,769 over the next 20 years as demonstrated in the BCA.

Access Improvements to address traffic safety include:

- Access Closures
- Shared access
- Restricting access to right-in/right-out
- Restricting access to ¾ access
- Intersection realignments
- Constructing frontage and/or backage roads
- Mountable medians (for farm access)

Figure 9 Intersection Crashes by Year

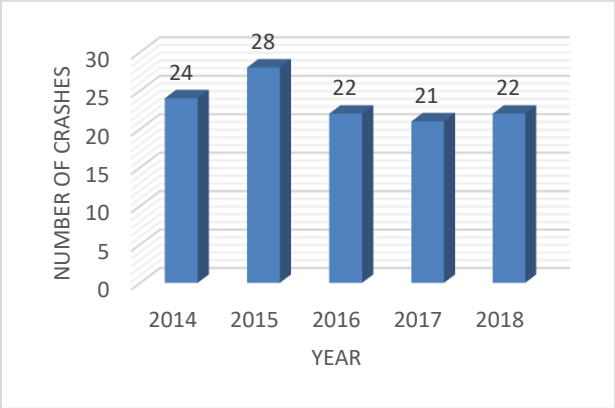


Figure 10 Intersection Crashes by Type

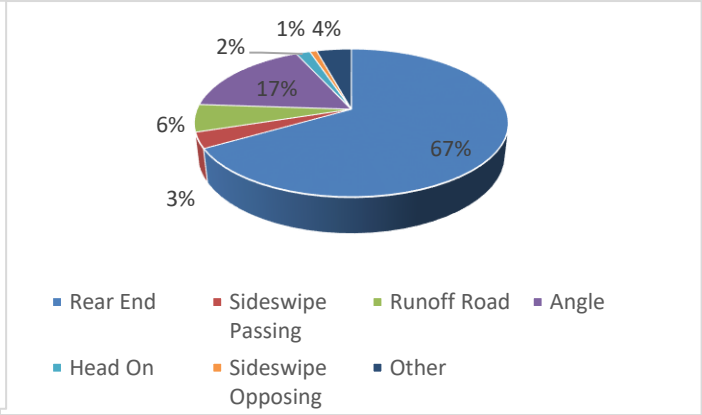


Figure 11 Segment Crashes by Year

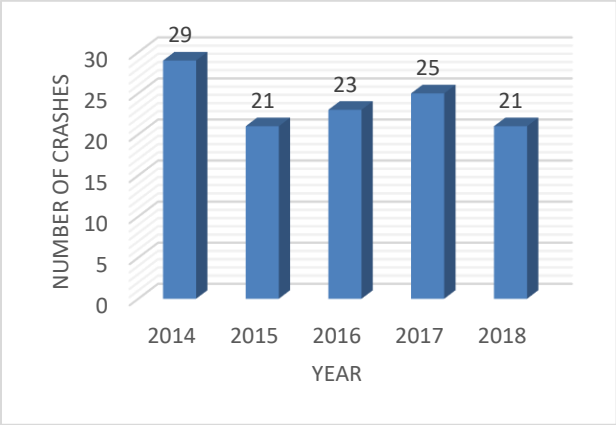
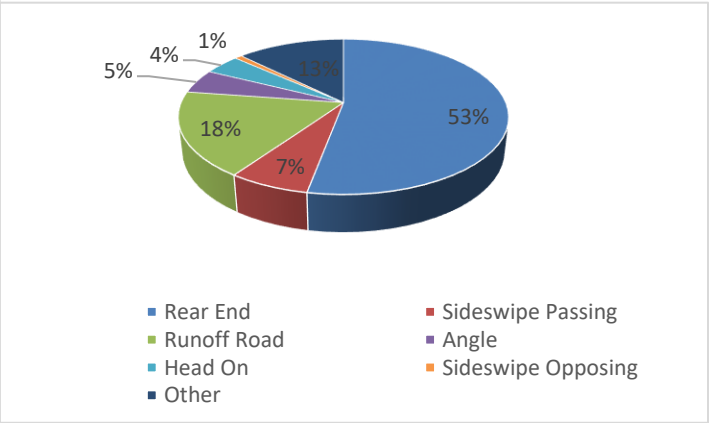


Figure 12 Segment Crashes by Type



Emergency Vehicle Response

Emergency services (fire protection, police protection, emergency medical services, hazardous materials clean up, transportation agencies, towing and recovery) can expect to see improved response times to incidents along the Project as congestion and delays are alleviated, and traffic operations at the intersections are improved. According to the Travel Demand Model, a 3% reduction in congestion and approximately a 60 second delay reduction is anticipated along the Project. The primary ambulance dispatch location serving the Project segment is located in Forest Lake from Fairview Health Services. Multiple fire services are located along the Project in Forest Lake and Chisago City.

b) State of Good Repair

The Project was originally constructed beginning in the 1950's. Most of the Project was reconstructed in 1981. Multiple preventative maintenance techniques have been applied including bituminous mill & overlay, crack repair, shoulder reconstruction, resurfacing, joint/edgeline sealing. A mill and overlay 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. The Ride Quality Index (RQI), used by MnDOT in the 2017 Pavement Condition Annual Report to categorize performance measure categories for the national highway system (NHS), is currently within the RQI "Good" range along the Project. The Project is projected to fall within the RQI "Fair" range, which is 2.1 to 3.0, by 2026 (projected RQI=2.9). It is anticipated that the Project corridor will deteriorate to "poor" condition by 2038 (projected RQI = 2.0), respectively, considering the planned mill and overlay in 2025. If left unimproved, the condition of the Project will decrease to poor by 2033 threatening future transportation network efficiency, mobility of commuters, and in turn, economic growth.

Figure 13 MnDOT Pavement Condition Indices

Index Name	Pavement Attribute Measured by Index	Rating Scale
Ride Quality Index (RQI)	Pavement Roughness	0.0 - 5.0
Surface Rating (SR)	Pavement Distress	0.0 - 4.0
Pavement Quality Index (PQI)	Overall Pavement Quality	0.0 - 4.5

Figure 14 MnDOT Pavement Condition Ratings

Condition Categories (Metric)	RSL (# of yrs from current yr to yr RQI=2.5; if RQI≤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

c) Economic Competitiveness

Figure 15 Freight

TH 8 is an important interregional corridor that serves a variety of transportation needs in the east metro region including trips to and from Wisconsin. The highway is the primary transportation route for goods and services for area businesses, as well as a major connector for residents, neighborhoods, churches, schools, and clinics. It also serves a large volume of daily commuters and weekend recreational traffic (during summer months). Hence, the Project must be recognized for its importance in accommodating future economic growth and vitality in the region in a safe and efficient manner.

Capacity issues along TH 8 cause significant mobility and safety issues for travelers. The existing traffic volume currently causes operational concern in the corridor especially at Greenway Road, Pioneer Road, Viking Blvd and 270th St intersections (as seen in Figures 18 and Figure 19 on pages 18 and 19). According to a preliminary traffic study, Forest Lake Boulevard North (TH 61) to Karmel Avenue is near capacity or at capacity (2017) while the 2040 no build forecast reveal near capacity or at capacity for the entire Project (I-35 to Karmel) as seen in Figure 16. Providing safer 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 quality of life of communities along the Project. Adding capacity to the roadway reduces congestion and delays consequently reducing the burden associated with traveling on a congested corridor for commuting, recreation and passing through purposes.

Figure 16 Project Capacity

Metropolitan Council TDM (for 6/25/2019 PMT)						Volume/Capacity Ratio 0.85 - 1.00 (Near Congested) 1.00 + (Congested)	
TH 8 – West of TH 61 (Forest Lake)	4-lane divided	32,000	21,900	29,000	1.2%	0.68	0.91
TH 8 – East of TH 61 (Forest Lake)	2-lane undivided rural	15,000	20,600	26,500	1.1%	1.37	1.77
TH 8 – West of CSAH 36 (Chisago City)	2-lane undivided rural	15,000	14,500	20,500	1.5%	0.97	1.37
TH 8 – East of CSAH 36 (Chisago City)	2-lane undivided rural	15,000	17,700	23,500	1.2%	1.18	1.57

Following MnDOT's Access Management Guidelines, 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. This further adds to the attractiveness or economic vitality of the areas around the corridor for existing and potential commercial and residential investments. As seen in MnDOT's 2018 Streetlight Insight Transportation study data (Figure 17), about 19 percent of westbound and 41 percent of eastbound commercial trips made along the Project corridor are locally destined, which emphasizes the local commercial importance of the corridor. Further, 81% of commercial trips originating east of the Project corridor and 59% of commercial trips originating west of the Project corridor pass through, which signify the regional commercial significance. The project will improve traveling efficiency for these commercial vehicles and the opportunity for future economic growth in the region.

Figure 17 Commercial Trips - Origin and Destinations

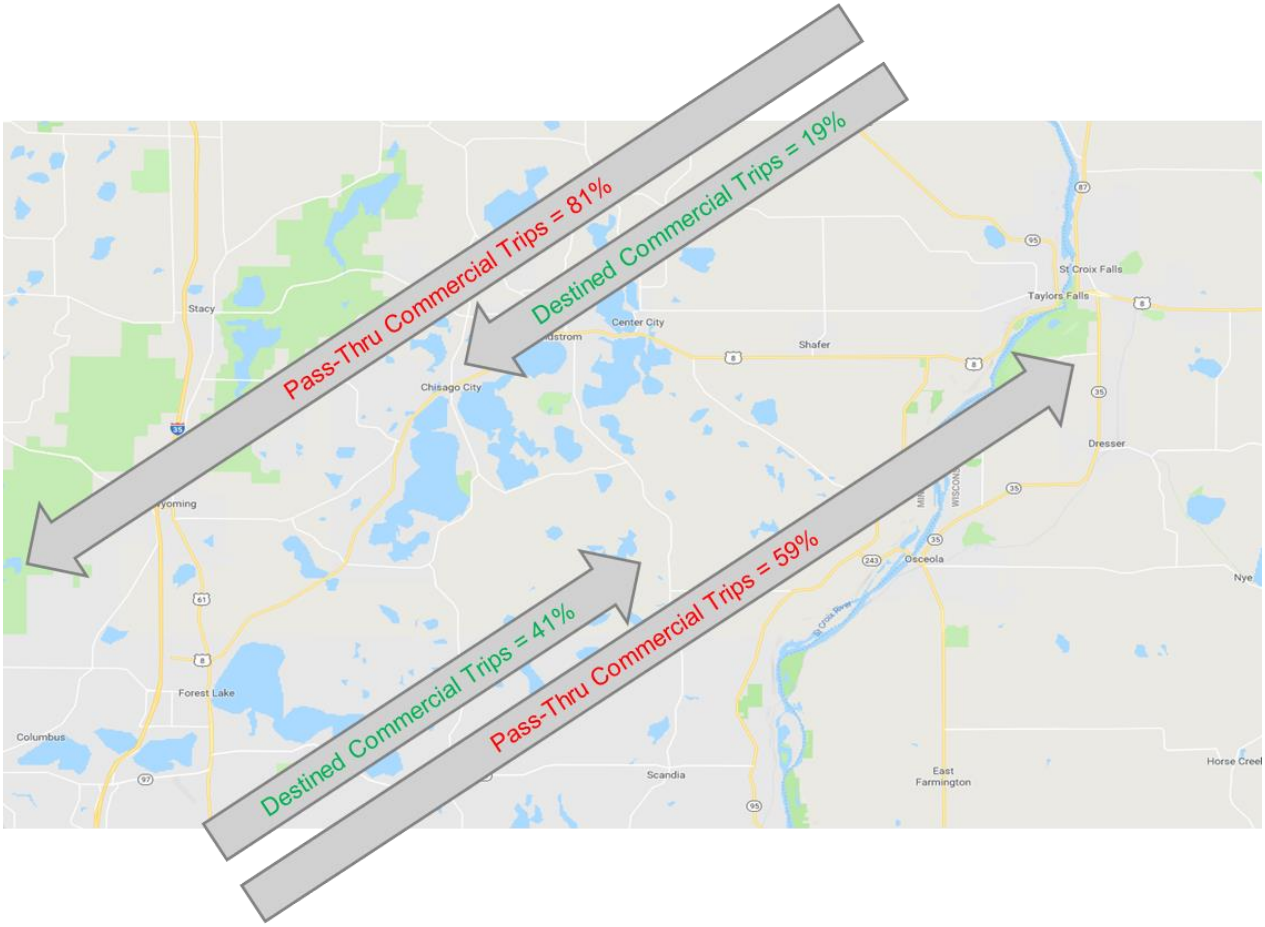


Figure 18 Existing Conditions AM Peak LOS/95th Queue

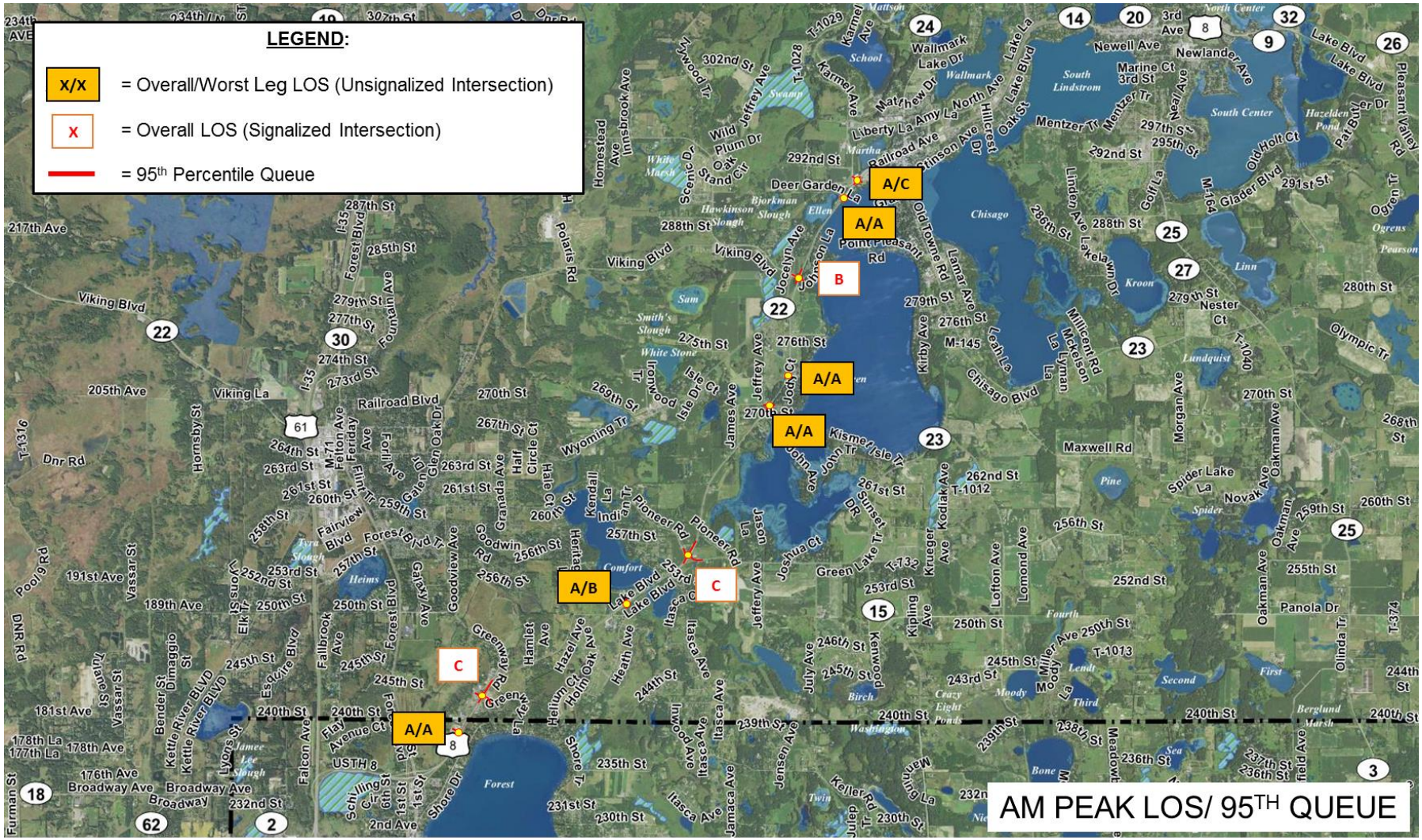
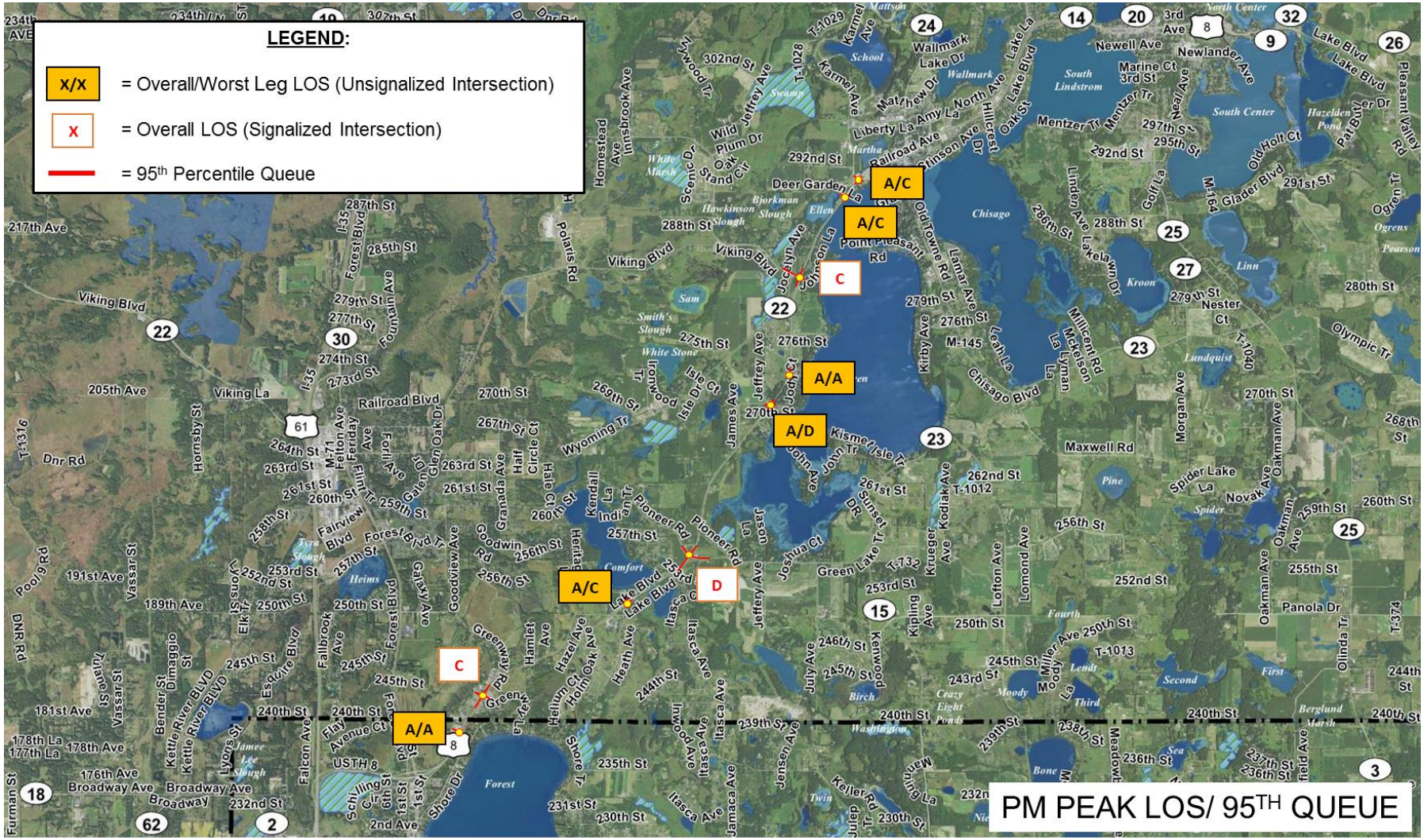


Figure 19 Existing Conditions PM Peak LOS/95th Queue



d) Environmental Sustainability

The Project is near numerous water resources including jurisdictional ditches, the Sunrise River, Forest Lake, Comfort Lake, Lake Ellen, and Green Lake. As roadway alternatives are developed, balancing environmental impacts with roadway enhancements will be one of the priorities. By performing a hydraulic analysis, the project will consider minimizing the stormwater runoff and its impacts on existing systems. In some areas, smaller ditches or curb and gutter sections may be used to reduce impacts to wetlands and lakes. In addition, the maintenance associated with stormwater management system requires a significant amount of resources and the project design goal will consider minimizing future maintenance, thereby reducing energy use and enhancing financial sustainability of the transportation infrastructure.

The operational improvements along the Project will reduce Vehicle Hours Travelled (VHT) by passenger cars as well as freight traffic. The reduction in VHT, vehicle operating cost, and traffic queuing will reduce energy consumption and emissions associated with automobile use resulting in a benefit of $503,630 over the next 20 years as demonstrated in the BCA. Moreover, the project will consider financial and environmental sustainability through pavement preservation techniques wherever possible.

e) Quality of Life

Over the years, the travel demand on TH 8 has grown considerably. The proportion of recreational travel through the corridor has also increased over time. Chisago County is viewed by many as a reasonable commuting distance to the Twin Cities, particularly with I-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 TH 8 Corridor by reducing congestion and improving pedestrian and bicycle circulation.

Regional and Rural Mobility

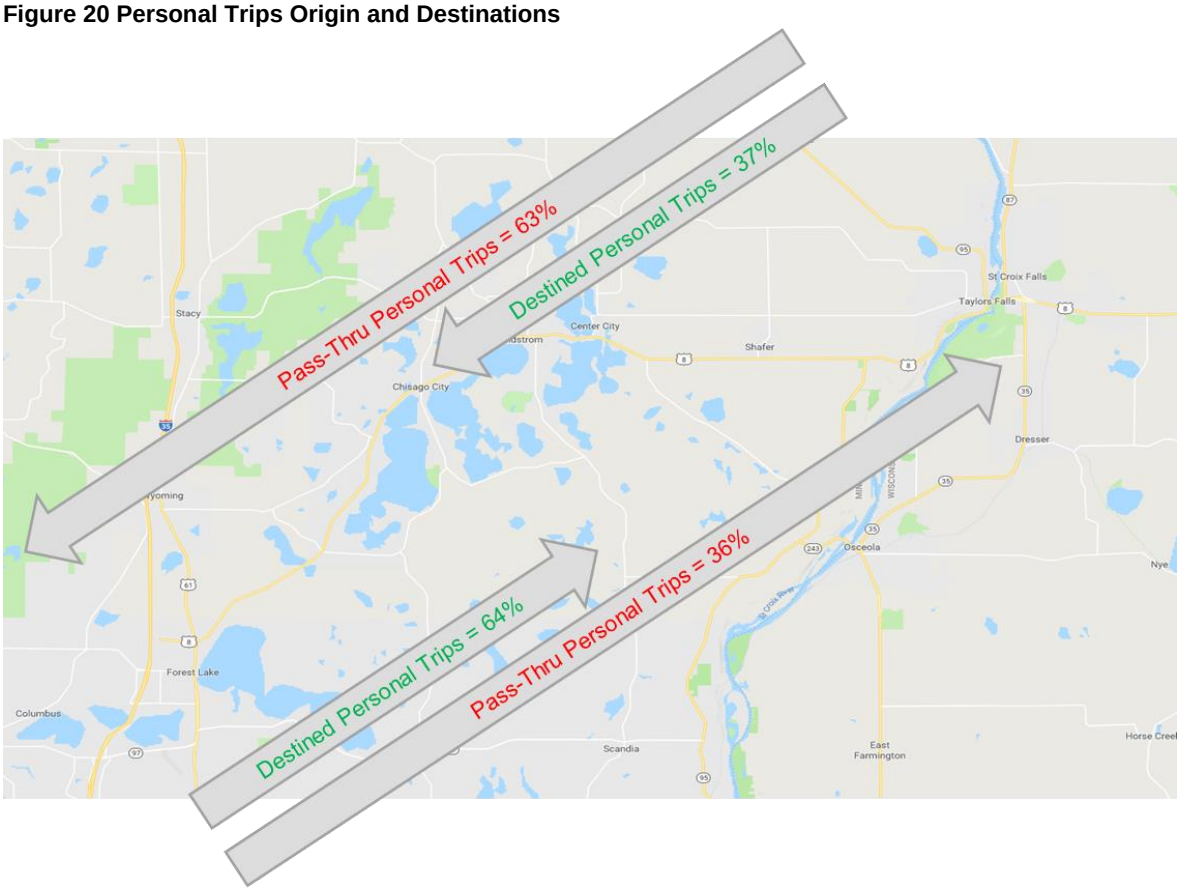
TH 8 serves a rich diversity of roadway users to include commuters passing through, vacationers enjoying the resources of many of the lakes along the Project, business patrons, and local community members. According to MnDOT's 2018 Streetlight Insight transportation study along the Project, 63% of personal vehicles passing through the corridor travel west to further destinations south towards the Twin Cities or further to the west, while 36% of commuters travel through the Project traveling north and further east to neighboring cities or the Wisconsin border. Personal trips destined along the Project range between 37% to 64% depending on their origin. The majority of the destined vehicles originate from west of the Project corridor. Of the total daily traffic, 10% are freight as seen in Figure 20. Improving the congestion and delay along the Project will positively impact all users.

Homeownership is relatively high in the communities within the Project area at approximately 75%. The average commute time for working people is nearly half an hour. This data suggests

that community members are invested long-term in their communities and likely use TH 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 TH 8.

The Project will improve these conditions by adding a lane to the east- and west- bound and improving turning movements. According to the Travel Demand Model, a 3% reduction in congestion and approximately a 60 second delay reduction is anticipated along the Project.

Figure 20 Personal Trips Origin and Destinations



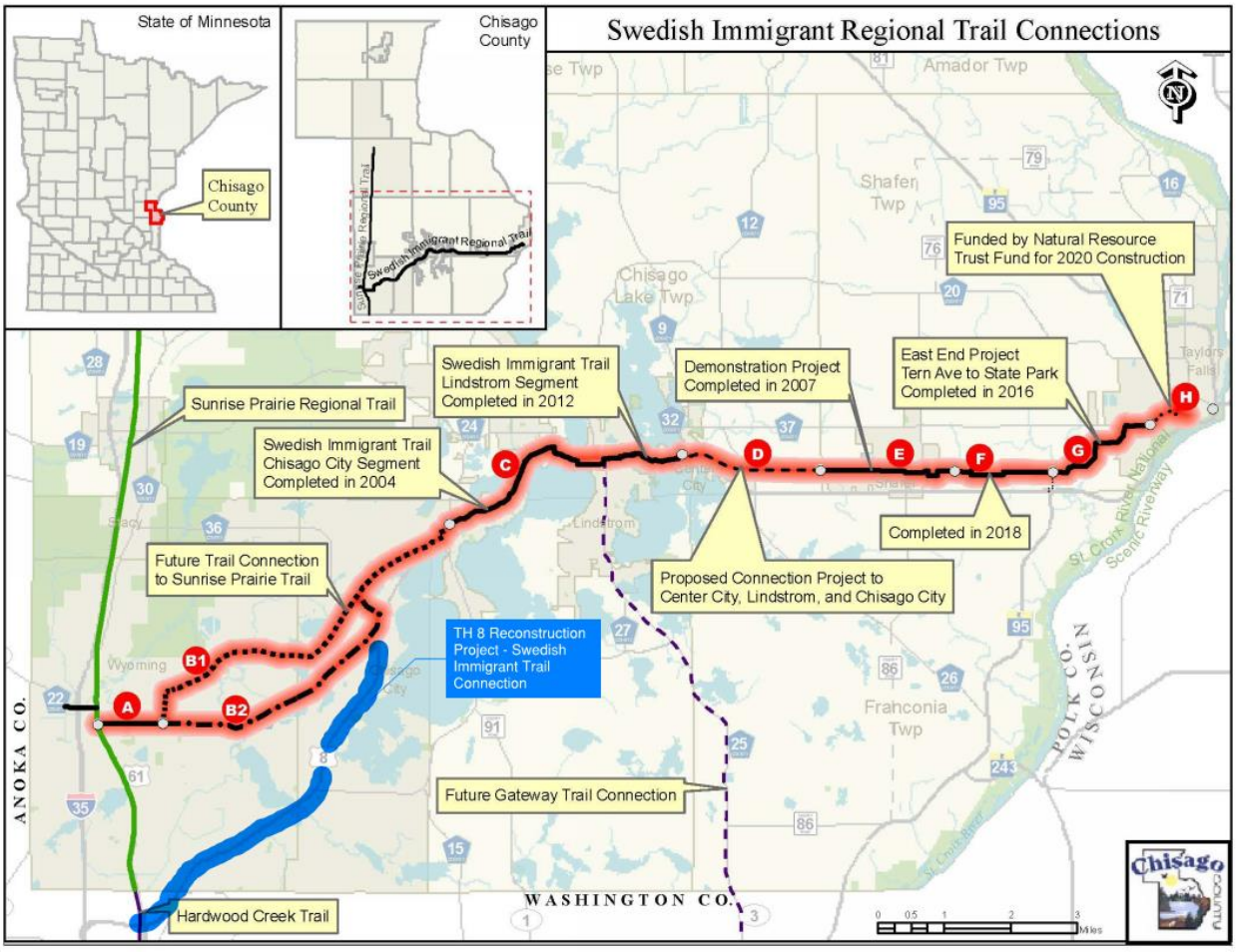
Transit

Chisago County is served by Heartland Express 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 TH 8. The Project will improve efficiency of Heartland Express to Running Aces Park-n-Ride by reducing congestion by 3% and reducing delay by approximately 60 seconds.

Trails

The Swedish Immigrant Trail is a planned 20-mile, multi-use trail that connects the Cities of Wyoming to Taylors Falls. The trail will run east to west across Chisago County to the Wisconsin border. Portions of the trail exist today east of the City of Lindstrom. 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. The Project will add a trail on the north side of TH 8 along an off-street facility, which will serve to develop the east-west connection as seen in Figure 21.

Figure 21 Swedish Immigration Regional Trail Connections



Secondary Selection Criteria

a) Innovation (innovative technologies, Innovative project delivery)

Innovative Technology

Broadband Deployment

The County will identify opportunities for fiber optic conduits along the Project. Conduits may be used for communications/Broadband or Intellident Transportation Systems (ITS). Broadband can vastly improve the speed and reliability of internet service. Improving internet access along the Connection will benefit future businesses, employees, and residents who work and live near the roadway, in particular providing more reliable connections to help small businesses compete. 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 applications as well as connected and automated vehicles. Intelligent signs may provide congestion, detour, and crash information to motorists to make an informed travel decision. By providing information to road 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.

Innovative Project delivery

Civil Information Management Software

During public engagement of the corridor study, project designers used innovative Civil Information Management (CIM) software for preliminary modeling and visualization of the proposed project to understand and mitigate impacts. This allowed stakeholders and partners to make decisions through a visual compare and contrast in real-time.

The Project will continue to utilize CIM software to model and visualize the project, as well as increased transparency of the project. The transparency will enable owners, consultants, contractors, and stakeholders to work together easily. 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. This enables an effective conflict detection, rapid design review and validation. These efforts will reduce project schedule timelines and overall costs.

Intersection Control Evaluations

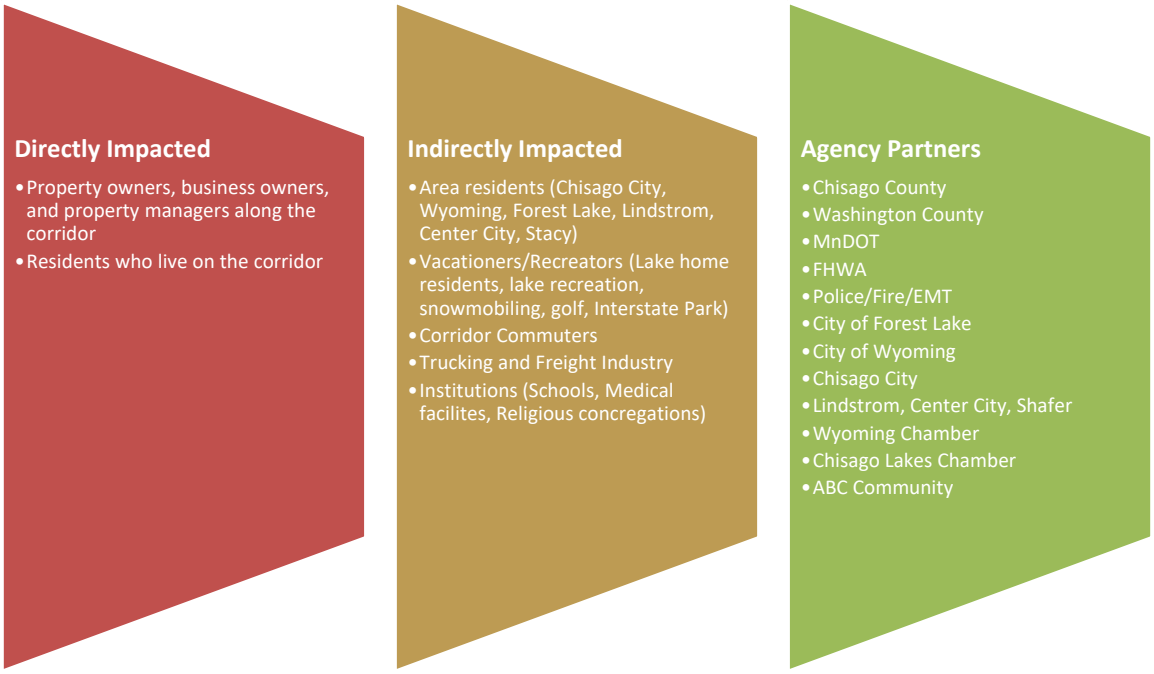
Each intersection along the 8-mile Project will undergo an Intersection Control Evaluation (ICE). The ICE will include a safety review to identify the average and critical crash rates and identify any geometric deficiencies and proximate causes and trends. Alternative operations and intersection controls will be considered. Safety strategies that may be deployed as a result of the

ICE include roundabouts, reducing intersection skews, rumble or mumbles strips, and clear zone maintenance enhancements.

b) Partnership

The Project is led by Chisago County with support and partnership from FHWA, MnDOT, Washington County, and more (as seen in Figure 22). The Project also includes three cities that are involved in the planning and public involvement of the project. They include Chisago City, Wyoming, and Forest Lake. With that being said, the corridor serves a broader group of jurisdictions beyond these three cities, as well. These cities include Lindstrom, Stacy, and Center City along with others as needed during the project, as they have a vested interest in the corridor.

Figure 22 Project Partners



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:

- the City of Lindstrom Newsletter
- Chisago City newsletter “Town Topics”

- Chisago County Project Website
- City of Wyoming website
- City of Forest Lake website
- City of Chisago website
- City of Lindstrom website

Additional public and agency involvement include the use of online and in-person engagement tools. An interactive mapping tool and contact information are available at the Chisago County Project Website. Surveys, wikimaps, and an Arc StoryMap will be made available on the Project Website in late Summer 2019. A TH 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 are scheduled throughout the Summer and Fall of 2019 to connect and engage with users of the roadway system. A detailed Engagement Schedule may be found in the Project's Public Involvement Plan found in Link.

Elected Officials Providing Document Project Support

- Congressman, Pete Stauber
- Commissioner, Margaret Anderson Kelliher (MnDOT)
- State Representative, Anne Neu
- State Representative, Bob Dettmer
- Senator, Mark Koran

Other Agencies providing Documented Project Support

- Chisago County Sheriff's Office
- City of Forest Lake
- Chisago County HRA - Economic Development Authority
- City of Wyoming, City Council
- Township of Chisago Lake
- Lakes Region Emergency Medical Services
- City of Wyoming Economic Development Authority
- Employment Consultant
- Highway 8 Task Force

See Link for all documented letters of support.

V. Project Readiness

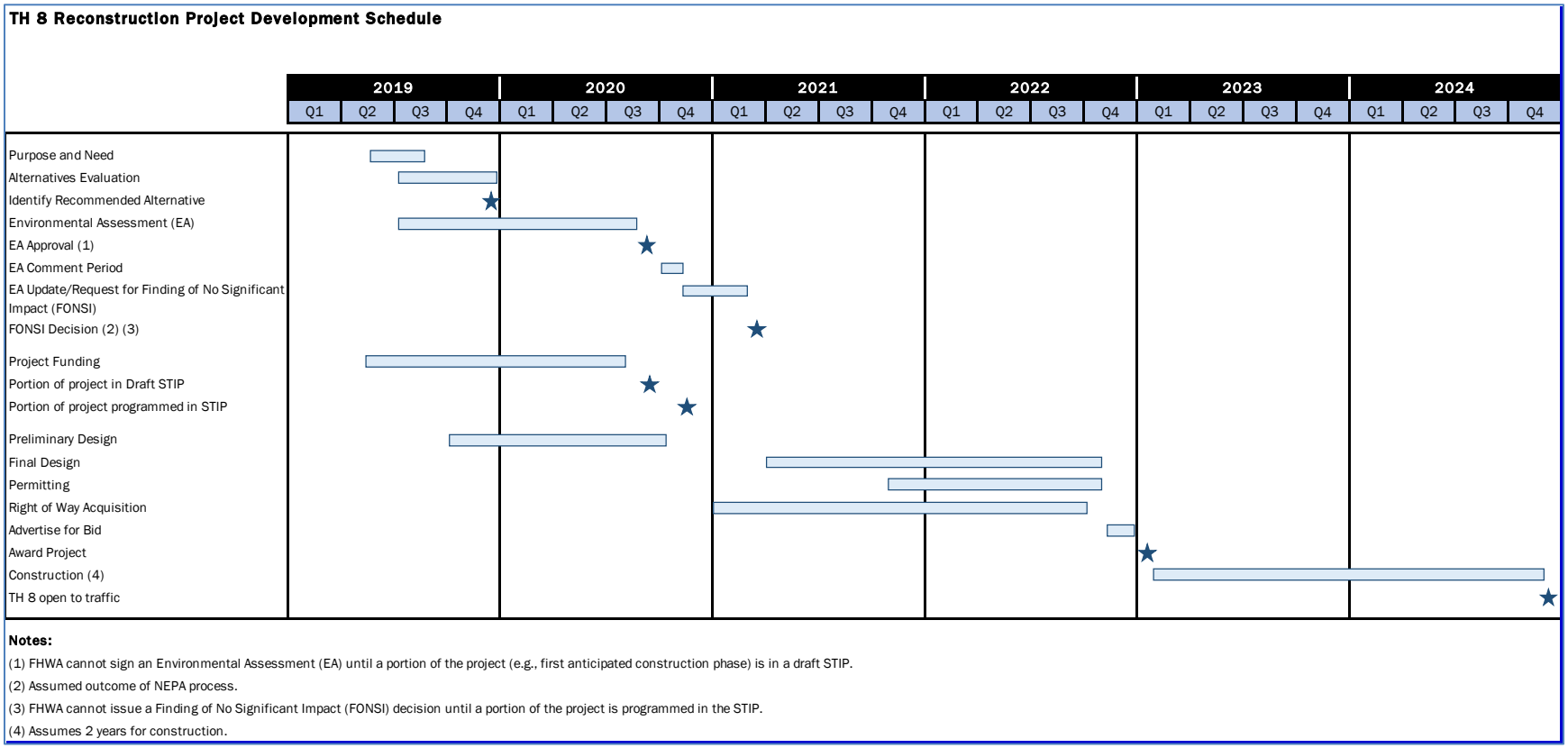
Technical, Legal, and Financial Feasibility

Chisago County has experienced staff and Project Management to procure, oversee, and manage the implementation of the TH 8 Reconstruction Project. The County previously utilized federal funding on many highway, transit and enhancement projects and is experienced with federal guidelines. The County provides for the ongoing administration of federal transit system programs, contracts for transportation services, and federal funding of projects. The County adopts each year a Capital Improvement Plan (CIP) and Annual Budget along with meeting all financial reporting and audit requirements. Chisago County is in a secure financial position, with a good track record for implementing large infrastructure projects in a timely manner.

Project Schedule

The County's proposed project schedule will meet the BUILD Transportation Grant requirements. The County is prepared to immediately initiate reconstruction of TH 8 upon notification of grant funding. Figure 23 illustrates the draft project schedule. Construction is anticipated to begin promptly upon obligation of BUILD Transportation funds (January 2023) and will be completed in the 24-month period by December 2024.

Figure 23 Project Schedule



Required Approvals

Environmental Permits and Reviews

The Project is in the pre-NEPA stage of the project development process. An Environmental Assessment Worksheet (EAW) was completed on May 2013 in accordance with Minnesota Rules Chapter 4410. However, future studies and environmental reviews will be required under the NEPA process. It is expected that the project would be reviewed as a Class III action under NEPA (Environmental Assessment, EA). An EA began in the Summer of 2019. An EA approval is anticipated a year later in the Summer of 2020 with a Finding of No Significant Impact (FONSI) decision anticipated for the Spring of 2021. Although FHWA's fiscal constraint policy prohibits approval of NEPA documents prior to the project's listing in the State Transportation Improvement Program (STIP), larger projects, like the TH 8 Reconstruction Project, are waived prior to listing in the STIP. In order to continue moving this process forward, MnDOT Metro Office of Environmental Stewardship (OES) and FHWA will be engaged throughout the Project.

Due to the size of the Project and number of aquatic resources along the TH, it is expected that more than 5 acres of wetlands will be impacted. Therefore, a Section 404 Individual Permit (IP) authorization will be required from the US Army Corps of Engineers (USACE) prior to construction. The County is taking proactive measures to coordinate with wetland regulatory agencies, including USACE, DNR, Board of Water and Soil Resources (BWSR), and Wetland Conservation Act (WCA) local government units (LGUs) from the start. A 401-water quality certification from the Minnesota Pollution Control Agency (MPCA) will also be required. The County will resolve and mitigate any issues early in project development, avoiding costly delays in permitting.

A Level 2 (field) wetland delineation will be completed along the Project. All wetlands and public waters within the likely construction limits will be delineated as per U.S. Army Corps of Engineers and Wetland Conservation Act (WCA) requirements. Wetland boundaries will be reviewed with the Technical Evaluation Panel (TEP).

Further, MPCA's NPDES permit will be required due to a combination of stormwater pond and ditch improvements along the Project. Stormwater management requires significant amounts of agency resources. Thus, early coordination with the Watershed District, MnDOT, and Cities to verify that standards and stormwater management are understood and mutually accepted along with a design to minimize future maintenance is of utmost importance.

A cultural resources literature review and Phase I archaeology survey for the Project will take place. The State Historic Preservation Office will review the results of the Phase I archaeology survey as required under the Minnesota Historic Sites Act and Minnesota Field Archaeology Act. Although a Phase 1 Environmental Site Assessment (ESA) was previously completed for the Project, an updated Phase 1 ESA is recommended to assess current site conditions and to comply with current MnDOT Phase 1 ESA reporting requirements. The County will complete the

updated Phase 1 ESA to stay proactive in case the Minnesota Pollution Control Agency requests it later in the project schedule.

State and local approvals

The Project is consistent with the State, local and regional plans. Although the Project is not currently a part of the State Transportation Investment Program (STIP), the Project will be included prior to obligation. All required State and Local approvals will be obtained prior to construction including:

- Municipal Consent from the Cities of Wyoming and Chisago
- Watershed District Permit from the Comfort Lake Forest Lake Watershed District
- Local Governmental Unit from the Wetland Conservation Act (Outside MnDOT right-or-way)
- Controlled Access Approval from the Metropolitan Council

The list is not finite. Additional State and local permits and approvals will be acquired prior to obligation and construction.

Federal Transportation Requirements

No additional known federal approvals other than those already listed under Environmental Permits and Reviews are required as part of this Project. However, FHWA is engaged throughout the Project. Any additional federal requirements that may be required will be completed in a timely manner prior to obligation and construction.

Assessment of Project Risks and Mitigation Strategies

As with most construction project negative externalities will be created; however proactive mitigation measures and early collaboration with all project partners will be implemented to minimize impacts. The County will evaluate all risks during Final Design including environmental uncertainties, needed legislative approvals, engineering and design risks, alternative financial structures needed to advance the project, adequacy of financial sources, etc. With all MnDOT Facility projects, the Project will require a value engineering study by an independent consultant. Although the study requires an additional step, the review will ensure impacts and costs are reduced. A Transportation Management Plan will be prepared for the Project. The Plan will lay out strategies for managing project work-zone impacts and include both construction traffic operation controls and public information components.

VI. Benefit Cost Analysis

The objective of a benefit-cost analysis (BCA) is to bring all the direct effects of a transportation investment into a common measure (dollars), and to allow benefits to accrue over an extended period while costs are incurred primarily in the initial years. The primary elements that can be monetized are travel time, vehicle crashes, remaining capital value, and maintenance costs. The result of the BCA is briefly summarized below. A detailed memorandum of the analysis and the active BCA workbook is provided in Link.

No Build Alternative

The No Build Alternative included leaving the 8-mile TH 8 corridor from the cities of Forest Lake to Chisago City in its current geometric and operational condition; with no modifications or restrictions to current access. This includes the two-lane undivided with a posted speed limit of 55 miles per hour with just under 60 public and private accesses to TH 8. It was assumed that the existing roadway would have a mill and overlay completed in year 2023.

Build Alternative

The proposed project replaced the existing two-lane undivided sections with a four-lane divided roadway with 8' shoulders and a grass median. Private and public accesses will be closed and redirected to frontage or backage roads, when possible, to reduce vehicle conflict points and to improve traffic safety along the Project Corridor. Also, full access intersection improvement improvements are proposed for the following seven intersections to include designated left- and right-turn lanes, reduction of skews.

- Greenway Avenue
- Heath Avenue
- Pioneer Road (CSAH 23)
- 270th Street
- 276th Street
- Viking Boulevard (CSAH 36)
- Karmel Avenue

BCA Methodology

The primary cost and benefit components analyzed in the BCA included:

- Travel time/delay (vehicle hours traveled – VHT)
- Operating costs (vehicle miles traveled – VMT)
- Crashes by severity
- Environmental and air quality impacts
- Initial capital costs: These costs were broken into distinct categories in accordance with service life (consistent with the recommendations from MnDOT Office of Transportation System Management, July 2018) and were applied evenly over the duration of the construction period.

- Remaining Capital Value: The remaining capital value (value of improvement beyond the analysis period) was considered a benefit and was added to other user benefits.
- Maintenance costs

Other analysis considerations included:

- This analysis assumed that the Build Alternative would be constructed over a two-year period, starting in year 2023, with completion in year 2024. Therefore, year 2025 was assumed to be the first full year that benefits will be accrued from the Connection. The analysis focused on the estimated weekday benefits for the twenty-year period from 2024 to 2043. The study used 365 days per year. The present value of all benefits and costs was calculated using 2017 as the year of current dollars.
- The present value of all benefits and costs was calculated using 2017 as the year of current dollars.
- A benefit-cost analysis period of 20 years was used to determine net project costs and benefits.

Project Costs

Year 2018 project cost for the BUILD Transportation Discretionary Grant components of the overall project is expected to be about $49.7 million ($48.7 in 2017 dollars). The current 2017 project costs discounted at a rate of 7 percent is approximately 29.5 million.

BCA Results

The benefit-cost analysis provides an indication of the economic desirability of a scenario, but results must be weighed by decision-makers along with the assessment of other effects and impacts. Projects are considered cost-effective if the benefit-cost ratio is greater than 1.0. The larger the ratio number, the greater the benefits per unit cost. Results of the benefit-cost analysis are included in Table 2 below.

Table 2. Benefit Cost Analysis Summary

	7% Discount
Benefits (2017)	$38.5 million
Costs (2017)	$29.5 million
B/C Ratio	1.3

VII. Supporting Documents

- Appendix A. Benefit Cost Analysis Memorandum
- Appendix B: Benefit Cost Analysis Workbook

Links to supporting documents are included throughout this narrative. All supporting documents and the BUILD grant application narrative are available to view at the following webpage: https://www.srfconsulting.com/th8-build/