

SECTION 1

Purpose and Need for Proposed Action

Section 1 describes the purpose of, and the need for, the proposed US Highway 14 (US 14) improvements. Because this is a long-range study, this section evaluates the need for improvements based on both existing transportation problems and anticipated future problems through 2030.

1.1 Introduction

The Minnesota Department of Transportation (Mn/DOT) prepared this Draft Environmental Impact Statement (Draft EIS or DEIS) to study improvements proposed to US 14 from Front Street, near the western terminus of the US 14 Minnesota River bridge in New Ulm, to County Road 6, near North Mankato (see Exhibit 1-1, Study Area Map). This 22.5-mile long corridor includes portions in the cities of New Ulm (in Brown County), as well as Courtland and Nicollet (in Nicollet County).

US 14 is a major east-west highway, located in southern Minnesota that is part of the Minnesota Trunk Highway system, as well as the U.S. Department of Transportation's National Highway System (NHS). The highway extends approximately 1,500 miles from the entrance of Yellowstone National Park near Cody, Wyoming to Chicago, Illinois. Within Minnesota, US 14 extends from the South Dakota border through New Ulm, Mankato, and Rochester and then east to La Crescent, MN, where it crosses the Mississippi River into Wisconsin.

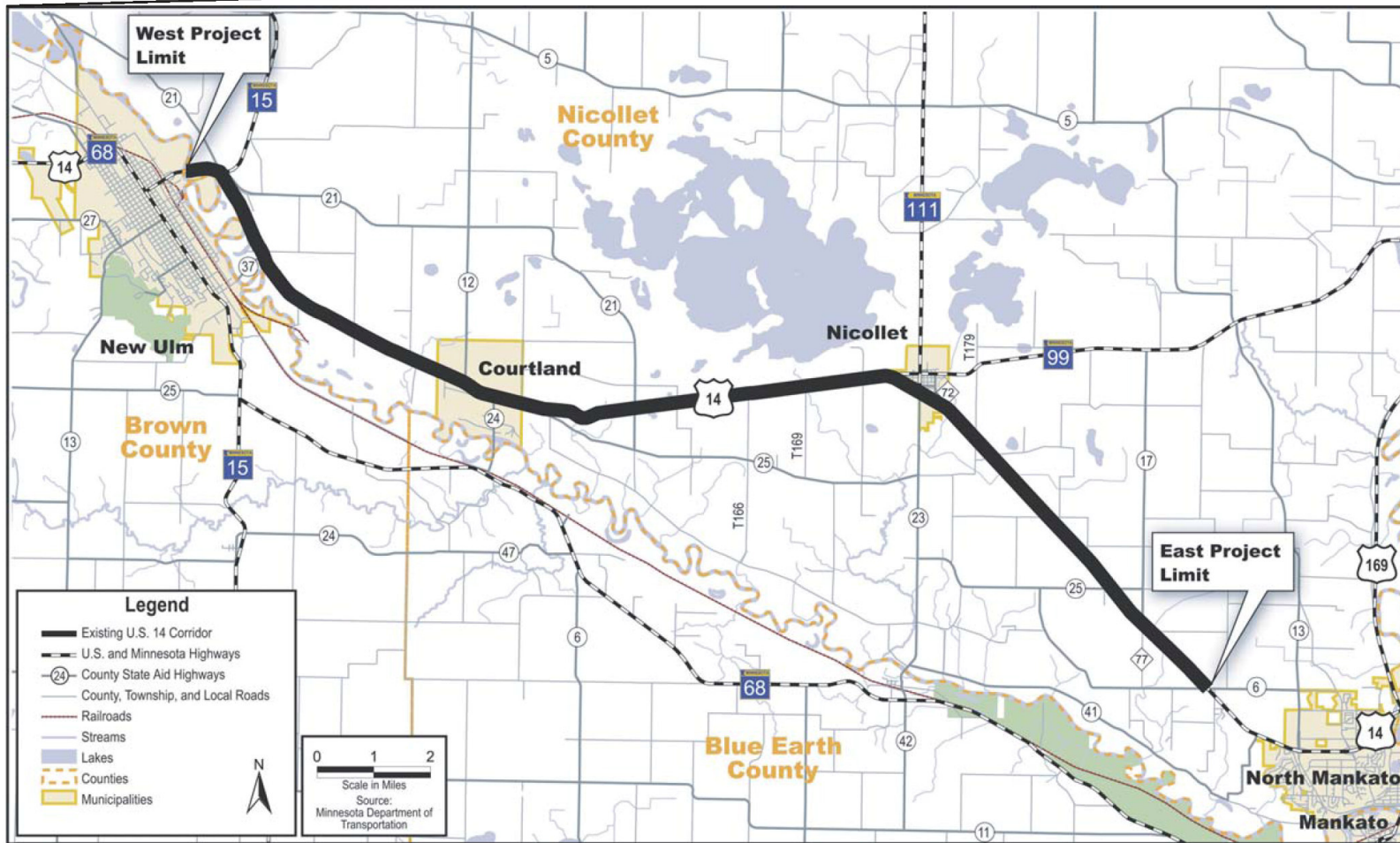
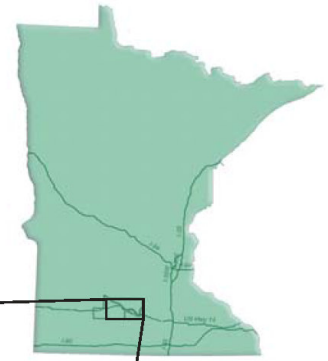
In 1999, Mn/DOT identified the stretch of US 14 from New Ulm to Rochester as a Medium Priority Interregional Corridor (IRC). The IRC designation means that US 14 is among 2,930 miles of highway that tie Minnesota's largest economic centers together.

The portion of US 14 studied in this DEIS is the western-most part of a designated interregional travel corridor, connecting the growing regional centers of New Ulm and Mankato (see Section 3 for more information about land use and growth in the study area). The goal of the IRC System is to provide efficient connections among regional trade centers.

The existing 2-lane highway is classified as a principal arterial. It serves daily commuters and commercial or truck traffic, and also provides access to homes, farms, and businesses. The majority of the land within the study area is rural in nature, partially due to zoning policies enacted by Nicollet County in 1981 to preserve agricultural land. The Swan Lake Wildlife Management Area (WMA), located primarily north of US 14 between Courtland and Nicollet, is another major feature of the study area (see Section 3 for more details regarding land use features and growth in the study area).

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US 14 Draft EIS
New Ulm to North Mankato

1.2 Project Purpose

Mn/DOT's long-term objective for US 14 is to provide safe and reliable transportation. This goal is consistent with Mn/DOT's vision and mission, as stated in its Strategic Plan:¹

- **Vision**— *A coordinated transportation network that meets the needs of Minnesota's citizens and businesses for safe, timely, and predictable travel.*
- **Mission**— *Improve access to markets, jobs, goods and services and improve mobility by focusing on priority transportation improvements and investments that help Minnesotans travel safer, smarter and more efficiently.*

The purpose of the proposed US 14 improvements from New Ulm to North Mankato is based on more specific performance objectives for a Minnesota IRC, while seeking compatibility with local communities and the area's natural resources. The proposed project must, therefore, be based on a sound and balanced plan that will:

- Provide for system continuity to the west end of the US 14 IRC at New Ulm;
- Address and reduce the potential for safety problems;
- Support US 14's function as an interregional trade corridor, specifically by maintaining or improving travel conditions to meet performance; and
- Fit the context of the area's communities, resources, land uses, and transportation demands (the Cities of New Ulm, Courtland, and Nicollet; the area's farms, neighborhoods, businesses, topography/bluffs, and other social and natural resources).

This DEIS was prepared to identify highway improvements necessary to meet these project goals. It builds upon the planning and environmental review documents that have been completed to-date, ultimately to identify a preferred alternative. The preferred alternative will include a decision regarding the location of improvements, as well as the proposed design.

1.3 Need for Project

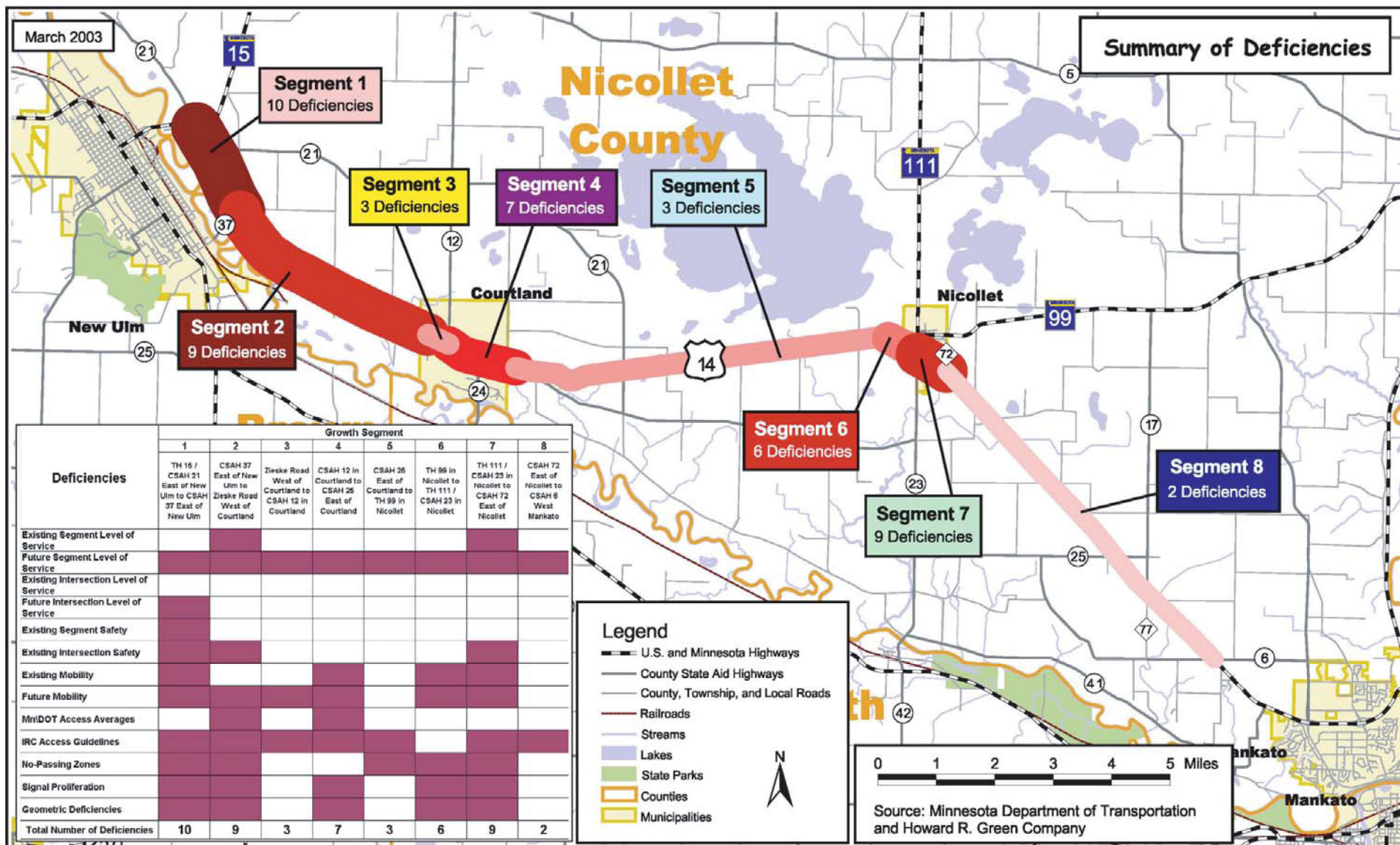
Improvements to US 14 are proposed to address a variety of traffic operational needs that have long been recognized and identified along the highway. These include: access management needs, capacity needs, crash problems, and geometric deficiencies, as summarized in Exhibit 1-2.

Improving the highway would also serve the corridor's interregional trade function and respond

Improvements to US 14 are proposed to address a variety of safety and capacity needs including: access management, capacity issues, crash history, and operational and geometric deficiencies.

¹ See: <http://www.dot.state.mn.us/information/statplan00/index.html>





Source: 14 West IRC Scoping Document, March 2003, Figure 2-7



to governmental and public support for continuity of improvements to US 14. This section discusses how these functions combine to create a need for the project. The project needs, in turn, shape the development of viable transportation improvement alternatives, which are described in Section 2. Documented deficiencies along the US 14 corridor are discussed further in the subsections below and more detailed mapping of the corridor is provided in the attached Aerial Photo Exhibit. More detailed analysis that supports the safety, capacity, operational, and geometric deficiencies is available in the *Corridor Management Plan (CMP)*, Chapter 3 – Existing and Forecast Conditions, and Chapter 4 – Identification of Deficiencies.

The *14 West Interregional Corridor Scoping Document* reports in detail on the corridor's existing and forecasted safety, capacity, and operational deficiencies. The key deficiencies and issues that must be addressed include:

System Continuity (see Section 1.3.1)

- The New Ulm to North Mankato section is one of two pieces of the US 14 IRC between New Ulm and Rochester that is not already a four-lane expressway, or is not in an advanced stage of project approval (the other section is from Owatonna to Dodge Center – a section that is now being re-evaluated in a Draft EIS).
- Within the New Ulm to North Mankato section, highway design characteristics are inconsistent, especially with regards to intersection improvements.

Safety Deficiencies and Needs (see Section 1.3.2)

- Crash rates that often exceed statewide averages, including a crash severity rate that is three times the average at the US 14/MN 15/CR 21 intersection (at the corridor's west end), where four fatalities and 70 percent of the injury crashes occurred (1996 through 2000).
- Lack of passing zones which affects the high crash rates, including head-on crashes.

Capacity Deficiencies and Needs (see Section 1.3.3)

- A forecasted increase in traffic congestion for the entire corridor resulting from high traffic volumes, a high percentage of trucks, and the lack of passing opportunities.
- Failure to meet or exceed Mn/DOT's IRC performance target for maintaining average speeds above 55 mph.
- Increasing traffic, including through-town truck traffic, will have a continuing and mounting adverse impact on the growing communities of Courtland and Nicollet – including growing levels of congestion and crashes.
- Multiple intersections are at high risk for placing traffic signals, which reduce speeds/mobility and (contrary to popular belief) can also reduce highway safety when compared to interchanges or other approaches – see Section 1.3.3.3.

Highway and Bridge Design Deficiencies and Needs (see Section 1.3.4)

- Two-lane highway design; along with vertical and horizontal highway geometry (including skewed intersections, limited sight distances, and horizontal curves) increases collision risk.
- Two-lane Minnesota River bridge which would be nearly 50 years old at the time highway improvements are made and in need of future improvements; not expanding the bridge may create a “bottleneck effect” as traffic transitions from four lanes on both bridge ends.



- A high number of accesses per mile increases the likelihood of crashes resulting from lack of gaps for motorists to enter the highway.

The *14 West Interregional Corridor Scoping Document* divided the study corridor into eight corridor segments as shown in Table 1-1. The rest of this section documents the need for improvements to US 14 between New Ulm and North Mankato based on these eight segments.

TABLE 1-1
US 14 Corridor Segments from New Ulm to North Mankato

Segment	Location	Typical Section	Segment Length (Miles)
1	MN 15/CR 21 to CR 37	2-Lane Rural	1.8
2	CR 37 to Zieske Road	2-Lane Rural	3.8
3	Zieske Road to CR 12	2-Lane Urbanizing	0.4
4	CR 12 to CR 25	2-Lane Urban	1.2
5	CR 25 to MN 99	2-Lane Rural	6.5
6	MN 99 to MN 111/CR 23	2-Lane Urbanizing	0.6
7	MN 111/CR 23 to CR 72	2-Lane Urban	0.6
8	CR 72 to CR 6	2-Lane Rural	6.8
TOTAL			21.7 ¹

1 The *CMP* did not study the segment of highway between Front Street in New Ulm and the US 14/MN 15 intersection. The addition of this 0.8 mile segment to the DEIS study area results in a 22.5 mile corridor.

Source: *14 West Interregional Corridor – North Mankato to New Ulm – Corridor Management Plan, June 2003, p. 3-4.*

1.3.1 Need for Improved System Continuity

System continuity refers to the concept of having consistent road design along the length of a corridor. Consistent road design allows drivers to correctly anticipate how to make necessary maneuvers. For example, if turn lanes are used consistently, drivers know to enter the turn lane to decelerate instead of slowing down substantially in the travel lanes. Design that is consistent throughout the corridor thus benefits safety and capacity by eliminating surprises for drivers.

1.3.1.1 System Continuity on the US 14 Interregional Corridor

US 14 from New Ulm to Rochester is part of Minnesota’s interregional corridor (IRC) system. The IRC system emphasizes efficient connections between regional trade centers and the goal is to enhance the economic vitality of the state by providing safe, timely, and efficient movement of goods and people.



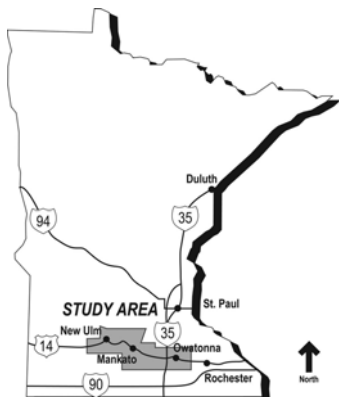
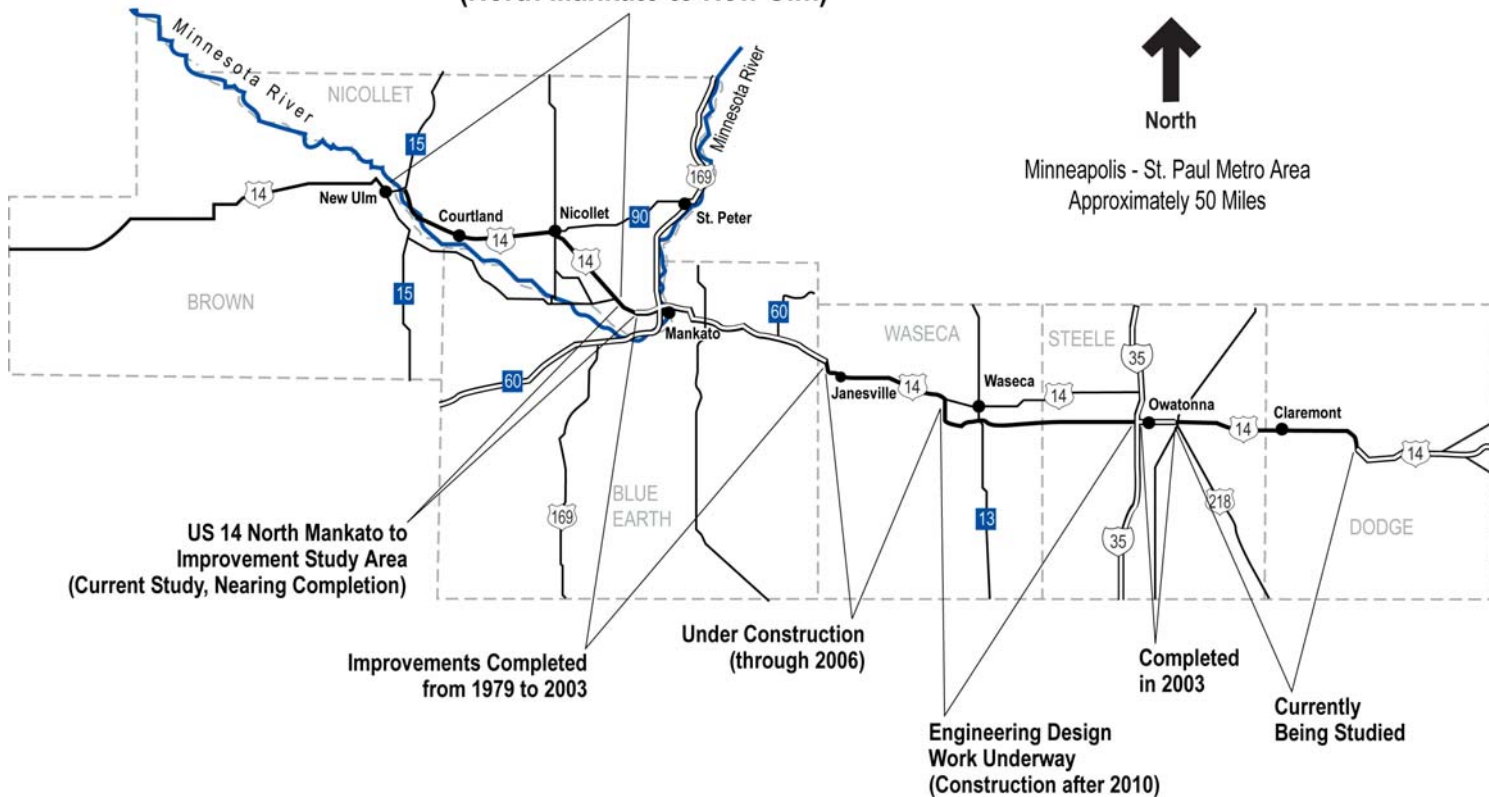
Since the 1960s, Mn/DOT has been upgrading US 14 between New Ulm and Rochester to four lanes. As shown in Exhibit 1-3, several sections of US 14 between North Mankato and Rochester have been expanded, or have had the planning for expansion completed. These expansion projects include:

- 1960s & 1970s – completed upgrade to four lanes from Kasson to Rochester (13 miles)
- 1979 – completed Mankato bypass upgrade to four lanes (8 miles)
- 1997 – completed upgrade to four lanes from Mankato to Eagle Lake (8.0 miles)
- 1999 – completed the EIS for the corridor between MN 60 to I-35; the Preferred Alternative is a 4-lane expressway with bypasses of Janesville and Waseca and a new connection at Owatonna (32 miles)
- 2001 – completed upgrade to four lanes from Dodge Center to Kasson (9 miles)
- 2003 – completed upgrade to four lanes from MN 60 to Smiths Mill (4.8 miles)
- 2004 – completed an Environmental Assessment (EA) to upgrade to a 4-lane divided expressway from west of CR 6 in Belgrade Township to Lookout Drive in North Mankato and construction of an interchange at CR 41 in Nicollet County; construction is currently unscheduled (2.7 miles)
- 2006 – completed upgrade to four lanes from Janesville to Waseca (9.8 miles)
- 2006 – began preparation of a new EIS for upgrade to four lanes between Owatonna and Dodge Center; a previous EIS determined that the highway would be upgraded, but the location is in question (19 miles)
- 2008 – scheduled start of construction from Waseca to I-35 at Owatonna (17.5 miles)

Upon completion of the projects that are planned for US 14, the New Ulm to North Mankato segment will be the only remaining two-lane section on the interregional corridor. Upgrading this segment will complete the development of the US 14 interregional corridor as a four lane expressway.



US 14 EIS Study Area (North Mankato to New Ulm)



1.3.1.2 Design Consistency within the New Ulm to North Mankato Segment

US 14 between New Ulm and North Mankato has undergone numerous localized projects to improve safety and enhance mobility along the corridor. While these improvements have addressed the local issues, the corridor does not have a consistent design that allows drivers to anticipate what comes next.

For most of the length of the corridor between New Ulm and North Mankato, US 14 is a rural, two lane, undivided roadway with paved shoulders and right turn lanes at public roadway intersections. The following are notable deviations from the typical design:

- Minnesota River bridge has very narrow shoulders
- The US 14/MN 15/CR 21 intersection has left turn lanes on both US 14 and the MN 15 approach and free right turns to go north on MN 15 and east on US 14 and a stop on US 14 westbound
- At CR 37 there is a left turn lane from US 14 onto CR 37 and a free right from CR 37 to an acceleration lane on eastbound US 14
- At 571st Avenue there is a westbound bypass lane to allow through traffic to go around vehicles waiting to make a left turn onto 571st; there is a truck climbing lane going eastbound
- At 561st Avenue there are left turn lanes in each direction on US 14
- Within Courtland, parking is allowed along US 14
- At 466th Street there is no westbound right turn lane on US 14
- There is a right turn lane into the hog buying station west of Nicollet
- There is no right turn lane into the wildlife management area
- US 14 becomes divided with a grass median for a short segment at MN 99 to allow for an eastbound left turn lane
- The grass median ends and is replaced by a painted median through Nicollet
- There are left turn lanes in both directions at the intersection with MN 111 and CR 27
- There are left turn lanes through Nicollet that, for a short segment, become a two way center left turn lane
- There are no right turn lanes at the unpaved east-west road crossing just east of Nicollet
- There is a westbound right turn lane at an entrance to a farm just west of CR 25

While all of these anomalous designs were constructed to address specific needs, the list demonstrates the fact that there is not a consistent design for US 14 through the study area.



1.3.2 Need for Safety Improvements

1.3.2.1 Crashes

Safety on the US 14 corridor was studied in-depth in the *Corridor Management Plan (CMP)*, including documentation of crash rates, critical crash rates, crash severity, and the distribution of crash types along the entire corridor, and at intersections. The data used were for the years 1996 through 2000. Although the following discussion is not based on the most recent data, the analysis in the CMP is used because it is the most exhaustive. A less comprehensive review of recent data indicates generally slightly improved crash and severity rates, especially at the MN 15 intersection.

Crashes by Corridor Segment

Between 1996 and 2000, a total of 209 crashes occurred on the study corridor. Table 1-2 documents the crash rate, severity rate, and critical rate of the eight segments studied in the *CMP*. The *CMP* analysis identified considerable safety deficiencies along the segment between MN 15 and CR 37. This segment has a crash rate of 2.0 crashes per million vehicle miles, which is about twice the statewide average for a rural expressway (0.9) and Mn/DOT's IRC performance target of 1.0; this also exceeds the critical crash rate for that segment. Additionally, six of the eight segments in Table 1-2 exhibit severity rates above the average of 1.9 severe crashes per million vehicle miles (see the **bold** text in the crash rate and severity rate columns in Table 1-2). In summary, these data indicate that safety problems are already apparent along much of the US 14 corridor and these problems can be expected to worsen as traffic volumes increase.

The location of greatest concern for crashes is the US 14/MN 15/CR 21 intersection at the western end of the segment. Within this segment, 50 percent of the crashes were turn-related (right angle and left turn), which exceeds the average rate of around 32 percent. Additionally, the severity rate is more than three times the average rate because of four fatalities; also, 70 percent of the injuries along US 14 occurred at this intersection.



TABLE 1-2
Crash and Severity Rates along US 14 Corridor Segments (1996-2000)

Segment	Crash Rate ¹	MN Avg. Crash Rate by Hwy. Type ²	Critical Rate ³	Severity Rate ⁴
1 - MN 15/CR 21 to CR 37 (rural)	2.0	1.0	1.7	6.5
2 - CR 37 to Zieske Road (rural)	1.0	1.0	1.5	2.5
3 - Zieske Road to CR 12 (rural)	1.6	1.0	2.1	6.4
4 - CR 12 to CR 25 (urban)	1.0	3.0	5.7	2.6
5 - CR 25 to MN 99 (rural)	0.6	1.0	1.4	1.1
6 - MN 99 to MN 111/CR 23 (urban)	0.8	3.0	7.3	2.8
7 - MN 111/CR 23 to CR 72 (urban)	2.5	3.0	6.7	7.8
8 - CR 72 to CR 6 (rural)	0.5	1.0	1.4	1.3

1 Crash Rate by Segment – crashes per million vehicle miles (MVM) of travel.

2 The average statewide crash rate for a 2-lane rural highway is 1.0/MVM; the average statewide crash rate for a 2-lane urban highway is 3.0/MVM.

3 Critical Crash Rate – crash rate that is statistically significant above the average crash rate for similar facilities (the critical rate defines an unusual safety problem for the roadway segment; in this case it is exceeded only in segment 1, primarily because of the MN 15 intersection).

4 Severity Rate—crash severity rate accounts for property damage only crashes; injury crashes; and fatal crashes. The average severity rate is 1.9/MVM for a Minnesota rural expressway (as highlighted above, six segments have exhibited severity rates above this average).

Source: *TH 14 North Mankato to New Ulm CMP*, June 2003, p. 3-71 and 3-72

Crashes at Intersections

As shown in Table 1-3, three of the intersections analyzed in the *CMP* had crash rates above both the average crash rate (for through stop intersections) and the critical rate: US 14/MN 15/CR 21; US 14/CR 37; and US 14/MN 111/CR 23). Problems at these three intersections are also apparent based on severity rates that exceed the averages of 0.75 to 1.0 severe crashes per million entering vehicles (see the **bolded** values in Table 1-3 under the Crash Rate column).



TABLE 1-3
Crash Rates at Corridor Intersections

Intersection	Crash Rate ¹	Avg. Crash Rate (for through stop intersections)	Critical Rate ²	Severity Rate ³
US 14 & MN 15/CR 21	1.4	0.4	0.6	5.5
US 14 & CR 37	0.7	0.4	0.6	2.2
US 14 & CR 12	0.1	0.4	0.6	0.4
US 14 & MN 99	0.2	0.4	0.6	0.5
US 14 & MN 111/CR 23	1.1	0.4	0.6	2.2
US 14 & CR 25	0.3	0.4	0.6	0.6

1 Crash Rate by Intersection – number of crashes per million entering vehicles (MEV) into the intersection.

2 Critical Crash Rate – crash rate that is statistically significant above the average crash rate for similar facilities (the critical rate defines an unusual safety problem for the intersection; in this case it is exceeded at three intersections).

3 Severity Rate – crash severity rate accounts for: property damage only crashes; injury crashes; and fatal crashes. The average severity rate for comparable Minnesota intersections is 0.75 to 1.0/MEV (as highlighted above, the same three intersections exhibit rates above that average range).

Source: *14 West Interregional Corridor Management Plan, June 2003, Section 3.*

US 14/MN 15/CR 21 Intersection – This intersection has the highest crash rate along the corridor, with 1.4 crashes per million entering vehicles (MEV). Forty-five percent of the crashes involve left turns while 36 percent involve right turns. The severity rate at this intersection (5.5) is more than four times greater than the average severity rate of 1.0. All four fatalities and nearly 70 percent of the injuries that occurred along this 22.5-mile long corridor were at this intersection. One key factor that contributes to the frequency and severity of crashes at this intersection is a 90 degree turn that motorists must make to continue traveling on US 14. Also, vehicles traveling on MN 15 toward New Ulm are coming down a steep grade with a curve. As noted below in Section 1.5, Mn/DOT implemented interim safety improvements to this intersection in 2003. The data from 2004-2006 show a crash rate of 1.1 crashes per MEV and a severity rate of 1.9. There were no fatalities at the intersection during that time period. The reduced crash rate suggests that the improvements are helping. However, the severity rate is still nearly double the statewide average for similar intersections; additionally, future increased traffic volumes will increase the risk for more crashes. Finally, note that the reduction in severity rate based on the most recent data is primarily due to an absence of fatal crashes which has a strong influence on severity rate.

US 14 at CR 37 Intersection (T-intersection) – Vehicles on CR 37 are required to stop for through traffic on US 14. The crash rate is 25 percent higher than the Minnesota average for this type of intersection. The severity rate of 2.2 is over two times the expected rate of 1.0. Two-thirds of the crashes at this intersection occur when a vehicle is turning onto or off of CR 37. Further review



indicated that from the stop sign on CR 37, motorists have adequate intersection sight distance; however, it appears that they have difficulty selecting a safe gap. This intersection underwent a slight reconfiguration, including an extension of the US 14 eastbound acceleration lane for right turning traffic during Summer 2004 as an interim safety measure (see Section 1.5 below).

US 14/MN 111/CR 23 Intersection – US 14 traffic is the through movement while traffic on MN 111/CR 23 stops at this through stop controlled intersection in Nicollet. Overhead warning flashers were in place until September 2001 when they were replaced with warning flashers mounted on the stop signs. The existing crash rate is 10 percent higher than Mn/DOT's IRC intersection goal. The severity rate of 2.2 is nearly three times the average rate of 0.75.

More than 90 percent of the crashes at this intersection were right angle crashes which is much higher than the Minnesota average of 28 percent at urban intersections. Analysis of the intersection indicated that a large portion of the crashes occurred on the far side of the intersection when motorists were attempting to cross US 14 from the minor street. The skewed angle of minor street approaches appears to be a key factor to the higher than expected frequency of angle crashes.²

1.3.2.2 No Passing Zones

Three of the five passing-related crashes occurred on sections of the highway striped for passing. The other two occurred where passing is not allowed. Most of these crashes occurred during daylight, in clear and dry conditions. US 14 through Courtland (referred to as Segment 4 in the *CMP*) experienced a substantially higher rate of passing related crashes than Minnesota averages. This is the only corridor segment where parking is allowed along the highway.

One third of the study corridor does not have passing zones (see Table 1-4). Mn/DOT's goal is that the state's 2-lane rural roads should have no passing zones along less than 10 percent of the route miles. Between New Ulm and Courtland, nearly 60 percent of the roadway is no passing, and between Courtland and Nicollet, nearly 50 percent of the highway is no passing. The entire corridor through Nicollet is a no passing zone. This high percentage of no passing zones will ultimately continue to degrade highway safety performance as increased traffic and different vehicle types combine to create more exposure to crash risks, including head-on crashes, along the corridor (see Table 1-4).

² The Mn/DOT Road Design Manual recommends that the alignment of intersecting highways should be as close to 90 degrees as possible. Recent studies show that skewed intersections increased the potential for crashes (an 18% increase in crash rate for a 30 degree skew angle) and impaired driver views (NCHRP 500, Strategy 17.1 B 16 - Realign Intersection Approaches). The AASHTO, Policy on Geometric Design of Highways and Streets (2004) recommends a maximum skew of 30 degrees, noting that the ideal is no skew at all. The skew at this intersection is 29 degrees.



TABLE 1-4
Analysis of No Passing Zones along Corridor Segments

Segment	Segment Length (Miles)	Length of No Passing (miles)	Percentage No Passing	Number of Head on Crashes
1 - MN 15/CR 21 to CR 37	1.8	0.7	36%	0
2 - CR 37 to Zieske Road	3.8	2.2	59%	1
3 - Zieske Road to CR 12	0.4	0.0	0%	0
4 - CR 12 to CR 25	1.2	0.0	0%	0
5 - CR 25 to MN 99	6.5	3.1	48%	1
6 - MN 99 to MN 111/CR 23	0.6	0.6	100%	0
7 - MN 111/CR 23 to CR 72	0.6	0.6	100%	0
8 - CR 72 to CR 6	6.8	0.1	2%	3
TOTAL	21.7	7.3	33%	5

Source: 14 West Interregional Corridor – North Mankato to New Ulm – Scoping Document, March 2003, p.2-2 and 14 West Interregional Corridor – North Mankato to New Ulm – Corridor Management Plan, June 2003, p. 3-76.

1.3.3 Need for Highway Capacity

1.3.3.1 Traffic Volumes and Level of Service

The CMP analyzed traffic patterns on the corridor from 1980 to 2000. Forecasts for the year 2025 were developed based on the identified trends. The discussion in the DEIS utilizes the forecasts in the CMP extended to 2030. Recent traffic counts are also included to illuminate the trends, but the forecasts are still based on the comprehensive study performed in the CMP.

As shown in Table 1-5, the year 2006 average daily traffic (ADT) volumes on the corridor ranged from 5,000 to 8,700 vehicles per day (vpd). A regression analysis of historic volumes (completed for the CMP in 2003) predicted that by 2025, the ADT will range from 9,000 vpd to 12,800 vpd, an increase of between 60 and 80 percent. An additional forecast through 2030 was completed to provide more appropriate design year traffic volumes (see Table 1-5).³

³ The “design year,” for highway planning purposes, is the forecast year that represents the construction timeframe plus 20 years. Because no major construction is anticipated for this project prior to 2010, the soonest reasonable design year is 2030.



TABLE 1-5
Actual and Forecasted Traffic Volumes

Segment (length)	Typical Section	2000 ADT ^a	2006 ADT	2025 ADT	2030 ADT	2000 LOS	2025-2030 LOS
0 - MN River Crossing to MN 15 (0.8 mile)	2-lane urbanizing & Bridge Deck	7,600	8700	13,500	14,600	D	E
1 - MN 15/CR 21 to CR 37 (1.8 miles)	2-lane rural	5,500	6100	9,700	10,500	C	E
2 - CR 37 to Zieske Road (3.8 miles)	2-lane rural	6,800	8000	12,300	13,300	D	E
3 - Zieske Road to CR 12 (0.4 miles)	2-lane urbanizing	6,800	8000	12,300	13,300	C	E
4 - CR 12 to CR 25 (1.2 miles)	2-lane urban	6,500	7300	10,400	11,400	C	E
5 - CR 25 to MN 99 (6.5 miles)	2-lane rural	5,300	5000	9,400	10,200	C	E
6 - MN 99 to MN 111/CR 23 (0.6 miles)	2-lane urbanizing	4,800	5000	9,000	9,700	C	E
7 - MN 111/CR 23 to CR 72 (0.6 miles)	2-lane urban	7,100	6800	12,800	13,900	D	E
8 - CR 72 to CR 6 (6.8 miles)	2-lane rural	7,100	6800	12,800	13,900	C	E

Sources: *14 West Interregional Corridor – North Mankato to New Ulm – Scoping Document*, March 2003, p.2-10 (the 2030 forecast volumes were developed as part of the DEIS analysis).

^a The latest traffic volume data for the US 14 corridor is through 2004 and is not broken out to the level of detail provided in this table. A comparison of 2000 data to 2004 data indicates similar volumes.

The primary measure used by transportation professionals to assess operations is Level of Service (LOS). LOS is typically presented in the form of a letter grade (A through F) – much like an academic report card. LOS A represents conditions with “free-flow” traffic with little or no delays. Conversely, LOS F conditions are represented by extreme congestion with long delays and queuing. The typical maximum capacity of a 2-lane rural road ranges from 10,000 vpd to 12,000 vpd, which corresponds to LOS E-F. Given the rural nature of the roadway and Mn/DOT’s objective for mobility along interregional corridors, the LOS C-D boundary has been selected as the threshold of congestion along the corridor. LOS declines along with speeds as traffic volume increases on 2-lane and multilane facilities. Any location falling below that threshold would be considered for some type of corrective action (including added travel lanes) to return to acceptable operations.

As shown in Table 1-5, three segments (0, 3 and 7) of US 14 are currently congested relative to expected performance (noting that a lower level of performance through the towns of Courtland and Nicollet is expected versus the rural areas). If no improvements are made by



2025, congestion is forecast for the entire corridor. In summary, the traffic forecasts show that future volumes will reach a point where a 2-lane highway will no longer provide sufficient capacity, which will also substantially magnify the safety problems discussed above.

1.3.3.2 Truck Traffic

Truck traffic (heavy commercial vehicles) refers to a wide assortment of vehicles, including semi-trucks with trailers, cement trucks, smaller single-unit moving/shipping trucks, or other similar vehicle classifications. In 2004, trucks comprised about 13 percent of all traffic on US 14 between New Ulm and Mankato.⁴ The statewide average percentage of truck traffic on US highways in Minnesota in 2004 was 9 percent.⁵ Traditionally, the highest level of truck traffic occurs on interstate highways. Because the US 14 corridor is a 2-lane highway with limited passing opportunities, the presence of a high volume of trucks has a greater impact on traffic operations.

Mn/DOT is currently completing a freight planning study for District 7, which includes the EIS study area. Some of the most relevant preliminary findings and recommendations include references to:

- Extraordinary growth in the biofuels industry (ethanol and soy-diesel)
- Freight volume increases driven by growth of the agricultural economy (production of corn, soybeans, and hogs have grown steadily since 1970)
- Trends toward larger farm and semi tractor trailer equipment, creating potential weight issues and other transportation challenges in rural areas
- Performance-based planning and management for freight movements in non-metropolitan areas

These factors affecting freight traffic, while difficult to measure precisely, demonstrate a general trend toward more trucks and larger loads. As previously noted, the presence of many trucks on a 2-lane highway will adversely affect overall traffic operations.

1.3.3.3 Signal Proliferation

The probability of needing to install a traffic signal at an intersection is a primary component used to estimate future levels of congestion and travel times. An intersection is considered “at risk” of requiring a traffic signal if traffic volumes at the intersection exceed the thresholds identified in the *Minnesota Manual on Uniform Traffic Control Devices*. A signal risk evaluation in the *CMP* identified the following intersections as high risk for signal installation:

- US 14/MN 15/CR 21
- US 14/CR 37
- US 14/MN 111/CR 23

⁴ “State of Minnesota 2004 Truck Highway Traffic Volume Map” from Mn/DOT’s Office of Transportation Data and Analysis

⁵ Data from Mn/DOT Office of Transportation and Data Analysis



IRC guidelines strongly discourage traffic signals on high- and medium-priority corridors due to negative impacts on mobility and safety. These at-risk intersections are being studied for potential interchanges (see Section 2 of this Draft EIS, which discusses alternatives).

1.3.3.4 Interregional Mobility Goals

Mn/DOT’s target goal for mobility on medium priority IRCs, including US 14, is 55 mph and above. The existing and future travel speeds in each segment are shown on Table 1-6. Currently, three of the four deficient segments are located in Courtland and Nicollet, which have posted speed limits of 35 and 45 mph, respectively. The IRC goals were set to address long-distance travel on major Minnesota highways and average performance over those distances – in this case more than 22 miles.

The corridor is currently operating at an average speed of 57 mph. However, over time, the average speed will decline – to operate at about 50 mph by 2025, more than 17 mph less than the previously measured average speeds. Review of the analysis (Table 1-6) shows that the reduced overall speed performance is anticipated as a result of delays in all segments – not just those segments through Courtland and Nicollet (segments 3, 4, 6, and 7). At the same time, we can see the emerging need for community bypasses reflected in these data. Again, the goals being to maintain a high average speed over a relatively long distance and to minimize potential for undue delay all along the corridor.

TABLE 1-6
Existing and Future Speed Performance

Segment (length)	2002 Travel Speed (mph)	2002 Performance	2025 Travel Speed (mph)	2025 Performance
1 - MN 15/CR 21 to CR 37 (1.8 miles)	55.0	At	49.1	Below
2 - CR 37 to Zieske Road (3.8 miles)	60.7	At	50.8	Below
3 - Zieske Road to CR 12 (0.4 miles)	56.6	At	31.2	Below
4 - CR 12 to CR 25 (1.2 miles)	41.9	Below	27.9	Below
5 - CR 25 to MN 99 (6.5 miles)	59.8	At	57.7	At
6 – MN 99 to MN 111/CR 23 (0.6 miles)	53.5	Below	41.0	Below
7 - MN 111/CR 23 to CR 72 (0.6 miles)	53.0	At	27.8	Below
8 - CR 72 to CR 6 (6.8 miles)	58.8	At	55.5	At
Average	57.3	At	50.2	Below

Source: *14 West Interregional Corridor – North Mankato to New Ulm – Scoping Document, June 2003, p. 2-15.*

The analysis of future travel speeds for consistency with Mn/DOT’s IRC guidelines indicates that estimated 2025 peak hour travel speeds are expected to drop below the 55 mph goal to 50 mph. The segments with the lowest travel speeds are located within urban or urbanizing areas.



1.3.4 Need to Correct Highway and Bridge Design Deficiencies

1.3.4.1 Highway Design in General

Generally, a 4-lane divided highway is safer than a 2-lane highway. Medians separate oncoming traffic and multiple lanes allow more passing opportunities to avoid potential collisions and reduce congestion. The entire 22-mile long segment of US 14 is a 2-lane road. Additionally, as shown in Table 1-4, passing is not permitted along one-third of the corridor.

1.3.4.2 Minnesota River Bridge (MN Bridge ID No. 9200)

Bridge Description and Sufficiency Rating

As noted previously, this DEIS evaluates highway improvements within a long-term context, with little likelihood of beginning construction until sometime between 2015 and 2023. Because the existing bridge over the Minnesota River (at the corridor's west end) was built in 1963, it will be about 50 years old by that time. This bridge is also moderately large and complex – it is 566 feet long with 6 spans crossing a large river, with each span about 94 feet long. The cast-in-place deck is supported by five 4.5-foot deep prestressed concrete girders. The deck area is 20,107 square feet and includes a 2-lane roadway that is 30 feet wide. The bridge has an overall sufficiency rating of 69.7 (out of a scale up to

100).⁶ That rating compares to general guidance used by Mn/DOT and most transportation agencies, which says that a sufficiency rating below 50 indicates the bridge is a candidate for reconstruction or replacement. In some cases, repair or rehabilitation may be recommended when the sufficiency rating is below 80. This DEIS does not include a detailed engineering

This DEIS does not include a detailed engineering analysis of the need to rehabilitate or replace the US 14 Minnesota River bridge. However, with this study ongoing today, now is an appropriate time to plan ahead for possible bridge actions.

analysis of the need to rehabilitate or reconstruct the bridge because the study's main purpose is to evaluate highway corridor location alternatives. However, with this study ongoing today, now is an appropriate time to plan ahead for possible bridge actions (which will be needed eventually). Because the existing bridge provides for only two lanes of traffic, it is also appropriate to review it from the standpoint of capacity.

Highway Capacity and Connectivity at the Bridge

As shown in Table 1-5, above, future traffic volumes at the Minnesota River bridge will reach 13,500 by 2025, and 14,600 by 2030, when the need for an improved US 14 will be fully felt. This is the highest forecasted traffic volume anywhere along the corridor, as should be expected from the combined traffic demands of both US 14 and MN 15. The existing bridge provides for only two lanes of traffic and thus it is expected that the bridge will begin to create a "bottleneck effect" as traffic transitions from a possible improved 4-lane highway. The city's street design

⁶ The sufficiency rating of a bridge is determined through regular bridge inspections. The rating is a numeric value with a maximum of 100. The sufficiency rating takes into consideration a number of factors, including structural adequacy, functional capacity, and essentiality for public use, load carrying capacity, the average daily traffic (p. 12, *Mn/DOT Bridge Inspection Manual Version 1.3 - December, 2006*).



on the west end of the bridge in New Ulm is also four lanes, adding to the potential capacity problem at the bridge.

Based on the information above, there is a need to evaluate the proposed expansion of the bridge to four lanes in this DEIS, either with a new parallel bridge or through expansion of the existing bridge. There is, however, no need to consider a new location for the Minnesota River bridge. That conclusion is based on the results of a vehicle origin-destination (O-D) study completed for the 2003 *CMP* (see the US 14

An Origin-Destination Study (2003) showed that a bypass of New Ulm, which would include a new Minnesota River crossing location, would not divert enough traffic from existing US 14 through the city to make construction of a New Ulm bypass economically feasible.

Project Website for more information). The O-D study revealed that approximately 85 percent of all the vehicles entering and exiting New Ulm on US 14 either started or stopped their trips in New Ulm. This finding shows that a bypass of New Ulm, which would include a new river crossing location, would not divert enough traffic from existing US 14 through the city to make construction of a New Ulm bypass economically feasible.

1.3.4.3 Access Control

Access is typically one of the key factors contributing to high crash rates. The higher the number of accesses per mile, the more exposure there is to conflicts and the more likely crashes will increase. As traffic increases, crash risk at access points also increases due to the lack of gaps for motorists to enter the highway (particularly for left turns). The US 14 corridor between New Ulm and North Mankato averages about 10 access points per mile (Table 1-7). However, some of the areas classified as urban along the corridor have considerably higher access densities. The highest access density through the business district in Courtland contains 58 access points in one mile. According to the Mn/DOT Traffic Safety Fundamentals Handbook, the statewide average is eight accesses per mile in rural areas and 28 accesses per mile in urban areas. IRC guidelines recommend access density ranging between one access per mile to 18 accesses per mile depending on whether the area is rural or urban (more access points are acceptable in urban areas, where operating speeds are lower and use of auxiliary turning lanes is more prevalent).

TABLE 1-7
Summary of Access Inventory by Segment

Segment (length)	Segment Type	# of Access Points	Average Access Density/Mile
1 - MN 15/CR 21 to CR 37 (1.8 miles)	Rural Area	11	6
2 - CR 37 to Zieske Road (3.8 miles)	Rural Area	36	10
3 - Zieske Road to CR 12 (0.4 miles)	Urbanizing Growth Area	3	7
4 - CR 12 to CR 25 (1.2 miles)	Urban Growth Area	70	58
5 - CR 25 to MN 99 (6.5 miles)	Rural Area	40	6



TABLE 1-7
Summary of Access Inventory by Segment

Segment (length)	Segment Type	# of Access Points	Average Access Density/Mile
6 – MN 99 to MN 111/CR 23 (0.6 miles)	Urbanizing Growth Area	1	2
7 - MN 111/CR 23 to CR 72 (0.6 miles)	Urban Growth Area	11	19
8 - CR 72 to CR 6 (6.8 miles)	Rural Area	49	7
TOTAL		221	10

Source: *14 West Interregional Corridor – North Mankato to New Ulm – Scoping Document, March 2003, p.2-2.*

Interchanges are one way to control access by providing a safe means for converging and diverging traffic along two or more roads. The primary safety benefits are derived from the elimination of at grade turning and crossing movements at grade with through traffic movement. Mn/DOT is proposing and planning, ultimately, to add interchanges at appropriate locations – with potential interim designs to include two-way stop intersections at crossroads or possible roundabouts. Section 2 includes more information on consideration of interchanges. Also, the US 14 Project Website includes the full Interchange Report that contains information on the US 14 Interchange Workshop Mn/DOT hosted in June 2004, as well as several conceptual interchange designs that were developed during the workshop.

1.3.4.4 Vertical and Horizontal Geometry

Highway geometry influences sight distances, as well as the roadway driving characteristics. A roadway design with long sight distances allows drivers more time to react to and to avoid potential collisions. Properly designed geometry allows traffic to flow at a more constant speed, reducing the potential for driver error or collisions when accelerating or decelerating on curves. US 14 includes skewed angles, sight distance deficiencies, and horizontal curves. Table 1-8 documents in detail the existing geometric deficiencies on US 14.

- Skewed Intersections – The basic alignment of the US 14 corridor typically runs at an oblique angle relative to intersecting north-south roadways. This results in multiple intersections with skewed minor street approaches. Such intersections are notably less safe as drivers must look back over their shoulder to see approaching traffic. Safety deficiencies at the US 14/MN 111/CR 23 intersection appear to be related to this type of skew angle (also see Section 1.3.2.1).
- Sight Distance – Sight distance is the length of roadway visible to a driver. Several intersections along the corridor are noted in Table 1-8 as having poor sight distances.
- Horizontal Curves – The curve radius on the east leg of MN 15 at the US 14/MN 15 intersection does not meet the 60-mph design speed.



TABLE 1-8
Existing Geometric Deficiencies

Deficiency	Location	Description
Horizontal Curvature	East leg of US 14 to MN 15	Curve radius does not meet 60 mph design speed, however, meets 55 mph posted speed limit
Vertical Grades	East of New Ulm; Minnesota River Valley	Above 3% maximum for Flat Classification; in range for Rolling Classification
Poor Sight Distance	CR 21	Enters mainline on inside of curve
Poor Sight Distance	CR 37	Horizontal and vertical curves to west limit sight distance to approximately 10 seconds (NOTE: this was partially addressed by recent minor construction)
Poor Sight Distance/High Intersection Skew Angle	446 th St., 561 st Av., 551 st Av., Zieske Rd., CR 12, CR 24, MN 99, MN 11 Pine St., Elm St., CR 72, TC-217, 451 st Av., 478 th St., 490 th St., CR 25, CR 17, CR 6, and a number of other minor roads and driveways	Skew angle approaching or above upper limit, creates poor driver sight line
Lack of Left Turn Lanes	446 th St., 551 st Av., 547 th Ln., Zieske Rd., CR 12, downtown Courtland, Fiemeyer dr., 531 st Av., CR 25, CR 21, 466 th St., 491 st Av., 481 st Av., 471 st Ln., 451 st Av., CR 72, TC 217, 478 th St., 490 th St., CR 25, CR 17, and a number of other minor roads and driveways	Oncoming traffic causes left-turning vehicles to stop unsheltered from other vehicles, creating congestion and higher potential for crashes

Source: *14 West Interregional Corridor – North Mankato to New Ulm – Corridor Management Plan, June 2003, p.4-19; completed by Howard R. Green Company using Mn/DOT Design Guidelines.*

1.3.4.5 Supporting Roadways

The ability of US 14 to continue to meet speed, mobility, access, and safety objectives established by Mn/DOT is dependent to some extent on the existence of the local and supporting road system. The local and supporting road system along US 14 is made up of frontage roads, parallel minor arterial/collector roads, and roads that intersect US 14 that are all discussed below.

Frontage Roads

Currently, there are only two frontage roads within the study area. One road in Courtland begins at the western eastern city limit on the north side of US 14 and extends approximately 1,000 feet into Courtland. The other frontage road is the Hewitt Service Road in the south part of Nicollet. The rural nature of the corridor makes frontage roads generally not feasible. However, other roadways, such as 6th Street in Nicollet serve as frontage roads by providing east-west circulation along US 14.



The access density problem in Courtland caused by a high concentration of direct private and public access indicates the lack of an effective frontage road system to serve the direct access function in place of US 14.

Parallel Minor Arterial/Collector Roads

Adequate north-south and east-west minor arterials and collectors spaced at roughly regular intervals generally exist to support US 14. MN 68 is a minor arterial that parallels the entire length of US 14 within the study area. Several miles to the north CR 5, a major collector, also roughly parallels the highway. CR 21, CR 11, and CR 25 also parallel some portions of US 14.

The lack of a southern, parallel roadway to offer an alternative to US 14 for traveling between Courtland and Nicollet was documented as a local and supporting roadway deficiency in the *CMP* (p. 4-18 and Figure 4.1-1). While CR 25 parallels US 14 to the south from just northwest of North Mankato to Courtland, there is a gap between CR 23 in Nicollet and CR 24 in Courtland. This limits the travel options between Courtland and Nicollet, increasing the importance of US 14.

North-South Roads that Intersect US 14

Direct access across US 14 is provided by 1st Street, 2nd Street, 3rd Street and 4th Street in Courtland. In Nicollet, MN 111/CR 23 (Main Street) and Elm Street provide direct access for vehicles crossing the highway. Outside Courtland and Nicollet, CR 17, CR 77 and some township roads provide access across the highway. The *CMP* noted another north-south roadway deficiency within Courtland – motorists traveling north and south within Courtland must complete part of their trip on US 14 because CR 12 (north of Courtland) does not directly tie into CR 24 (south of Courtland).

1.4 Proposed Action and Schedule

1.4.1 Proposed Action and Funding Status

The proposed action evaluated in this DEIS is based on the needs and alternatives considered during corridor planning and scoping phases of study, with particular reference to the needs stated above. As discussed further in Section 2, this includes upgrading the existing 2-lane highway to a 4-lane divided expressway with interchanges or at-grade intersections at crossroads where necessary, safe, and feasible.⁷ The proposed upgraded highway may use existing and/or new alignment that meets applicable standards for a rural expressway with access to the highway only at interchanges and a limited number of intersections. The alternatives under consideration to satisfy purpose and need are described in detail in Section 2.

The proposal to improve this portion of US 14 has also been identified, evaluated, and selected through Minnesota's highway planning process. Planning and constructing needed

⁷ Early scoping studies (www.dot.state.mn.us/d7/projects/14newulmtonmankato/documents.html) also evaluated whether US 14 could be upgraded to an improved 2-lane highway, but determined that future performance goals could be satisfied only with development of a 4-lane divided expressway. The posted speed limit along the proposed roadway should be 65 mph; certain portions may also be designed and posted at lower speeds because of curves, intersections, or other access points. See also Section 2 for more information on project alternatives and how they were developed.



improvements along US 14 is one of the highest priorities for Mn/DOT's District 7 (southwest Minnesota, with headquarters in Mankato). The District's emphasis stems from a steady history of increasing traffic and safety problems along 2-lane portions of the highway.

But, as previously noted, the proposed timeframe for the action evaluated in this DEIS is long-term – with the majority of the funds needed to start construction not anticipated until the 2015 to 2023 timeframe. This timing is based on Mn/DOT's long-range transportation plan, *Minnesota Statewide Transportation Plan: Moving People and Freight from 2003 to 2023*.⁸ This plan serves as Mn/DOT's framework for making transportation investment decisions.

The funds needed to start construction are not anticipated to be available until the 2015 to 2023 timeframe. The current goal is to establish a sound long-term plan for the preservation of right-of-way and for project funding and construction.

Mn/DOT's current goal is to establish a sound long-term plan for the preservation of right-of-way and secure project funding for construction. This will be done after a preferred alternative has been selected (scheduled to occur in 2008). A preferred alternative will serve as a transportation and land use planning tool that will allow the local communities to appropriately plan for and guide future development.

1.4.2 Schedule for Environmental Review

Table 1-9 below summarizes the anticipated schedule for environmental review of this project prior to letting for construction. A key component of this process is a 45-day comment period, during which input from the public and agencies will be solicited. Comments received during this time will be incorporated into the Final EIS, or "FEIS."

⁸ See <http://www.oim.dot.state.mn.us/StatePlan/index.html>



TABLE 1-9
Schedule for US 14 Environmental Review

Completion Date	Task
June 2003	Issued Federal Notice of Intent for Draft EIS
May 2005	Held Section 404 Permit, Pre-application consultation meeting with the Army Corps of Engineers
Summer 2005	Issue State EIS Preparation Notice
Winter 2007-2008	Complete and distribute the Draft EIS for agency/public comment; start of Draft EIS comment period; hold the Public Hearing
Spring 2008	End of Draft EIS comment period; Mn/DOT and FHWA identify the preferred corridor location alternative
2008-2009	Prepare/Distribute Final EIS FHWA to issue Record of Decision; State Adequacy Determination Begin Right-of-Way Preservation Process
2015-2023	Possible Construction Start

1.5 Project History and Other Projects in the Study Area

This section discusses previously completed studies and recently completed improvements to US 14 both within and outside of the DEIS study area.

1.5.1 Previous Studies of the DEIS Study Corridor

The needs along the US 14 corridor between New Ulm and North Mankato (the western-most part of the IRC corridor also evaluated in this DEIS) were addressed in detail in 2003 with the publication the following three studies:

- *14 West Interregional Corridor – North Mankato to New Ulm – Corridor Management Plan (CMP)*– June 2003 – Mn/DOT and the communities within the study area worked together to identify and document corridor deficiencies, and identify and evaluate a wide range of potential solutions for the corridor.
- *14 West Interregional Corridor – North Mankato to New Ulm – Scoping Document* – March 2003 – The study verified the need for US 14 improvements, studied the full range of alternatives identified in the *Corridor Management Plan*, and identified which alternatives warranted additional study in future environmental documents.



- *14 West Interregional Corridor – North Mankato to New Ulm – Scoping Decision Document – May 2003* – This document identified the issues and alternatives that are examined in-depth in this DEIS.

These and many other documents are available on the US 14 Project Website:

www.dot.state.mn.us/d7/projects/14newulmtonmankato/documents.html.

The key findings presented in these documents are referenced in this DEIS rather than repeating the details here.

1.5.2 Other US 14 Projects in the Study Area

Section 1.3.1.2 identifies a number of long-term US highway 14 improvement projects located west of the DEIS study area. The list below is provided to note recent improvements made to portions of the US 14 corridor evaluated in this DEIS:

- 2000 – completed Nicollet to North Mankato overlay project
- Summer 2003 – Mn/DOT implemented interim safety improvements to the intersection of US 14 and MN 15 including the lengthening and separating of the free right lanes for eastbound US 14 motorists to improve visibility. The project also included grading, paving, right turn lane and lighting, as well as relocating some signs and removing trees and vegetation to improve visibility of the intersection and other vehicles.
- Summer 2004 – Mn/DOT completed an overlay project for the fourteen miles between MN 15 and the City of Nicollet. Safety improvements to the US 14/CR 37 intersection were also made, including extending the US 14 eastbound acceleration lane for right turning traffic. In Courtland, the project also included milling the existing bituminous before applying the overlay.
- 2004-2005 – This project included reconstruction of US 14 from the area of the New Ulm Airport to 7th North Street. The project included two lanes of traffic in each direction with a concrete median from 7th North Street to just west of Highland Avenue. All streets intersecting with US 14 now have full access to and from the highway except at 19th North Street. Garden Street and CR 29 was realigned to improve visibility and safety.

