I-494/TH 62 Congestion Relief Study

Needs Assessment

Minnesota Department of Transportation

Congestion Relief Study Project Website

December 2015

SRF No. 8867

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1. Introduction

The Interstate (I)-494 and Trunk Highway (TH) 62 corridors are parallel major freeway corridors connecting communities to large employment and shopping centers at the Bloomington commercial strip along I-494 between TH 100 and 12th Avenue South, the Eden Prairie "Golden Triangle" business park located between United States Highway (US) 212, US 169, and I-494, the Eden Prairie Center Mall, Southdale Mall, the Mall of America, downtown Minneapolis and Saint Paul, and the Minneapolis-Saint Paul (MSP) International Airport.

As the region has grown and more development has occurred, highway traffic volumes have increased to the point that a number of segments along the corridors experience significant peak period congestion each day, including weekends. Congestion is expected to significantly increase by year 2040 as additional growth and development occur in the region and along the study corridors.

Study Purpose

The purpose of the I-494/TH 62 Congestion Relief Study is to identify potential viable MnPASS managed lane improvements, spot mobility, and transit advantage improvements on the I-494 and/or TH 62 corridors. These improvements are intended to help people and freight access their destinations by improving mobility, reliability, and safety through the study area. The study limits are shown in Figure 1.

As part of this study effort, this Needs Assessment will review all pertinent corridor information including traffic, physical, and transit characteristics to help identify existing safety and mobility issues. This assessment will be used to help identify lower-cost/high-benefit spot improvements and viable, cost-effective capacity improvements to relieve congestion, and address other identified issues.

Following the Needs Assessment phase, the next steps in the study process include identifying alternatives for the corridors, including spot improvements, evaluating alternatives, and developing an Implementation Plan. The Implementation Plan will be used to help move specific improvements that were developed as part of the Needs Assessment, alternative development, and screening processes into the environmental/pre-design process. The Implementation Plan will also identify opportunities to add specific improvements to existing programmed projects, and identify additional improvements for the corridors if funding becomes available in the future.

Figure 1. I-494/TH 62 Congestion Relief Study Area

MnPASS History and Project Background

In September 2010, MnDOT completed the MnPASS System Study Phase II. It established a vision for a MnPASS managed lane network in the Twin Cities Metropolitan Area and identified the I-494 corridor, from US 212 to the MSP Airport, as one of the strongest performers for MnPASS lanes and/or a managed corridor. The study also identified I-494 as expensive and having considerable risk due to right-of-way constraints, a need for bridge replacements if adding lanes, and roadway storm water needs. The MnPASS System Study final corridor designations are shown in Figure 2. Within the Study, the I-494 corridor was identified for potential improvements, including:

- Increased traveler information
- Enhanced transit facilities and service
- A congestion free choice
- High-Occupancy Vehicle (HOV) advantages
- Transit advantages

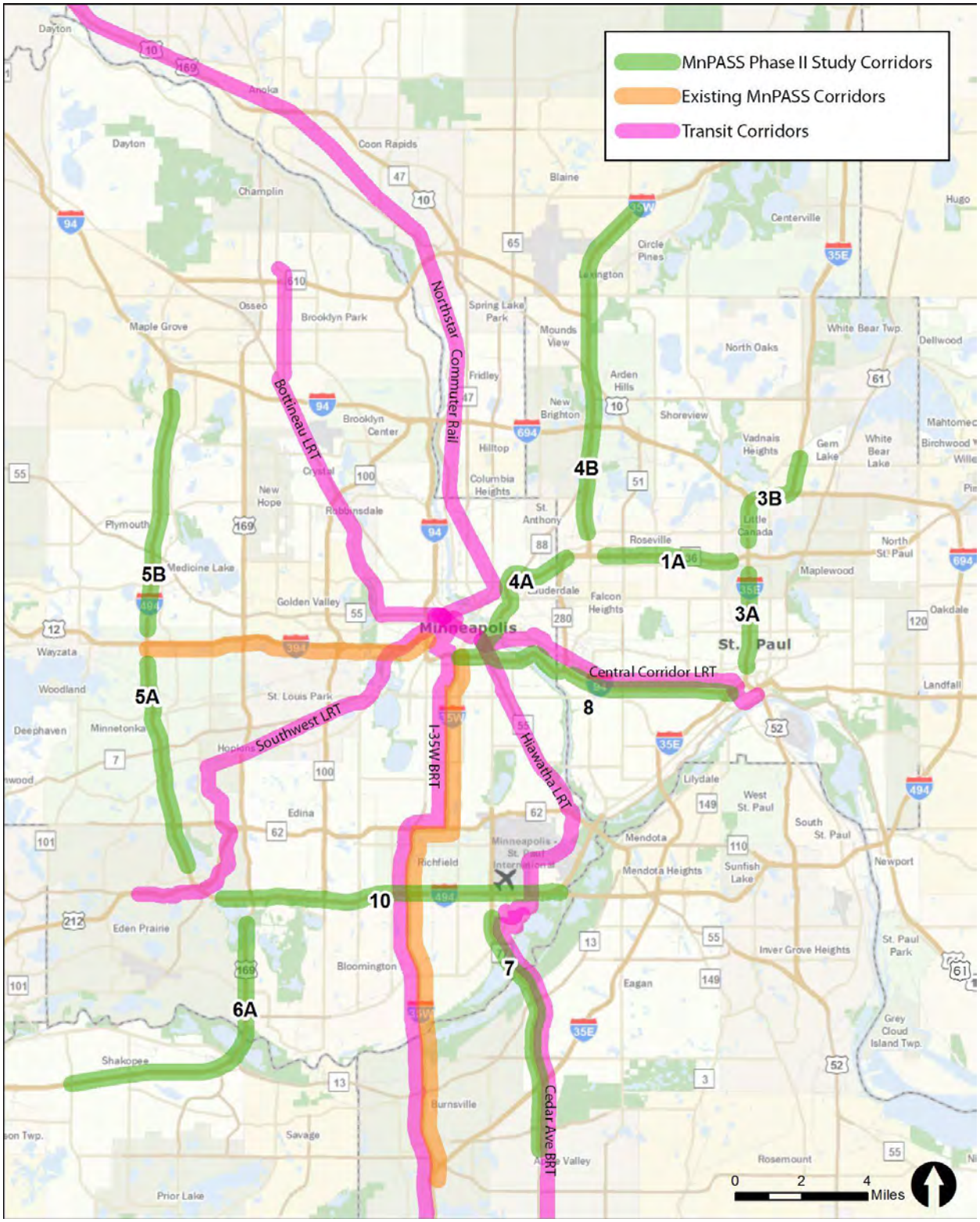
In addition to the framework identified in the MnPASS System Study Phase II, the 2040 Transportation Policy Plan (2040 TPP), which is the region's long-range transportation policy and investment plan, incorporated the Phase II findings and refined them to establish the vision for a MnPASS priced managed lane network throughout the Twin Cities Metropolitan Area. Furthermore, corridor congestion, which is expected to deteriorate as volumes in the travelshed increase by 2040; aging infrastructure; and local support from the I-494 Corridor Coalition and its member communities have driven the need for further study of the I-494 corridor. MnDOT and study partners also agreed to jointly study the parallel TH 62 corridor, which operates as a critical component of the highway network surrounding I-494.

Between the late 1980s and early 2000s, the Minnesota Department of Transportation (MnDOT) and the Federal Highway Administration (FHWA) completed an Environmental Impact Statement (EIS) for the I-494 corridor to understand how to best address increasing congestion, outdated design, aging facilities, and environmental issues. A preferred alternative for corridor improvements was identified in the Final EIS in 2001. These improvements included additional east and westbound travel lanes, multiple auxiliary lanes in both directions at various locations, shoulder expansion and strengthening to support transit operations (bus-only shoulders), a 26 foot median, and numerous interchange improvements.

To date, four of the interchange improvements identified in the 2001 FEIS have been completed (i.e., Penn Avenue, Lyndale Avenue, 24th Avenue, and 34th Avenue) and others are included in current STIP/CIP documents (e.g., East Bush Lake Road and I-35W/I-494).

However, changes to Metropolitan Council and MnDOT policies, as well as increasingly limited access to public funding, have created a need to reevaluate the extent of the FEIS scope to match the policy changes and the limited-funding environment.

Figure 2. MnPASS System Study Phase II - Final Corridor Designations



Source: I-35W North Managed Lanes Corridor Study (Page 3), MnDOT and SRF Consulting Group, Inc., 2013

2. Goals and Objectives

The purpose of this study is to identify lower-cost/high-benefit improvement strategies for the corridors and how improvements could be strategically implemented over time. Specifically this study will investigate the location and implementation of MnPASS systems, spot mobility improvements, and transit advantages to determine a viable set of corridor improvement strategies and associated policies.

Building off of the project purpose, MnDOT and the Metropolitan Council developed and refined a set of seven goals and associated objectives to measure progress on each goal. Additional guidance and goal refinement was provided by the Project Management Team (PMT) and Technical Steering Committee (TSC). The goals and objectives developed by these project stakeholders include:

Goal 1: Increase person throughput and travel time reliability

Goal 2: Enhance economic vitality of the region

Goal 3: Enhance safety and mobility by providing congestion free options

Goal 4: Enhance/maintain advantages for transit, park and ride, ride sharing, taxi cabs, airport shuttles, and non-motorized connections

Objectives for Goals 1-4:

- Increase hourly person throughput
- Reduce geometric elements that negatively impact capacity along the corridor
- Improve travel time reliability for vehicles and transit
- Reduce anticipated crashes (number and severity)
- Provide a congestion-free trip for transit and high-occupancy vehicles (HOVs), and the option for single-occupancy vehicles (SOVs)
- Reduce travel times for all vehicle types

Goal 5: Use existing infrastructure and right-of-way to the maximum extent possible, as well as lower-cost/high-benefit investments

Goal 6: Coordinate and provide synergies with other planned and programmed investments

Objectives for Goals 5-6:

- Develop lower-cost/high-benefit strategies with less than a two-year return period
- Optimize the use of all available pavements and evaluate the use of shoulders
- Overlap programmed improvements with implementation of study vision

Goal 7: Educate, inform, involve, and adapt to public stakeholders at strategic decision making points throughout the duration of the study.

Objectives for Goal 7:

- Educate stakeholders about MnPASS lanes and the study process
- Solicit input about the existing conditions of the corridors from users
- Solicit input about MnPASS and spot improvement concepts
- Inform stakeholders about the corridor vision
- Utilize potential synergies and additional resources provided by project stakeholders

Throughout the duration of this study, the PMT and TSC will use these goals and objectives to guide the study and decision making for the study area.

3. Existing Conditions

The existing conditions in the I-494/TH 62 corridors establishes a baseline from which concept alternatives can be developed to address issues and move toward the corridor vision.

The existing operational conditions identify the physical characteristics of the study corridors, existing traffic characteristics, congestion causes impacting each corridor, and safety issues on the highways and interchanges. Transit service, transit infrastructure, and service/ infrastructure gaps are also identified in the study corridors, which served over 6.1 million riders in 2014.

Physical Characteristics

Physical characteristics of the corridors were reviewed to identify potential obstacles for implementing changes in the future. These characteristics will also help guide the screening process of all alternatives considered. The corridors include a variety of cross sections. The text that follows is a brief summary of the physical characteristics for each corridor.

I-494

The I-494 corridor is characterized as an urban six-lane cross section; however, there are multiple locations where the corridor varies from this typical characterization. In these locations, additional auxiliary lanes exist near interchanges, shoulder widths vary between four and twelve feet, and shoulders transition from an urban to a rural cross section. Furthermore, in some locations, a fourth through-lane exists. A large portion of the corridor is also characterized by interchange spacing that is not consistent with spacing guidelines. In urban areas interchange spacing is recommended to be greater than one mile. Between East Bush Lake Road and TH 77 interchange spacing ranges from half a mile to one mile.

The median along the I-494 corridor is predominately an urban section with concrete median barriers; however, there is a section between US 169 and East Bush Lake Road that is rural and includes a median cable barrier.

Geometric and right-of-way (ROW) constraints are varied throughout the corridor. They are prevalent in locations that have narrow shoulders (under six feet) and retaining walls to allow for frontage roads and interchange ramps. These preliminary constraints include, and are not limited to:

Retaining walls between US 169 and Penn Avenue

Westbound I-494

- Between US 169 and West Bush Lake Road, due to frontage road
- TH 100 ramps

- Between TH 100 and France Avenue, due to frontage road
- Between France Avenue and Penn Avenue, due to frontage road

Eastbound I-494

- US 169 ramps
- Between West Bush Lake Road and East Bush Lake Road
- Between TH 100 and France Avenue, due to frontage road

Limited ROW between Penn Avenue and 24th Avenue

Westbound I-494

- Between Penn Avenue and I-35W
- Lyndale Avenue Bridge
- Between Portland Avenue and TH 77

Eastbound I-494

- Between Penn Avenue and I-35W, due to frontage road
- Between Lyndale Avenue and Nicollet Avenue
- Between Nicollet Avenue and Portland Avenue
- Between Portland Avenue and TH 77

Retaining walls between Portland Avenue and 34th Avenue

Westbound I-494

- Between Portland Avenue and TH 77
- TH 77 entrance ramp

Eastbound I-494

- Between 24th Avenue and 34th Avenue, due to frontage road

TH 62

The TH 62 corridor is largely characterized as a rural four-lane cross section. However, similar to the I-494 corridor, there are multiple locations along the corridor where auxiliary lanes exist, shoulder widths vary, and the shoulder transitions to an urban-style cross section between Xerxes Avenue and TH 77, and again between 34th Avenue and TH 5. A large portion of the corridor is also characterized by interchange spacing that is not consistent with spacing guidelines. In urban areas interchange spacing is recommended to be greater than one mile. Between TH 100 and the Crosstown Commons interchange spacing ranges from 0.2 miles to 0.8 miles.

TH 62 also has two unique sections, including one area where eastbound TH 62 merges with US 212. At this point, TH 62 drops to one lane before merging with two lanes from US 212. The three TH 62 lanes then drop to two lanes after the Gleason Lake Road exit. The second

unique section on TH 62 is through the Crosstown Commons, where the eastbound direction includes three lanes, drops to two lanes within the I-35W/TH 62 Commons, and then TH 62 drops to one lane at the Portland Avenue exit.

The median along TH 62 transitions between rural median and guardrail/concrete median.

Similar to the I-494 corridor, there are also various geometric constraints throughout the TH 62 corridor. These preliminary constraints include:

Retaining and noise walls between Penn Avenue and Portland Avenue

Westbound TH 62

- Westbound lanes between Penn Avenue and I-35W (Crosstown Commons)
- Westbound lanes between I-35W (Crosstown Commons) and Portland Avenue

Eastbound TH 62

- Eastbound lanes between Penn Avenue and I-35W (Crosstown Commons)
- Eastbound lanes between I-35W (Crosstown Commons) and Portland Avenue

Limited ROW between France Avenue and TH 5

Westbound TH 62

- Westbound lanes between France Avenue and Xerxes Avenue
- Westbound lanes between Xerxes Avenue and Penn Avenue, due to frontage road
- Westbound lanes between Penn Avenue and TH 77
- Westbound lanes between 34th Avenue and TH 5,due to frontage road

Eastbound TH 62

- Eastbound lanes between France Avenue and Xerxes Avenue
- Eastbound lanes between Xerxes Avenue and Penn Avenue, due to frontage road
- Eastbound lanes between Penn Avenue and TH 77 (frontage road between Portland Avenue and TH 77)
- Eastbound lanes between 34th Avenue and TH 5, due to frontage road

Existing Traffic Characteristics

General Travel Destinations and Volumes

The I-494 and TH 62 corridors generally carry commuter-oriented traffic from southern and western Twin Cities suburban communities to employment centers in Minneapolis and surrounding areas; the "Golden Triangle" commercial center located between US 212, US 169, and I-494; the Bloomington commercial strip; the Mall of America; Eden Prairie Center, Southdale Center, and the MSP International Airport. This results in peak period travel patterns in the eastbound and westbound directions on both study corridors during both the A.M. and P.M. peak periods. While the corridors are characterized by large commercial centers, the three large shopping centers, events, and international airport traffic often result in additional non-commuter peaks around these destinations. Figure 3 illustrates travel patterns, traffic generators, and existing vehicle and heavy commercial volumes on the study corridors.

The I-494 and TH 62 corridors also connect with other principal arterial routes, including US 212, US 169, TH 100, I-35W, TH 77, and TH 5. These connecting highways serve different traffic movements and result in distinctive traffic characteristics on one side of these interchanges, relative to the other side.

Directional Split

Traffic demand is largely balanced between the eastbound and westbound directions on both corridors during the A.M. and P.M. peak periods. During the A.M. peak hour, TH 62 is balanced directionally between US 169 and TH 77. West of US 212, the volume balance shifts slightly to 65 percent eastbound. East of TH 77, the volume balance is approximately 60 percent eastbound.

The I-494 A.M. directional splits are more balanced than TH 62 and range from 45 to 55 percent. The eastbound share of traffic is slightly larger between TH 62 and TH 100, and the westbound direction is slightly higher than the half east of TH 100.

During the P.M. peak hour, the directional splits on the I-494 and TH 62 corridors remain balanced, with a maximum volume split of 55/45 percent, in either direction. The only locations on the study corridors where this is not the case is on TH 62 west of US 169, where the traffic share is a 60/40 split between US 212 and US 169 (westbound and eastbound, respectively), and 70/30 split between US 212 and I-494 (westbound and eastbound).

Figure 3. Existing Average Annual Daily Traffic and Heavy Commercial Annual Average Daily Traffic

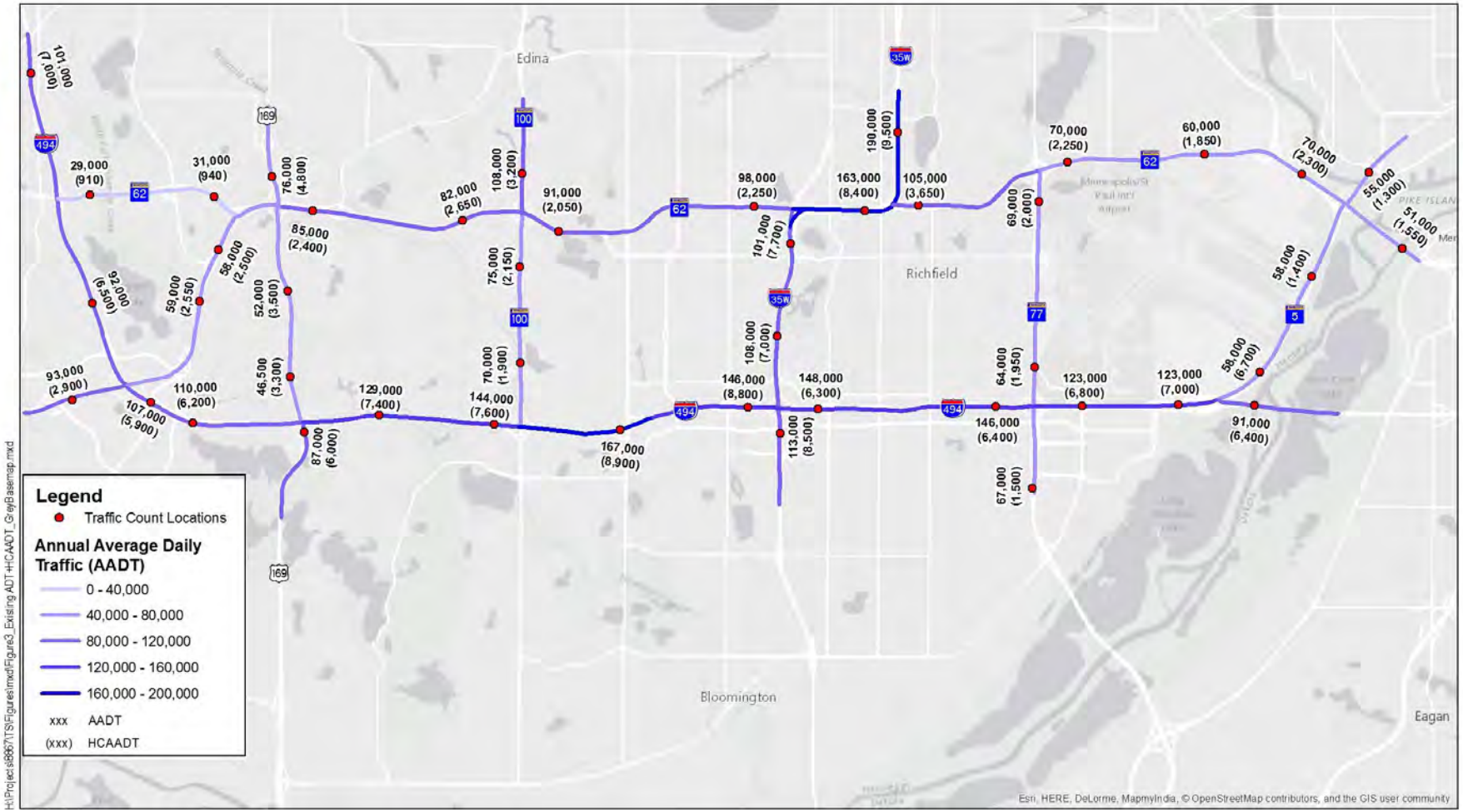


Table 1. Traffic Characteristics – A.M. Peak Directional Split

	TH 62 to US 212	US 212 to US 169	US 169 to TH 100	TH 100 to I-35W	I-35W to TH 77	TH 77 to TH 5
EB I-494	55	52	51	43	45	47
WB I-494	45	48	49	57	55	53
	I-494 to US 169	US 169 to TH 100	TH 100 to Crosstown Commons	Crosstown Commons	Crosstown Commons to TH 77	TH 77 to TH 5
EB TH 62	66	49	48	47	48	58
WB TH 62	34	51	52	53	52	42

Table 2. Traffic Characteristics – P.M. Peak Directional Split

	TH 62 to US 212	US 212 to US 169	US 169 to TH 100	TH 100 to I-35W	I-35W to TH 77	TH 77 to TH 5
EB I-494	48	43	44	46	55	50
WB I-494	52	57	56	54	45	50
	I-494 to US 169	US 169 to TH 100	TH 100 to Crosstown Commons	Crosstown Commons	Crosstown Commons to TH 77	TH 77 to TH 5
EB TH 62	32	42	45	52	49	49
WB TH 62	68	58	55	48	51	51

Table 3. Traffic Characteristics – Daily Directional Split

	TH 62 to US 212	US 212 to US 169	US 169 to TH 100	TH 100 to I-35W	I-35W to TH 77	TH 77 to TH 5
EB I-494	51	48	48	46	50	49
WB I-494	49	52	52	54	50	51
	I-494 to US 169	US 169 to TH 100	TH 100 to Crosstown Commons	Crosstown Commons	Crosstown Commons to TH 77	TH 77 to TH 5
EB TH 62	49	48	48	51	50	52
WB TH 62	51	52	52	49	50	48

Peak Hour Percent of Daily Traffic

Overall, the peak hour percent of daily traffic is consistent throughout the study corridors. The peak hour percent of daily traffic volumes along the I-494 corridor ranged from six to nine percent in both the A.M. and P.M. peak hours. The TH 62 corridor ranged between seven and nine percent, except west of US 169, where peak hour volumes ranged from six to thirteen percent. This area experiences lower daily volumes and higher peak directionality, causing the

increase in peak percentage of daily values. The peak hour percentage was observed to be the lowest between US 169 and TH 77, from six to eight percent. Traveling out from the center of the study corridors the peak percent of daily increased, ranging between seven and nine percent. A summary of peak hour traffic, expressed as a percentage of daily traffic is shown in Table 4. The first value in each cell represents the percentage of A.M. peak traffic, and the value in parenthesis (#) represents the P.M. peak percentage.

Table 4. Traffic Characteristics – Peak Hour Traffic Percentage of Daily Traffic – A.M./P.M. Peaks

	TH 62 to US 212	US 212 to US 169	US 169 to TH 100	TH 100 to I-35W	I-35W to TH 77	TH 77 to TH 5
EB I-494	9 (8)	9 (7)	8 (6)	7 (7)	6 (8)	7 (9)
WB I-494	8 (9)	7 (9)	7 (8)	8 (7)	8 (7)	8 (8)
	I-494 to US 169	US 169 to TH 100	TH 100 to Crosstown Commons	Crosstown Commons	Crosstown Commons to TH 77	TH 77 to TH 5
EB TH 62	13 (6)	10 (8)	8 (7)	7 (8)	7 (7)	9 (7)
WB TH 62	7 (12)	9 (10)	8 (8)	8 (7)	8 (7)	7 (8)

Volumes Approaching Capacity

Peak hour traffic volume approaches and exceeds the expected capacity threshold for a freeway lane of 2,000 vehicles per lane per hour on I-494 and TH 62 in various locations.

In the A.M. peak hour, traffic volumes are more than 80 percent of expected capacity at the following locations:

- Eastbound on I-494 between TH 100 and I-35W
- Westbound on I-494 between TH 100 and TH 77
- Eastbound on TH 62 between US 169 and I-35W
- Eastbound on TH 62 between TH 77 and TH 5

In the A.M. peak hour, volumes exceed capacity on:

- Eastbound on TH 62 between I-35W and TH 77
- Westbound on TH 62 between US 169 and TH 77 (excluding crosstown)

Table 5. Traffic Characteristics – A.M. Peak Volumes Approaching Capacity (V/C)

	TH 62 to US 212	US 212 to US 169	US 169 to TH 100	TH 100 to I-35W	I-35W to TH 77	TH 77 to TH 5
EB I-494	.77	.54	.77	.97	.76	.53
WB I-494	.64	.63	.75	.96	.94	.60
	I-494 to US 169	US 169 to TH 100	TH 100 to Crosstown Commons	Crosstown Commons	Crosstown Commons to TH 77	TH 77 to TH 5
EB TH 62	.56	.47	.92	.94	1.01	.82
WB TH 62	.30	.49	1.01	1.05	1.09	.59

These locations correspond to congestion produced at bottlenecks observed on MnDOT's year *2014 Congestion Maps*.

In the P.M. peak hour, volumes are over 80 percent of capacity on:

- Eastbound and westbound on I-494 between TH 100 and TH 77
- Eastbound on TH 62 between US 169 and TH 100
- Eastbound on TH 62 between I-35W and TH 77
- Westbound on TH 62 on between US 169 and I-35W

In the P.M. peak hour, volumes exceed capacity on:

- Eastbound on TH 62 between TH 100 and I-35W
- Westbound on TH 62 between I-35W and TH 77

Table 6. Traffic Characteristics – P.M. Peak Volumes Approaching Capacity (V/C)

	TH 62 to US 212	US 212 to US 169	US 169 to TH 100	TH 100 to I-35W	I-35W to TH 77	TH 77 to TH 5
EB I-494	.68	.46	.62	.91	.98	.66
WB I-494	.73	.75	.78	.81	.80	.66
	I-494 to US 169	US 169 to TH 100	TH 100 to Crosstown Commons	Crosstown Commons	Crosstown Commons to TH 77	TH 77 to TH 5
EB TH 62	.25	.40	.80	1.03	.99	.67
WB TH 62	.54	.55	.98	.94	1.02	.69

Again, these over-capacity segments correspond to bottlenecks observed on MnDOT's *2014 Congestion Maps*.

Duration of Peak

The duration of peak hour traffic conditions varies throughout the corridor. In the A.M. peak period, the duration of traffic demand within 85 percent of peak hour demand steadily increases from the west end of the study corridors, to the center of the study area around TH 100 and I-35W, and then decreases towards east end of the study corridors.

On eastbound TH 62, the duration of peak varies from 1 hour at the west end of the corridor, to 3 hours and 45 minutes in the center of the study area near I-35W, and down to 2.5 hours at the east end of the corridor. A similar pattern is observed in the westbound direction having peak volumes for 1 hour at the west end, 3 hours and 15 minutes near the center, and 3 hours at the east end.

I-494 also experiences a similar pattern with peak durations lasting 2.5 hours at either end of the corridor, to 4 hours near the center during the A.M. peak period, and 3 hours at either end of the corridor to just over 4 hours near the center during the P.M. peak period.

Table 7. Traffic Characteristics – A.M. Peak Duration (# of 15-minute time periods)

	TH 62 to US 212	US 212 to US 169	US 169 to TH 100	TH 100 to I-35W	I-35W to TH 77	TH 77 to TH 5
EB I-494	2 hours 45 minutes	3 hours	3 hours 45 minutes	3 hours 30 minutes	2 hours 30 minutes	2 hours 30 minutes
WB I-494	2 hours 30 minutes	2 hours 45 minutes	3 hours	3 hours	3 hours 15 minutes	2 hours 45 minutes
	I-494 to US 169	US 169 to TH 100	TH 100 to Crosstown Commons	Crosstown Commons	Crosstown Commons to TH 77	TH 77 to TH 5
EB TH 62	1 hour	1 hour	3 hours 45 minutes	3 hours 30 minutes	3 hours	2 hours 30 minutes
WB TH 62	1 hour	1 hour	3 hours	3 hours 15 minutes	3 hours 15 minutes	3 hours

Table 8. Traffic Characteristics – P.M. Peak Duration (# of 15-minute time periods)

	TH 62 to US 212	US 212 to US 169	US 169 to TH 100	TH 100 to I-35W	I-35W to TH 77	TH 77 to TH 5
EB I-494	3 hours	2 hours 15 minutes	3 hours	3 hours 30 minutes	4 hours 15 minutes	3 hours 15 minutes
WB I-494	3 hours 30 minutes	3 hours 15 minutes	4 hours	4 hours	4 hours	3 hours
	I-494 to US 169	US 169 to TH 100	TH 100 to Crosstown Commons	Crosstown Commons	Crosstown Commons to TH 77	TH 77 to TH 5
EB TH 62	1 hour	1 hour	2 hours 30 minutes	4 hours 15 minutes	4 hours 45 minutes	4 hours
WB TH 62	1 hour	1 hour	4 hours	4 hours 15 minutes	4 hours 15 minutes	3 hours 30 minutes

Time of Peak

Due to the length of the corridors and travel pattern changes at system interchanges, the time of peak traffic varies by location. In the morning, the peak hour was observed to start between 6:30 A.M. and 7:15 A.M. on both I-494 and TH 62. Earlier peak hours were observed in both eastbound and westbound directions near TH 100 and I-35W, with later peaks happening at the east and west ends of the corridor. The beginning of the peak hour across the study area network was observed to be 7:15 a.m., on average, based on observed detector traffic volumes.

During the P.M. peak period, a similar trend exists on both corridors, but the variance of the start of the peak hour is much greater. Near the center of the study area, the peak hour is observed to start between 3:15 P.M. and 3:45 P.M., while the east and west ends of the study corridors experience peak traffic between 4:30 P.M. and 5:00 P.M. On average, the peak hour for the study area was observed to start at 4:15 P.M.

The P.M. peak hour has greater variability throughout the study area. This variation was attributed to a greater variety of trip purposes, volumes approaching capacity, and longer duration of peak traffic demand in the afternoon.

Table 9. **Traffic Characteristics – A.M. Peak Start Time**

	TH 62 to US 212	US 212 to US 169	US 169 to TH 100	TH 100 to I-35W	I-35W to TH 77	TH 77 to TH 5
EB I-494	7:15	6:45	6:45	6:45	7:00	7:15
WB I-494	7:15	7:15	7:15	6:45	6:30	7:00
	I-494 to US 169	US 169 to TH 100	TH 100 to Crosstown Commons	Crosstown Commons	Crosstown Commons to TH 77	TH 77 to TH 5
EB TH 62	7:00	7:00	6:30	6:45	7:00	7:15
WB TH 62	7:15	7:15	7:15	6:30	6:30	7:15

Table 10. **Traffic Characteristics – P.M. Peak Start Time**

	TH 62 to US 212	US 212 to US 169	US 169 to TH 100	TH 100 to I-35W	I-35W to TH 77	TH 77 to TH 5
EB I-494	4:30	3:15	3:15	3:15	3:45	4:30
WB I-494	4:15	4:30	3:45	3:30	3:45	4:45
	I-494 to US 169	US 169 to TH 100	TH 100 to Crosstown Commons	Crosstown Commons	Crosstown Commons to TH 77	TH 77 to TH 5
EB TH 62	3:45	3:45	3:15	3:45	3:15	4:30
WB TH 62	5:00	4:45	4:45	4:15	4:30	4:15

Freight

Currently, limited freight data is available for the study area. To better understand existing freight characteristics, heavy commercial traffic counts were reviewed for the study area. Heavy commercial traffic volumes used the most recent available data on the MnDOT Traffic Mapping Analysis Tool (Draft 2014). These volumes are summarized on Figure 3. Analysis of third-party origin-destination data in future stages of the study will enhance the project understanding of commercial vehicle travel patterns in the study corridors.

Available data suggests significant heavy commercial volumes, particularly along the I-494 corridor. Average weekday truck volumes along the I-494 corridor range from 5,900 to 8,900, while the daily percentage of traffic ranges from 4.2 to 7.1 percent. The highest percentages occur at the east and west ends of the corridor near TH 62 on the west and TH 5 on the east. Truck volumes on I-494 are nearly three times higher than those on TH 62, and make up nearly double the percentage of daily traffic. The maximum truck volume and percentage on TH 62 within the study corridor occurs between I-35W and TH 77, is 3,650 vehicles, and accounts for 3.5 percent of daily trips.

Along the I-494 corridor, large heavy commercial vehicle volume changes occur at the system interchanges with US 169, I-35W, and TH 5. Truck volumes on US 169 south of I-494 are 6,000 trips per day and drop by nearly 50 percent to 3,300 trips after crossing I-494 (dropping from 6,000 to 3,300). This indicates that many freight trips are being fed in and out of the study area to the southwest via the US 169 corridor.

Similar to the US 169 interchange, large volume shifts are observed at the I-494/I-35W interchange, indicating that trips traveling on I-494 to the west of the interchange are utilizing I-35W to transport goods to downtown Minneapolis, as well as southern Minnesota. At the TH 5 interchange, a large heavy commercial vehicle volume change is observed where truck volumes jump to 11.6 percent on TH 5 just north of I-494. The fact that the total volume on TH 5 just north of I-494 is half of I-494, but the heavy vehicle total is nearly equal to I-494 (6,700 for TH 5 compared to 7,000 for I-494), and drops to 1,400 after Glumack Drive indicates that many commercial deliveries are using I-494 to access the MSP International Airport via the Post Road/TH 5 interchange. Table 11 summarizes the share of heavy commercial traffic on the I-494 corridor and adjacent north/south connections.

Table 11. Share of Heavy Commercial Volumes on I-494 and North/South Connections

Roadway	Passenger Car Share	Heavy Commercial Share
I-494	95.8%–92.9% (148,000–92,000)	4.3% – 7.1% (6,300 – 6,500)
US 169 (S of I-494)	93.1% (87,000)	6.9% (6,000)
I-35W (N of I-494)	93.5% (108,000)	6.5% (7,000)
I-35W (S of I-494)	92.5% (113,000)	7.5% (8,500)
TH 5 (N of I-494)	88.4% (58,000)	11.6% (6,700)

Congestion Causes

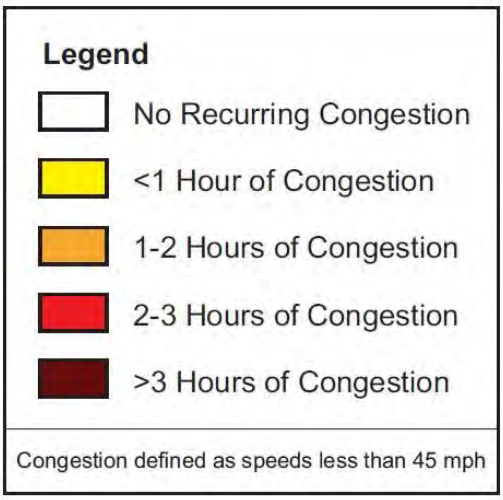
Data sources and existing operations analysis used to develop an understanding of the congestion causes affecting the study corridors is included the *System Problem Statement* technical memorandum completed as part of the *Congestion Management and Safety Plan Phase II* (2008) along with the *Metropolitan Freeway System 2014 Congestion Report*.

MnDOT defines congestion as traffic flowing at speeds less than or equal to 45 miles per hour (MPH) in one or more lanes. Congestion is measured by two processes: surveillance detectors in roadways and field observations. MnDOT currently uses electronic surveillance systems in place throughout the I-494 and TH 62 study corridors.

A lack of roadway capacity (i.e., number of lanes) is not the only cause of recurring congestion. Often congestion may be caused by a downstream constraint, such as a large volume of entering or exiting traffic, a short weaving section, closely spaced interchanges, or a lane drop. The purpose of the existing operation assessment was to clearly identify the causes of congestion; development of solutions to the congestion causes will be accomplished as part of the alternative development stage of the study. These congestion causes were also cross checked with other operational characteristics including safety, physical characteristics, and transit and high occupancy vehicle use. Nonrecurring congestion was also reviewed to determine the influence of crashes, incidents, weather, and roadwork on study corridor operations.

Congestion Reports are freeway maps which display color coding corresponding to a certain number of hours of recurring congestion. The typical legend for congestion reports use a range of color coding; no color represents no recurring congestion while gradually moving to a dark color represents multiple hours of recurring congestion. An example of such a legend can be seen in Figure 4. As each congestion cause is discussed, a corresponding Congestion Report segment is presented using this legend. Data from the congestion reports was summarized using loop detector data from October 2014. Morning peak period congestion was aggregated from 5 to 10 A.M., and afternoon peak period data was aggregated from 2 to 7 P.M. More information can be found in the 2014 Metropolitan Freeway Congestion Report, available at http://www.dot.state.mn.us/rtmc/reports/2014congestionreport.pdf.

Figure 4. Congestion Report Legend Example



Often times segments of roadway experiencing congestion have multiple contributing issues. The analysis seeked to identify the primary cause in each of these instances, or the most downstream/first point of failure that started generating a bottleneck. Subsequent congestion causes upstream of the primary congestion point compound congestion issues. In the section below, primary congestion causes are identified as (Primary Cause of Congestion) after the congestion cause label.

Congestion Causes on I-494 and TH 62

Five major congestion causes for the study corridors were identified along the study corridors. The causes include entering traffic, loop-to-loop weaving, substandard geometry, exit ramp capacity, and lane drops. Additionally, several secondary congestion causes were also identified as part of the assessment. Major and secondary causes are detailed below by corridor.

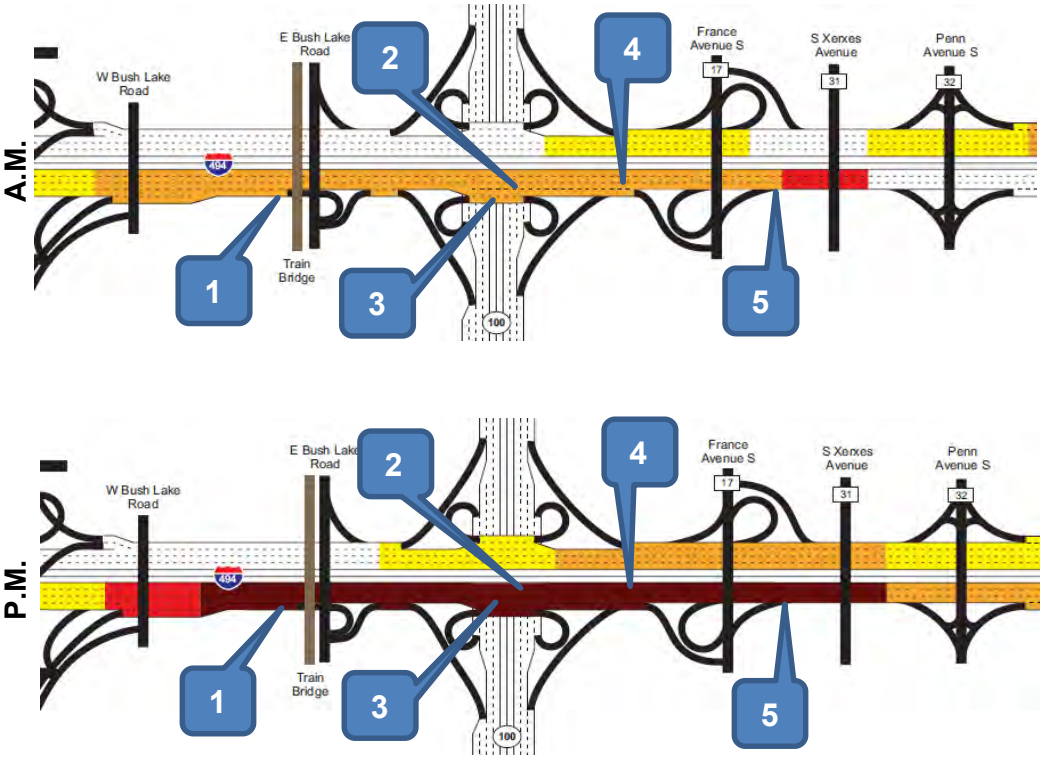
Eastbound I-494

A.M. and P.M. Peak Periods

Congestion Causes 1 through 5

Figure 5 displays the A.M. and P.M. congestion locations and severity on eastbound I-494 for Congestion Causes 1-5.

Figure 5. A.M. and P.M. Eastbound I-494 Congestion Causes 1-5



Congestion Cause 1:

The lane drop on eastbound I-494 at East Bush Lake Road does not carry a full lane's worth of traffic. The demand for the remaining three through lanes exceeds capacity. This area is congested between one and two hours in the A.M. peak period, and over three hours during the P.M. peak period.

Congestion Causes 2 and 3:

Entering traffic from southbound TH 100 combined with the substandard geometry of the buffer lane design and driver expectation to have to merge (from southbound TH 100) with mainline traffic instead of using the provided auxiliary lane is affecting the eastbound I-494 mainline operation. This area is congested between one and two hours in the A.M. peak period, and over three hours during the P.M. peak period.

Congestion Cause 4:

The lane drop on eastbound I-494 at France Avenue does not carry a full lane's worth of traffic. The demand for the remaining three through lanes exceeds capacity. This area is congested between one and two hours in the A.M. peak period, and over three hours during the P.M. peak period.

Congestion Cause 5 (Primary Cause of Congestion):

Entering traffic from France Avenue puts the eastbound I-494 mainline over capacity. This area is congested between two and three hours in the A.M. peak period, and over three hours during the P.M. peak period.

It is also recognized that the close interchange spacing exacerbates the the identified congestion problems. Interchanges through this section are spaced between a half mile and mile apart. Local guidance recommends that interchanges in urban areas be spaced at least one mile apart to provide adequate distance for merging and weaving traffic.

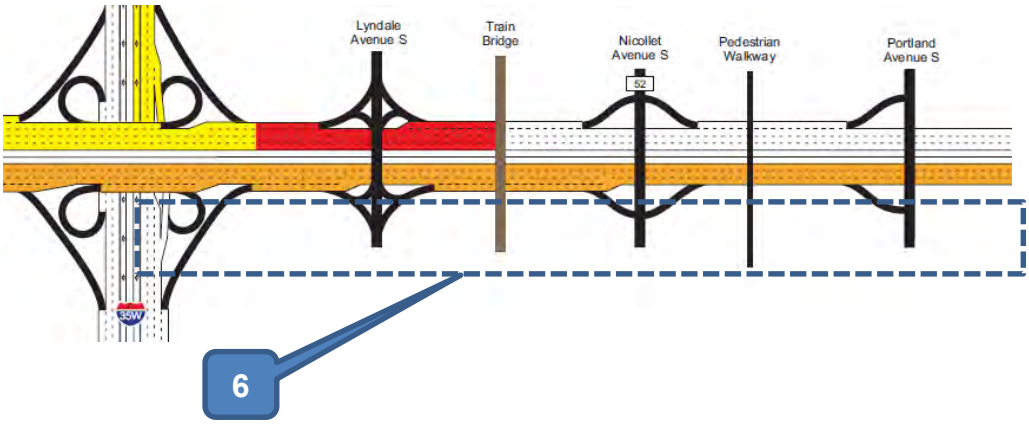
Eastbound I-494

P.M. Peak Period

Congestion Cause 6:

Figure 6 displays the P.M. congestion locations and severity on eastbound I-494 for Congestion Cause 6.

Figure 6. P.M. Eastbound I-494 Congestion Cause 6



Entering traffic and ramp to ramp weaving occurs between ramps of the interchanges of eastbound I-494 and I-35W, Lyndale Avenue, Nicollet Avenue, Portland Avenue, and TH 77. This area is congested between one and two hours during the P.M. peak period.

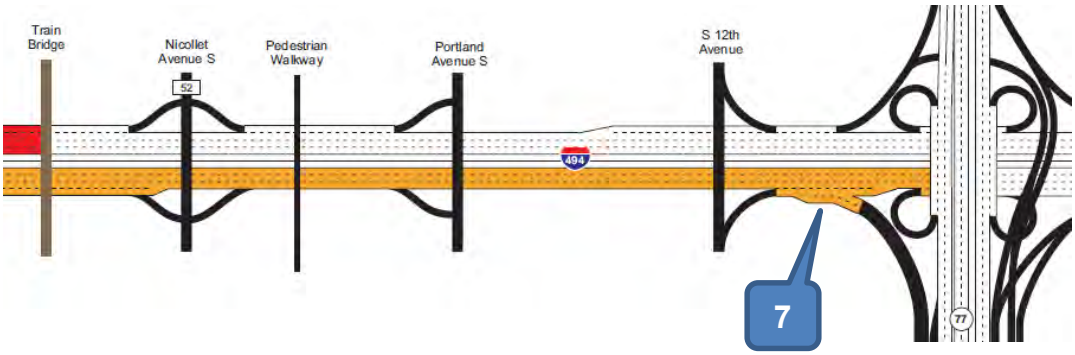
Eastbound I-494

P.M. Peak Period

Congestion Cause 7:

Figure 7 displays the P.M. congestion locations and severity on eastbound I-494 for Congestion Cause 7.

Figure 7. P.M. Eastbound I-494 Congestion Cause 7



The volume exiting to southbound TH 77 exceeds the capacity of the exit ramp and downstream collector-distributor road, and backs up onto eastbound I-494, which affects mainline operation. This area is congested between one and two hours during the P.M. peak period.

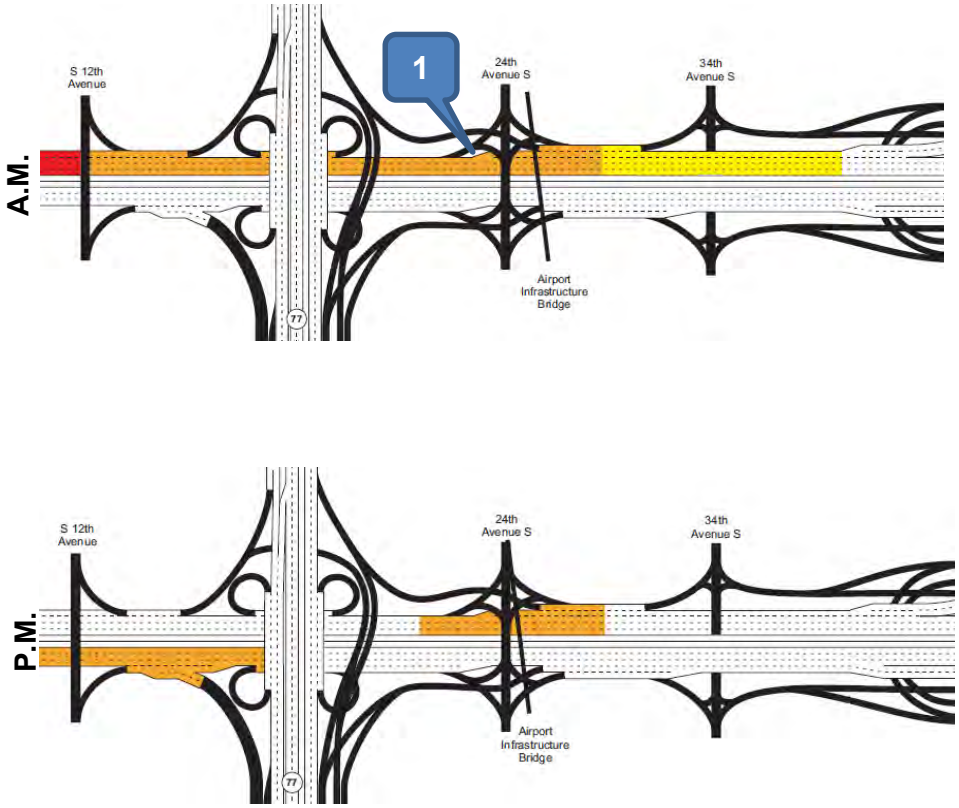
Westbound I-494

A.M. and P.M. Peak Periods

Congestion Cause 1:

Figure 8 displays the A.M. and P.M. congestion locations and severity on westbound I-494 for Congestion Cause 1.

Figure 8. A.M. and P.M. Westbound I-494 Congestion Cause 1



The lane drop on westbound I-494 after the 24th Avenue exit puts the mainline at capacity. This area is congested between one and two hours in the A.M. peak period, and between one and two hours during the P.M. peak period.

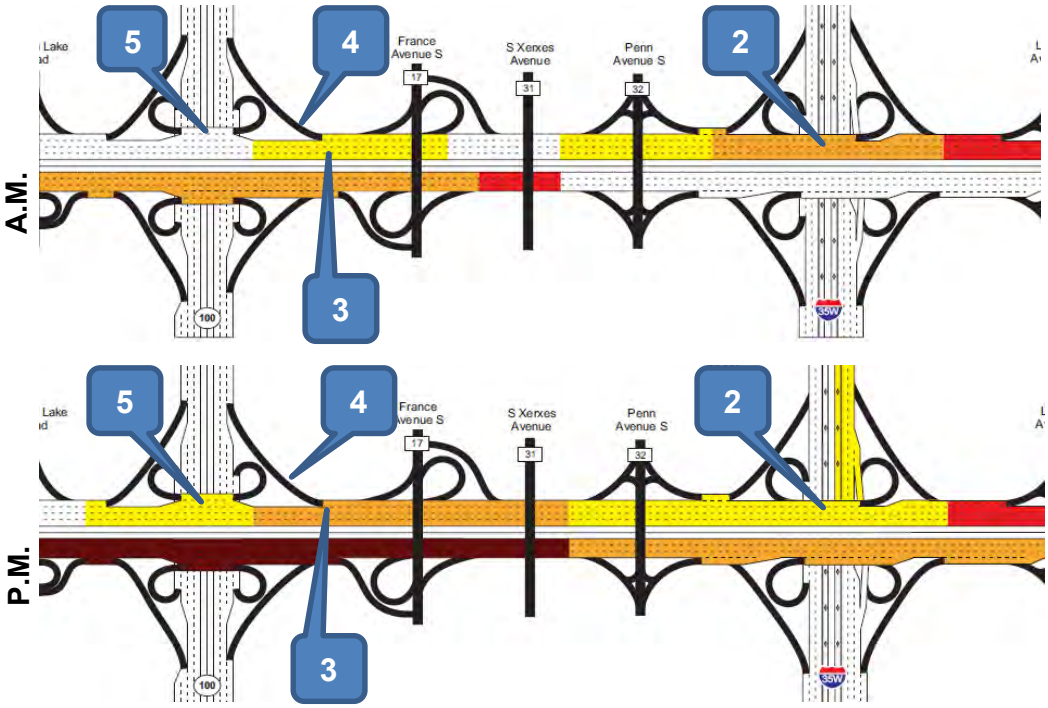
Westbound I-494

A.M. and P.M. Peak Periods

Congestion Causes 2 through 5

Figure 9 displays the A.M. and P.M. congestion locations and severity on westbound I-494 for Congestion Causes 2 through 5.

Figure 9. A.M. Westbound I-494 Congestion Causes 2-5



Congestion Cause 2:

Ramp to ramp weaving occurs between the northbound I-35W entrance and the southbound I-35W exit creating an over-capacity weave segment between the interchange loops. This area is congested between two and three hours in the A.M. peak period, and between two and three hours during the P.M. peak period.

Congestion Causes 3 through 5 (Primary Cause of Congestion – Ramp to Ramp Weaving):

A combination of issues causes the congestion on westbound I-494 near the TH 100 interchange. After the exit for northbound TH 100 the mainline drops from four lanes to three. The traffic exiting to northbound TH 100 also has been observed to intermittantly brake while exiting the mainline, due to poor sight distance for this movement. Lastly, ramp to ramp weaving occurs between the northbound TH 100 entrance and the southbound TH 100 exit creating an over-capacity weave segment between the interchange loops. This area is congested less than one hour in the A.M. peak period, and between one and two hours during the P.M. peak period.

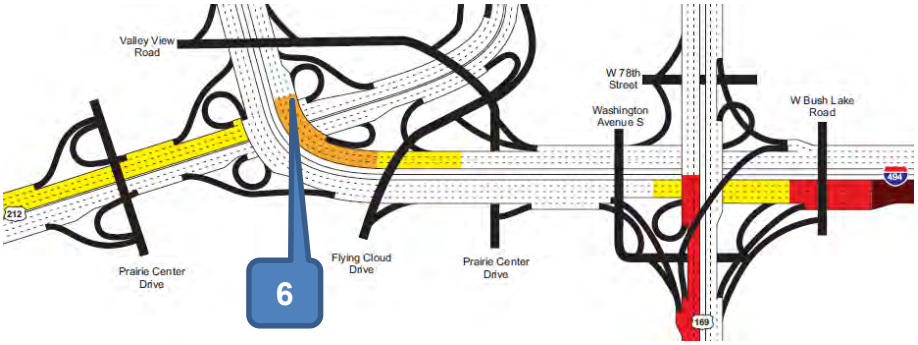
Westbound I-494

P.M. Peak Period

Congestion Cause 6:

Figure 10 displays the P.M. congestion locations and severity on westbound I-494 for Congestion Cause 6.

Figure 10. P.M. Westbound I-494 Congestion Cause 6



The volume exiting to westbound US 212 exceeds the capacity of the ramp and queues back on to I-494, which affects mainline operation. This area is congested between one and two hours during the P.M. peak period.

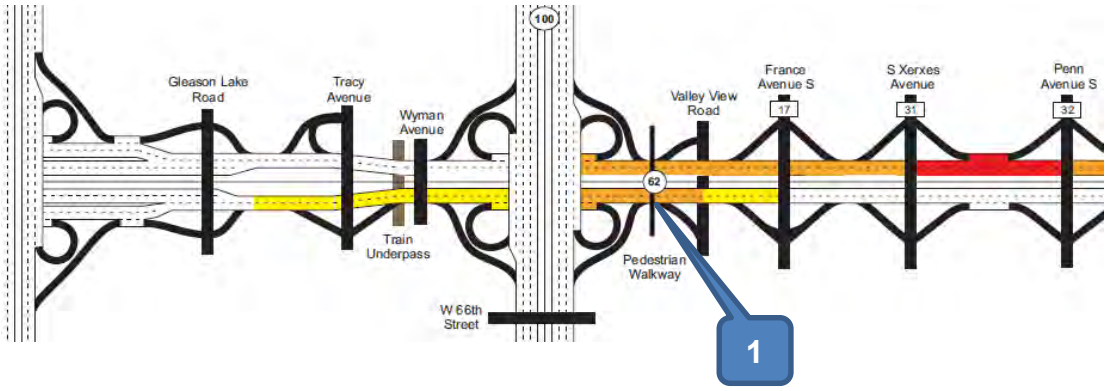
Eastbound TH 62

A.M. Peak Period

Congestion Cause 1:

Figure 11 displays the A.M. congestion locations and severity on eastbound TH 62 for Congestion Cause 1.

Figure 11. A.M. Eastbound TH 62 Congestion Cause 1



Entering traffic from northbound TH 100 puts the eastbound TH 62 mainline over capacity. This area is congested between one and two hours during the A.M. peak period.

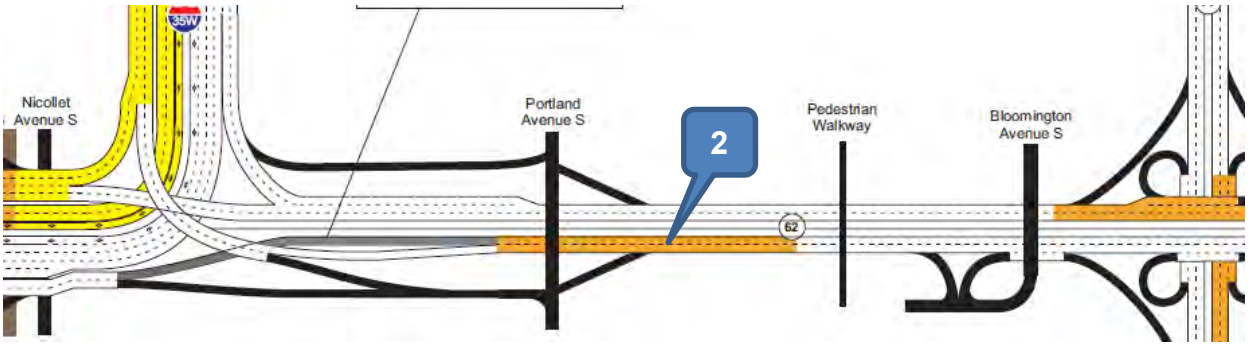
Eastbound TH 62

A.M. Peak Period

Congestion Cause 2:

Figure 12 displays the A.M. congestion locations and severity on eastbound TH 62 for Congestion Cause 2.

Figure 12. A.M. Eastbound TH 62 Congestion Cause 2



Entering traffic from Portland Avenue must merge on to eastbound TH 62, putting the mainline demand over capacity. This capacity issue causes queueing back to I-35W. This area is congested between one and two hours during the A.M. peak period.

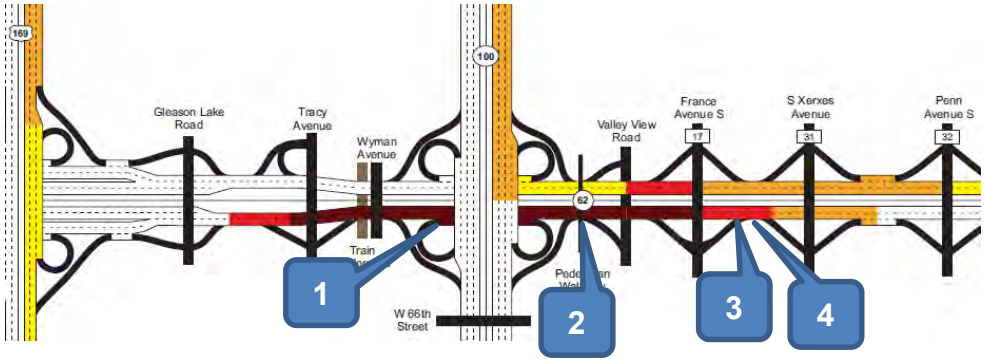
Eastbound TH 62

P.M. Peak Period

Congestion Causes 1 through 4

Figure 13 displays the P.M. congestion locations and severity on eastbound TH 62 for Congestion Causes 1 through 4.

Figure 13. P.M. Eastbound TH 62 Congestion Causes 1-4



Congestion Cause 1:

Ramp to ramp weaving occurs between the southbound TH 100 entrance and the northbound TH 100 exit creating an over-capacity weave segment between the interchange loops. This area is congested for over three hours during the P.M. peak period.

Congestion Cause 2:

Entering traffic from northbound TH 100 must merge on to eastbound TH 62, putting the mainline demand over capacity. This area is congested for over three hours during the P.M. peak period. Figure 13 displays the P.M. congestion locations and severity on eastbound TH 62.

Congestion Causes 3 and 4 (Primary Cause of Congestion – Entering Traffic):

Entering traffic from France Avenue puts the mainline over capacity. Congestion is compounded by the substandard geometry of the acceleration lane from France Avenue. Short acceleration distance and approach angle/poor sight distance angles make it even more difficult for drivers to find an adequate gap during congested conditions. This area is congested between two and three hours in the P.M. peak period.

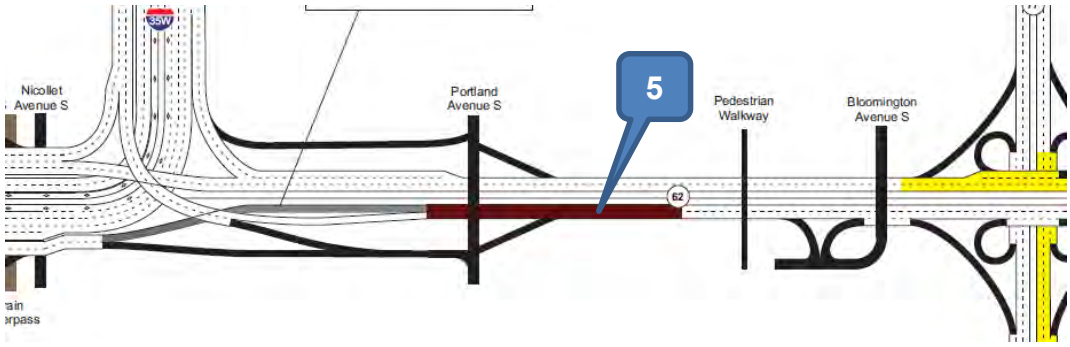
Eastbound TH 62

P.M. Peak Period

Congestion Cause 5:

Figure 14 displays the P.M. congestion locations and severity on eastbound TH 62 for Congestion Cause 5.

Figure 14. P.M. Eastbound TH 62 Congestion Cause 5



Entering traffic from Portland Avenue must merge on to eastbound TH 62, putting the mainline demand over capacity. This capacity issue causes queueing back to I-35W. This area is congested over three hours during the P.M. peak period.

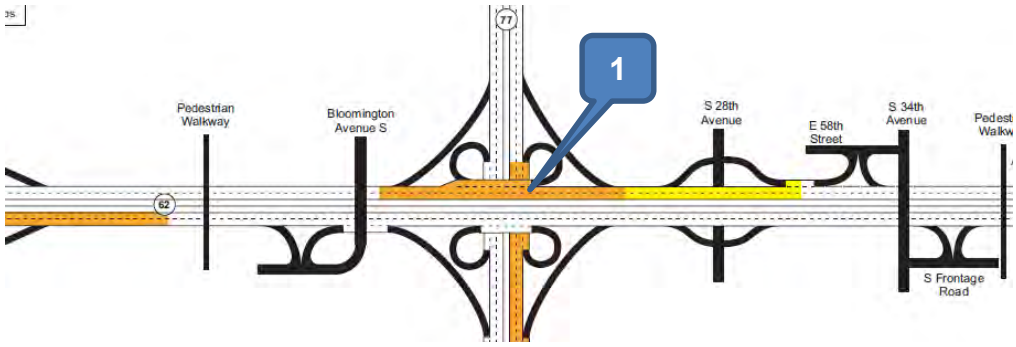
Westbound TH 62

A.M. Peak Period

Congestion Cause 1:

Figure 15 displays the A.M. congestion locations and severity on westbound TH 62 for Congestion Cause 1.

Figure 15. A.M. Westbound TH 62 Congestion Cause 1



Ramp to ramp weaving occurs between the northbound TH 77 entrance and the southbound TH 77 exit creating an over-capacity weave segment between the interchange loops. This capacity issue causes queueing on northbound TH 77. This area is congested between one and two hours during the A.M. peak period.

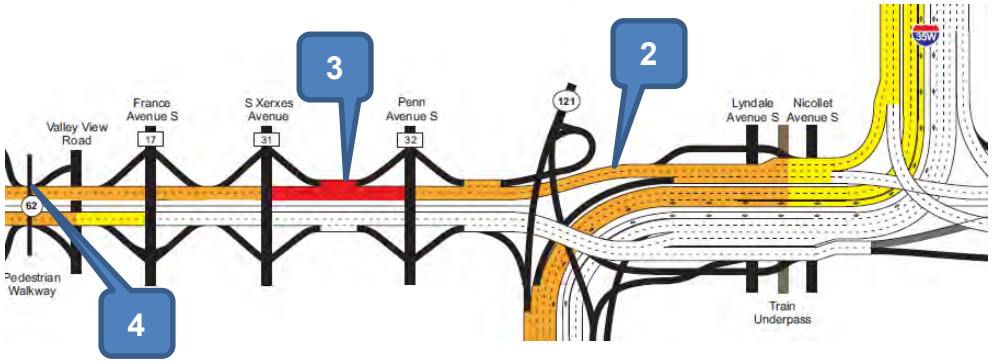
Westbound TH 62

A.M. Peak Period

Congestion Causes 2 through 4

Figure 16 displays the A.M. congestion locations and severity on westbound TH 62 for Congestion Causes 2 through 4.

Figure 16. A.M. WB TH 62 Congestion Causes 2-4



Congestion Cause 2:

Substandard geometry exists on westbound TH 62 as the mainline travels uphill after the southbound I-35W exit. This causes irregular braking due to driver uncertainty of downstream queues, and results in increased congestion and queues. This area is congested between one and two hours during the A.M. peak period.

Congestion Cause 3:

Entering traffic from Xerxes Avenue and Penn Avenue add to existing downstream congestion issues. This area is congested between two and three hours during the A.M. peak period.

Congestion Cause 4 (Primary Cause of Congestion):

Entering traffic from Valley View Road must merge on to westbound TH 62, putting the mainline demand over capacity. Volume on the mainline must also weave to the northbound TH 100 exit. This area is congested between one and two hours during the A.M. peak period.

It is also recognized that the close interchange spacing exacerbates the the identified congestion problems. Interchanges through this section are spaced between a half mile and mile apart. Local guidance recommends that interchanges in urban areas be spaced at least one mile apart to provide adequate distance for merging and weaving traffic.

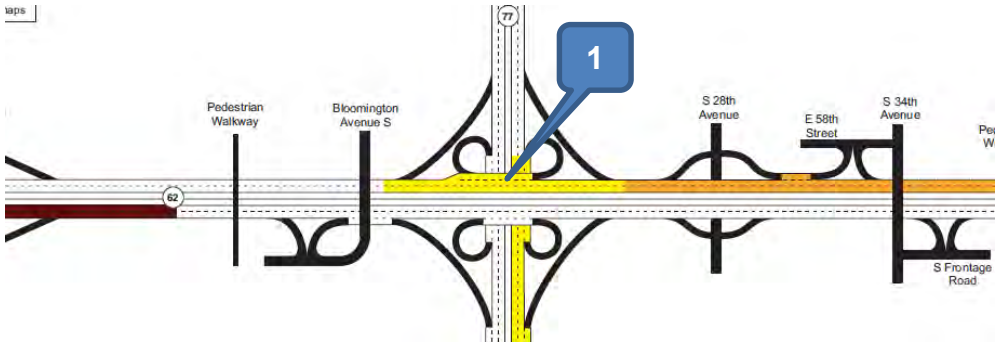
Westbound TH 62

P.M. Peak Period

Congestion Cause 1:

Figure 17 displays the P.M. congestion locations and severity on westbound TH 62 for Congestion Cause 1.

Figure 17. P.M. Westbound TH 62 Congestion Cause 1



Congestion Cause 1 is identical to the A.M. peak period cause, and is congested for less than one hour.

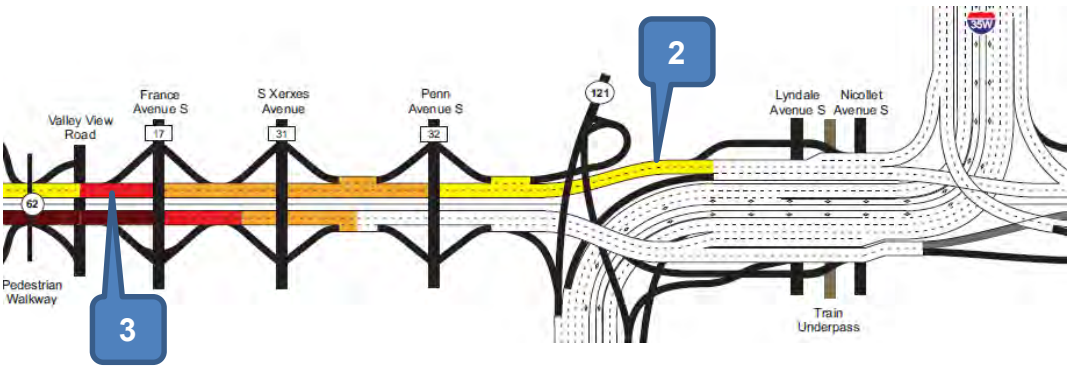
Westbound TH 62

P.M. Peak Period

Congestion Causes 2 and 3

Figure 18 displays the P.M. congestion locations and severity on westbound TH 62 for Congestion Causes 2 and 3.

Figure 18. P.M. Westbound TH 62 Congestion Causes 2-4



Congestion Cause 2:

Substandard geometry exists on westbound TH 62 as the mainline travels uphill after the southbound I-35W exit. This causes irregular braking due to driver uncertainty of downstream queues, and results in increased congestion and queues. This area is congested less than one hour during the P.M. peak period.

Congestion Cause 3 (Primary Cause of Congestion):

Entering traffic from France Avenue must merge on to westbound TH 62, putting the mainline demand over capacity. This area is congested between two and three hours during the P.M. peak period.

It is also recognized that the close interchange spacing exacerbates the the identified congestion problems. Interchanges through this section are spaced between a half mile and mile apart. Local guidance recommends that interchanges in urban areas be spaced at least one mile apart to provide adequate distance for merging and weaving traffic.

Congestion Causes in Key North-South Connections

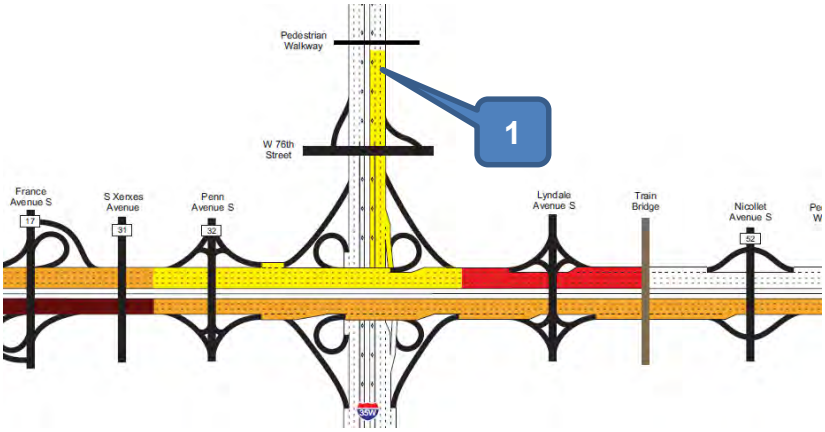
Northbound I-35W

P.M. Peak Period

Congestion Cause 1:

Figure 19 displays the P.M. congestion locations and severity on northbound I-35W for Congestion Cause 1.

Figure 19. P.M. Northbound I-35W Congestion Cause 1



Entering traffic from 76th Street and northbound I-494 merge on to northbound I-35W, putting the mainline demand over capacity. This area is congested less than one hour during the P.M. peak period.

Southbound I-35W

A.M. and P.M. Peak Periods

Congestion Causes 1 and 2:

Figure 20 displays the A.M. and P.M. congestion locations and severity on southbound I-35W for Congestion Causes 1 and 2.

Figure 20. A.M. Southbound I-35W Congestion Causes 1-2

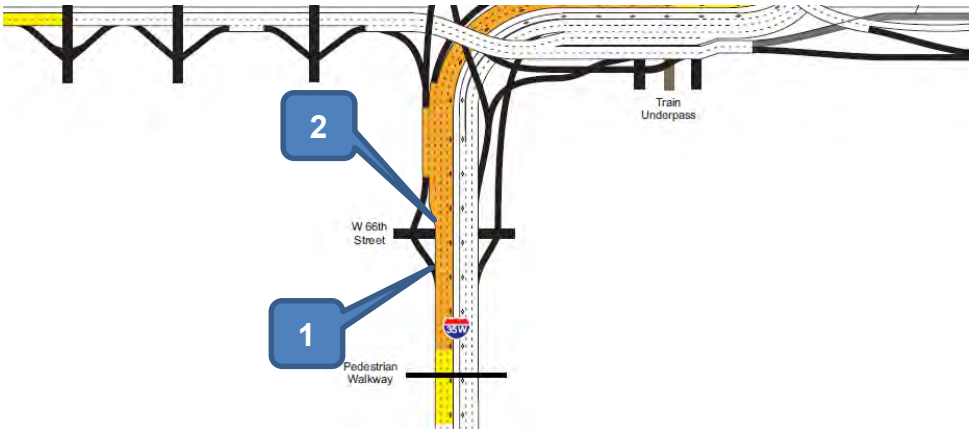
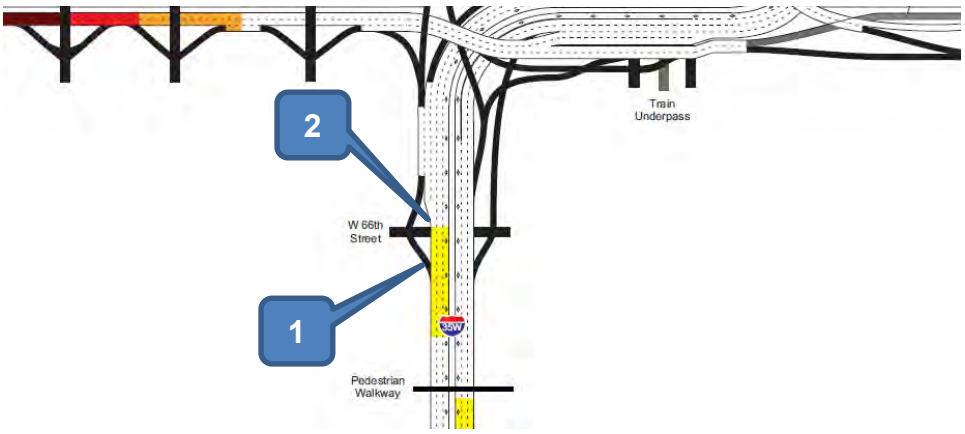


Figure 21. P.M. Southbound I-35W Congestion Causes 1-2



Entering traffic from westbound TH 62 and 66th Street caused the southbound I-35W mainline to reach capacity. The traffic merging at this location must also maneuver from a 300 foot auxiliary lane, to a lane that drops 700 feet further downstream, effectively requiring two lane changes for 66th Street traffic within 1,000 feet.

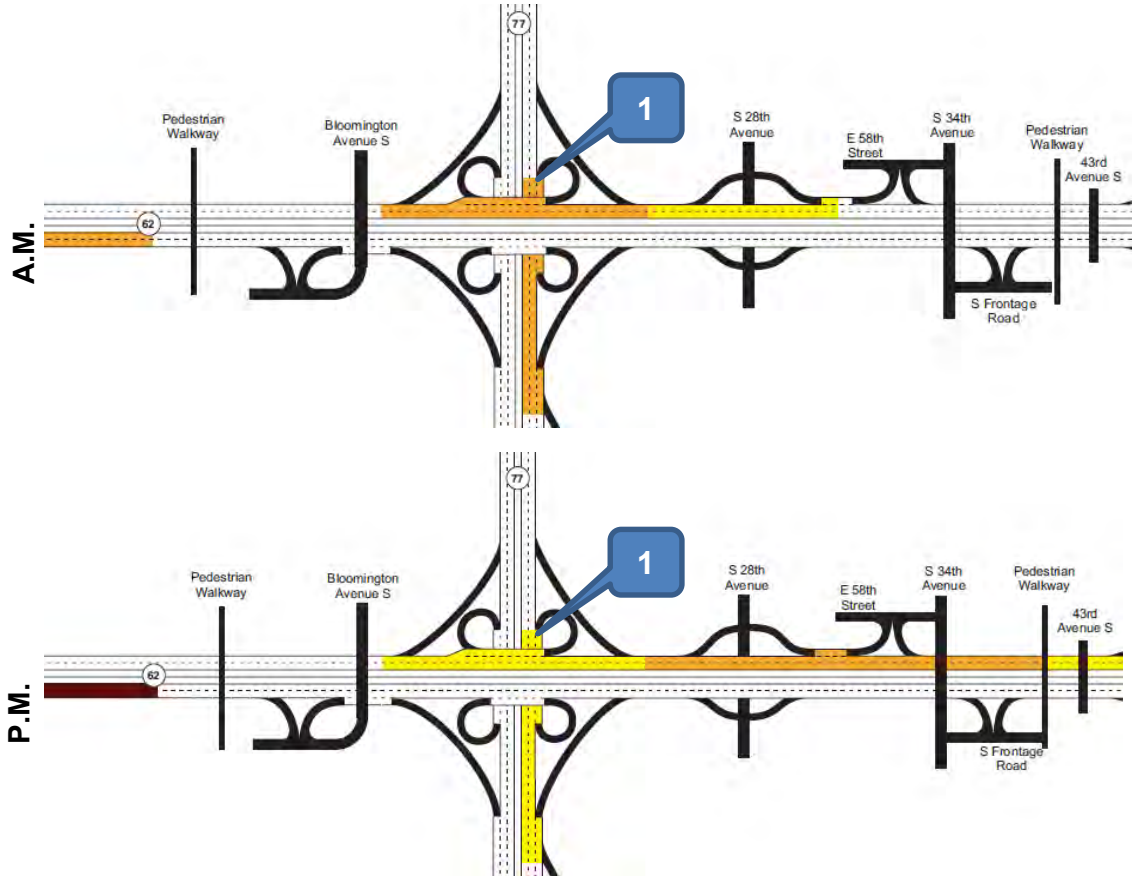
Northbound TH 77

A.M. and P.M. Peak Periods

Congestion Cause 1:

Figure 22 displays the A.M. and P.M. congestion locations and severity on northbound TH 77 for Congestion Cause 1.

Figure 22. A.M. and P.M. Northbound TH 77 Congestion Cause 1



The volume exiting to westbound TH 62 exceeds the capacity of the ramp and causes vehicles to back on up northbound TH 77. This is impacted by interchange loop to loop weave operations on westbound TH 62.

Reliability

A reliability analysis was performed on both study corridors to determine the extent of delay occurring on sections of each corridor and the associated travel condition for that delay.

Delay was measured for each section by comparing 15-minute travel times for the day to free flow travel time; the difference between travel times was aggregated for year 2014 to determine user delay on the corridor. Figure 23 displays the location of these corridor segments.

The study corridors were broken into sections running from one system interchange through the next system interchange, and adopt the following naming scheme:

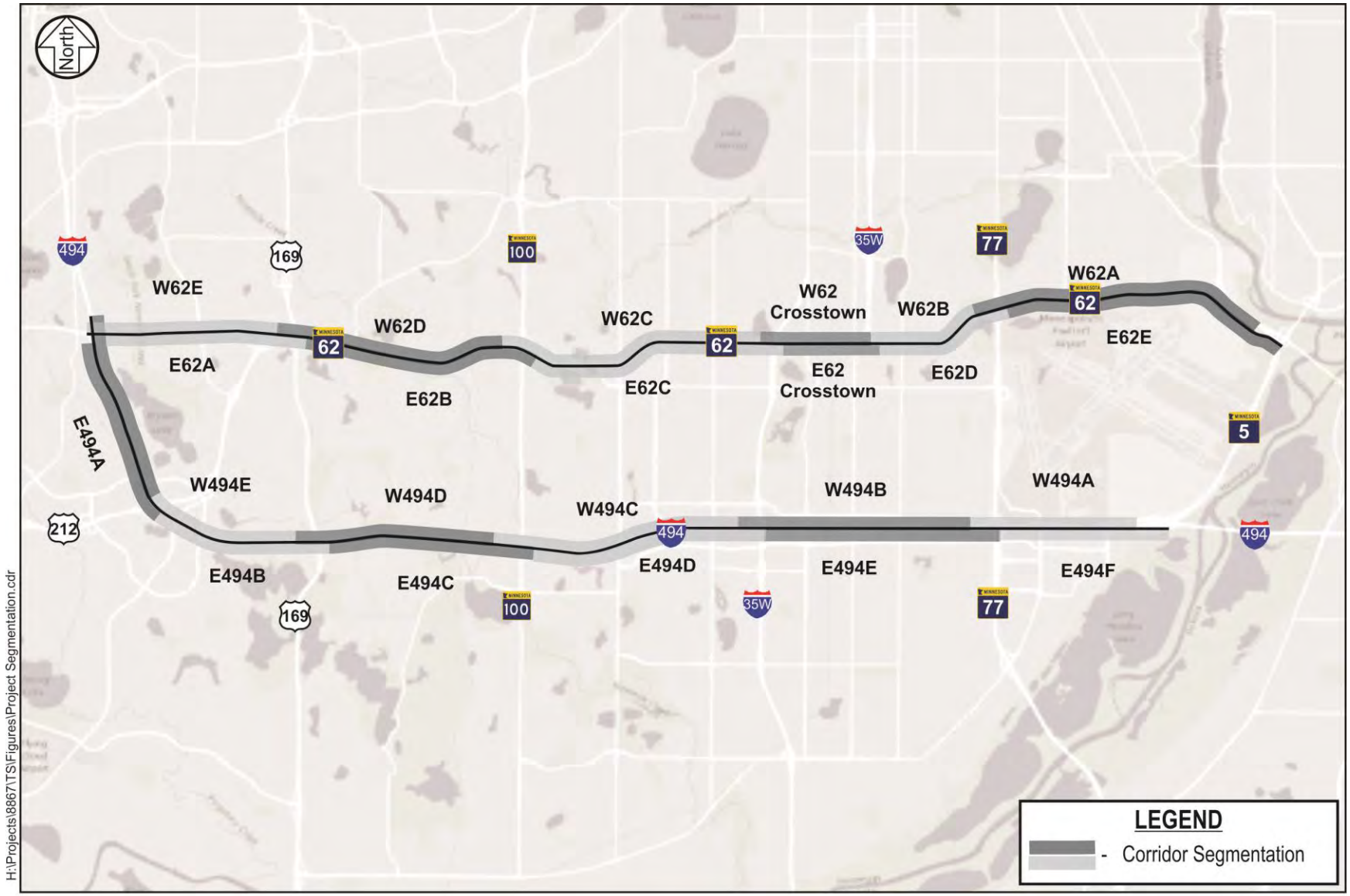
I-494 Segments

- TH 62 to US 212: E494A and W494F
- US 212 to US 169: E494B and W494E
- US 169 to TH 100: E494C and W494D
- TH 100 to I-35W: E494D and W494C
- I-35W to TH 77: E494E and W494B
- TH 77 to TH 5: E494F and W494A

TH 62 Segments

- I-494 to US 169: E62A and W62E
- US 169 to TH 100: E62B and W62D
- TH 100 to I-35W: E62C and W62C
- I-35W/TH 62 Crosstown Commons: E62 Crosstown and W62 Crosstown
- Crosstown Commons to TH 77: E62D and W62B
- TH 77 to TH 5: E62E and W62A

Figure 23. I-494 and TH 62 Reliability Analysis Segmentation



Graphic summaries are provided in Figure 24 to Figure 27 for the I-494 and TH 62 corridors. These figures show the current (2014) delay for each corridor by delay type.

Figure 24. Eastbound I-494 Segment Delay (2014, by Delay Category)

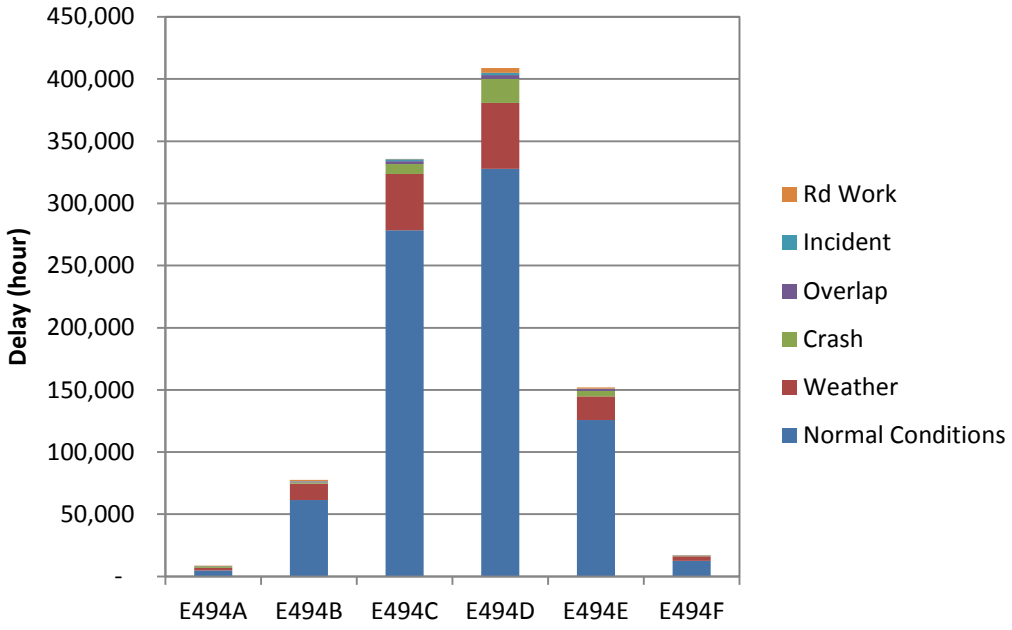


Figure 25. Westbound I-494 Segment Delay (2014, by Delay Category)

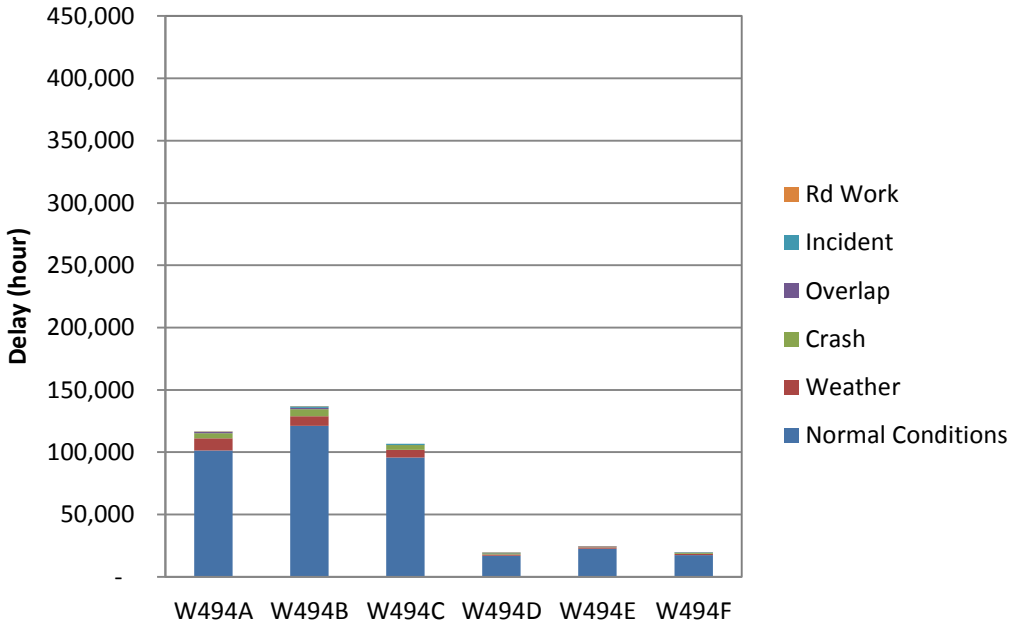


Figure 26. Eastbound TH-62 Segment Delay (2014, by Delay Category)

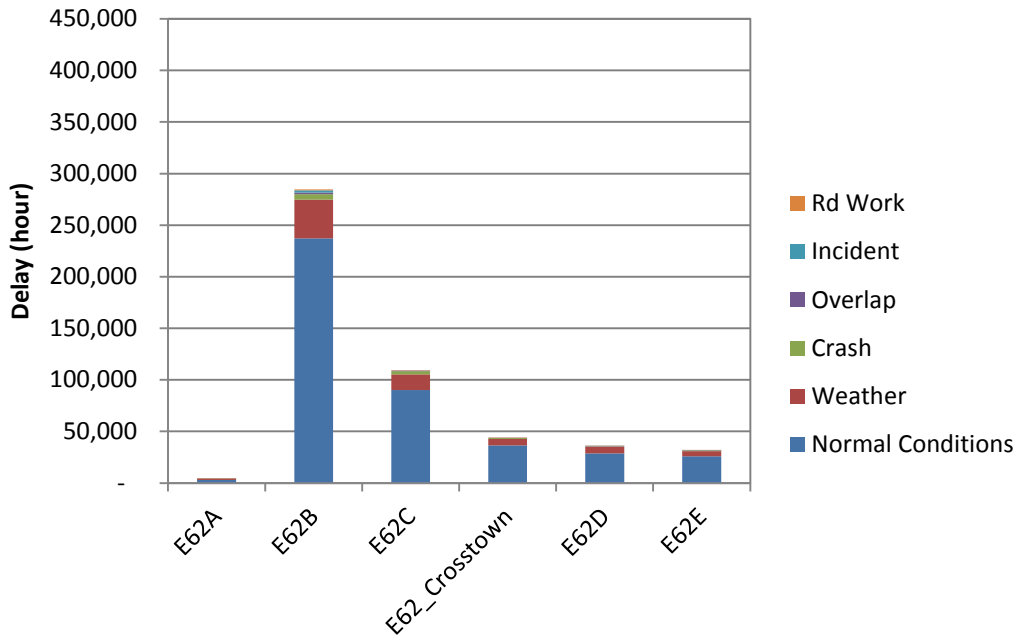
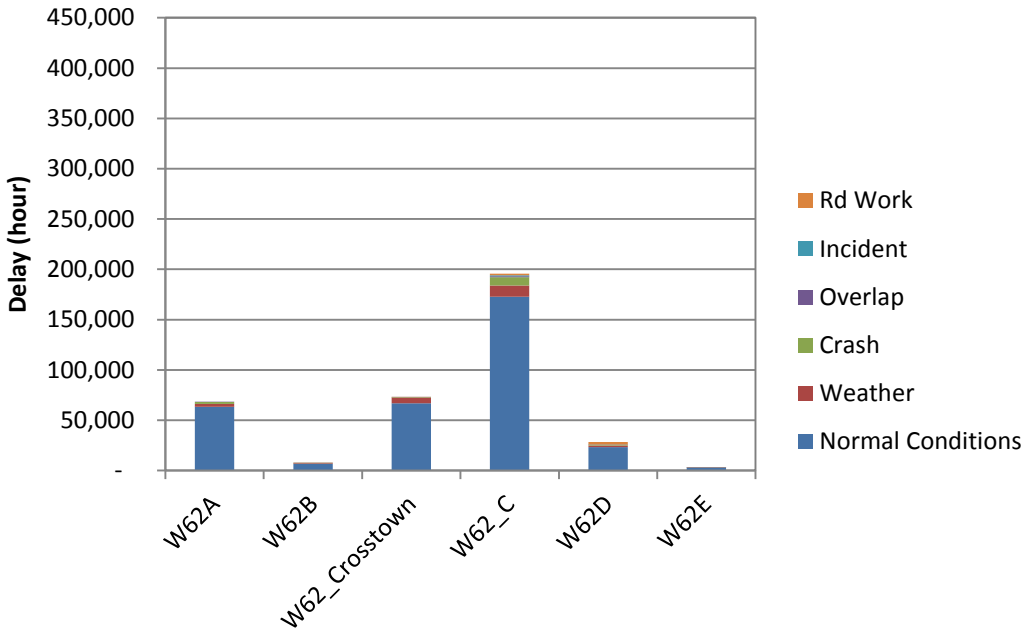


Figure 27. Westbound TH-62 Segment Delay (2014, by Delay Category)



On I-494, most of the delay occurs in the eastbound direction between US 169 and I-35W, with the two segments totaling nearly 750,000 hours of annual delay. This coincides with the congestion causes identified: the lane drop, entering traffic and associated capacity issues at the France Avenue interchange. In the westbound direction, the majority of the delay occurs between TH 5 and TH 100. This also coincides with the identified congestion causes. The

ramp to ramp weaving at the TH 100 and I-35W system interchanges, and the lane drop at 24th Avenue are the primary causes of congestion along the corridor.

Overall, the TH 62 corridor has less annual delay than I-494, but there are two sections that contain disproportional amounts of delay when compared to the rest of the corridor. The first is in the eastbound direction between US 169 and TH 100. The congestion in this segment stems from entering volumes downstream at the TH 100 and France Avenue interchanges. Queues from these bottlenecks are compounded by the lane drop after the Gleason Lake interchange where traffic from TH 62 and US 212 merges and necks down from four lanes to two lanes. These issues combine to cause over 250,000 hours of delay annually. In the westbound direction there is nearly 200,000 hours of annual delay between the Crosstown Commons and TH 100. Congestion are a result of entering traffic from the Penn Avenue, Xerxes Avenue, France Avenue, and Valley View Road interchanges, and other geometric and vertical curvature deficiencies.

On I-494, delay associated with nonrecurring conditions makes up approximately 15 to 20 percent of the overall delay in these sections. However, nonrecurring delay is more of an issue on less congested segments near the ends of the study corridor; delay associated with nonrecurring conditions on I-494 can range from 25 percent up to 45 percent. This is a result of the section having sufficient capacity for recurring traffic volumes; in this section, a nonrecurring event is needed to cause delay.

On TH 62, nonrecurring delay makes up less than 20 percent of delay on all segments except for the eastbound section between I-494 and US 169 where 35 percent of the delay can be attributed to nonrecurring conditions. This is also a result of there being sufficient capacity to serve most traffic demands under normal conditions and a nonrecurring event being needed to generate delay.

Annual delay totals were aggregated for both corridors, by direction, to compare the order of magnitude difference between I-494 and TH 62. These are shown in Figure 28. Aggregation of delay across each corridor illustrates that eastbound I-494 experiences the most delay annually, and even more that both directions of TH 62 combined. Across each segment, nonrecurring delay makes up between 25 and 35 percent of total delay.

Due to the substantially higher traffic volumes and greater capacity on the I-494 corridor, delay totals in Figure 28 were weighted per vehicle mile to examine the amount of delay experienced on a per vehicle basis. Figure 29 illustrates these results and shows that while I-494 has higher annually delays overall, TH 62 experiences more delay on a per-vehicle basis. While the eastbound delay per vehicle mile is equal between the corridors, the westbound delay is higher on TH 62. This could be a result of the recent addition of an auxiliary lane on westbound I-494 from I-35W to France Avenue, and the system not yet reaching an equilibrium between the two corridors (like eastbound).

Figure 28. I-494 and TH 62 Corridor Delay (2014, by Delay Category)

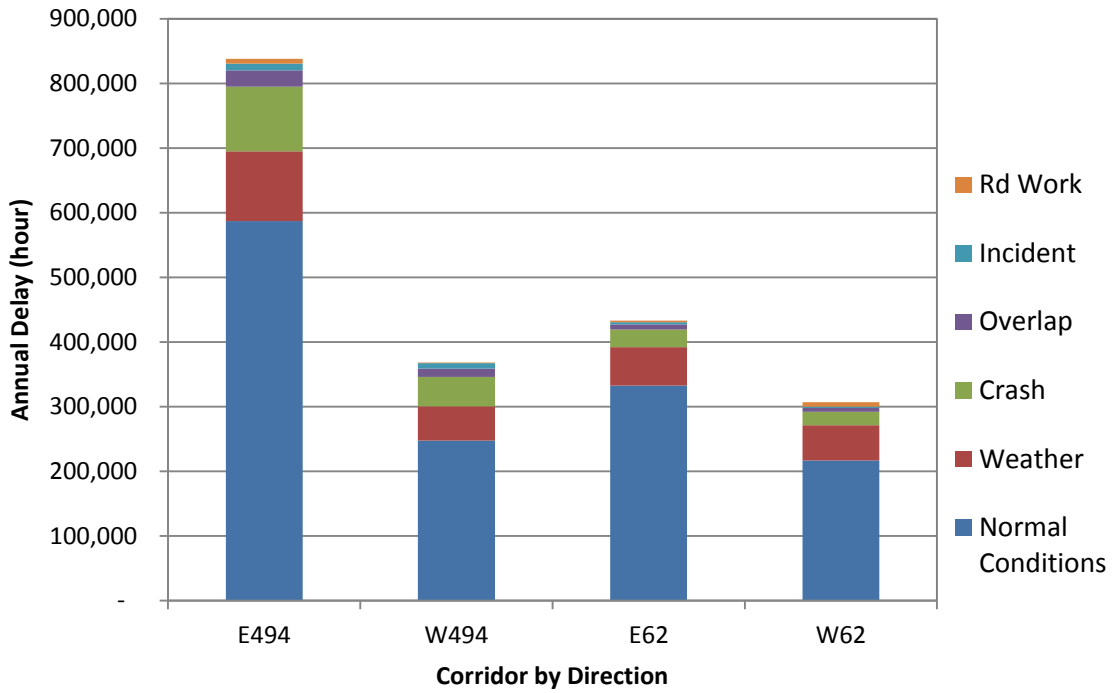
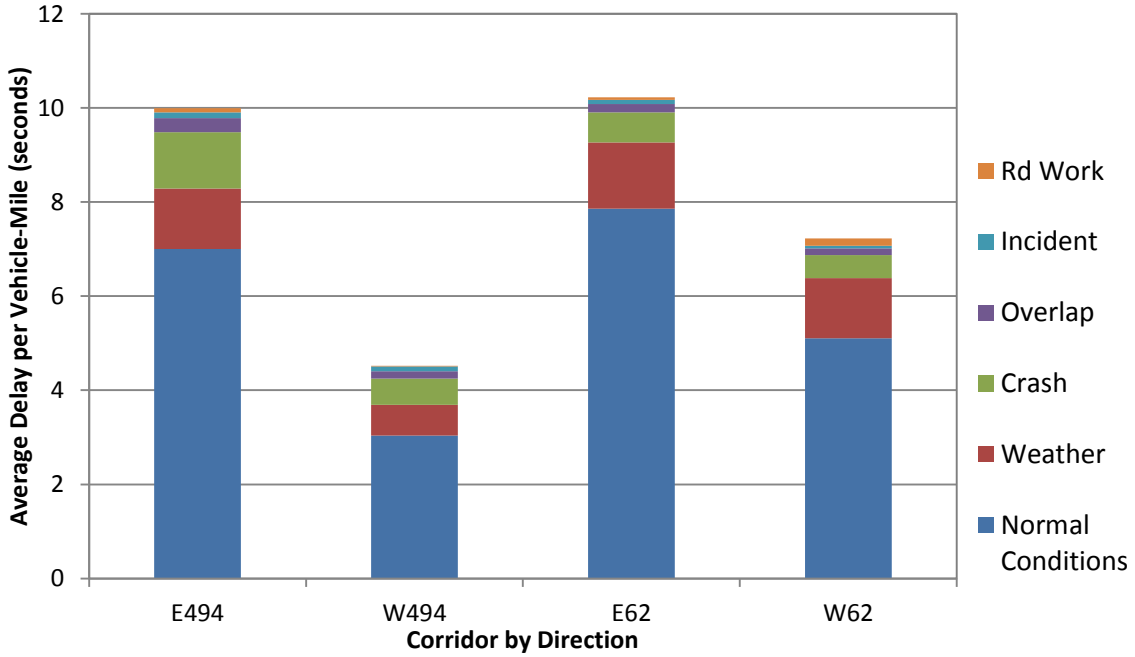


Figure 29. I-494 and TH 62 Corridor Delay per VMT (2014, by Delay Category)



Safety

A safety analysis was performed on the study corridors within the study area. The I-494 corridor includes 18 interchanges, 15 of which are ranked in the top 200 statewide interchanges by crash cost in the *2013 MnDOT Interchange Crash Toolkit*. Six of these interchanges were in the top 25 percent of the top 200 highest crash cost interchanges by crash cost. The TH 62 corridor includes 19 interchanges, nine of which are ranked in the top 200 statewide interchanges by crash cost. Two of these interchanges were in the top 25 percent of the top 200 highest crash cost interchanges.

Congestion and safety are inextricably linked. The probability of crashes increase when congestion is present, driver confusion exists and/or driver expectancy is not met. Two individual safety assessments of the corridors were completed covering crash data from the calendar years 2010 to 2014. Two assessments were conducted using standard MnDOT reporting processes or reports.

1. Mainline Assessment: Assesses crash density and crash rate
2. Interchange Assessment: Assesses crash cost and crash rate

Mainline Assessment

To more closely evaluate the crash data and road characteristics, crashes along I-494 and TH 62 were assigned to either a mainline segment or interchange area. An assessment was then completed for each interchange and mainline segment between interchanges. The mainline assessment included calculating crash density and crash rates.

To avoid skewed crash rates due to analyzing short segments, crash data was aggregated into six crash data segments along I-494 and five crash data segments along TH 62. Table 12 and Table 13 provide a summary of the crash data characteristics within each of the crash data segments for the I-494 and TH 62 corridors. Figure 30 displays these analysis segments by crash severity.

Results of the mainline assessment indicate that three of the I-494 segments have a crash rate greater than the average crash rate for segments with similar characteristics and one of the segments has a crash rate greater than the critical crash rate. It should be noted that a higher than average crash rate does not necessarily indicate a significant crash problem. Therefore, the crash rates were compared to the critical crash rates to determine the statistical significance of the above average crash rates. If the calculated crash rate is below the critical crash rate, crashes that occurred are typically due to the random nature of crashes and are not necessarily the result of a geometric design issue. However, a crash rate that is greater than the critical crash rate indicates that there may be a geometric design issue and warrants further review or mitigation.

I-494 Mainline Assessment

Table 12. I-494 Crash Data (2010 – 2014)

Segment #	Segment Extent	Free-way Type	Total Crashes	AADT	Crash Density (crashes per Mile per Year)	Crash Rate (crashes per million VMT)	Crash Rate vs Average/Critical Crash Rate
1	TH 62 to US 212	6 Lane Rural	31	85,000	6.2	0.2	< Average
2	**US 212 to US 169**	**6 to 8 Lane Urban**	**40**	**102,000**	**80.0**	**2.1**	**> Critical**
3	US 169 to TH 100	6 to 8 Lane Urban/ Rural	271	133,000(2)	49.3	1.0	> Average
4	TH 100 to I-35W	7 Lane Urban	323	159,000(2)	58.7	1.0	> Average
5	I-35W to TH 77	6 Lane Urban	189	135,000(2)	42.0	0.8	> Average
6	TH 77 to TH 5	6 to 8 Lane Urban/ Rural	8	133,000(2)	8.0	0.1	< Average

(1) Source: MnDOT Metro Traffic MnCMAT

(2) AADT represents weighted average along segment

Figure 30. Segment and Interchange Crash Rates

Crash Data Segment 1: MN TH 62 to US 212

The Crash Data Segment 1 is 2.0 miles and extends from TH 62 to US 212. This segment is a six-lane, rural freeway with a concrete jersey median barrier. This segment experiences no recurring congestion during the A.M. and P.M. peak periods. As shown in Table 12, the crash rate for Segment 1 is less than the average crash rate within the study area.

Crash Data Segment 2: US 212 to US 169

The Crash Data Segment 2 is 1.8 miles from US 212 to US 169. This segment is a seven-lane, urban freeway with a concrete jersey median barrier. This segment experiences less than one hour of congestion during the A.M. peak period and one to two hours of congestion during the P.M. peak period. As shown in Table 12, the crash rate for Segment 2 is greater than the average and critical crash rates within the study area. The crashes were evenly distributed by direction with 50 percent of the crashes occurring in the eastbound direction and 50 percent in the westbound direction. The majority (58 percent) of the crashes were rear end crashes.

Crash Data Segment 3: US 169 to TH 100

The Crash Data Segment 3 is a 2.2-mile segment from US 169 to TH 100. The segment is a six-lane (plus auxiliary lane) urban and rural freeway with a high-tension cable median barrier. This segment experiences one to two hours of congestion in the eastbound direction during the A.M. peak period and greater than three hours of congestion in the eastbound direction during the P.M. peak period. As shown in Table 12 the crash rate for Segment 3 is greater than the average crash rate, but less than the critical rate. The majority (73 percent) of the crashes occurred in the eastbound direction with the predominant type being rear end crashes (60 percent).

Crash Data Segment 4: TH 100 to I-35W

The Crash Data Segment 4 is a 2.6-mile stretch of I-494 from TH 100 to I-35W. This segment is a seven-lane, urban freeway with a concrete jersey median barrier. A westbound auxiliary lane begins at the northbound I-35W on ramp and ends at the northbound TH 100 off-ramp. This segment experiences recurring congestion in both directions during the A.M. and P.M. peak periods. As shown in Table 12, the crash rate for Segment 4 is greater than the average crash rate, but less than the critical rate. Approximately 67 percent of the crashes occurred in the westbound direction with the predominant type being rear end crashes (88 percent).

Crash Data Segment 5: I-35W to TH 77

The Crash Data Segment 5 is a 2.5-mile stretch of I-494 from I-35W to TH 77. This segment is a six-lane, urban freeway with a concrete jersey median barrier. This segment experiences recurring congestion in the westbound direction during the A.M. peak period and in the eastbound direction during the P.M. peak period. As shown in Table 12, the crash rate for Segment 5 is greater than the average crash rate, but less than the critical rate. Approximately 60 percent of the crashes occurred in the eastbound direction with the predominant type being rear end crashes (77 percent).

Crash Data Segment 6: TH 77 to TH 5

The Crash Data Segment 6 is a 1.6-mile stretch of I-494 from TH 77 to TH 5. This segment is a six-lane, urban and rural freeway with a concrete jersey median. This segment experiences recurring congestion in the westbound direction during the A.M. and P.M. peak. As shown in Table 12, the crash rate for Segment 6 is less than the average crash rate within the study area.

TH 62 Mainline Assessment

Table 13. TH 62 Crash Data and Segments (2010 – 2014)

Segment	Crash Data Segment	Freeway Type	Total Crashes	AADT	Crash Density (crashes per mile per year)	Crash Rate (crashes per M VMT)	Crash Rate vs Average/Critical Crash Rate
7	I-494 to US 169	4 to 6 Lane Urban/ Rural	32	31,000(2)	5.8	0.5	< Average
8	US 169 to TH 100	4 Lane Rural	82	89,000(2)	18.2	0.5	< Average
9	TH 100 to I-35W	4 Lane Urban	121	92,000(2)	16.1	0.5	< Average
10	I-35W to TH 77	4 Lane Urban	34	102,000(2)	11.3	0.3	< Average
11	TH 77 to TH 5	4 Lane Urban/ Rural	29	62,000(2)	5.8	0.2	< Average

(1) Source: MnDOT Metro Traffic MnCMAT

(2) AADT represents weighted average along segment

Crash Data Segment 7: I-494 to US 212/US 169

The Crash Data Segment 7 is 1.8 miles and extends from I-494 to US 169. This segment transitions from a six-lane divided roadway with at-grade intersections to a four-lane suburban freeway approximately 1/4 mile east of I-494. This segment experiences no recurring congestion during the A.M. and P.M. peak periods. As shown in Table 13, the crash rate for Segment 7 is less than the average crash rate within the study area.

Crash Data Segment 8: US 212/US 169 to TH 100

The Crash Data Segment 8 is a 2.5-mile stretch of TH 62 from US 169 to TH 100. This segment is a four-lane, rural freeway with a high-tension cable median barrier. This segment experiences less than an hour of congestion in the eastbound direction during the A.M. peak period and greater than three hours of congestion during the P.M. peak period. As shown in Table 13, the crash rate for Segment 8 is less than the average crash rate within the study area.

Crash Data Segment 9: TH 100 to I-35W

The Crash Data Segment 9 is a 2.8-mile stretch of TH 62 from TH 100 to I-35W. This segment is a four-lane, urban freeway with a combination of high-tension cable median barrier and guardrail between TH 100 and Xerxes Avenue. It is a four-lane, suburban freeway with a concrete jersey median barrier between Xerxes Avenue and I-35W. This segment experiences recurring congestion in the eastbound direction during the A.M. peak period and both directions during the P.M. peak period. As shown in Table 13, the crash rate for Segment 9 is less than the average crash rate within the study area.

Crash Data Segment 10: I-35W to TH 77

The Crash Data Segment 10 is a 1.4-mile stretch of TH 62 from I-35W to TH 77. This segment is a four-lane, urban freeway with a concrete jersey median barrier. This segment experiences recurring congestion in the eastbound direction during the A.M. and P.M. peak period. As shown in Table 13, the crash rate for Segment 10 is less than the average crash rate within the study area.

Crash Data Segment 11: TH 77 to TH 5

The Crash Data Segment 11 is a 2.2-mile stretch of TH 62 from TH 77 to TH 5. This segment is a four-lane, urban and rural freeway with a combination of depressed grass median west of 28th Avenue and a concrete jersey median barrier east of 28th Avenue. This segment experiences recurring congestion in the westbound direction during the A.M. peak period and both directions during the P.M. peak period. As shown in Table 13, the crash rate for Segment 11 is less than the average crash rate within the study area.

Interchange Assessment

The second safety assessment was a review of the 15 interchanges along I-494 and 11 interchanges along TH 62. This assessment reviewed corridor mainline crashes within the interchange influence area and crashes on the cross road. The analyses used the standardized assessment zones within the Transportation Information Systems database Intersection/ Interchange file.

Table 14 and Table 15 identify 26 interchanges in the study area listed in the *2013 MnDOT Interchange Crash* Toolkit, which lists the top 200 worst interchanges by crash cost. Three interchanges within the study corridor are in the top 25 and have a crash rate greater than the critical crash rate. One additional interchange within the study corridor has a crash rate greater than the critical crash rate. These interchanges were evaluated in greater detail. Figure 30 is a map of these interchanges by crash severity.

The I-35W/I-494 interchange was ranked eighth in the state in the *2013 MnDOT Interchange Crash Toolkit*, based on crash costs. A critical movement in this interchange, northbound I-35W to westbound I-494, had a particularly severe ramp crash problem prior to 2013. This was mitigated with the addition of an auxiliary lane on westbound I-494 that extends from the northbound I-35W on ramp to the northbound TH 100 off ramp during the 2013 construction

year. The project developed added capacity to westbound I-494 which resulted in the reduction of mainline queuing on northbound I-35W. The mitigation effort has not been evaluated, nor is reflected in the reported data. The expectation is the construction will, at a minimum, reduce the crashes attributed to queuing on northbound I-35W.

The I-494 interchange at France Avenue is a partial clover leaf interchange and was ranked 16th in the state in the *2013 MnDOT Interchange Crash Toolkit*, based on crash costs. I-494 is heavily congested at the interchange with eastbound I-494 experiencing greater than seven hours of congestion daily. The eastbound on ramps at France Avenue create a bottleneck and are a major cause of congestion along the I-494 corridor.

The I-494 interchange at Penn Avenue is a single point urban interchange (SPUI) and was ranked 22nd in the state in the *2013 MnDOT Interchange Crash Toolkit*, based on crash costs. The interchange is closely spaced to the I-35W/I-494 interchange, creating a short weaving distance between the two interchanges. This short weaving distance contributes to the high number of crashes at the interchange.

The TH 62 interchange at France Avenue is a standard diamond interchange. TH 62 is heavily congested at this interchange with westbound I-494 experiencing two to three hours of congestion during the a.m. peak period and eastbound I-494 experiencing two to three hours of congestion during the p.m. peak period. The interchange is located along a horizontal curve.

The collective crash costs for the 26 interchanges on the study corridors on MnDOT's *Top 200 Interchange Crash Cost List Report* amount to an average of $45.2 million dollars from 2009-2013. Four of the interchanges experienced crash rates that were greater than the critical crash rate.

Table 14. I-494 Corridor Interchanges Included in MnDOT Top 200 Interchanges Report for 2013

	Interchange Description	Approach Volume	Overall Rank	Crash Cost	K	A	B	C	PD	TOT	CR	FAR
I-35W	I 494	251,558	8	$3,623,640	1	4	31	89	358	483	1.05	1.09
I-494	FRANCE AVENUE (CSAH 17)	187,967	16	$3,150,200	1	4	28	71	300	404	1.18	1.46
I-494	PENN AVENUE (CSAH 32)	184,095	22	$2,893,880	0	1	38	67	326	432	1.29	0.30
I-494	US 169	180,975	32	$2,481,400	0	0	21	82	325	428	1.30	0.00
I-494	PORTLAND AVENUE (CSAH 35)	147,995	40	$2,164,240	0	2	18	65	213	298	1.10	0.74
I-494	TH 77/CEDAR AVENUE	199,467	42	$2,151,240	1	2	15	57	208	283	0.78	0.82
I-494	TH 100	200,632	54	$1,817,440	0	3	11	52	198	264	0.72	0.82
I-494	12TH AVENUE S	150,057	65	$1,707,120	0	1	16	52	164	233	085	0.36
I-494	24TH AVE S (CSAH 1)	143,012	74	$1,642,120	0	1	20	41	154	216	0.83	0.38
I-494	TH 5	143,322	92	$1,496,720	1	0	14	38	144	197	0.75	0.38
I-494	CSAH 61 & PRAIRE CENTER DRIVE	147,691	105	$1,375,040	0	1	7	48	178	234	0.87	0.37
I-494	NICOLLET AVE (CSAH 52)	153,775	107	$1,358,160	0	0	10	47	187	244	0.87	0.00
I-494	E BUSH LAKE ROAD (CSAH 28)	144,921	137	$1,146,000	0	0	9	42	120	171	0.65	0.00
I-494	34TH AVENUE S	151,116	143	$1,124,720	0	2	8	31	99	140	0.51	0.72
I-494	LYNDALE AVENUE S	162,966	163	$1,010,840	0	0	5	39	148	192	0.77	0.00

K: Fatal Crash; A: Incapacitation Injury Crash; B: Non-Incapacitation Injury Crash; C: Possible or Unknown Injury Crash; PD: Property Damage Only Crash;

TOT: Total Crashes within Intersection; CR: Intersection Crash Rate; FAR: Fatal and Severe Crash Rate; Crash period consists of 1,826 days (2009-2013)

Table 15. TH 62 Corridor Interchanges Included in MnDOT Top 200 Interchanges Report for 2013

	Interchange Description	Approach Volume	Overall Rank	Crash Cost	K	A	B	C	PD	TOT	CR	FAR
TH 62	FRANCE AVENUE	99,078	31	$2,481,720	0	2	16	88	219	325	1.80	1.11
I-35W	TH 121 & TH 62	142,923	44	$2,038,240	0	3	26	36	198	263	1.01	1.15
TH 62	TH 77/CEDAR AVENUE	120,730	56	$1,793,680	0	1	21	45	191	258	1.17	0.45
I-35W	TH 62	147,656	63	$1,711,480	1	0	26	26	161	214	0.79	0.37
TH 62	LYNDALE AVENUE S	102,652	87	$1,527,480	0	2	21	30	101	154	0.82	1.07
TH 62	TH 100	160,913	113	$1,287,520	0	1	5	46	184	236	0.80	0.34
US 169	US 212 & TH 62	152,119	119	$1,262,480	0	1	8	42	146	197	0.71	0.36
TH 62	PENN AVENUE (CSAH 32)	106,762	150	$1,081,880	0	0	11	34	121	166	0.85	0.00
TH 62	VALLEY VIEW ROAD	95,355	166	$995,120	0	0	10	34	84	128	0.74	0.00
TH 62	PORTLAND AVENUE (CSAH 35)	109,189	171	$976,240	0	0	6	39	103	148	0.74	0.00
TH 62	XERXES AVENUE (CSAH 31)	101,673	195	$867,680	0	1	7	26	76	110	0.59	0.54

K: Fatal Crash; A: Incapacitation Injury Crash; B: Non-Incapacitation Injury Crash; C: Possible or Unknown Injury Crash; PD: Property Damage Only Crash;

TOT: Total Crashes within Intersection; CR: Intersection Crash Rate; FAR: Fatal and Severe Crash Rate; Crash period consists of 1,826 days (2009-2013)

Transit Service, Infrastructure, and Needs

A review of existing transit service and infrastructure in the study area was completed as part of the Need Assessment. Components of the transit system on the I-494/TH 62 corridor that were reviewed include the following:

- Transit service
  - Inventory of routes
  - Ridership
  - Trips per day
- Transit performance
  - On-time performance
  - Historic schedule and service planning changes
- Transit infrastructure
  - Park-and-ride lots
  - Transit advantages
- Future projects and gaps in service

Existing Transit Service and Providers

The study corridors are served by three transit agencies that provide fixed-route local and express bus service. I-494 and TH 62 are not currently planned transitway (i.e., Highway and Arterial BRT, light rail, or commuter rail) corridors in the 2040 Transportation Policy Plan, and transitway improvements are not identified on these roadways. However, portions of existing and future transitways are present in the study area. These include:

- METRO Blue Line LRT
  - Dedicated right-of-way parallel to TH 55, serves MSP Airport and the Mall of America (link to map)
- METRO Orange Line Highway BRT
  - I-35W and Crosstown Commons section of TH 62 (link to map)
  - Knox Avenue Transitway, traveling under the study area immediately west of the I-494/I-35W Interchange to connect the Knox Avenue/American Boulevard and Knox Avenue/76th Street Stations
- Riverview Corridor/West 7th Street Arterial BRT (ABRT)
  - Includes portions of TH 5 in the study area (link to Riverview Corridor map) (link to West 7th ABRT)
- American Boulevard Arterial BRT
  - Includes portion of I-494 from TH 100 to US 212 (link to map)
- US 169 Highway BRT
  - Includes portions of US 169 in study area

Potential implementation of MnPASS lanes and traffic operations improvements in the project study area will have the most direct impact on local and express transit service. A summary of transit trips and ridership is shown in Table 16. Additionally, a map displaying the geographic coverage of bus routes that operate in the study area is shown in Figure 31 (the full extent of all routes are not shown, e.g., Route 54 service in Saint Paul).

Table 16. Study Area Transit Summary

2014 Transit Ridership on Routes Serving Study Area	6,101,129
2014 Average Daily Transit Ridership on Routes Serving Study Area	21,646
Inbound Express Bus Trips	271
Outbound Express Bus Trips	283

Metro Transit/Metropolitan Council

Metro Transit serves as a transportation resource for the Twin Cities, offering an integrated network of buses, light rail, and commuter trains as well as resources for those who carpool, vanpool, walk, or bike. Metro Transit is an operating division of the Metropolitan Council. The Metropolitan Council, through Metro Transit or its contracted operators, provides fixed route transit service in the study area on nine bus routes. These include urban local, suburban local, and express services, with approximately 75 weekday trips serving southern suburban communities, the Mall of America, downtown Minneapolis, the Veterans Administration Hospital on TH 55, and the University of Minnesota. A summary of ridership and service characteristics from 2014 is shown in Table 17.

Minnesota Valley Transit Authority (MVTA)

MVTA is the public transportation agency for seven suburbs located approximately 15 miles south of Minneapolis and St. Paul: Apple Valley, Burnsville, Eagan, and Rosemount in Dakota County; and Savage, Prior Lake and Shakopee in Scott County. In the project study area MVTA operates 15 bus routes, including suburban local service and express service. A majority of the 15 routes operate as peak-period express bus service to destinations in Minneapolis. Four of these routes include additional trips in the midday and late evening. MVTA service includes approximately 290 combined inbound and outbound bus trips on weekdays. A summary of ridership and service characteristics is shown in 0.

Figure 31. Bus Routes by Service Provider in the Study Area

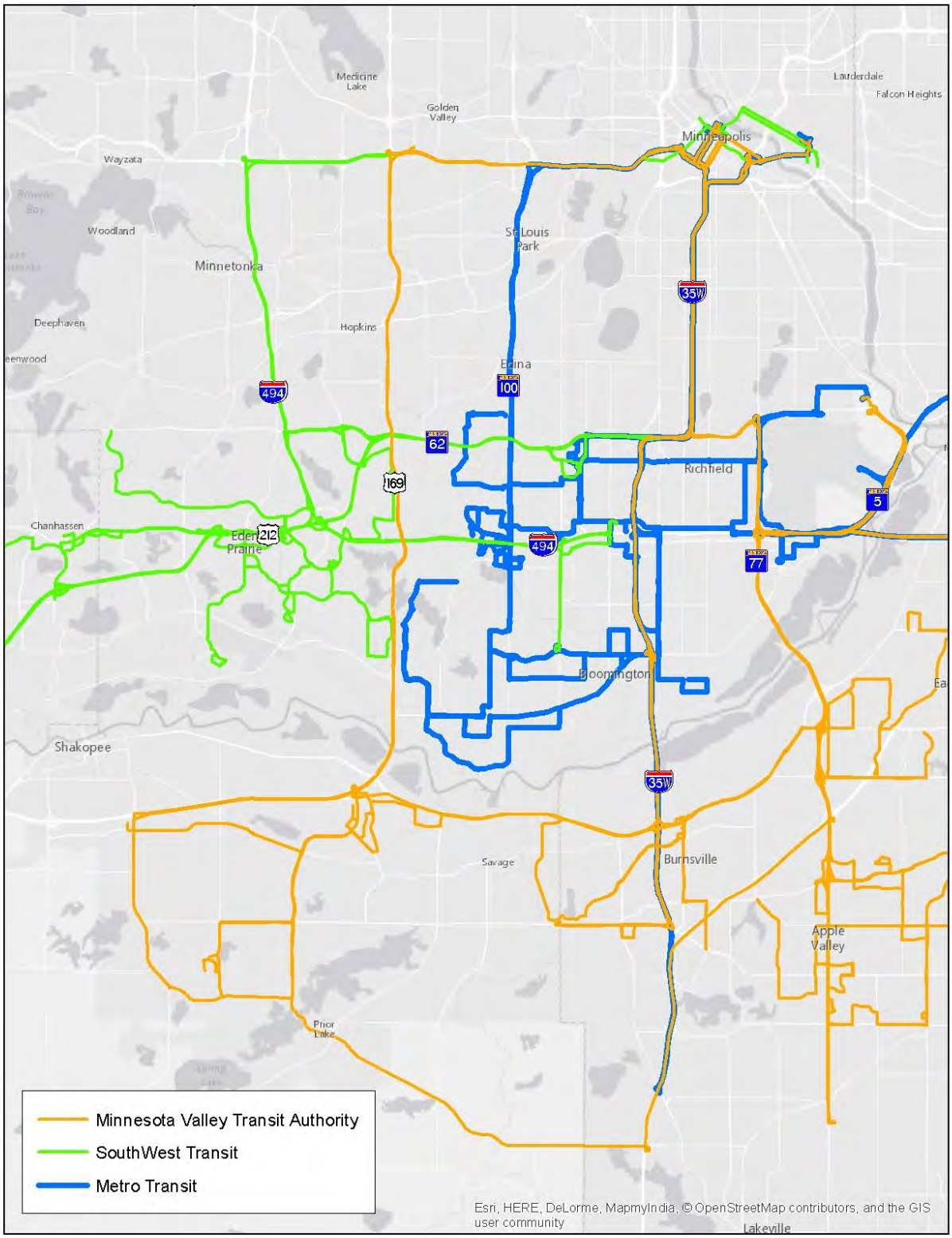


Table 17. Metropolitan Council Transit Ridership Characteristics/Description

Route Number	Annual Ridership	Average Daily Ridership	Service Type	Description
54	1,484,874	4,079	Urban Local	West 7th Street, Airport, Mall of America. Link to Map: Route 54
415	3,481	14	Suburban Local	Mall of America, Mendota Heights, Sanford Brown College, Eagan. Link to Map: Route 415
467	266,124	1,052	Express	Lakeville, Minneapolis. Link to Map: Route 467
515	628,679	1,727	Urban Local	Southdale, 66th Street, Bloomington Ave., Veterans Administration, Mall of America. Link to Map: Route 515
535	425,377	1,662	Urban Local (Limited Stop)	South Bloomington, Richfield. Link to Map: Route 535
540	197,686	784	Suburban Local	Edina, Richfield, 77th Street, Mall of America: Route 540
578	94,198	368	Express	Edina, Southdale. Link to Map: Route 578
579	28,163	111	Express	Southdale, University of Minnesota. Link to Map: Route 579
589	45,856	181	Express	West Bloomington. Link to Map: Route 589
597	129,836	507	Express	West Bloomington. Link to Map: Route 597
TOTAL	3,304,274	10,485		

Table 18. MVTA Transit Ridership Characteristics

Route Number	Annual Ridership	Average Daily Ridership	Service Type	Description
440	43,039	170	Suburban Local	Apple Valley, Cedar Grove, VA Hospital. Link to Map: Route 440
460	423,446	1,674	Express	Burnsville, Minneapolis. Link to Map: Route 460
464	65,373	258	Express	Savage, Burnsville, Minneapolis:
465	248,871	984	Express	Burnsville, Minneapolis, University of Minnesota. Link to Map: Route 465
470	142,588	564	Express	Eagan, Minneapolis. Link to Map: Route 470
472	93,674	370	Express	Eagan, Blackhawk, Minneapolis. Link to Map: Route 472
475	60,698	240	Express	Apple Valley, Cedar Grove, Minneapolis, University of Minnesota. Link to Map: Route 475
476	123,415	488	Express	Palomino Hills, Minneapolis. Link to Map: Route 476
477	370,066	1,463	Express	Lakeville, Apple Valley, Minneapolis. Link to Map: Route 477
478	21,632	86	Express	Rosemount, Minneapolis. Link to Map: Route 478
479	14,215	56	Express	157th Street, Minneapolis. Link to Map: Route 479
490	177,401	700	Express	Prior Lake, Shakopee, Minneapolis. Link to Map: Route 490
491	9,396	37	Express	Scott County, Minneapolis. Link to Map: Route 491
492	1,993	8	Express	Prior Lake, Minneapolis. Link to Map: Route 492
493	N/A (New Service)	73	Express	Shakopee, Minneapolis. Link to Map: Route 493
Total	1,795,807	7,171		

SouthWest Transit

SouthWest Transit is the transit agency serving the communities of Carver, Chaska, Chanhassen in Carver County, and Eden Prairie in Hennepin County. SouthWest Transit provides express bus service connecting these communities with downtown Minneapolis, and provides service connecting suburban communities. SouthWest Transit operates eight express bus routes in the project study area. A summary of ridership and service characteristics is shown in 0. A majority of the eight routes operate as peak-period express bus service to destinations in Minneapolis. Two of these routes include additional trips in the midday and late evening. SouthWest Transit service includes approximately 180 combined inbound and outbound bus trips on weekdays.

Table 19. SouthWest Transit Ridership Characteristics (2014)

Route Number	Annual Ridership	Average Daily Ridership	Service Type	Description
684	52,611	210	Express	Eden Prairie, Southdale, Minneapolis. Link to Map: Route 684
687	14,680	58	Express	Target North Campus, Eden Prairie. Link to Map: Route 687
690	373,124	1,487	Express	Eden Prairie, Minneapolis. Link to Map: Route 690
691	9,251	37	Express	Eden Prairie, Minneapolis. Link to Map: Route 691
692	40,332	161	Express	Chanhassen, Minneapolis. Link to Map: Route 692
694	26,479	106	Express	Best Buy, Normandale. Link to Map: Route 694
695	74,447	297	Express	Chaska, Chanhassen, Minneapolis. Link to Map: Route 695
697	64,788	258	Express	Carver, Chaska, Minneapolis. Link to Map: Route 697
698	206,906	824	Express	Chaska, Chanhassen, Minneapolis. Link to Map: Route 698
699	138,430	552	Express	Chaska, Minneapolis. Link to Map: Route 699
TOTAL	1,001,048	3,990		

Existing Route Performance

On-time performance of transit service in the study area was reviewed for a comprehensive understanding of congestion impacts in the corridor. Poor schedule adherence on a continual basis is an indicator of unreliable travel times and a lack of transit advantages, such as bus-only shoulder lanes and high-occupancy toll lanes, offering opportunities for buses to bypass congestion.

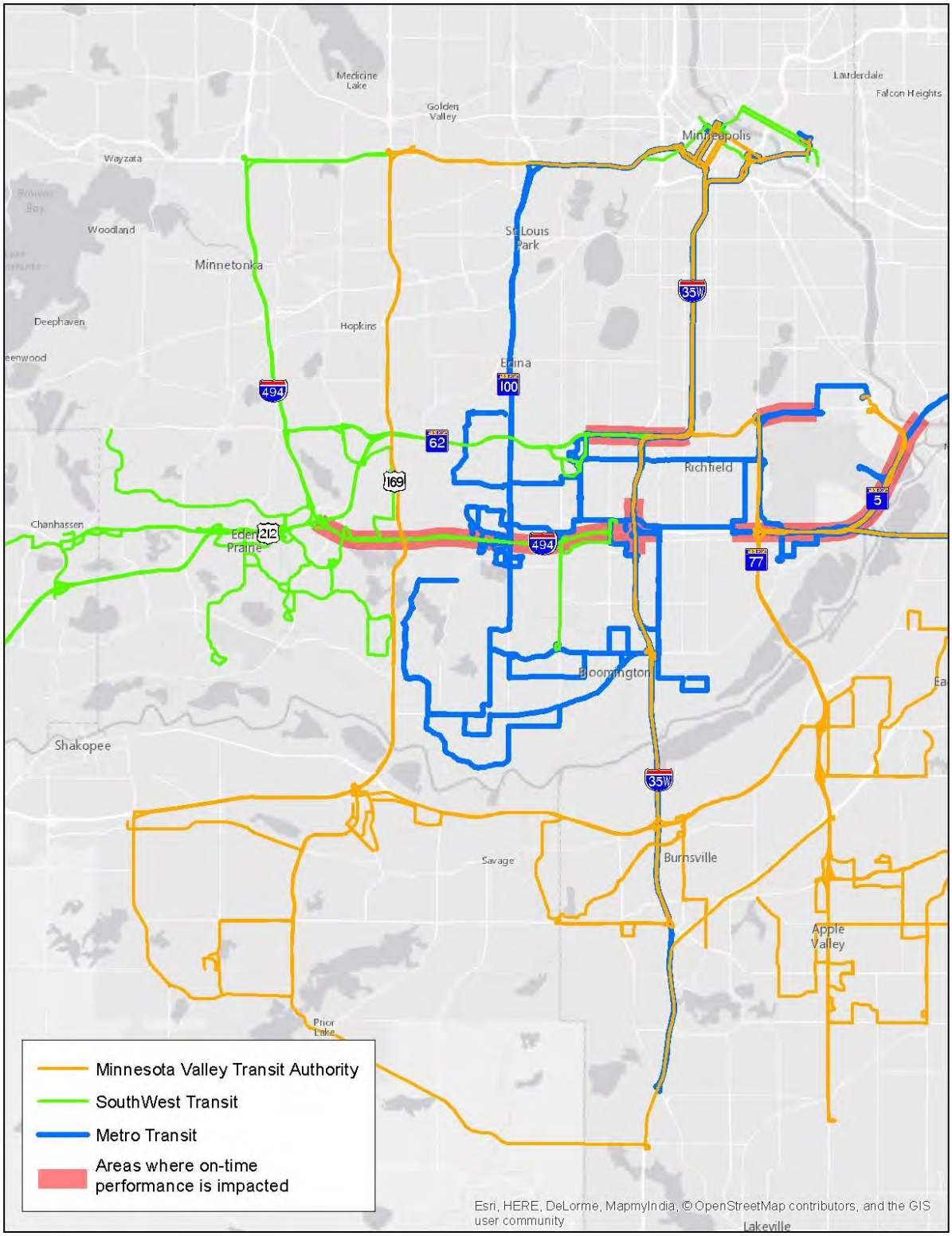
When reviewing scheduled time points within or adjacent to the project study area, the following schedule adherence issues were identified in calendar year 2014.

0 includes schedule adherence issues, as well as service and schedule adjustments made by agency staff to improve on-time performance issues related to congestion in the study corridors. Figure 32 shows the location of these on-time performance issues in the study area.

Table 20. Schedule Adherence Issues and Congestion-Based Service Adjustments

Route	Issue
Metro Transit	
54	Common to have delays between Mall of America and MSP Airport on eastbound trips. Buses arrive at MSP Airport an average of 2.5 minutes late. Route 54 travels on I-494 and TH 5 between 34th Avenue S. and the Mississippi River in the study area. There are a lack of alternate parallel roadways for Route 54 buses.
467	
515	Route 515C and 515E typically have late arrivals to their eastern terminals at the Mall of America and the VA Medical Center. The 515C is an average of 2.2 minutes late, and the 515E is an average of 6.6 minutes late. Route 515E travels on TH 77 and TH 62 in the study area between 66th Street and 34th Avenue; Route 515C travels on I-494 between the Mall of America and 24th Avenue.
535	Northbound trips are typically late to the American Boulevard and Morgan Circle time point (Southtown) by an average of 2.6 minutes throughout the day. Delays occur on I-35W south of American Boulevard.
540	Westbound departures from Mall of America are typically late arriving at the 12th Avenue at 77th Street time point by an average of 5.6 minutes, but this time is typically made up by the time it reaches its next time point. Eastbound delays can extend up to 18 minutes between 12th Avenue and 24th Avenue. The route will be re-routed from I-494 onto 12th Avenue and American Boulevard between 12th Avenue and 24th Avenue by the end of 2015 until future construction of the 77th Street tunnel under TH 77, when the service will be routed onto 77th Street.
578	Outbound trips arrive at Minnesota Drive and France Avenue an average of 4.7 minutes late during P.M. peak. This segment of the route is primarily on York Avenue.
579	Inbound trips depart Southdale an average of 3.4 minutes late during the A.M. peak. This route travels on TH 62 from Xerxes Avenue to Crosstown Commons in the project study area.
589	One minute of run time has been added to Route 589 in Spring 2013 on one northbound trip after the 82nd Street time point.
MVTA	
470 & 476	MVTA added 3 to 5 minutes of run time in August 2014 to Routes 470 and 476 between 3:55 and 4:55 P.M. to attempt to improves customer perceptions (ex. trips may leave downtown late but arrive at the final destination early, the additional time provides an extra buffer). Arrival times have been inconsistent due to varying levels of congestion.
470	MVTA approved an alternate routing for Route 470 that operators may use at their discretion that uses Cedar to TH 13 to take advantage of bus only shoulders when I-494 and I-35E are congested.
477	Route 477 SB departing Gateway Ramp at 4:26 is one trip that we will be adding running time to in August 2015 based on a history of arriving 10 minutes late.
SouthWest Transit	
694	AVL data needs to be calibrated, but operations supervisors and planners regularly observe delays of 5-15 minutes on the segment of this route that operates on I-494 from US 212 to Penn Avenue. Delays are most common during the P.M. peak.
695	Outbound trips experience intermittent delays due to congestion/required weaving on the southbound I-35W/TH 62 segment. Intermittent delays occur on inbound trips ranging from 5-15 minutes, and on outbound trips ranging from 5-20 minutes. Delays are inconsistent.

Figure 32. Study Area On-Time Performance Issues



Park and Ride Facilities

The I-494 and TH 62 corridors are a significant part of the region's express bus system. There are 526 express bus trips per day that operate in the project study area. Express bus routes typically serve park-and-rides in suburban areas. Park-and-rides provide an opportunity to serve low-density areas with high frequencies of transit service and greater capacity as they draw people in to a central collection point. They also make logical timed transfer areas for local bus service. An inventory of park-and-rides is shown in Table 21. These facilities are served by bus routes that use the roadways in the project study area. Their capacity is shown as the number of parking spaces, along with their 2015 usage.

Table 21. I-494 and TH 62 Park-and-Rides

Facility	Location	Bus Routes	Capacity	Usage
157th St. Station	Apple Valley	477, 479	258	11%
Palomino Hills	Apple Valley	440, 476, 477	318	81%
Apple Valley Transit Station	Apple Valley	440, 475, 477	768	99%
28th Avenue Station	Bloomington	54	1383	62%
South Bloomington Transit Center	Bloomington	465, 535, 597	195	100%
Normandale Village	Bloomington	589, 597	25	32%
St. Edward's Catholic Church	Bloomington	589	100	10%
St. Luke's Lutheran Church	Bloomington	597	100	27%
Heart of the City	Burnsville	464, 465	343	19%
Burnsville Transit Station	Burnsville	460, 465	1428	84%
Chanhassen Station	Chanhassen	690, 698	420	47%
Southwest Village	Chanhassen	690, 691, 695, 698, 699	511	58%
Clover Field	Chaska	698, 699	39	13%
East Creek	Chaska	690, 691, 694, 695, 697, 698, 699	675	73%
Walnut Park & Ride	Chaska	691, 699	50	36%
Blackhawk	Eagan	470, 472	370	73%
Cedar Grove Station	Eagan	440, 472, 475, 491, 492	166	31%
Eagan Transit Station	Eagan	470	719	49%
SouthWest Station	Eden Prairie	684, 690, 691, 695, 698	924	98%
Preserve Village Mall	Eden Prairie	690	50	34%
Southdale Transit Center and Park & Ride	Edina	515, 578, 579, 684, 694	102	58%
Kenrick Avenue	Lakeville	467	540	72%
Lakeville Cedar	Lakeville	477(V)	190	4%
Knox Avenue Park & Ride	Richfield	535	525	31%
Rosemount Transit Station	Rosemount	476, 478	102	70%
Co. Rd. 42 & Huntington	Savage	464	182	41%
Eagle Creek	Shakopee	490, 491	563	13%
Marschall Road Transit Station	Shakopee	490, 493	442	11%
Southbridge Crossing	Shakopee	490, 491	513	40%

Transit Advantages

Bus-Only Shoulders

The study corridors offer several "transit advantages" that make for more efficient transit operations and enable buses to bypass instances of congestion. Designated bus-only shoulders allow buses to operate at a faster speed of travel than general traffic. Buses are limited to a speed of 35 miles per hour while operating on a shoulder, and they may not travel more than 15 miles per hour faster than the speed of general traffic. Bus shoulder lanes also have specific design standards. New bus-only shoulders are constructed to a width of 12 feet, though some older shoulder lanes are 10 feet wide. Pavement thickness is consistent with the general purpose lanes and is typically seven inches. Bus-only shoulders are also signed. A map of existing and future bus-only shoulder lanes is shown in Figure 33.

Ramp Meter Bypasses

Throughout the two study corridors, there are ramp meter bypasses where HOVs and transit vehicles can bypass vehicle queues at ramp meters. Ramp meter bypasses are located at the following interchanges:

- Westbound I-494 Entrance Ramp from TH 62
- Northbound US 169 Entrance Ramp from TH 62
- Westbound I-494 Entrance Ramp from Northbound US 169
- Eastbound I-494 Entrance Ramp from Southbound US 169
- Westbound I-494 Entrance Ramp from Eastbound US 212
- Eastbound I-494 Entrance Ramp from Eastbound US 212
- Westbound I-494 Entrance Ramp from Valley View Road
- Eastbound TH 62 Entrance Ramp from Xerxes Avenue

Figure 33. Current and Planned Bus-Only Shoulder Lanes

Source: 2040 Transportation Policy Plan (Page 6.39), Metropolitan Council, 2015

Other Transit Advantages

In addition to bus-only shoulder lanes and ramp meter bypasses, there are several other transit advantages on the study area roadway system. A transit advantage bus bypass lane/ramp has been constructed to facilitate the movement of northbound buses at the TH 77/TH 62 interchange. A bus-only left-turn lane has been constructed and traffic signals have been installed to allow buses to make a left turn from northbound TH 77 to westbound TH 62 to avoid the northeast loop of the interchange, which experiences heavy congestion.

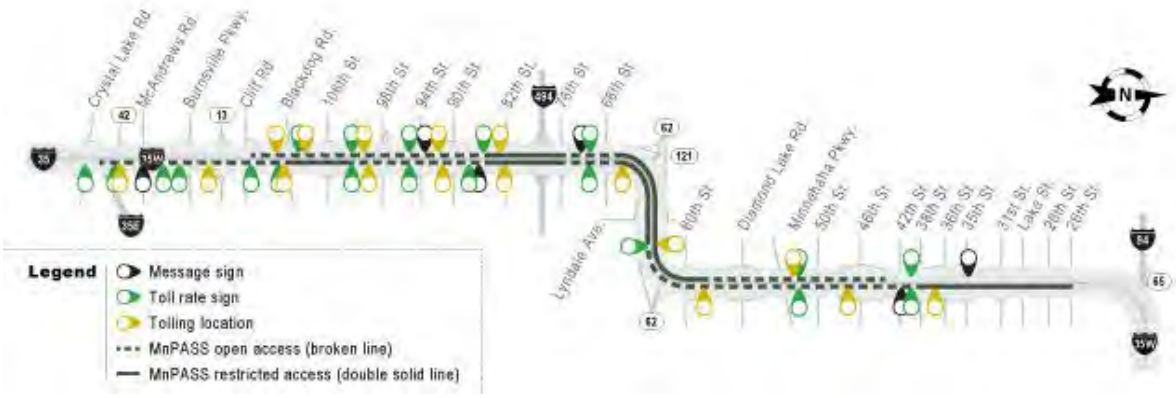
There is a "slip-ramp" at SouthWest Station in Eden Prairie where buses leaving the park-and-ride facility can directly enter US 212 on a dedicated on-ramp. This slip ramp is pictured in Figure 34. A slip-ramp also connects the Blackhawk Park-and-Ride in Eagan and connects the facility to the northbound entrance ramp. This ramp is open to HOVs, including transit vehicles.

Figure 34. US 212 Slip Ramp (Right)

Source: Google Street View, October 2013

There are also MnPASS lanes on the Crosstown Commons section of TH 62 and I-35W that transit through-traffic can use to bypass congestion. A map of I-35W MnPASS lanes is shown in Figure 35.

Figure 35. I-35W MnPASS Map



Source: Minnesota Department of Transportation

Future Projects and Gaps in Service

There are several planning documents that list future transit service and infrastructure projects in the study area. These include planned expansions of transit service, the construction of transit facilities, and the deployment of transit advantages on roadways.

This future transit service and infrastructure project list is sourced from the following documents:

- 2030 Metropolitan Council Regional Park-and-Ride Plan
- Grant requests to MnDOT Team Transit
- 2012-2016 Regional Service Improvement Plan (RSIP)
- 2014 Park-and-Ride System Report
- 2015 Metro Transit Service Improvement Plan (SIP)
- 2015 Cedar Avenue Transitway Implementation Plan Update (IPU)

Transit Service Projects

Several regional documents outline transit service expansion projects that would operate on the roadways in the project study area. An inventory of these projects is provided in Table 22.

Table 22. Transit Service Expansion

Route	Project Description	Notes[1]
535	Replace segments of Route 535 with Orange Line BRT service on I-35W. The METRO Orange Line is planned to operate every 10 minutes during peak hours, every 15 minutes off-peak, and every 30 minutes on nights and weekends.	Listed in RSIP, CY 2016
535	Increase all day weekend frequency to match that of weekday off-peak operations.	Listed in SIP, CY2021-2030
54	Increased frequency on West 7th Street resulting from Arterial BRT implementation.	Listed in RSIP, CY 2014, under further study – Riverview Corridor PPD.
54	Increased frequency on Route 54 to 10-minute all day, and 15-minute early morning and evening; 15-minute frequency on Sunday.	Listed in SIP, CY2015-2017
515	Restructure route; Routes 515C and 515E replaced by new Route 505 connecting VA Medical Center and Mall of America.	Listed in SIP, CY2018-2020
540	Increase span to 5:30 a.m.-11:30 p.m. and frequency to every 30 minutes.	Listed in SIP, CY2015-2017
578	Enhance reverse commute service to employment centers at I-494/France Avenue by adding three daily trips.	Listed in SIP, CY 2018-2020
New	New Southwest Transit express service on Highway 169 connecting to Pioneer Trail Park-and-Ride in Eden Prairie; 30-minute peak service with one midday and evening round trip.	Listed in RSIP, CY 2016
New	New MVTA reverse commute service connecting Golden Triangle and Shakopee.	Grant request, CY2018-2020

[1] Project start dates shown as listed in adopted regional planning documents. These dates are subject to change and revision upon future project planning and implementation.

Transit Infrastructure Projects

Park-and-Rides

There are several future park-and-rides listed in the 2030 Regional Park-and-Ride Plan that would serve the project study area and result in expansion of the express bus system. Their locations and capacities are summarized in Table 23.

Table 23. Future Park-and-Ride Facilities[2]

Facility Name	Location	Projected Capacity
Northern Apple Valley/Eagan[3]	Apple Valley or Eagan	400
I-35W at American Boulevard	Bloomington	500
US 212 at CR 11	Carver	400
US 212 at CR 10	Chaska	400
Chanhassen Transit Station	Chanhassen	300 (expansion)
Lake Ann Park-and-Ride	Chanhassen	120
TH 62 at Penn Avenue	Richfield	400
CR 16 at CR 21	Shakopee	545
Victoria Park-and-Ride	Victoria	200 (expansion)

Other Infrastructure

Regional transit agencies have also made requests for transit infrastructure, such as bus-only shoulder lanes and other transit advantages. According to recent funding requests to MnDOT Team Transit, these are the requested projects directly related to this corridor:

- Bus-only shoulder lanes on TH 62 between I-494 and I-35W (SouthWest Transit)
- Bus-only shoulder lanes on I-494 between US 212 and I-35W (SouthWest Transit)
- Bus-only shoulder lanes on I-494 from TH 77 to I-35E

Furthermore, MVTA has requested that future studies explore the feasibility of transit advantages similar to the bus-only left turn at TH 77/TH 62, as they provide significant operational improvements for express bus service.

[2] Park-and-ride locations and capacities are based on the most recent version of the Regional Park-and-Ride Plan. In some cases these, locations and capacities have been changed based on further study of each express bus corridor.

[3] As recommended through the Cedar Avenue Transitway Implementation Plan Update. Location of park-and-ride facility will be studied further in a detailed study of Palomino Drive METRO Red Line Station, Cliff Road METRO Red Line Station, and TH 77 MnPASS implementation and operations.

Bicycle and Pedestrian Infrastructure and Needs

Freeway corridors such as TH 62 and I-494 can be significant barriers for pedestrians and bicyclists to cross unless bridges are designed to safely accommodate people who bike and walk. Many local, regional, and state agencies have documented these needs in a planning documents, including the Metropolitan Council Regional Bicycle Transportation Network in the 2040 TPP, the Hennepin County 2040 Bicycle Transportation Plan, the MnDOT Statewide Bicycle and Pedestrian Plans, local comprehensive plans, parks and trails master plans, and specific city bicycle and pedestrian system plans.

These documents identify planned pedestrian and bicycle routes, many of which aim to use existing bridges since crossing opportunities can be infrequent and additional crossings are costly to construct. Proposed projects that result in changes to bridges across TH 62 or I-494 should consider existing and future pedestrian and bicycle needs and follow guidance in these planning documents. Relevant documents and locations include:

- City of Bloomington Alternative Transportation Plan: https://www.bloomingtonmn.gov/alternative-transportation-plan
- City of Eden Prairie Pedestrian and Bicycle Plan: http://www.edenprairie.org/community/infrastructure-projects/pedestrian-and-bicycle-plan
- City of Edina Bicycle Plan: http://edinamn.gov/edinafiles/files/City_Offices/Engineering/Transportation/Bike_Plan.pdf
- City of Minneapolis Bicycle Master Plan: http://www.minneapolismn.gov/bicycles/WCMS1P-135610
- City of Minnetonka Comprehensive Plan: http://eminnetonka.com/planning/comprehensive-guide-plan
- City of Richfield Bicycle Master Plan: http://www.cityofrichfield.org/home/showdocument?id=778
- Hennepin County 2040 Bicycle Transportation Plan: http://www.hennepin.us/bikeplan
- Metropolitan Council Regional Bicycle Transportation Network (RBTN): http://www.metrocouncil.org/Transportation/Planning-2/Key-Transportation-Planning-Documents/Bike-Pedestrian-Plans/RBTN.aspx
- MnDOT Statewide Bicycle Plan: http://www.dot.state.mn.us/bike/
- MnDOT Statewide Pedestrian Plan: http://www.dot.state.mn.us/peds/

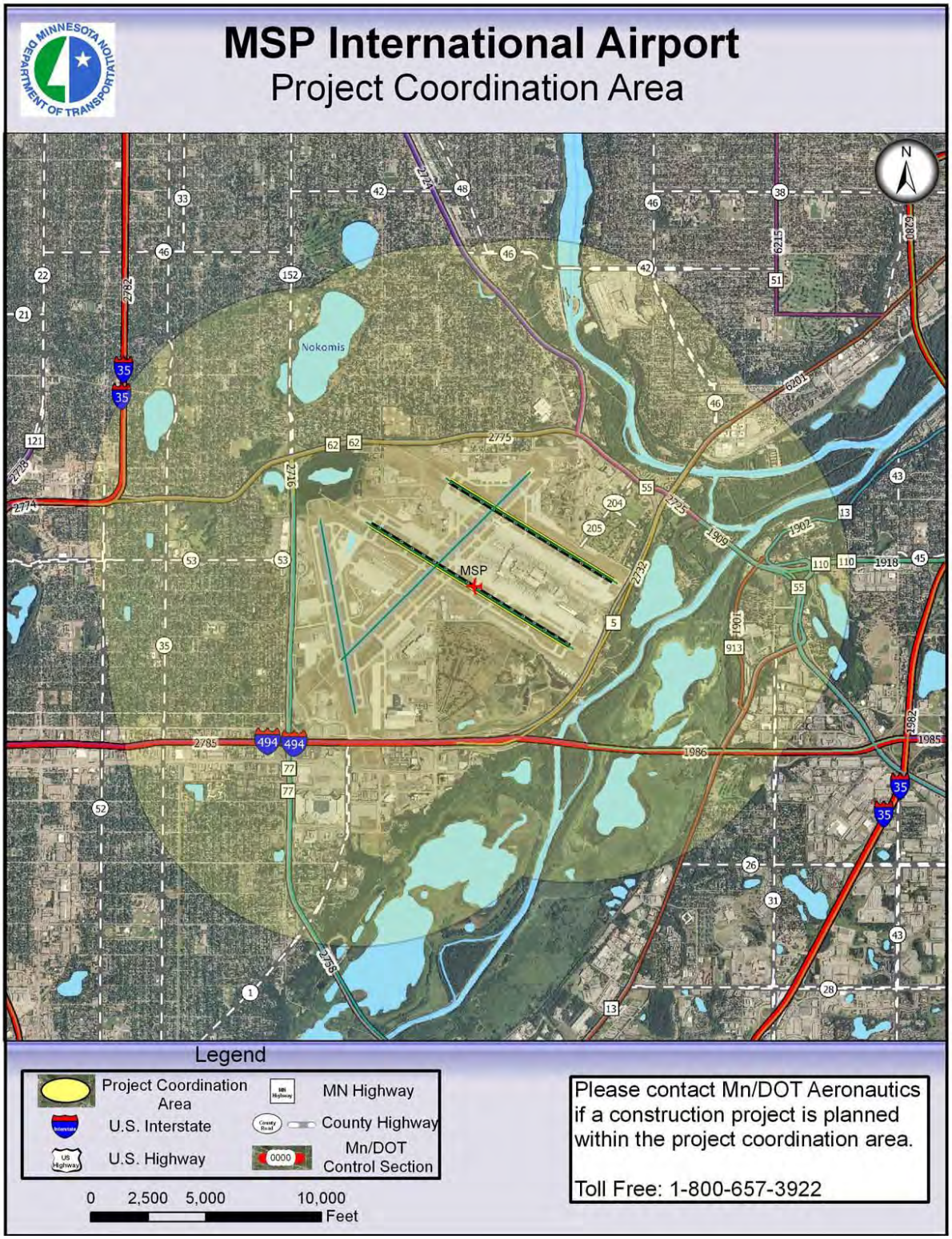
In addition to the abovementioned planning documents, Hennepin County is also studying and scoping potential solutions for major barriers identified in their bike plan. Barriers currently under study that should be considered and integrated in future stages of the I-494/TH 62 study process include:

- Portland Avenue Bridge over TH 62 to identify possible solutions, costs and feasibility to improve biking and walking on this bridge; and
- Bicycle Access to the MSP International Airport to determine demand and feasibility for providing bicycle access to the Airport.

Minneapolis – Saint Paul International Airport Influence Area

Consideration of aviation safety is crucial for the I-494/TH 62 Congestion Management Study, as it can be affected by construction in the vicinity of an airport. Figure 36 displays the area surrounding the MSP International Airport that is influenced by airport rules and regulations, which includes segments of I-494 and TH 62. Proposed construction projects within the area of influence require early and ongoing coordination with the MnDOT Office of Aeronautics, and the implementation plan will recognize the need for coordination on proposed projects within the area of influence.

Figure 36. MSP International Airport Influence Area



Source: MnDOT Office of Aeronautics, January 2010

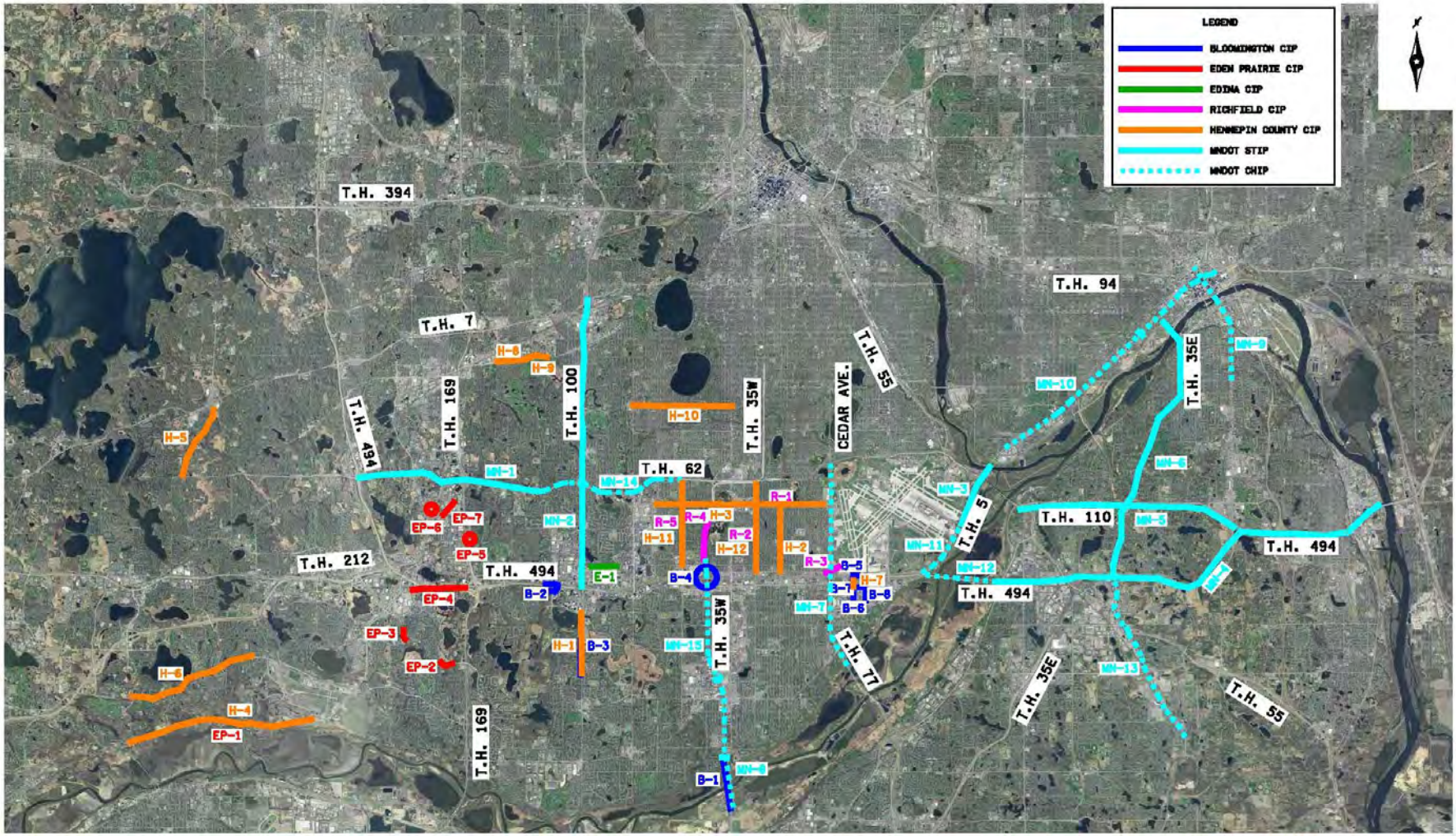
4. Programmed and Planned Improvements

In addition to planed transit improvements it is important to understand how future roadway improvement plans for the project corridor function with potential recommendations from this study. Therefore, a review of agency preservation and improvement plans was performed. Projects identified in these plans will be used for corridor segmentation, forecasting assumptions, and developing the study Implementation Plan. The following documents were reviewed to identify projects that may influence or be included in the above study elements:

- Metropolitan Council's *Transportation Policy Plan*, adopted January 2015, and as reflected in the Metropolitan Council's Regional Travel Demand model base network as of January 2015
- MnDOT 20-Year State Highway Investment Plan (SHIP) 2014-2033
- MnDOT State Transportation Improvement Program (STIP) 2015-2018
- MnDOT Capital Highway Investment Proposal 2020-2025
- The Hennepin County Capital Improvement Plan 2014-2018
- The City of Bloomington Community Investment Program 2015-2019
- The City of Eden Prairie Capital Improvement Plan 2015-2024
- The City of Edina Capital Improvement Plan 2015-2019
- The City of Minneapolis Capital Improvement Plan 2016-2020
- The City of Minnetonka Capital Improvements Program 2016-2020
- The City of Richfield Capital Improvement Budget and Plan 2015-2019

Table 24 contains a list of roadway projects identified in the Cities and County's CIP and MnDOT STIP and CHIP that are within the study area. These are geographically represented in Figure 37. Planned and Programmed Roadway Improvements in the Study Area A list of regionally significant transportation network improvements potentially affecting the study area that are assumed to be constructed between years 2015 and 2040 is also included in Figure 37. Table 25 contains a list of bridge projects identified in CIP, STIP, and CHIP documents in the study area, and Figure 38 is a map of these projects.

Figure 37. Planned and Programmed Roadway Improvements in the Study Area



Note: Projects current as of November 2015.

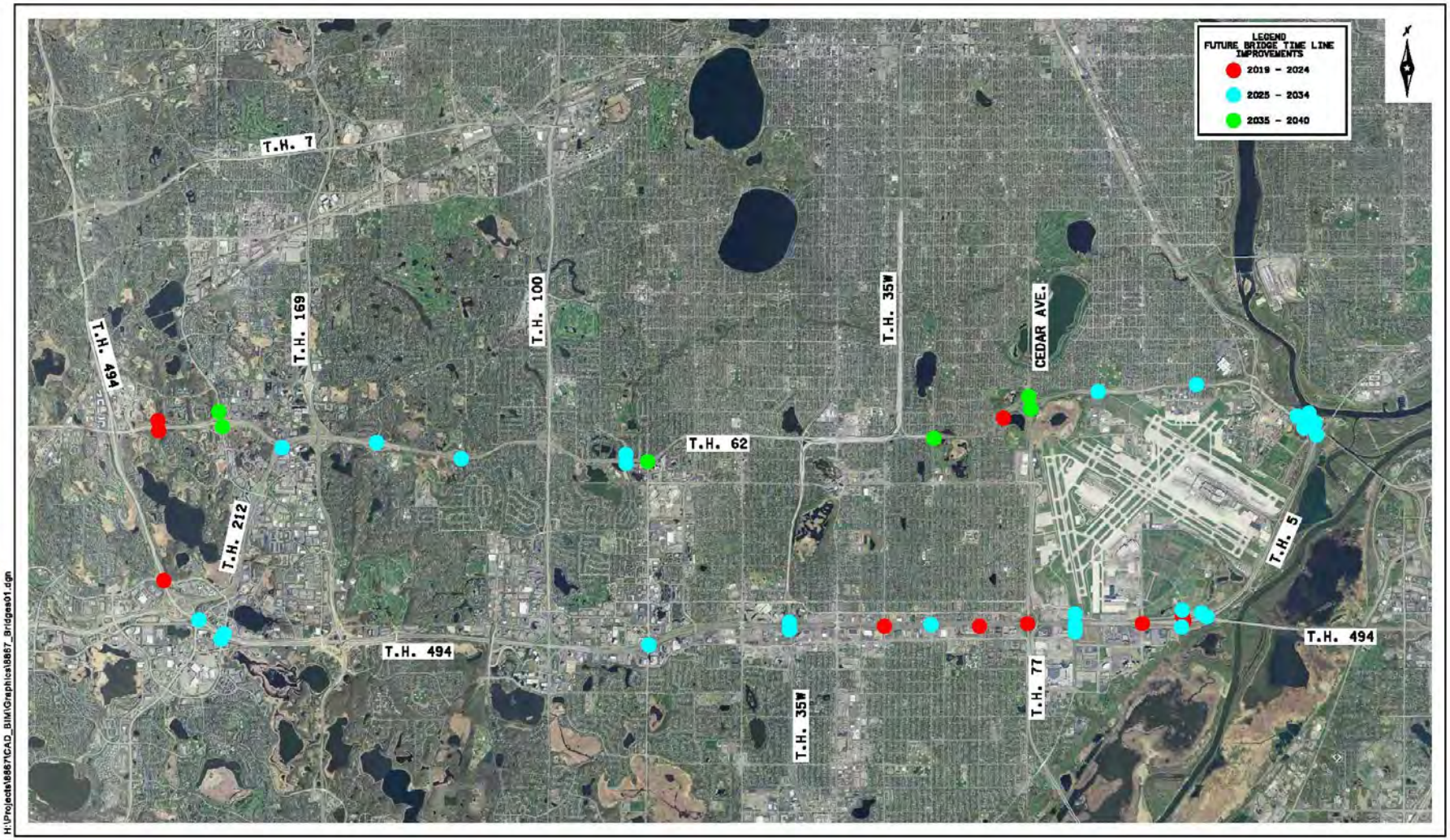
Table 24. Planned and Programmed Roadway Improvements in the Study Area

Project	Description	Timeframe for Improvement	Project Cost Estimate	Source Document
I-494 Projects				
TH 494	Mill & Overlay Minnesota River to Hardman Ave	2020	$22.0M	STIP 2015 -2018
TH 494	Rehabilitation of Bridge over Minnesota River	2023	$10.0M	MnDOT CHIP 2020-2025
TH 35W / TH 494	Expansion and Interchange Improvements	2019	$40.1M	Bloomington CIP 2015-2019
24th Ave / TH 494	Add triple lefts for WB to SB	2018	$0.8M	Bloomington CIP 2015-2019
TH 62 Projects				
TH 62	Mill & Overlay from Beach Rd to Tracy Ave	2018	$6.9M	STIP 2015 -2018
TH 62	Mill & Overlay from Tracy Ave to Penn Ave	2025	$5.5M	MnDOT CHIP 2020-2025
North/South Roadway Connections				
TH 100	Overlay from TH 494 to 36th Street	2016	$16.0M	STIP 2015 -2018
TH 5	Unbonded Overlay from Post Rd to County Line	2020	$7.5M	STIP 2015 -2018
TH 110	Mill & Overlay from TH 55 to TH 494, Turn lane extensions and Access Closures	2017	$7.4M	STIP 2015 -2018
TH 149	Mill & Overlay from TH 494 to TH 5, Turn Lane, Signals	2017	$5.5M	STIP 2015 -2018
TH 77	Mill & Overlay from Minnesota River to TH 62	2020	$7.8M	MnDOT CHIP 2020-2025
TH 35W River Bridge	Replace 35W River Bridge (same as Bloomington CIP)	2020-2022	$100.0M	MnDOT CHIP 2020-2025
MN 952A (Robert St)	Reconstruct Robert Street from Annapolis St to I-35E	2020	$5.8M	MnDOT CHIP 2020-2025
TH 5	Reconstruct / Mill & Overlay from Munster Ave to TH 52	2021	$11.6M	MnDOT CHIP 2020-2025
TH 5	Pavement rehabilitation (CPR & Diamond Grind)	2023	$3.2M	MnDOT CHIP 2020-2025
TH 149	Full depth reclaim or white topping from Albano Tr to Mendota Hts Rd	2024	$12.8M	MnDOT CHIP 2020-2025
TH 35W	Mill & Overlay from Burnsville Pkwy to 76th Street	2025	$15.0M	MnDOT CHIP 2020-2025
TH 35W River Bridge	Replace 35W River Bridge	2017	$30.0M	Bloomington CIP 2015-2019

Project	Description	Timeframe for Improvement	Project Cost Estimate	Source Document
East Bush Lk Rd / TH 494	Add on ramp to WB TH 494 from East Bush Lk Rd	2017	$18.5M	Bloomington CIP 2015-2019
Normandale Blvd	Reconstruct from 86th Street to 94th Street - widen lanes / add turn lanes	2016	$11.4M	Bloomington CIP 2015-2019
Shady Oak Rd / US 212	Reconstruction of Shady Oak Rd from Flying Cloud Dr to Rowland Rd	2015	$21.9M	Eden Prairie CIP 2015-2024
Valley View / US 169	Construct New Interchange	2021	$15.0M	Eden Prairie CIP 2015-2024
CSAH 1	Reconstruct to multilane from I-494 to American Blvd (Provisional project dependent on available funding)	2017	$4.9M	Hennepin County CIP
Other Projects				
24th Ave / 82nd St	Add trap left lane on 24th Ave to 82nd	2018	$0.1M	Bloomington CIP 2015-2019
24th Ave / American Blvd	Extend turn lanes and add to north side of American Blvd	2018	$5.2M	Bloomington CIP 2015-2019
28th Ave	Add auxiliary lane to SB from American Blvd to 82nd St	2018	$2.5M	Bloomington CIP 2015-2019
76th St	New street approx. 0.6 miles on North of Paragon Park	2018	$7.8M	Edina CIP 2015-2019
CSAH 61	Upgrade to 3 or 4 lane section from Charlson Rd to County Line	2017	$48.1M	Eden Prairie CIP 2015-2024
Anderson Lakes Pkwy	0.3 Miles of 2 additional lanes from Amsden Way to Franlo Rd	2024	$2.5M	Eden Prairie CIP 2015-2024
Preserve Blvd	Add second SB lane from Westwind Dr to Anderson Lakes Pkwy	2017	$3.0M	Eden Prairie CIP 2015-2024
W. 78th St	Upgrade to 3-or-4 lane section from Prairie Ctr Dr to Washington Ave	2019	$2.8M	Eden Prairie CIP 2015-2024
Flying Cloud Dr	Upgrade to 3 lane section from Shady Oak Rd to Washington Ave	2024	$3.8M	Eden Prairie CIP 2015-2024
Portland Ave	Upgrade to 3-lane section 67th St to 77th St	2015	$8.1M	Richfield CIP 2015-2019
Nicollet Ave	Upgrade to 3-lane section 62nd St to 77th St	2019	$10.9M	Richfield CIP 2015-2019
77th Street Underpass	Construct 77th Street under TH 77	Beyond 2019	$27.0M	Richfield CIP 2015-2019

Project	Description	Timeframe for Improvement	Project Cost Estimate	Source Document
Lakeshore Drive	Reconstruct Humboldt Ave / Lakeshore Dr. from 69th St to 75th St - Roadway section to be determined	Beyond 2019	$3.0M	Richfield CIP 2015-2019
Penn Avenue	Upgrade to 3-lane section from 62nd St to 77th St	Beyond 2019	$11.5M	Richfield CIP 2015-2019
CSAH 34	Reconstruct from 86th Street to 94th Street - widen lanes / add turn lanes (same as Bloomington CIP for Normandale Blvd)	2015	$1.6M	Hennepin County CIP
CSAH 35	Upgrade to 3-lane section 67th St to 77th St (same as Richfield CIP for Portland Ave)	2015	$0.5M	Hennepin County CIP
CSAH 53	Reconstruct 66th Street from Xerxes Ave to Cedar Ave	2015-2018	$37.0M	Hennepin County CIP
CSAH 61	Upgrade to 3-or-4 lane section from Charlson Rd to County Line (same as Eden Prairie CIP)	2018	$57.5M	Hennepin County CIP
CSAH 101	Reconstruct roadway to 3-lane section with center left turn lane	2016	$25.7M	Hennepin County CIP
CSAH 1	Upgrade to 4 lane section from West County line to Shetland Road (Provisional project dependent on available funding)	2017	$14.0M	Hennepin County CIP
CSAH 3	Reconstruct Excelsior Blvd from Blake Rd to Meadowbrook Rd to 4-lane divided (Provisional project dependent on available funding)	2019	$4.9M	Hennepin County CIP
CSAH 3	Reconstruct Excelsior Blvd from Meadowbrook Rd to Louisiana Ave to 4-lane divided (Provisional project dependent on available funding)	2018	$4.7M	Hennepin County CIP
CSAH 21	Reconstruction of 50th St W from France Ave to Lyndale Ave - Project Configuration TBD (Provisional project dependent on available funding)	2017	$12.6M	Hennepin County CIP
CSAH 32	Upgrade Penn Ave to 3 lane section from 62nd St to 77th St (same as Richfield CIP for Penn Ave) (Provisional project dependent on available funding)	2017	$13.9M	Hennepin County CIP
CSAH 52	Upgrade to 3 lane section 62nd St to 77th St (same as Richfield CIP for Nicollet Ave) (Provisional project dependent on available funding)	2019	$18.2M	Hennepin County CIP

Figure 38. Planned and Programmed Bridge Improvements in the Study Area



Note: Projects current as of November 2015.

Table 25. Planned and Programmed Bridge Improvements in the Study Area

Bridge Number	Roadway	Over / Under Roadway	Roadway / Feature	Year Built	Proposed Improvement	Timeframe for Improvement	Project Cost Estimate
I-494 Projects							
6850	WB TH 494	Over	TH 35W	1956	Replace Rehab	2025-2034	$2.1M
6851	EB TH 494	Over	TH 35W	1956	Replace/Rehab	2025-2034	$2.1M
9077	TH 494	Under	Nicollet Ave	1959	Replace/Rehab	2019-2024	$3.1M
9079	TH 494	Under	Portland Ave	1959	Replace/Rehab	2025-2034	$3.1M
9080	TH 494	Under	12th Ave	1959	Replace/Rehab	2019-2024	$1.7M
9081	TH 494	Under	SB TH 77	1958	Replace/Rehab	2019-2024	$1.5M
27713	NB TH 494	Over	Prairie Center Dr	1983	Reoverlay	2025-2034	$0.2M
27714	SB TH 494	Over	Prairie Center Dr	1983	Reoverlay	2025-2034	$0.2M
27761	TH 494	Under	Valley View Rd	1983	Reoverlay	2019-2024	$0.4M
27762	TH 494	Under	Flying Cloud Dr / CSAH 61	1983	Reoverlay	2025-2034	$0.3M
27763	TH 494	Under	TH 5 On Ramp from 34th Ave	1982	Reoverlay	2025-2034	$0.5M
27765	TH 494	Over	34th Ave	1983	Reoverlay	2019-2024	$0.5M
27766	TH 494 ramps	Under	TH 5 Ramps	1983	Reoverlay	2025-2034	$0.1M
27767	TH 494	Over	WB TH 494 & TH 5 to EB TH 494	1982	Reoverlay	2019-2024	$0.4M
27769	WB TH 494 Off Ramp	Over	34th Ave	1983	Reoverlay	2019-2024	$0.1M
27820	TH 494	Under	24th Ave	1989	Reoverlay	2025-2034	$0.5M
27892	TH 494	Under	France Ave	1985	Reoverlay	2025-2034	$0.5M
27984	TH 494	Under	TH 5 On Ramp from TH 494	1982	Reoverlay	2025-2034	$0.4M
TH 62 Projects							
7263	TH 62	Under	France Ave	1962	Redeck	2035-2040	
7264	W.B. TH 62	Over	Valley View Rd	1961	Overlay	2025-2034	-
7265	EB TH 62	Over	Valley View Rd	1962	Overlay	2025-2034	$0.1M

Bridge Number	Roadway	Over / Under Roadway	Roadway / Feature	Year Built	Proposed Improvement	Timeframe for Improvement	Project Cost Estimate
7269	TH 62	Under	Portland Ave	1963	Redeck	2035-2040	$0.8M
27021	WB TH 62	Over	TH 77	1962	Replace/Rehab	2035-2040	$2.1M
27022	EB TH 62	Over	TH 77	1962	Replace/Rehab	2035-2040	$2.1M
27078	EB TH 62	Over	US 212	1968	Overlay	2025-2034	$0.3M
27082	TH 62	Under	Gleason Lk Rd	1966	Redeck	2025-2034	$0.9M
27083	TH 62	Under	Tracy Ave	1965	Redeck	2025-2034	$0.9M
27521	TH 62	Over	28th Ave	1964	Overlay	2025-2034	$0.1M
27524	TH 62	Under	43rd Ave	1966	Redeck	2025-2034	$0.6M
27525	TH 62	Under	Bloomington Ave	1962	Overlay	2019-2024	$0.1M
27545	WB TH 62	Over	Shady Oak Rd	1969	Replace/Rehab	2035-2040	$1.5M
27546	EB TH 62	Over	Shady Oak Rd	1969	Replace/Rehab	2035-2040	$1.8M
27572	EB TH 62	Over	Nine Mile Creek	1986	Reoverlay	2019-2024	$0.1M
27573	WB TH 62	Over	Nine Mile Creek	1986	Reoverlay	2019-2024	$0.1M
TH 55 Projects							
9306	TH 55 On-ramp	Over	Bloomington Rd	1958	Replace/Rehab	2025-2034	$1.7M
27112	TH 55	Over	TH 5 & WB Collector Rd	1992	Reoverlay	2025-2034	$0.3M
27116	EB TH 55	Over	Bloomington Rd	1992	Reoverlay	2025-2034	$0.1M
27161	EB TH 55 Off Ramp	Over	WB TH 5 On-ramp	1968	Replace/Rehab	2019-2024	$1.8M
27169	WB TH 55	Over	EB TH 5 Off Ramp	1968	Replace/Rehab	2025-2034	$1.6M
27171	TH 55	Over	Bloomington Rd	1968	Replace/Rehab	2025-2034	$1.2M
Other Projects							
27709	24th Ave Off Ramp	Over	WB TH 494 Off Ramp	1989	Reoverlay	2025-2034	$0.4M
27712	24th Ave Off Ramp	Over	EB TH 494 On Ramp	1989	Reoverlay	2025-2034	$0.3M
27983	TH 5 Ramp	Over	WB TH 494 Off Ramp	1982	Reoverlay	2025-2034	$0.1M

5.Study Segmentation

To ensure a thorough evaluation of the managed lane alternatives throughout the two study corridors, the I-494 and TH 62 corridors were split into segments for analysis based on physical, traffic, and transit operational characteristics. Segmentation helps to ensure that the most appropriate alternatives are selected for each study corridor, as a managed lane alternative may be an appropriate option in one segment and not be adequate for the unique characteristics of another segment. Figure 39 shows the geographic extents of the segments of the corridors. Evaluation characteristics used to determine segmentation throughout the I-494 and TH 62 corridors include:

- Segment length
- Number of lanes
- Typical sections
- Peak hour congestion duration
- Heavy commercial traffic
- Directional split
- Transit service and volumes

Existing traffic characteristics change throughout the I-494 and TH 62 corridors. The most dramatic changes observed were at the system interchanges with US 212, US 169, TH 100, I-35W, TH 77, and TH 5 where large traffic volumes access I-494 and TH 62. The traffic characteristics on these intersecting principal arterials were often different than the I-494 or TH 62 to the east or west, resulting in shifts in peak hour percent of daily volumes, directional distribution, time of peak, and duration peak traffic.

Similar to traffic characteristics, transit ridership also varies throughout the study corridors. Figure 40 displays corridor average daily transit ridership by segment, with the darkest blue segments indicating the highest ridership on vehicles passing through and stopping within the segments. 2015 data from each transit provider and was aggregated at the segment level, based on stop-level boardings and the location of bus stops relative to the location of the segments.

I-494 Segmentation

The I-494 study corridor is approximately 13.0 miles in length, and varies in physical and traffic characteristics throughout the corridor.Figure 40 Table 26 includes a summary of the varying characteristics of the segments, including length, lanes, section type, the directional traffic split, peak hour characteristics, and truck volumes.

TH 62 Segmentation

The TH 62 study corridor is approximately 13.4 miles in length, and varies in physical and traffic characteristics throughout the corridor. Table 27 includes a summary of the segments and their varying characteristics, including length, lanes, section type, the directional traffic split, peak hour characteristics, and truck volumes.

Figure 39. I-494 and TH 62 Corridor Segmentation

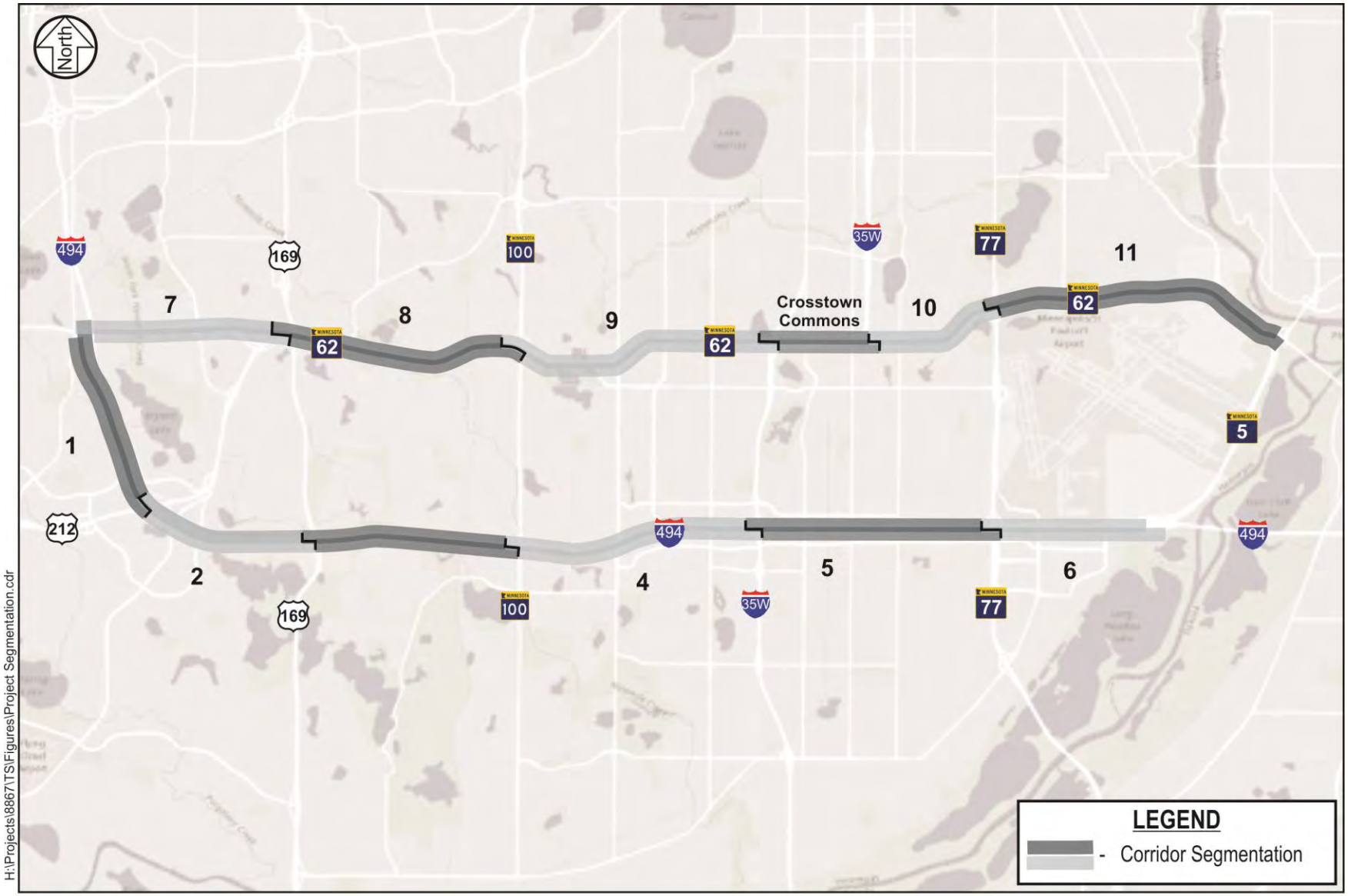


Figure 40. Average Daily Transit Ridership on Each Segment

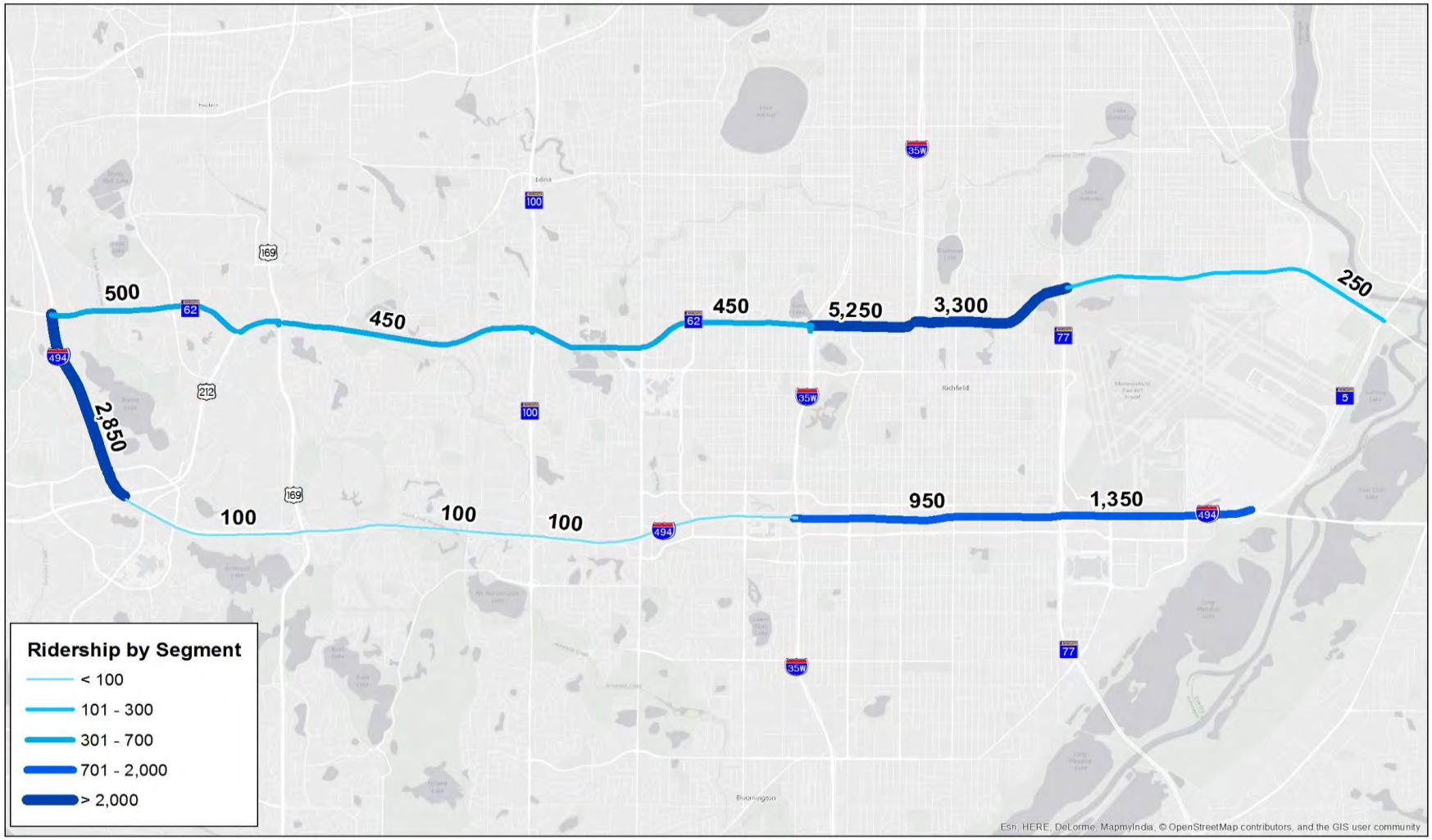


Table 26. I-494 Corridor Segmentation

#	Segment Limits	Length (Miles)	Lanes	Section Type	Directional Split	Peak Hour Percent of Daily Volume	Time of Peak Hour	Duration of Peak Period	Daily Truck Volumes
1	TH 62 to US 212	2.0	6	Rural	A.M.: 55/45	A.M.: 8-9%	A.M.:7:15	A.M.: 2.5-3 hrs.	6,500
					P.M.: 48/52	P.M.: 8-9%	P.M.: 4:15	P.M.: 3-3.5 hrs.	
2	US 212 to US 169	1.8	6 to 8	Urban	A.M.: 52/48	A.M.: 7-9%	A.M.: 7:00	A.M.: 2.5-3 hrs.	5,900
					P.M.: 43/57	P.M.: 7-9%	P.M.: 4:00	P.M.: 2-3.5 hrs.	
3	US 169 to TH 100	2.2	6 to 8	Urban/Rural	A.M.: 51/49	A.M.: 7-8%	A.M.: 7:00	A.M.: 3-4 hrs.	7,400
					P.M.: 44/56	P.M.: 6-8%	P.M.: 3:30	P.M.: 3-4 hrs.	
4	TH 100 to I-35W	2.6	7	Urban	A.M.: 43/57	A.M.: 7-8%	A.M.: 6:45	A.M.: 3-3.5 hrs.	8,900
					P.M.: 46/54	P.M.: 7%	P.M.: 3:30	P.M.: 3.5-4 hrs.	
5	I-35W to TH 77	2.5	6	Urban	A.M.: 45/55	A.M.: 6-8%	A.M.: 6:45	A.M.: 2.5-3.5 hrs.	6,400
					P.M.: 55/45	P.M.: 7-8%	P.M.: 3:45	P.M.: 4+ hrs.	
6	TH 77 to TH 5	1.9	6 to 8	Urban/Rural	A.M.: 47/53	A.M.: 7-8%	A.M.: 7:00	A.M.: 2.5-3 hrs.	7,000
					P.M.: 50/50	P.M.: 8-9%	P.M.: 4:30	P.M.: 3-3.5 hrs.	

Table 27. **TH 62 Corridor Segmentation**

#	Segment Limits	Length (Miles)	Lanes	Section Type	Directional Split	Peak Hour Percent of Daily Volume	Time of Peak Hour	Duration of Peak Period	Daily Truck Volumes
7	I-494 to US 169	2.3	4 to 6	Urban/Rural	A.M.: 66/34	A.M.: 7-13%	A.M.:7:00	A.M.: 1 hr.	940
					P.M.: 32/68	P.M.: 6-12%	P.M.: 4:30	P.M.: 1 hr.	
8	US 169 to TH 100	2.5	4	Rural	A.M.: 48/52	A.M.: 8%	A.M.: 6:45	A.M.: 3-4 hrs.	2,650
					P.M.: 45/55	P.M.: 7-8%	P.M.: 4:00	P.M.: 2.5-4 hrs.	
9	TH 100 to I-35W	2.7	4	Urban	A.M.: 47/53	A.M.: 7-8%	A.M.: 6:45	A.M.: 3-3.5 hrs.	2,250
					P.M.: 52/48	P.M.: 7-8%	P.M.: 4:00	P.M.: 4+ hrs.	
Cross-town	TH 62/ I-35W Crosstown Commons	1.4	6+4	Urban	A.M.: 30/70	A.M.: 7-8%	A.M.: 7:15	A.M.: 2.5-3 hrs.	8,400
					P.M.: 34/66	P.M.: 7-8%	P.M.: 3:45	P.M.: 4+ hrs.	
10	Crosstown Commons to TH 77	1.2	4	Urban	A.M.: 48/52	A.M.: 7-8%	A.M.: 6:45	A.M.: 3-3.5 hrs.	3,650
					P.M.: 49/51	P.M.: 7%	P.M.: 4:00	P.M.: 4+ hrs.	
11	TH 77 to TH 5	3.3	4	Urban/Rural	A.M.: 58/42	A.M.: 7-9%	A.M.: 7:15	A.M.: 2.5-3 hrs.	1,850
					P.M.: 49/51	P.M.: 7-8%	P.M.: 4:15	P.M.: 3.5-4 hrs.	

6. Needs Assessment Summary

The goal of I-494/TH 62 Congestion Relief Study is to identify potential viable MnPASS managed lane improvements, spot mobility improvements, and other transit advantage improvements on the I-494 and/or TH 62 corridors. These improvements are intended to help people and freight better access their destinations by increasing mobility, reliability, and safety in the study area.

As a basis for identifying improvements needed throughout the corridor, this Needs Assessment evaluated existing conditions, including physical characteristics; congestion causes; safety; traffic characteristics; and transit service, infrastructure, planned improvements, and service gaps were reviewed. Programmed and planned roadway improvements were also reviewed in conjunction with the existing conditions to help inform study segmentation and, subsequently, future analysis processes as part of the I-494/TH 62 Congestion Relief Study.

These issues emerged as significant findings from the Needs Assessment and will be considered in future stages of the overall Congestion Relief Study:

I-494

Traffic Congestion

The majority of the total traffic delay is on the eastbound lanes of I-494 between Highway 169 and I-35W. The eastbound lanes of I-494 can have traffic flow issues for up to eight hours each day. Major causes of congestion include:

- Entering traffic at the France Avenue interchange on to eastbound I-494.
- Weaving traffic from I-35W and TH 100 on to westbound I-494.

Freight

The volumes of heavy truck (freight) vehicles, which can cause major delay and congestion issues due to slow acceleration and merging, are three times higher on I-494 than Highway 62. Volumes on I-494 are also approximately twice as much of the overall share of daily traffic as Highway 62. The freight analysis showed that most the freight enters the I-494 corridor from the southwest on Highway 169.

Safety

Several crash issues were identified along the I-494 corridor, and they include:

- Segment of eastbound I-494 west of the US 169 interchange
- I-494/France Avenue interchange
- I-494/Penn Avenue interchange
- I-494/I-35W interchange

Highway 62

Traffic Congestion

Highway 62 has less delay in a one-year period than I-494. However, vehicles traveling on Highway 62 have more delay for each mile a vehicle traveled than I-494.

- Entering traffic from northbound Highway 100 to eastbound Highway 62 in the morning peak.
- Entering traffic from France Avenue to eastbound Highway 62 in the evening peak.
- Entering traffic from Valley View Road to westbound Highway 62 in the morning peak.
- Entering traffic from France Avenue to westbound Highway 62 in the evening peak.
- Entering traffic from Portland Avenue to eastbound Highway 62 during morning and evening peaks.

Safety

Only one crash issue was identified that involved Highway 62. Northbound Highway 77 has crash problems immediately south of the Highway 62/Highway 77 interchange. The crashes are caused by a line of vehicles waiting on northbound Highway 77 to enter westbound Highway 62.

Transit Service and Infrastructure on I-494 and Highway 62

Metro Transit, SouthWest Transit, and Minnesota Valley Transit Authority (MVTA) operate 34 bus routes on and through the I-494 and Highway 62 corridors. Congestion plays a significant role in the on-time performance of these routes, and many routes have consistent issues that cannot be reduced without infrastructure improvements in the corridor. These delay issues range from two to twenty minutes of delay on 11 routes (approximately 34 percent of all routes) in the corridor.

Infrastructure Improvements

In addition to planned service improvements throughout the study corridors, regional transit agencies have also made requests for transit infrastructure, such as bus-only shoulder lanes and other transit advantages. According to recent funding requests to MnDOT Team Transit, these are the requested projects directly related to the study corridors:

- Bus-only shoulder lanes on TH 62 between I-494 and I-35W (SouthWest Transit)
- Bus-only shoulder lanes on I-494 between US 212 and I-35W (SouthWest Transit)
- Bus-only shoulder lanes on I-494 from TH 77 to I-35E (MVTA)

Furthermore, MVTA has requested that future studies explore the feasibility of transit advantages similar to the bus-only left turn at TH 77/TH 62 throughout the study area, as they provide significant operational improvements for express bus service.