Final Study Report

September 2023

Acknowledgements

Special thanks to the following partners who provided their expertise, time, and feedback for this Study to ensure the study recommendations encompass the needs of the users of the CSAH 5 (Third Avenue) corridor.

Project Management Team

Chris Talamentez – MAPO

Shawn Schloesser – MAPO

Ryan Thilges – Blue Earth County

Stefan Gantert – Blue Earth County

Mark Konz – City of Mankato

Jon Nelson – City of Mankato

Beth Proctor – Lime Township

Angie Piltaver – MnDOT

Consultant Team

Molly Stewart – Project Manager

Charlie Androsky – Planning

Sue Miller – Project Advisor

Adrian Potter – Traffic

SRF Consulting Group, Inc.

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Chapter 1: Introduction

Introduction & Study Overview

The Mankato/North Mankato Area Planning Organization (MAPO), in partnership with the City of Mankato, Blue Earth County, Lime Township, and the Minnesota Department of Transportation (MnDOT), conducted the County State Aid Highway (CSAH) 5 (Third Avenue) Corridor Study (herein known as "the Study") which identified opportunities to better accommodate both nonmotorized and motorized users along the corridor. The corridor study area is approximately 4.8 miles long and includes the section of CSAH 5 (Third Avenue) from North Riverfront Drive (southern terminus) to the Blue Earth County Line (northern terminus) (Figure 1).

Blue Earth County is the local agency with jurisdictional ownership and maintenance of the roadway; however, the other partner agencies for this Study control adjacent infrastructure and land use with significant impact to the corridor. The Study includes the following ten key intersections and two railroad crossings:

- North Riverfront Drive
- Pine Street
- Cleveland Street
- US 14 Eastbound ramp
- US 14 Westbound ramp
- Summit Avenue
- CSAH 26 (Industrial Road)
- 231st Street
- 574th Street
- Lime Valley Road
- Union Pacific (UP) Class I Railroad crossing (in Mankato)
- Union Pacific (UP) Class I Railroad crossing (in Lime Township)

The primary objective of the Study was to complete a technical analysis of current and future multimodal traffic along the corridor, with a special emphasis on the corridor's regional importance to freight movement, and identify short-, mid-, and long-term improvements to improve safety, reduce congestion, and enhance accessibility for those traveling by all modes.

Source: SRF Consulting Group, 2022

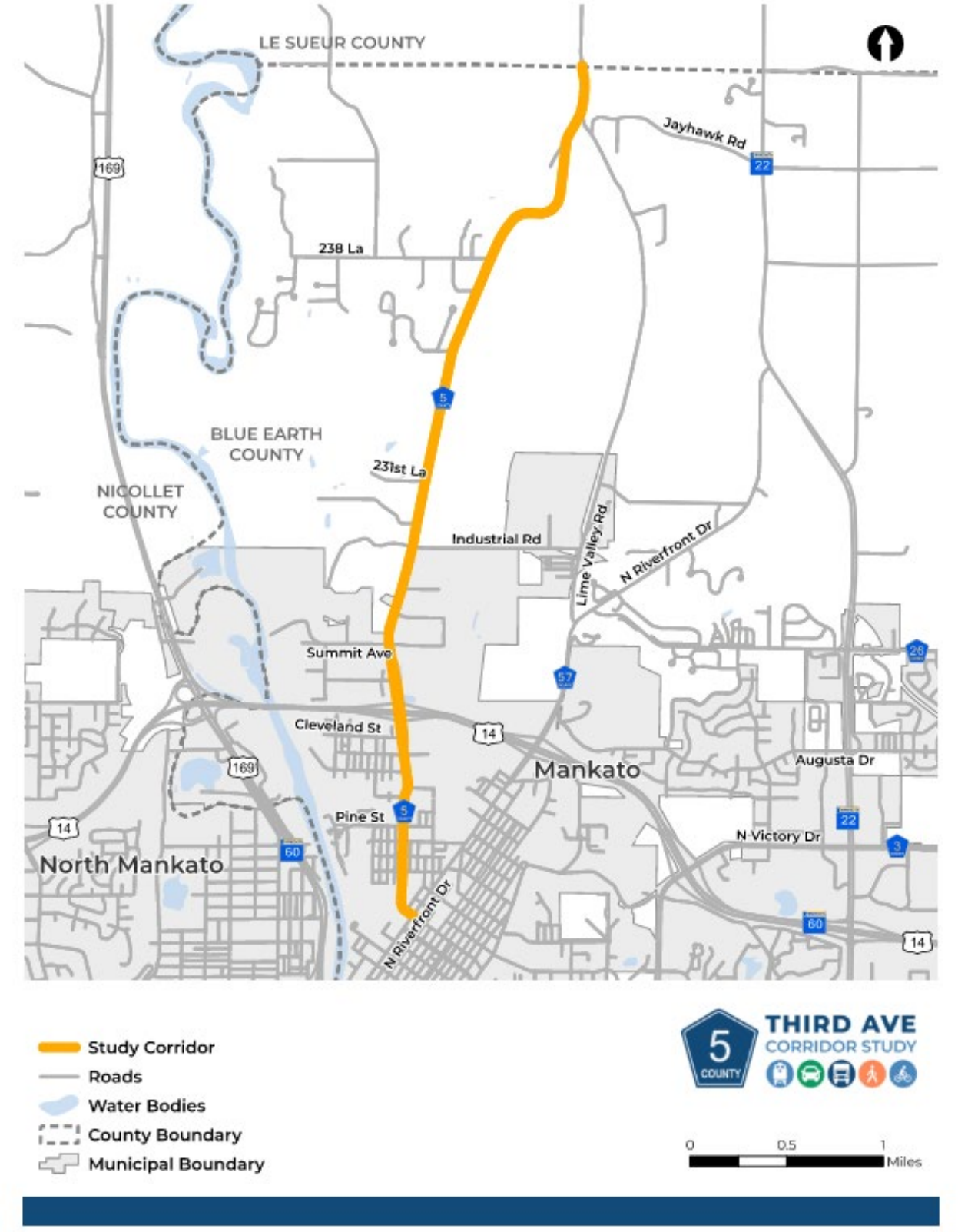
Related Planning Efforts

Past documents were reviewed to ensure decisions made in previous planning efforts were incorporated, as needed, into this Study.

- **MAPO 2045 Long Range Transportation Plan (LRTP) Update (2020)** – Defined area vision, developed traffic forecasts, and defined functional classifications. Identified numerous improvements within the corridor including the segment from North Riverfront Drive to United States Highway (US) 14 for a three-or-four-lane urban reconstruct with multimodal improvements (project R6) in the short-term, the US 14 ramp intersections for improvement (project 19) as illustrative, and an upgrade to one railroad crossing (project F1) as illustrative.
- **North Riverfront Drive Corridor Study (2020)** – Provided recommendations for improvements to North Riverfront Drive, including at the CSAH 5 (Third Avenue) intersection. Provided planning-level concepts, including extending CSAH 5 (Third Avenue) south as a parallel route to North Riverfront Drive and align with the Madison Avenue intersection.
- **Quiet Zone Assessment and Implementation Plan (2021)** – Investigated options to improve safety and minimize train horn noise at multiple railroad crossings, including crossing 193459P at Third Avenue. Identified safety improvement options which included four-quadrant gates and medians. Grade separation was explored but determined as unfeasible.
- **Jefferson Quarry Redevelopment Study (2023)** – Ongoing study which examines Mankato-area quarry sites with redevelopment potential. Site uses taken into consideration include parks and trails, housing, retail, and office space which could impact CSAH 5 (Third Avenue) via increased trips by various modes of travel.
- **MnDOT Intersection Control Evaluation (ICE) Report for US 14 and CSAH 5 (Third Avenue) Interchange (2010)** - Concluded that traffic signal or multi-lane roundabout intersection controls are both viable intersection treatments that would serve existing and 2030 traffic demands. The report also noted that traffic volumes at both ramp intersections satisfy the MMUTCD All-Way Stop Warrant, but only the eastbound ramp intersection meets the traffic signal warrants. An updated ICE report was completed as part of this Study.
- **City of Mankato Complete Streets Plan and Policy (2015)** - Proposed a sidewalk along the west side of CSAH 5 (Third Avenue) from Pine Street to the North Minnesota River Trail.
- **MAPO Americans with Disabilities Act (ADA) Transition Plan (2019)** – Identified a range of noncompliant pedestrian ramps along the corridor to be remedied at reconstruction.

Source: SRF Consulting Group, 2022

FIGURE 1: STUDY LOCATION MAP



Chapter 2: Corridor Review and Issue Identification

Study Area

The Study area originates in the immediate north of downtown Mankato, beginning at the CSAH 5 (Third Ave) intersection with North Riverfront Drive, and continues northward along CSAH 5 (Third Avenue) through a variety of land uses and roadway cross-sections including Mankato's Germania Park neighborhood. The Study area crosses the City limits between Mankato and Blue Earth County, continuing through the county before terminating approximately 4.8 miles to the north at the Blue Earth County line in Lime Township. The Study area extends approximately 0.25 miles to the east and west of CSAH 5 (Third Avenue). The corridor context shifts from a residential and commercial nature in the south to more industrial and rural in the north.

Land Use

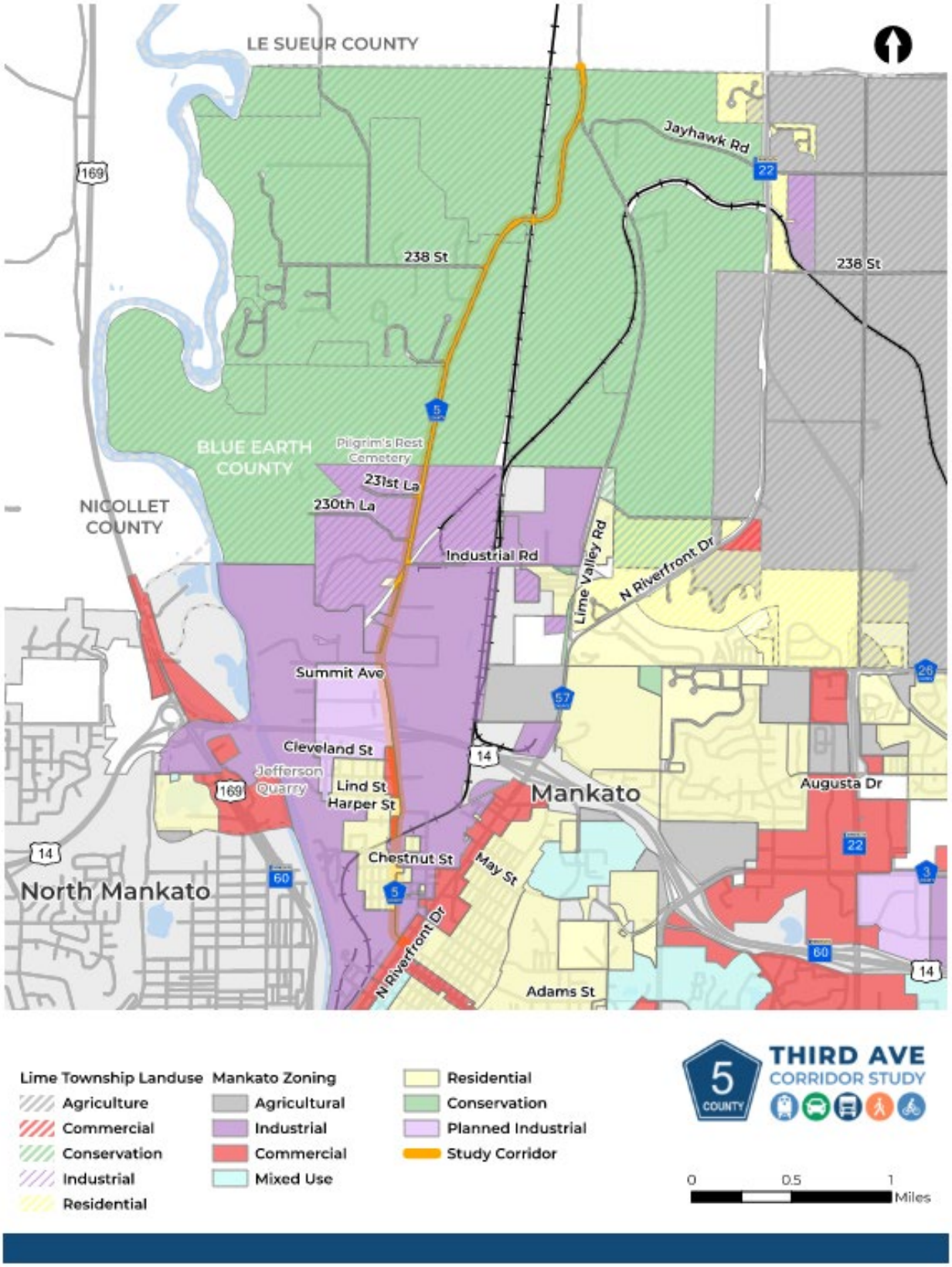
Land use and transportation are directly correlated. Within the CSAH 5 (Third Avenue) Study area, four land uses are primarily present including residential, commercial, and industrial to the south in the urbanized segment, as well as industrial and conservation to the north in the rural segment (see Figure 2).

Combinations of light and heavy industrial uses of varying intensity are also prevalent in the south and central portion of the corridor, with quarry mining (industrial) comprising most of the land use in the north. With close proximity to US 14, the businesses located in these commercial and industrial zones rely on the CSAH 5 (Third Avenue) corridor for efficient access to intrastate and interstate business opportunities.

Although a variety of land uses are present, conservation and industrial are the predominant uses. The needs of these various land uses and stakeholders were considered during the alternative development phase of the Study.

Source: SRF Consulting Group, 2021

FIGURE 2: EXISTING ZONING



Environmental, Social, and Cultural Resources

This section documents potential environmental and cultural constraints along, and adjacent to, the study corridor. An in-depth social, economic, and environmental resource analysis was not conducted as part of this effort. The purpose of this evaluation was to perform a preliminary inventory and assessment of potential impacts to guide the development of future alternative concepts. This impact assessment was generally based on environmental factors for highway projects and utilized available resources including aerial photography, geographic information systems (GIS), local and regional planning documents, and local expertise, among other resources.

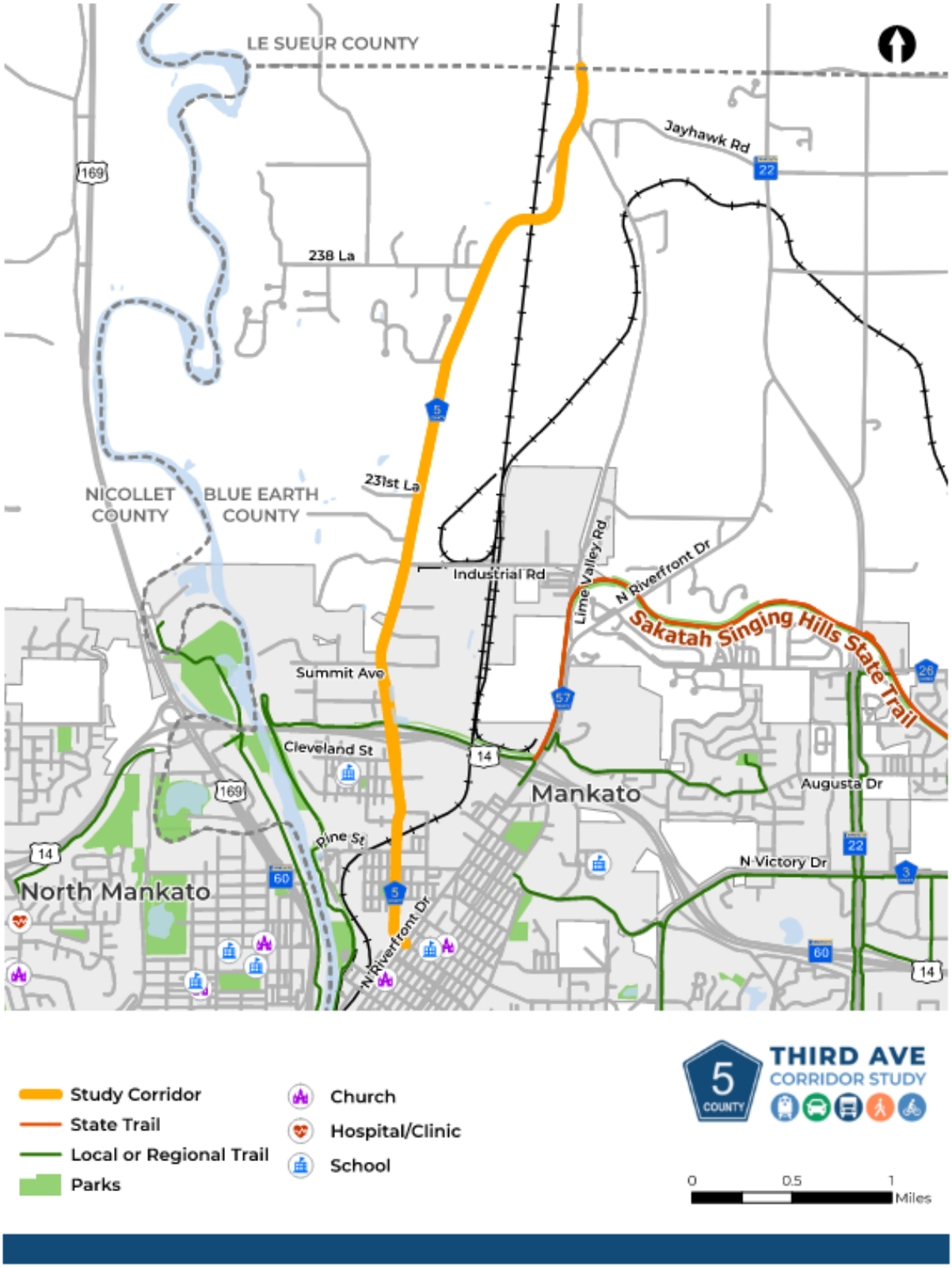
It is important to note that this analysis does not attempt to quantify specific project impacts. Additional analyses, including quantifying environmental impacts where necessary, will be completed for any proposed improvements reviewed under the National Environmental Policy Act (NEPA) and/or Minnesota Environmental Policy Act (MEPA). Future planning and site-specific development will include more rigorous environmental review processes depending on project scope, site conditions, and the nature of the project (Figure 3).

A planning-level analysis indicated potential hazardous environmental features per the Minnesota Pollution Control Agency (MnPCA) within the CSAH 5 (Third Avenue) Study area. These should be considered upon final design to ensure appropriate contingencies are in place. No areas immediately adjacent to the corridor were found to be designated as a Minnesota Department of Natural Resources (MnDNR) “Area of Biodiversity”. There are no State or Federal threatened or endangered species in the project area.

Several streams are located within a quarter-mile buffer distance, as well as the Minnesota River. Due to proximity, the corridor is within a 100-year floodplain which means that in any given year, there is a one percent chance of the area flooding. Due to the presence of wetlands throughout the corridor, the MnPCA has water surveying sites on the corridor on 1st Avenue, at Lind Street, and just south of 230th Lane as well.

The only social or cultural resource present is a regional trail that crosses CSAH 5 (Third Avenue) immediately north of the US 14 interchange (Figure 3).

FIGURE 3: SOCIAL AND CULTURAL RESOURCES

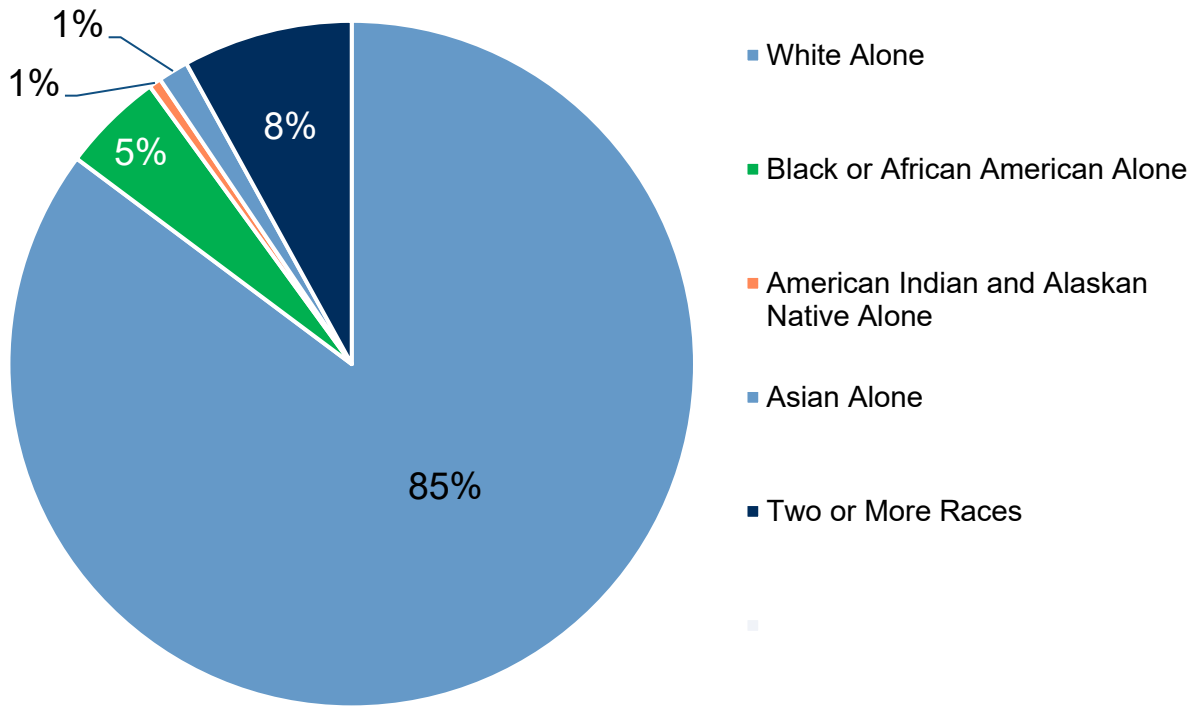


Demographics

The demographic profile for U.S. Census tracts #1702 (Block Group 2) and #1703 (Block Group 1), encompasses the study area and adjacent neighborhoods roughly bound by Main Street in the south, the Minnesota River in the west, the Blue Earth County line in the north, and Highway 22 in the east. A snapshot of the study area demographics is summarized below.

- As of 2020, the area's total population was 2,949, with a predominantly White population. The second-most reported racial category was Two or more races1 (Figure 4 and Figure 5).
- The majority of households in the immediate study area are categorized as Low Income, which is defined as making $67,750 or less (Figure 6).
- Approximately 18 percent of people residing in the study area are over the age of 60 (Figure 7).
- Approximately 51 percent are renters.
- Approximately 15 percent of households do not own a vehicle.
- Approximately eight percent were non-English speakers or English was not their primary language.

FIGURE 4: POPULATION BY RACE



[1] U.S. Census Bureau, Decennial Census, 2020

FIGURE 5: POPULATION NONWHITE

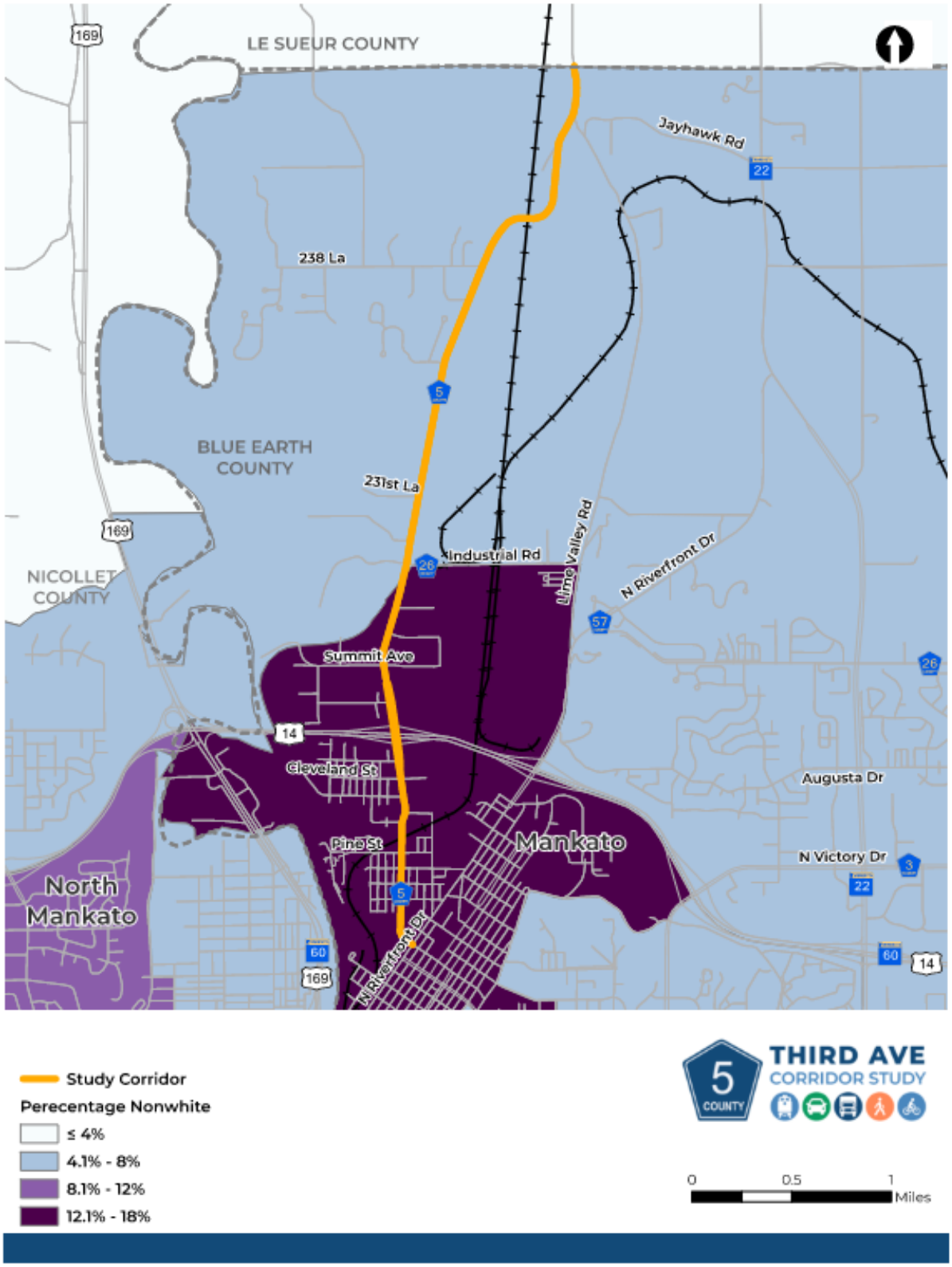


FIGURE 6: LOW-INCOME POPULATIONS

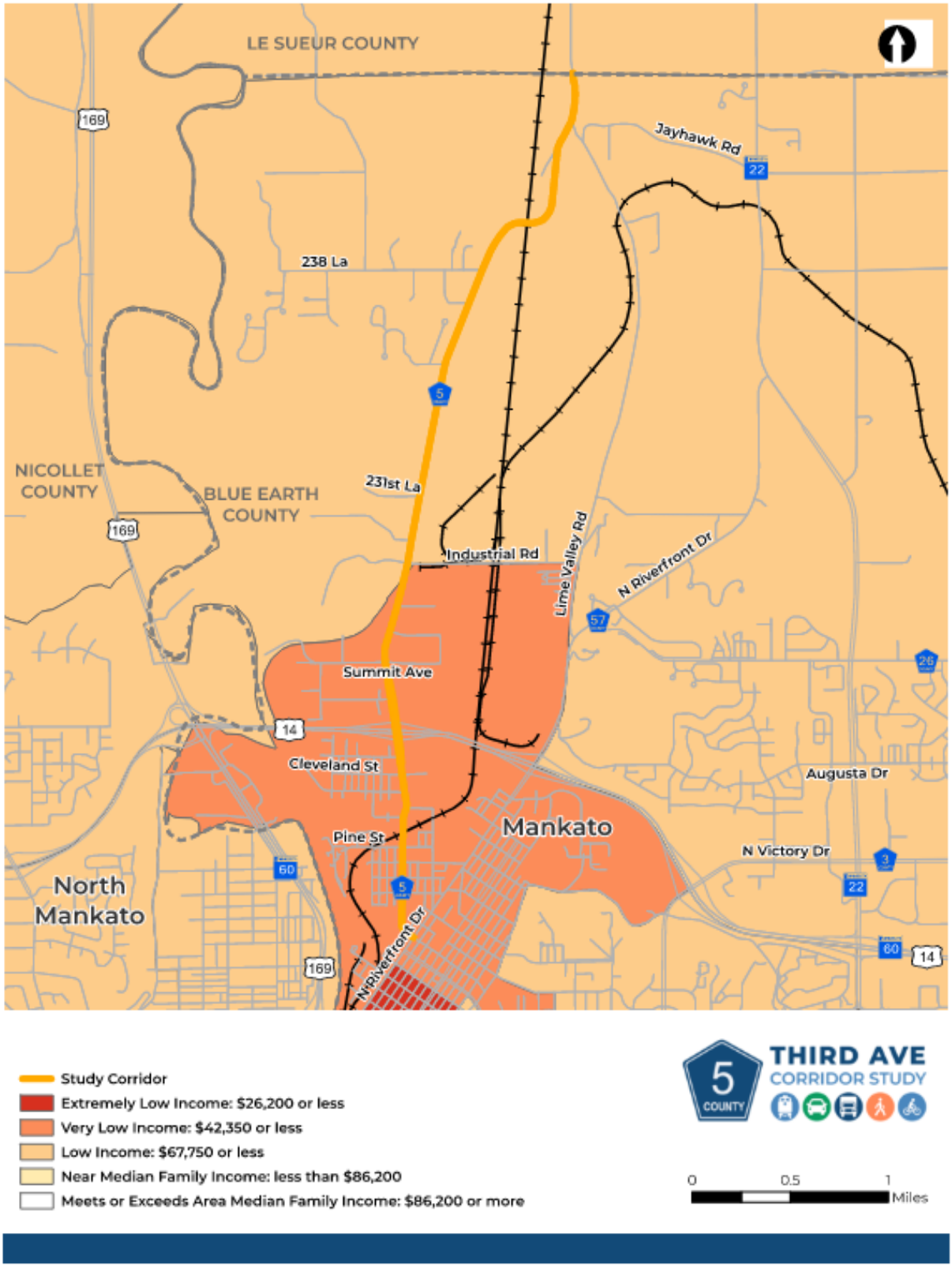
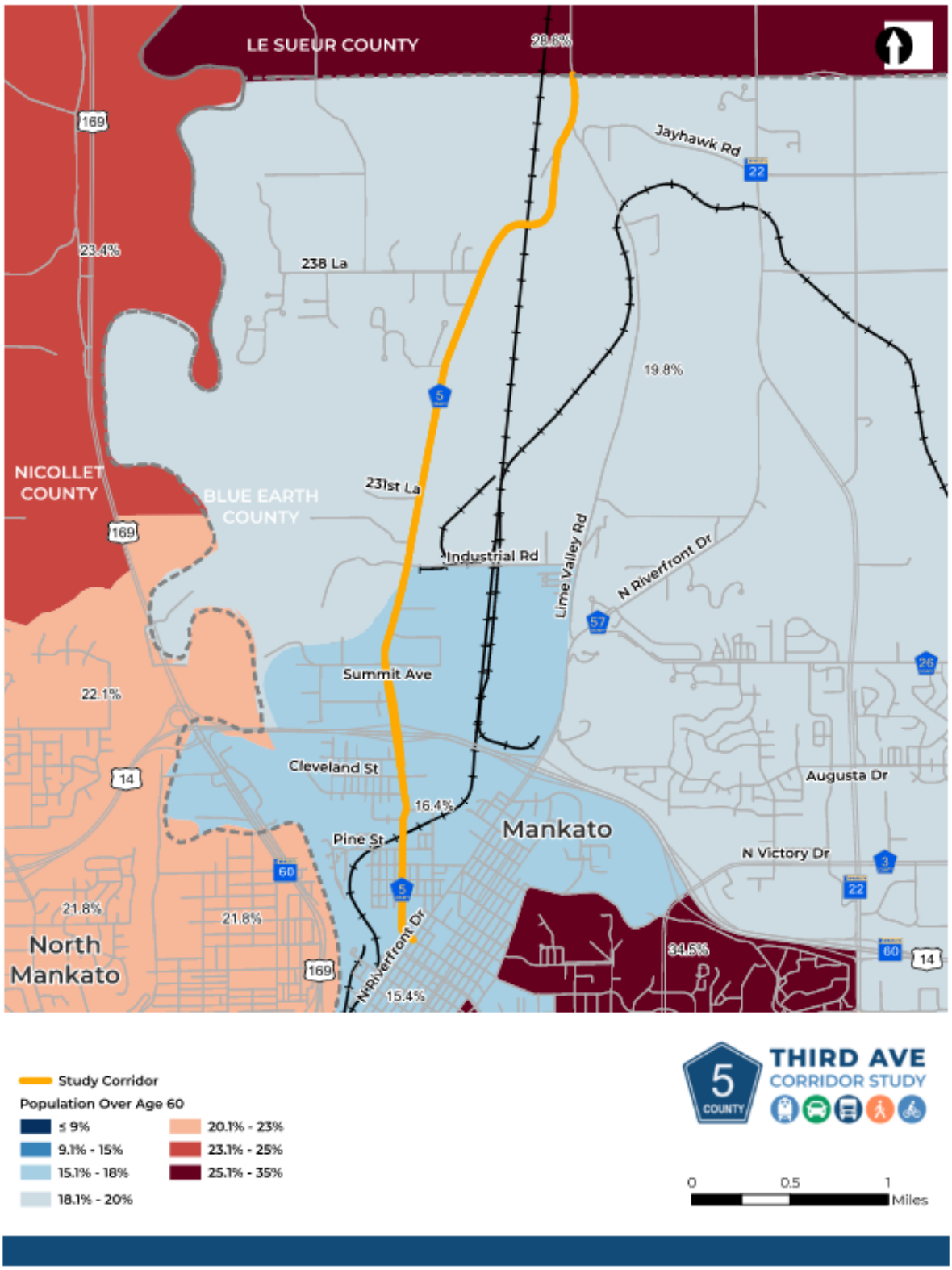


FIGURE 7: POPULATION OVER 60



Transportation Network

Roadway Jurisdiction

The hierarchy of jurisdictional classification is typically established so that higher-volume, regional corridors carrying inter-county traffic are maintained by the state (e.g., interstates and state trunk highways), while intermediate volume corridors with more limited travelsheds (e.g., CSAHs and county roads) are maintained by the counties. Roadways serving local traffic (e.g., Municipal State Aid Streets (MSASs), city streets and township roads) should be maintained by the municipalities or townships. Roadway jurisdiction classification identifies which agency is responsible for maintenance and improvement to the roadway. Roadway jurisdiction includes four primary categories: Township, Municipal, County, and State. As a County State Aid Highway, the CSAH 5 (Third Avenue) corridor is under the jurisdiction of Blue Earth County. There are several intersections along the corridor constituting a combination of jurisdictions ranging from township or municipal streets (typically in residential areas) county roads, and state roads (US 14) (Figure 8).

Functional Classification

The functional classification system defines both the function and role of a roadway within the hierarchy of an overall roadway system. This system is used to create a roadway network that collects and distributes traffic from neighborhoods and ultimately to the state or interstate highway system. Functional classification planning works to manage mobility, access, and alignment of routes. Functional classification also seeks to align designations that match current and future land uses with the roadway's purpose.

The functional classification system is divided into four major categories: Principal Arterials, Minor Arterials, Collectors (major and minor) and local roadways. CSAH 5 (Third Avenue) is classified as a Minor Arterial between North Riverfront Drive and CSAH 26 (Industrial Road) and a Major Collector between CSAH 26 (Industrial Road) and the Blue Earth County line (Figure 9).

Source: SRF Consulting Group, 2022

FIGURE 8: ROADWAY JURISDICTION

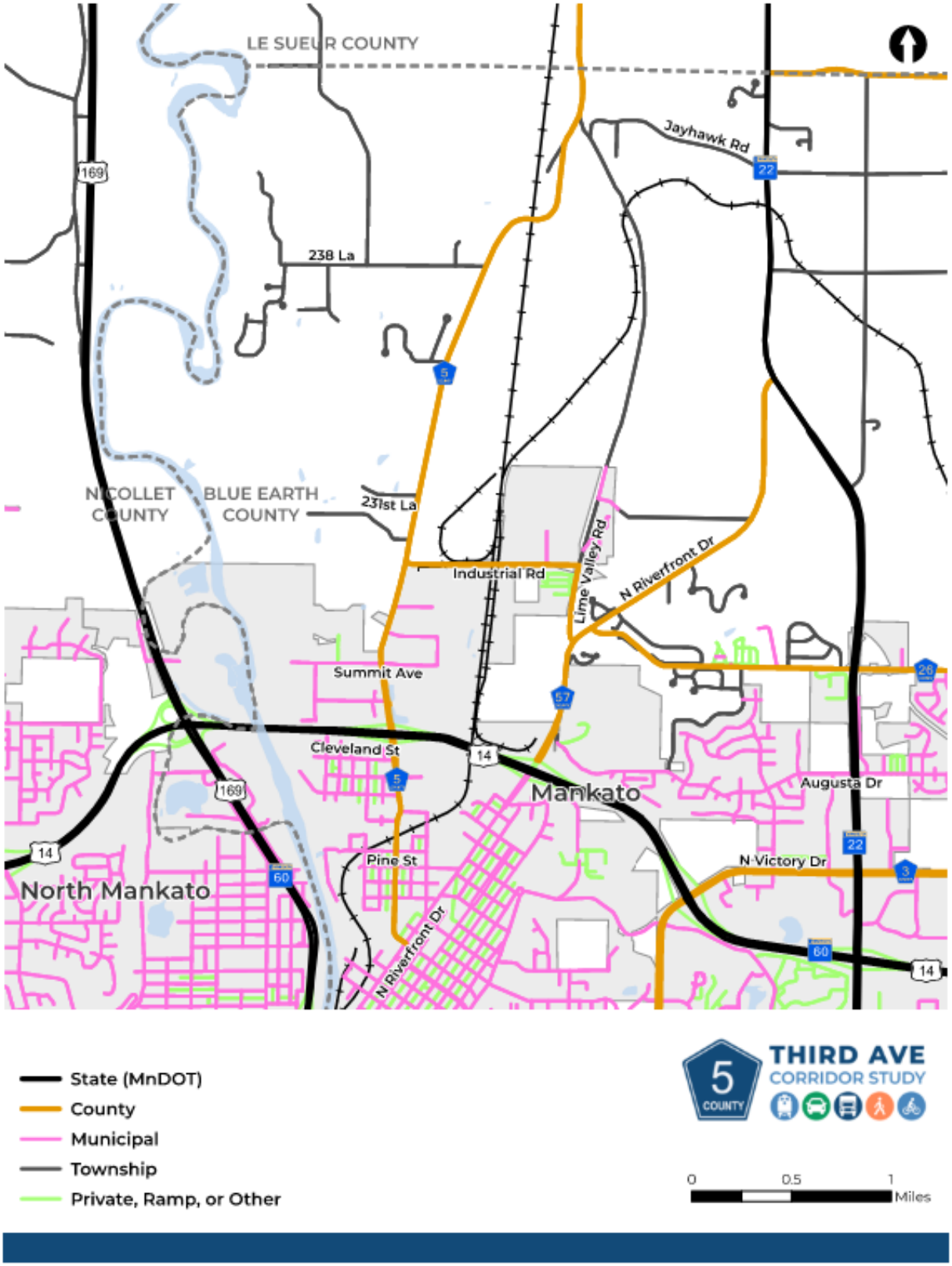
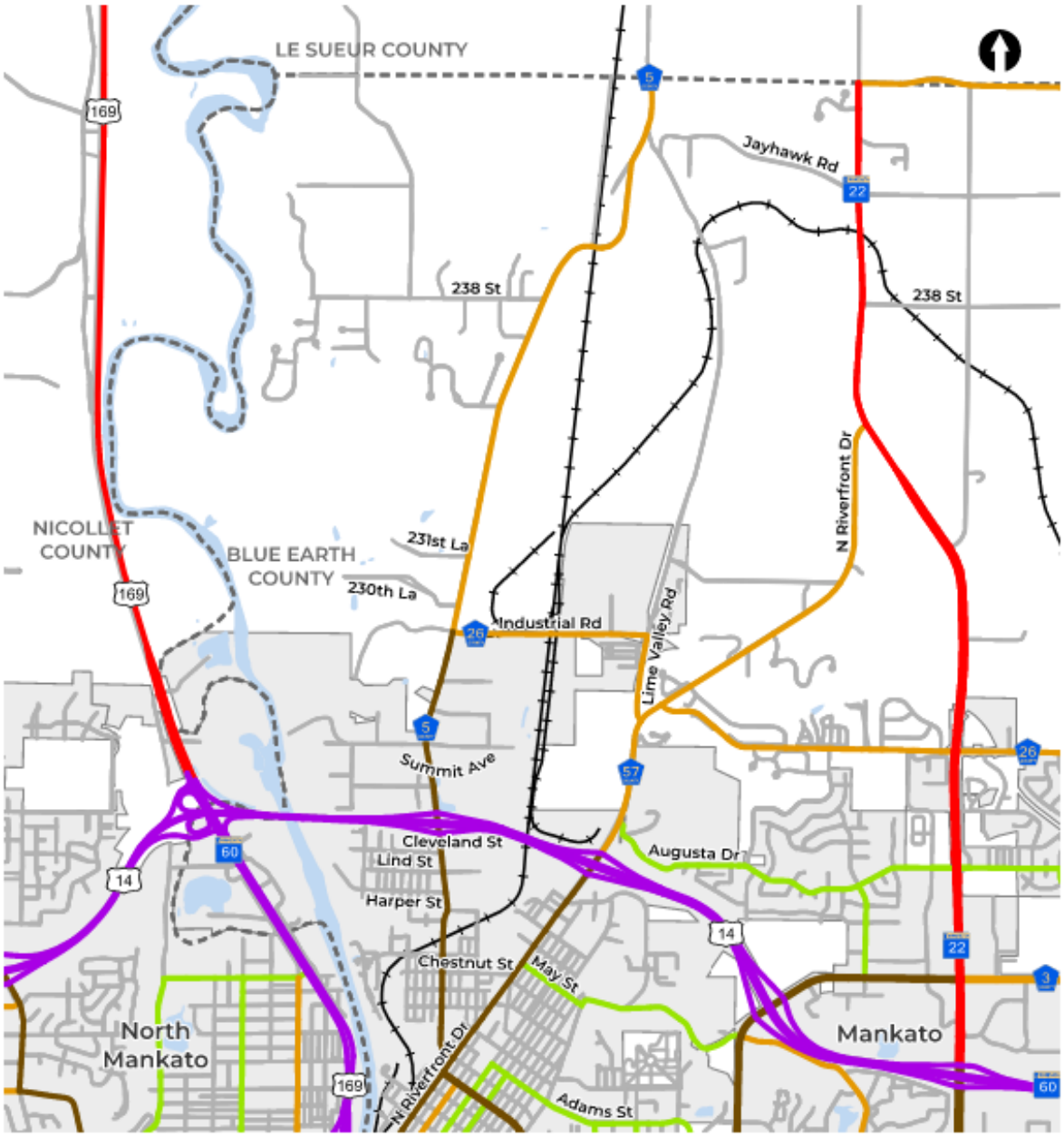


FIGURE 9: EXISTING ROADWAY FUNCTIONAL CLASSIFICATION



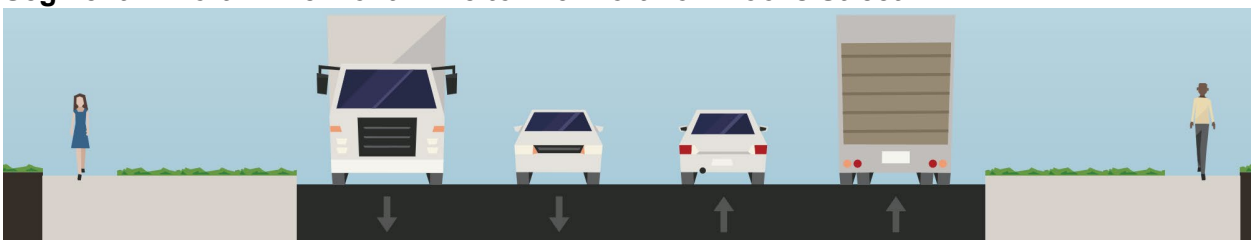
Existing Roadway Cross-Sections

The CSAH 5 (Third Avenue) Corridor varies in width and cross section. There are six distinct segments (see Figure 10) as noted below:

- **Segment 1:** (North Riverfront Drive to 275' North of Brooks St) is a four-lane undivided urban roadway. Note there is no sidewalk along CSAH 5 north of Pine Street.
- **Segment 2:** (275' North of Brooks Street to Lind Street) is a four-lane undivided urban roadway.
- **Segment 3:** (Lind Street to ~160 feet North of Lundin Boulevard) is a four-lane divided urban roadway. Note there is no sidewalk along CSAH 5 between Lind Street and Cleveland Street.
- **Segment 4:** (~160 feet North of Lundin Boulevard to ~240 feet South of Kingswood Drive) is a four-lane undivided urban roadway.
- **Segment 5:** (~240 feet South of Kingswood Drive to CSAH 26 (Industrial Road)) is a four-lane undivided urban roadway.
- **Segment 6:** (CSAH 26 (Industrial Road) to Blue Earth County line) is a two-lane undivided rural roadway with bypass lanes at key intersections.

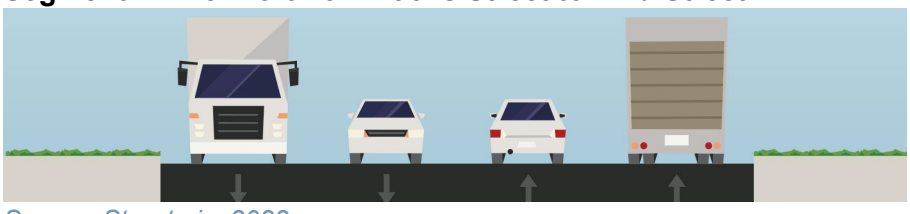
FIGURE 10: SEGMENT MAP

Segment 1: North Riverfront Drive to 275' North of Brooks Street



Source: Streetmix, 2022

Segment 2: 275' North of Brooks Street to Lind Street

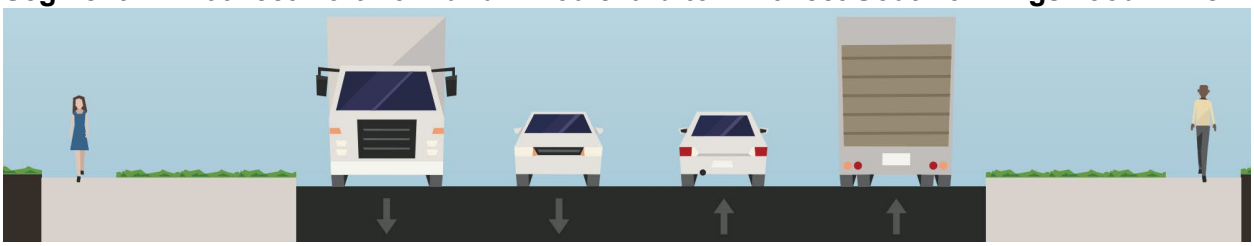


Source: Streetmix, 2022

Segment 3: Lind Street to ~160 feet North of Lundin Boulevard

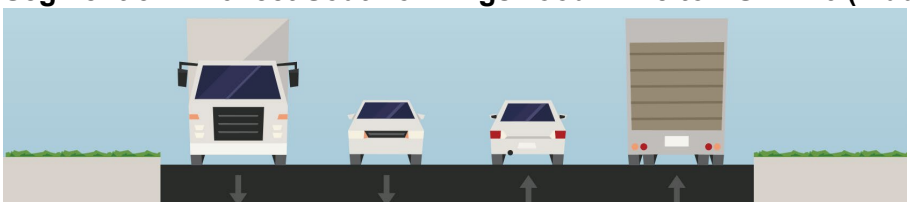
Source: Streetmix, 2022

Segment 4: ~160 feet North of Lundin Boulevard to ~240 feet South of Kingswood Drive



Source: Streetmix, 2022

Segment 5: ~240 feet South of Kingswood Drive to CSAH 26 (Industrial Road)



Source: Streetmix, 2022

Segment 6: CSAH 26 (Industrial Road) to Blue Earth County Line

Source: Streetmix, 2022

Freight

CSAH 5 (Third Avenue) is an important freight corridor servicing the region, notably interconnecting with US 14, which is a critical freight corridor on the National Truck Network (Figure 11). The land use adjacent to the corridor includes a combination of heavy and light industrial and freight-dependent businesses including Kasota Stone, Vetter Stone, Pilgrim Demolition Landfill, and ADM, among several other warehouses and distribution centers. There is also a Shell gas station with 30 overnight truck parking spaces.

2022 data collected from the MnDOT Traffic Mapping Application indicated that between US 14 and the Blue Earth County line, heavy commercial vehicle traffic was approximately three percent of the daily traffic volume. For the most northern segment of the corridor (Segment 6), the Heavy Commercial Vehicle Average Annual Daily Traffic (HCAADT) is 190.

To augment and validate existing daily traffic counts, additionally data was collected in April 2023. The traffic count locations are consistent with locations that MnDOT has collected daily traffic volumes at in the past. The 2023 daily counts indicated a corridor-length decrease in traffic volumes when compared to the 2018 counts (Table 1). Additionally, the heavy commercial daily traffic ranges from six to over 20 percent of daily traffic along the corridor with the heaviest volume between the US 14 ramps and CSAH 26 (Industrial Blvd).

TABLE 1: CORRIDOR TRAFFIC VOLUMES

Segment	MAPO LRTP (2018)	Collected data 2022-2023	2023 HCADT	2023 HCADT%
North of Riverfront Drive	4,700	3,570	226	6%
North of Lind Street	6,100	4,847	990	20%
North of US 14 WB Ramps	12,200	9,341	1,930	21%
South of N Industrial Road	6,100	4,091	956	23%
South of Deerhaven Drive	6,100	-	-	-
North of 480th Street	1,450	-	-	-

The study area has two at-grade railroad crossings: one to the north (DOT Crossing #185398F) in Lime Township and one to the south (DOT Crossing #193459P) in Mankato, both owned by the Union Pacific Railroad Company (UP). Both crossings average four trains per day as of 2019 per the Federal Railroad Administration (FRA). Both crossings are gated with flashers, signage, and striping. The maximum train speed is 30 mph and 40 mph at the northern and southern crossings, respectively, though most trains travel less than that (15 to 25 mph). There have been no recorded crashes at either crossing in over 25 years. There are routine traffic delays at both railroad crossings. Reported delays up to 40 minutes are not uncommon.

Pedestrians and Bicycles

Sidewalks exist along both sides of CSAH 5 (Third Avenue) from North Riverfront Drive to Pine Street, on both sides from Cleveland Street to just north of Lundin Blvd, on the east side only from just north of Lundin Blvd to Kingswood Drive (Figure 12). Sidewalk on both sides of CSAH 5 (Third Avenue) between Riverfront Drive and Kingswood Drive and a multiuse trail north of Kingswood Drive is proposed in the City of Mankato Complete Streets Plan and Policy. No on-street bicycle facilities exist, though cyclists were observed riding on the shoulder north of Industrial Road. A regional trail crosses CSAH 5 (Third Avenue) immediately north of the US 14 interchange and interconnects with both the Sakatah Singing Hills State Trail and the North Minnesota River Trail. The only existing marked crosswalk in the study area is at the trail crossing.

Feedback was also provided at the City Council meeting on March 6. The general desire was to provide sidewalk accommodation as shown in the City of Mankato's Complete Streets Plan as noted above. Additionally, the PMT discussed whether sidewalk was needed in the industrial areas so land use and future land use should be a consideration for determining whether to add sidewalk facilities.

FIGURE 11: EXISTING FREIGHT NETWORK

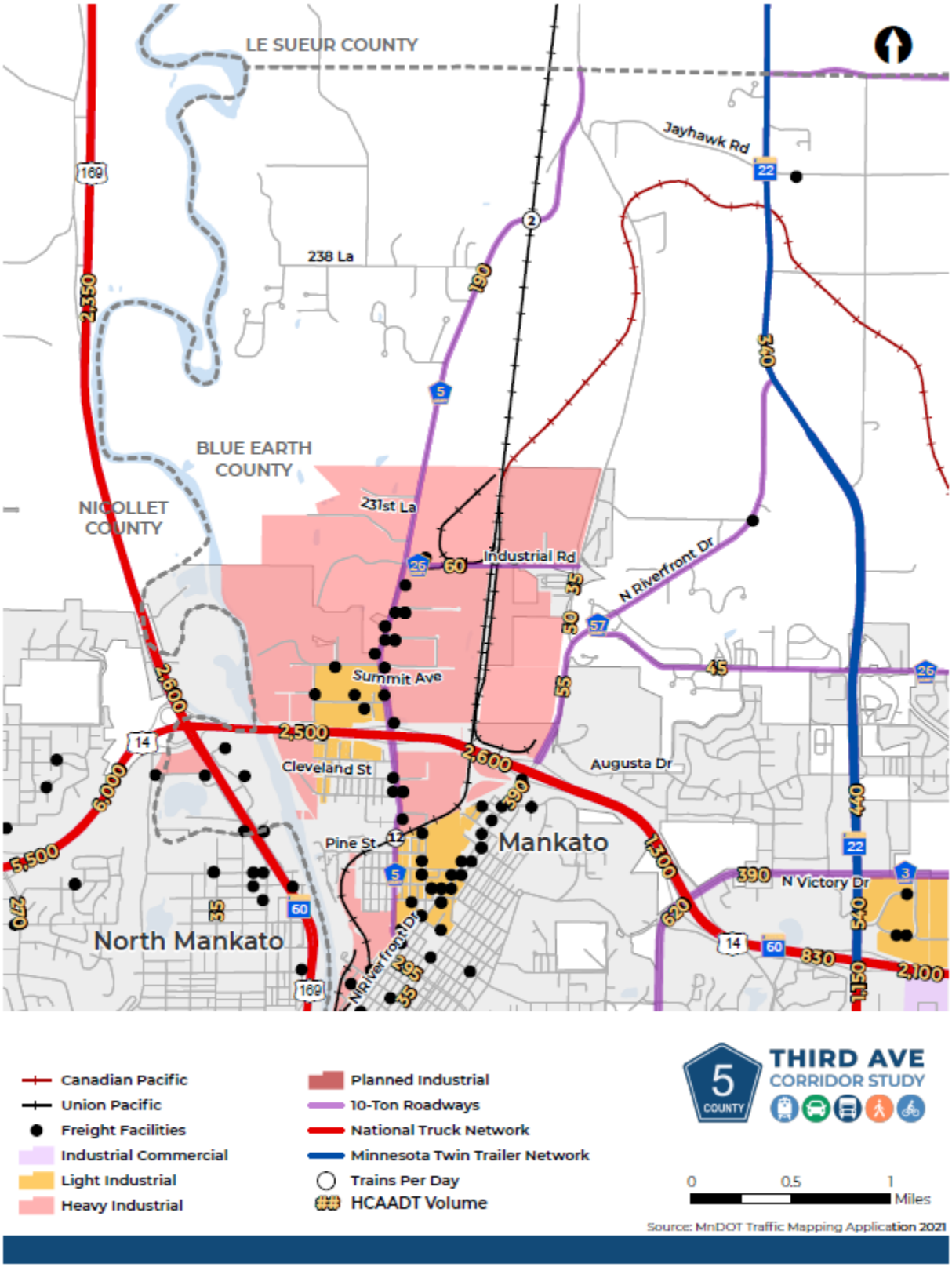
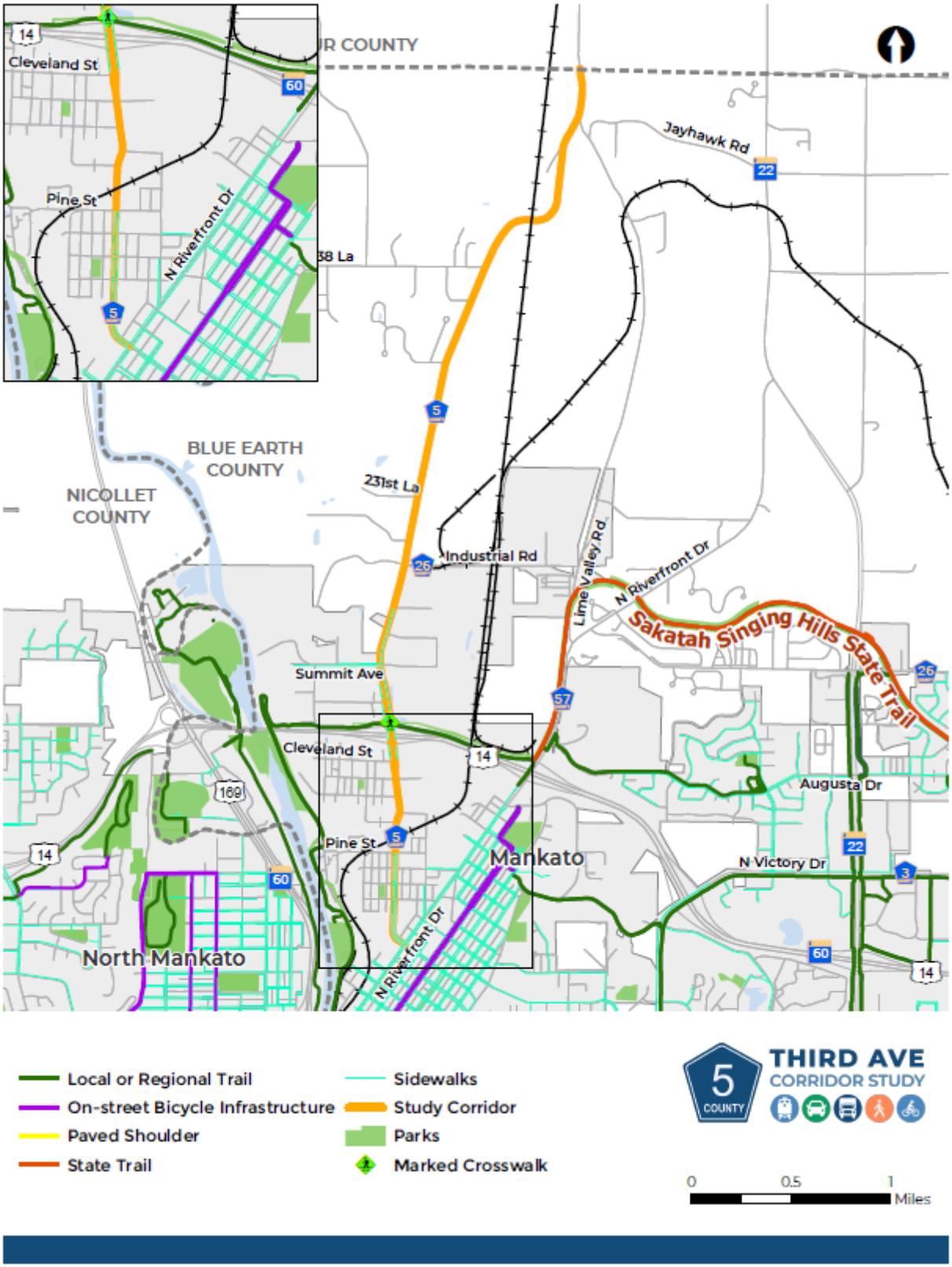


FIGURE 12: EXISTING BICYCLE AND PEDESTRIAN FACILITIES



Roadway Operations

To quantify current transportation operations, the following capacity analyses were completed.

Roadway Capacity

A volume to capacity (V/C) analysis was completed for the CSAH 5 (Third Avenue) Corridor potential capacity issues. Planning-level capacity by roadway facility type from the MAPO Long Range Transportation Plan were utilized for this analysis. CSAH 5 (Third Avenue) between North Riverfront Drive and CSAH 26 (Industrial Road) is classified as a four-lane urban facility type and between CSAH 26 (Industrial Road) and the Blue Earth County line is classified as a two-lane rural facility type.

Existing Vehicle-to-Capacity

Existing traffic volumes were compared to recommended facility type capacities using a V/C ratio (Table 2). V/C between 0.85 and 1 is considered to be approaching capacity, and a V/C over 1.0 is considered over capacity. The analysis was conducted on a segment-by-segment basis to provide greater specificity (Table 2). There are no segments currently experiencing capacity issues.

TABLE 2: EXISTING VEHICLE-TO-CAPACITY RESULTS

Segment	Facility Type	Volume	Capacity	V/C
North Riverfront Drive to Pine Street	4-lane Urban	4,700	24,000	0.19
Pine Street to US 14	4-lane Urban	6,100	24,000	0.25
US 14 to Summit Avenue	4-lane Urban	12,200	24,000	0.50
Summit Avenue to CSAH 26	4-lane Urban	6,100	24,000	0.25
CSAH 26 to Blue Earth County Line	2-lane Rural	6,100	14,000	0.43

Source: SRF Consulting Group, 2022

Future Vehicle-to-Capacity

The study team utilized the MAPO Long Range Transportation Plan to obtain future 2045 traffic volume forecasts (Table 3). Future forecasts were analyzed using existing roadway infrastructure conditions, otherwise referred to as a “No Build” scenario and assumes no improvements will be made between the current and future years. There are no capacity issues anticipated for the 2045 No Build scenario.

TABLE 3: FUTURE 2045 VEHICLE-TO-CAPACITY RESULTS

Segment	Facility Type	Volume	Capacity	V/C
North Riverfront Drive to Pine Street	4-lane Urban	6,500	24,000	0.27
Pine Street to US 14	4-lane Urban	7,700	24,000	0.32
US 14 to Summit Avenue	4-lane Urban	15,800	24,000	0.65
Summit Avenue to CSAH 26	4-lane Urban	9,100	24,000	0.37
CSAH 26 to Blue Earth County Line	2-lane Rural	9,100	14,000	0.65

Source: SRF Consulting Group, 2022

The PMT discussed that in recent years, there has been an observed decline in traffic volumes along the corridor. To validate existing traffic volumes, traffic volumes from the 2022 data were analyzed along with traffic counts collected in 2023. The future volumes projected from the 2023 counts indicated a lower overall level of traffic along the corridor, except north of 480th Street, which was forecast to undergo a minor traffic increase.

TABLE 4: TRAFFIC FORECAST COMPARISON

Segment	MAPO LRTP	Forecast based on collected
North of Riverfront Drive	6,500	4,800
North of Lind Street	7,700	6,000
North of US 14 WB Ramps	15,800	11,700
South of N Industrial Road	9,100	5,800
South of Deerhaven Drive	9,100	4,400
North of 480th Street	2,050	2,500

Source: MAPO Long Range Transportation Plan, SRF Consulting Group, 2023

Intersection Capacity

Traffic volumes and associated impacts to traffic operations were analyzed for existing and year 2045 time periods. Existing traffic data was collected at 10 key intersections on May 10, 2022. Volumes were analyzed to identify the a.m. and p.m. peak hours. Additionally, the forecast volumes from the MAPO Long Range Transportation Plan were utilized to develop future 2045 peak hour volumes at the key study intersections.

A peak hour capacity analysis was performed at each intersection using the Synchro/SimTraffic software. This analysis was performed based upon the intersection Level of Service (LOS) methodology from the Highway Capacity Manual. LOS characterizes the operational conditions of an intersection's traffic flows, ranging from LOS A which indicates traffic conditions with little or no delay, to LOS F which represents traffic conditions that result in long queues and significant delays. The system grade represents the driver's perspective and indicates the comfort and convenience associated with driving. Blue Earth County's standard threshold for acceptable operations is LOS D or better. Detailed intersection capacity results can be found in the Intersection Control Evaluation developed as a component of this study.

Existing Intersection Capacity

All intersections currently operate at an acceptable overall LOS during peak hours with the existing traffic control and roadway configuration (Table 5) in the existing year. The intersection with the highest LOS and delay is the US 14 EB ramp at CSAH 5 (Third Avenue) which operates at an LOS C during the p.m. peak hour.

TABLE 5: EXISTING INTERSECTION OPERATIONS

Intersection	Traffic Control[1]	LOS (AM peak hour)	Delay (AM peak hour	LOS (PM peak hour)	Delay (PM peak hour)
CSAH 5 & North Riverfront Drive	SSSC	A/A	9 sec.	A/A	7 sec.
CSAH 5 & Pine Street	SSSC	A/A	5 sec.	A/A	5 sec.
CSAH 5 & Cleveland Street	SSSC	A/A	7 sec.	A/A	8 sec.
CSAH 5 & US 14 EB Ramps	SSSC	A/A	9 sec.	A/C	18 sec.
CSAH 5 & US 14 WB Ramps	SSSC	A/A	6 sec.	A/A	6 sec
CSAH 5 & Summit Avenue	SSSC	A/A	7 sec.	A/B	7 sec.
CSAH 5 & CSAH 26	SSSC	A/A	6 sec.	A/A	6 sec.
CSAH 5 & 231st Lane	SSSC	A/A	6 sec.	A/A	7 sec.
CSAH 5 & 574th Avenue	SSSC	A/A	4 sec.	A/A	3 sec.
CSAH 5 & Lime Valley Road	SSSC	A/A	3 sec.	A/A	3 sec.

Source: SRF Consulting Group, 2022. [1]For unsignalized intersection with side-street stop control (SSSC) the overall LOS and delay is shown for the worst approach.

Peak hour 95th percentile and average queuing at each intersection were quantified using the traffic simulation software, SimTraffic (see Appendix A). There are no queueing issues anticipated at any of the study intersections. The intersection of CSAH 5 (Third Avenue) and US 14 eastbound ramps is anticipated to have 95 percentile queues of approximately 125 and 150 feet in length during the a.m. and p.m. peak hours, respectively. Average queues are expected to be 75 feet during the a.m. and p.m. peak. The eastbound left turn lane is approximately 400 feet in length and these queues are not anticipated to cause any blocking of turn-lanes or other operational issues at the intersection.

Future 2045 Intersection Capacity

All intersections are anticipated to operate at an acceptable overall LOS C or better during the a.m. and p.m. peak hours with the existing traffic control and geometric layout during the future 2045 year (Table 6). While overall operations are acceptable, the CSAH 5 (Third Avenue) and US 14 eastbound ramp intersection is expected to operate at a LOS F during the p.m. peak hour.

TABLE 6: 2045 NO BUILD INTERSECTION OPERATIONS

Intersection	Traffic Control [1]	LOS (AM peak hour)	Delay (AM peak hour	LOS (PM peak hour)	Delay (PM peak hour)
CSAH 5 & North Riverfront Drive	SSSC	A/C	19 sec.	A/A	9 sec.
CSAH 5 & Pine Street	SSSC	A/A	5 sec.	A/A	5 sec.
CSAH 5 & Cleveland Street	SSSC	A/A	8 sec.	A/A	9 sec.
CSAH 5 & US 14 EB Ramps	SSSC	A/B	12 sec.	C/F	78 sec.
CSAH 5 & US 14 WB Ramps	SSSC	A/A	7 sec.	A/A	9 sec
CSAH 5 & Summit Avenue	SSSC	A/A	8 sec.	A/B	10 sec.
CSAH 5 & CSAH 26	SSSC	A/A	6 sec.	A/A	7 sec.
CSAH 5 & 231st Lane	SSSC	A/A	8 sec.	A/A	10 sec.
CSAH 5 & 574th Avenue	SSSC	A/A	4 sec.	A/A	4 sec.
CSAH 5 & Lime Valley Road	SSSC	A/A	3 sec.	A/A	3 sec.

Source: SRF Consulting Group, 2022. [1]For unsignalized intersection with side-street stop control (SSSC) the overall LOS and delay is shown for the worst approach.

Peak hour 95th percentile and average queuing at each intersection were quantified using the traffic simulation software, SimTraffic (see Appendix A). There are no queueing issues anticipated at any of the study intersections except for the intersection of CSAH 5 (Third Avenue) and US 14 eastbound ramps. At this intersection 95th percentile queues are expected to be 175 feet and 400 feet during the a.m. and p.m. peak, respectively. Average queues are expected to be 75 feet 200 feet during the a.m. and p.m. peak, respectively. The eastbound left turn lane is approximately 400 feet in length and the vehicle queues have the potential to block the left-turn lane resulting in operational issues at this intersection. It should be noted, however, that the projected growth shown in the MAPO LRTP conflicts with recent counts collected along CSAH 5. Traffic volumes should be revisited when the LRTP is updated in the coming years to fully understand 2045 traffic operations.

Traffic Speed

Speed limits vary throughout the corridor from 30 miles per hour (mph) in the southern segment to 50 mph in the northern segment. These speed limits correspond to the adjacent land use, as the lower speed limit in the south overlays with urban residential and commercial uses, and the speed limit increases as density decreases to the south in the rural areas.

- 30 mph – North Riverfront Drive to US 14 WB ramp
- 40 mph – US 14 WB ramp to CSAH 26 (Industrial Road)
- 50 mph – CSAH 26 (Industrial Road) to 238th Lane
- 45 mph – 238th Lane to Blue Earth County line

Pavement Condition

Pavement condition data was obtained from Blue Earth County for the year 2021. Pavement sections are rated based on several factors, including the Ride Quality Index (RQI). A scale of 0-5.0 for RQI is utilized to determine the overall ride quality for travelers, ranging from Poor to Very Good. A summary of the pavement conditions along CSAH 5 (Third Avenue) is shown below (Table 7) It should be noted that Blue Earth County recently overlayed the north segment of CSAH 5 (Third Avenue) from CSAH 26 (Industrial Road) to the Blue Earth County line.

TABLE 7: PAVEMENT RIDE QUALITY INDEX (RQI)

Segment	RQI	Ride Quality
North Riverfront Drive to Summit Avenue	1.6 – 1.9	Poor
Summit Avenue to Mankato City Limits	3.1	Good
Mankato City Limits to CSAH 26 (Industrial Road)	3.0	Fair
CSAH 26 (Industrial Road) to Blue Earth County Line	5.0	Very Good

Source: Blue Earth County, 2021

Source: SRF Consulting Group, 2022

Safety

To identify potential traffic safety issues in the study area, five-years of crash history (2017 to 2021) was obtained from the Minnesota Crash Mapping Analysis Tool (MnCMAT2). Between 2017 and 2021, there were a total of 108 crashes (see Figure 13 and Figure 14). The crash details by severity are shown in Table 8 and Table 9.

TABLE 8: INTERSECTION CRASH DATA BY SEVERITY

Intersection	Total	Fatal	Serious Injury (A)	Minor Injury (B)	Possible Injury (C)	Property Damage
N Riverfront Drive	10	0	0	1	1	8
Pine Street	1	0	0	0	0	1
Cleveland Street	1	0	0	0	0	1
US 14 EB Ramps	11	1	0	1	1	8
US 14 WB Ramps	8	0	0	1	1	6
Summit Avenue	0	0	0	0	0	0
CSAH 26	0	0	0	0	0	0
231st Lane	2	1	0	0	0	1
574th Avenue	0	0	0	0	0	0
Lime Valley Road	1	0	0	0	1	0

Source: MnCMAT, 2022

TABLE 9: SEGMENT CRASH DATA BY SEVERITY

Segment	Total	Fatal	Serious Injury (A)	Minor Injury (B)	Possible Injury (C)	Property Damage
N Riverfront Drive to Lind Street	28	0	1	4	3	20
Lind Street to Summit Avenue	27	1	0	3	4	19
Summit Avenue to CSAH 26	0	0	0	0	0	0
CSAH 26 to Blue Earth County Line	19	1	0	2	2	14

Source: MnCMAT, 2022

MnDOT uses a comparison of the crash rate and the critical rate when determining whether there is a safety issue at an intersection or along a roadway segment. The crash rate or severity for an intersection is the number of crashes per million entering vehicles (MEV) and the crash rate or severity rate for a segment is the number of crashes per million vehicle miles (MVM) travelled for all crashes. For only fatal and serious injury crashes only the rates are calculated per 100 million entering vehicles (MEV) and the crash rate or severity rate for a segment is the number of crashes per 100 million vehicle miles (MVM) travelled. The critical crash rate is a statistical comparison based on similar intersections or segments statewide. An observed crash rate or severity rate greater than the critical crash rate indicates that the intersection or segment operates outside of the expected, normal range. The critical index reports the magnitude of this difference. The results by intersection and segment are shown in Table 10 and Table 11, respectively.

TABLE 10: INTERSECTION CRASH RATE

	All Crashes			Fatal and Serious Injury Only		
Intersection	Crash Rate	Statewide Average	Critical Index	Crash Rate	Statewide Average	Critical Index
N Riverfront Drive	0.29	0.13	0.97	0.00	0.31	0.00
Pine Street	0.10	0.13	0.21	0.00	0.31	0.00
Cleveland Street	0.09	0.13	0.20	0.00	0.31	0.00
US 14 EB Ramps	0.57	0.13	1.59	5.19	0.31	1.15
US 14 WB Ramps	0.34	0.13	1.01	0.00	0.31	0.00
Summit Avenue	0.00	0.13	0.00	0.00	0.31	0.00
CSAH 26	0.00	0.13	0.00	0.00	0.31	0.00
231st Lane	0.18	0.10	0.45	8.83	0.55	1.13
574th Avenue	0.00	0.10	0.00	0.00	0.55	0.00
Lime Valley Road	0.09	0.10	0.23	0.00	0.55	0.00

Source: SRF Consulting Group, 2022. Key: Rate over statewide average. Rate over critical threshold.

TABLE 11: SEGMENT CRASH RATE

	All Crashes			Fatal and Serious Injury Only		
Segment	Crash Rate	Statewide Average	Critical Index	Crash Rate	Statewide Average	Critical Index
N Riverfront Drive to Lind Street	3.33	0.82	1.98	11.89	1.44	0.94
Lind Street to Summit Avenue	3.30	1.99	0.99	12.22	2.73	0.75
Summit Avenue to CSAH 26	0.00	0.82	0.00	0.00	1.44	0.00
CSAH 26 to Blue Earth County Line	0.64	0.49	0.76	3.36	2.61	0.42

Source: SRF Consulting Group, 2022. Key: Rate over statewide average. Rate over critical threshold.

A detailed review of the type of crashes occurring along the corridor segments was also completed. Below is a summary by segment of the crash type and frequency (see Table 12).

TABLE 12: SEGMENT CRASH TYPE

Segment	Ped/Bike	ROR	Side-swipe	Rear End	Angle/ Left-turn	Other
N Riverfront Drive to Lind Street	1	6	5	3	10	3
Lind Street to Summit Avenue	0	1	0	9	15	2
Summit Avenue to CSAH 26	0	0	0	0	0	0
CSAH 26 to Blue Earth County Line	0	6	0	2	1	10[(1)]

Source: MnCMAT, 2022. *[1]All crashes were attributed to deer in the roadway.*

The geographic dispersion of crashes indicates there is not a singular acute safety issue within the corridor. Crashes occurring in proximity to Pine Street were in a residential area. Crashes which took place in proximity to US 14 occurred in a different roadway context, with differing adjacent land uses. Finally, the crashes which occurred in proximity to 231st Lane took place in an industrial context, often with proportionally more truck traffic (Figure 14).

From a design perspective, the travel speeds are higher, and the road curvatures are more severe in the northern section of the corridor. The corridor also transitions through several lane configurations to facilitate turning movements and areas of the corridor experience heavily wooded conditions, which can increase risk of deer strike, limit traveler sightlines, and the amount of shadowing and sunlight which reaches the road surface, which can affect ice and snowmelt. Any combination of these factors can increase crash conditions.

Crash Analysis: Run Off Road (ROR)

An analysis of corridor-wide ROR crashes indicates a diverse variety of causes and contributing conditions. While crashes within the analysis period appear inordinately high, an analysis of crash causes indicates a range of causes unrelated to road and access design, including driver behaviors, infrequent events, and winter weather conditions. There were 13 ROR crashes occurring on corridor segments between 2017 and 2021.

Crash Analysis: Bicycle and Pedestrian Crashes (2012-2022)

A detailed review of bicycle and pedestrian crashes was completed for the study area. Crash data was obtained from MnCMAT2 for the years 2012-2022. During this time period, three crashes involving a bicyclist (and no pedestrians) occurred. A possible injury crash in 2015 that involved a driver turning left onto CSAH 5 (Third Avenue) from Lind Street and colliding with a bicyclist traveling northbound on CSAH 5 (Third Avenue). A serious injury crash (type A) in 2016 that involved a bicyclist colliding with a car at the Pine Street/CSAH 5 (Third Avenue) intersection. A property damage only crash in 2020 at the Pine Street / CSAH 5 (Third Avenue) intersection.

FIGURE 13: CRASH SEVERITY

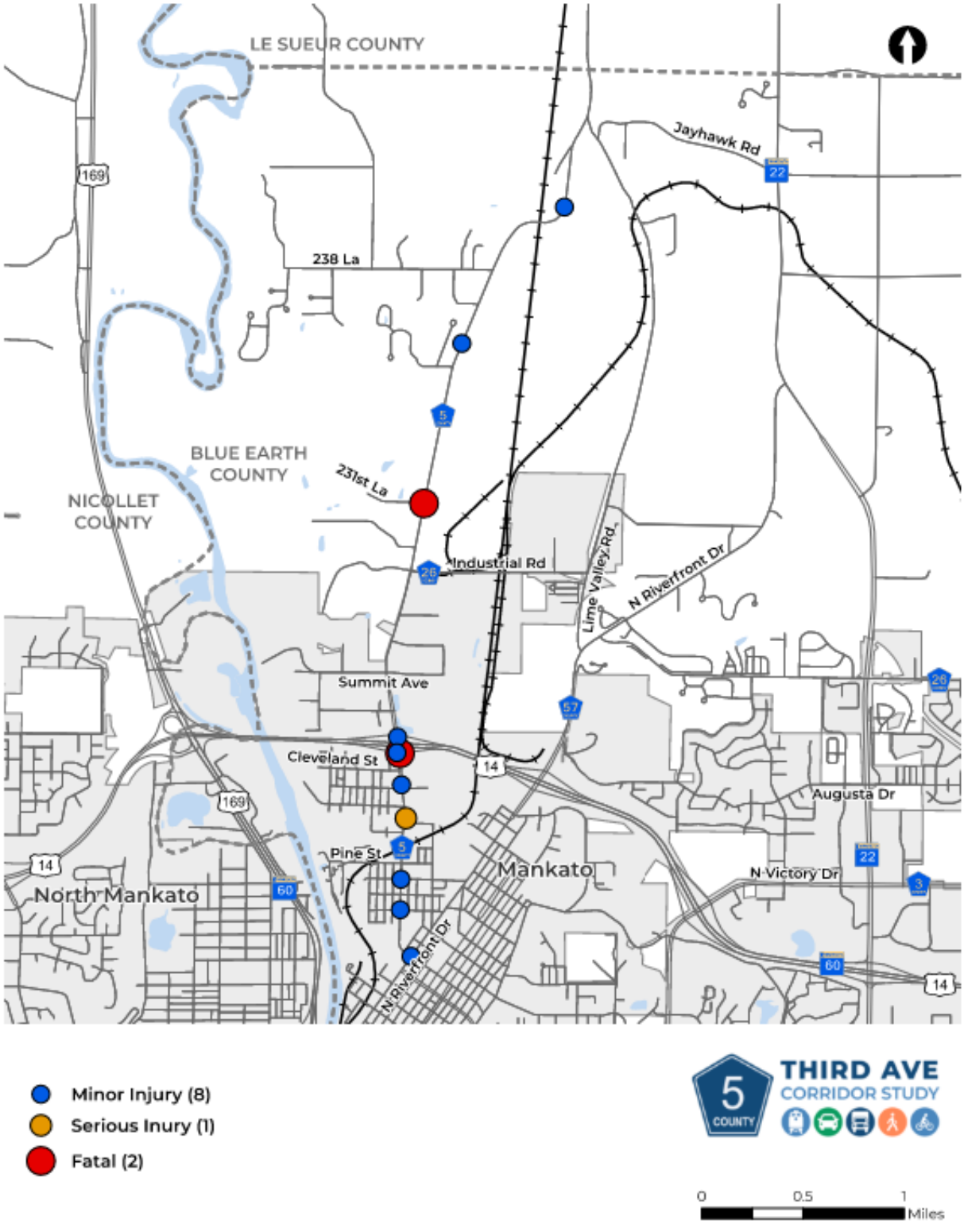
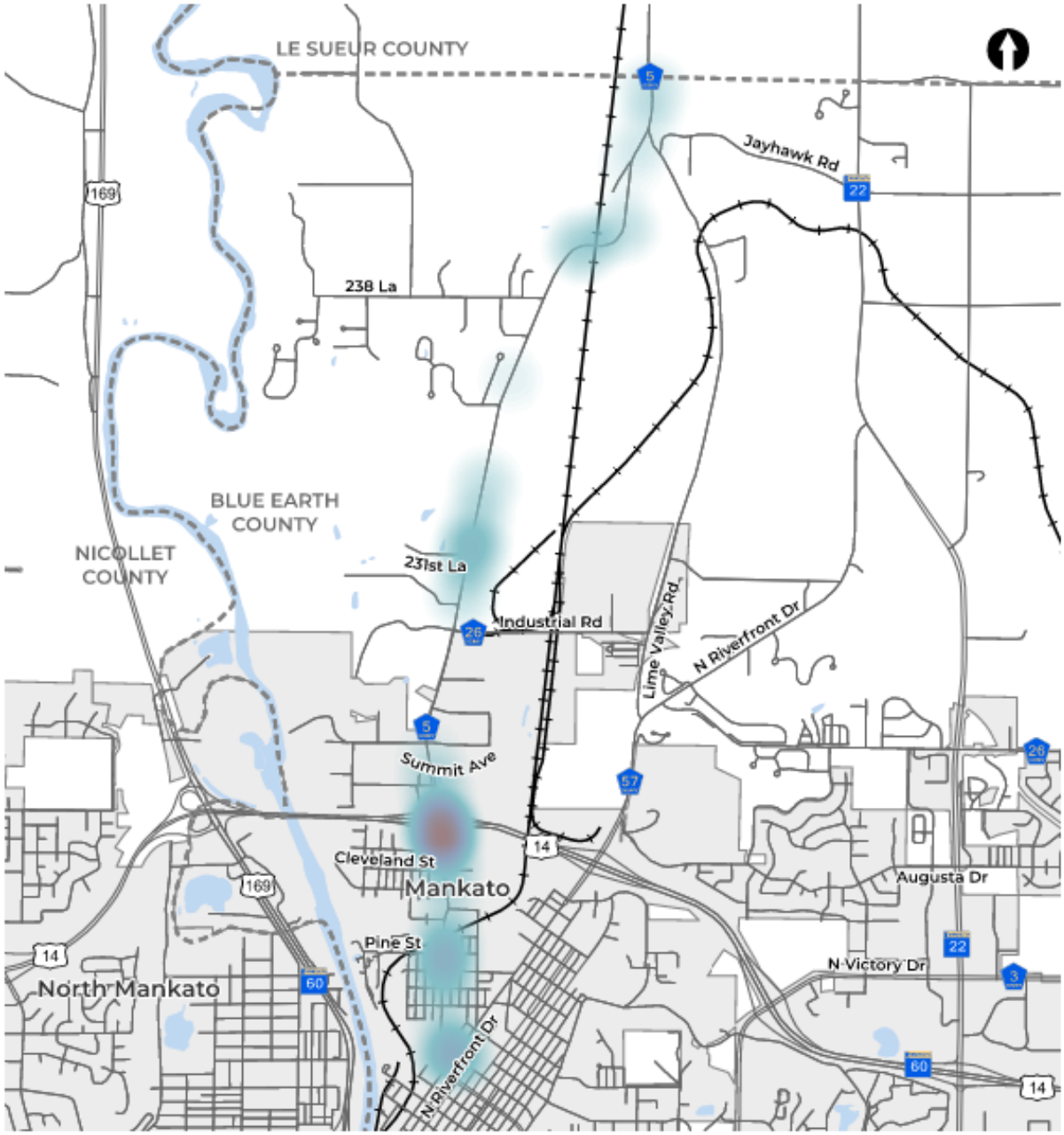


FIGURE 14: CRASH FREQUENCY



Access

Access points along the corridor provide entrance and exit points to commercial, residential, industrial, and public land uses. Proper access spacing along roadways promotes better traffic flow and increases safety. Research documented in NCHRP Report #420 found that on average, each access along a corridor increases crash potential by four percent and decreases corridor travel speeds by 0.25 miles per hour. Since operational and safety benefits are associated with proper access control, the MAPO has developed and published access spacing recommendations for routes in the planning area which was considered by this study. In total, 129 access points exist in the study area (Table 13).

TABLE 13: ACCESS SPACING

Segments	Distance	Access Points[1]	Functional Classification	Guideline	Compliance
North Riverfront Dr to Cleveland Street	0.95 miles	56	Minor Arterial – Urban Core	9-19/mile	Noncompliant
Cleveland Street to US 14 WB Ramp	0.18 miles	4	Minor Arterial - Urban Core	9-19/mile	Compliant
US 14 WB Ramp to Lundin Blvd	0.12 miles	3	Minor Arterial - Urban Core	9-19/mile	Noncompliant
Lundin Blvd to Mohr Drive	0.35 miles	6	Minor Arterial - Urban Core	9-19/mile	Compliant
Mohr Drive to CSAH 26	0.36 miles	12	Minor Arterial – Urban Core	9-19/mile	Noncompliant
CSAH 26 to Blue Earth County Line	2.8 miles	57	Major Collector – Rural	5/mile	Noncompliant

Source: SRF Consulting Group, 2022. *[1]Includes to/from intersections in total number of access points*

Most of the segments are not compliant with access spacing guidelines, with most having two times or more access points than recommended. Key points of access analyses include:

- The North Riverfront Drive – Lind Street segment is noncompliant and has over twice the amount of access points than MAPO recommended guidelines say for minor arterial – urban core. This segment is one of four corridor crash cluster areas for 2017-2021 crashes. The speed limit is only 30mph here, the slowest speed along the CSAH 5 (Third Avenue) corridor.
- The Lind Street – Summit Avenue segment is compliant with MAPO guidelines for minor arterial – urban core, but it should be noted that this is also a cluster area for vehicle crashes (especially near the US 14 on/off ramps). The speed limit is 30mph.
- Summit Avenue – CSAH 26 (Industrial Road) is compliant with MAPO guidelines for Minor Arterial – Urban Core roadways. Only one car crash was reported in this segment.
- The CSAH 26 (Industrial Road) – Blue Earth County line segment is noncompliant with MAPO guidelines for Major Collector – Rural roadways, servicing over 3.5 times the amount of recommended access points. The speed limit along this segment is between 40-50mph. This segment was the site of 15 reported crashes.

Review indicates there is an intermittent relationship between areas of the corridor with higher concentrations of access points and crashes. Certain areas of high access concentration are below crash thresholds. However, other areas of high access concentration present crash rates above crash thresholds.

This relationship is evident in the southern and middle segments of the corridor. The segment from North Riverfront Drive to Lind Street has over twice the number of recommended access points and is one of the four crash cluster areas. However, there are also areas of the corridor with higher-than-recommended access concentrations that are within statewide average crash thresholds. This includes the segment from CSAH 26 (Industrial Road) to the County line.

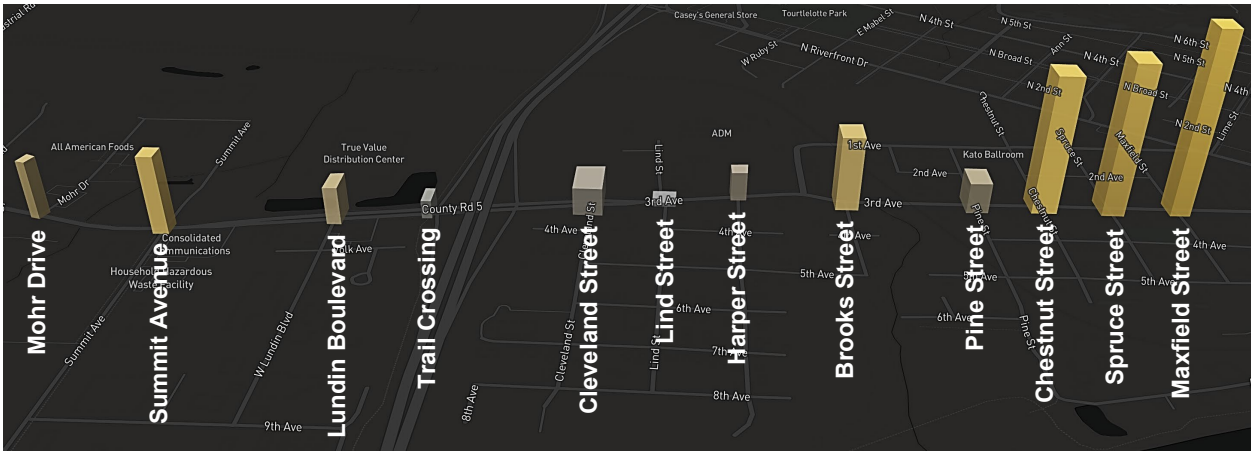
Origin-Destination (O-D) Analysis

An origin-destination (O-D) analysis using StreetLight was completed to understand travel patterns and identify the proportion of trips used for regional (trips traveling through the study area) or local trips (trips traveling within the study area). StreetLight trips are daily estimates aggregated from year 2019 to demonstrate normal conditions due to the COVID-19 pandemic impacts on the years 2020-2021. The data is organized using app-based locations cell phone data that is anonymized and organized by StreetLight using proprietary algorithms. Activity is estimated using this data and normalized using sample trip counts and Census Block population information. The software uses proprietary machine learning to incorporate traveler speeds and locations to differentiate between different travel modes.

Pedestrian Demand

Pedestrian crossings are demonstrated as demand, an estimate of crossing frequency of pedestrian per intersection, and now a raw count. Pedestrian crossing activity is highest in the urban neighborhood south of US 14, as well as at Summit Avenue (Figure 15).

FIGURE 15: PEDESTRIAN USAGE



Source: StreetLight, 2022

Bicycle Demand

Bicycle crossing demand is highest at existing trail crossing, as well as Summit Avenue and Spruce Street (Figure 16). On May 10, 2022, 13 hours of pedestrian and bicycle counts were collected. The data showed that during that time, 54 bicyclists (and five pedestrians) crossed CSAH 5 (Third Avenue) at the trail crossing during that time.

FIGURE 16: BICYCLE USAGE

Source: StreetLight, 2022

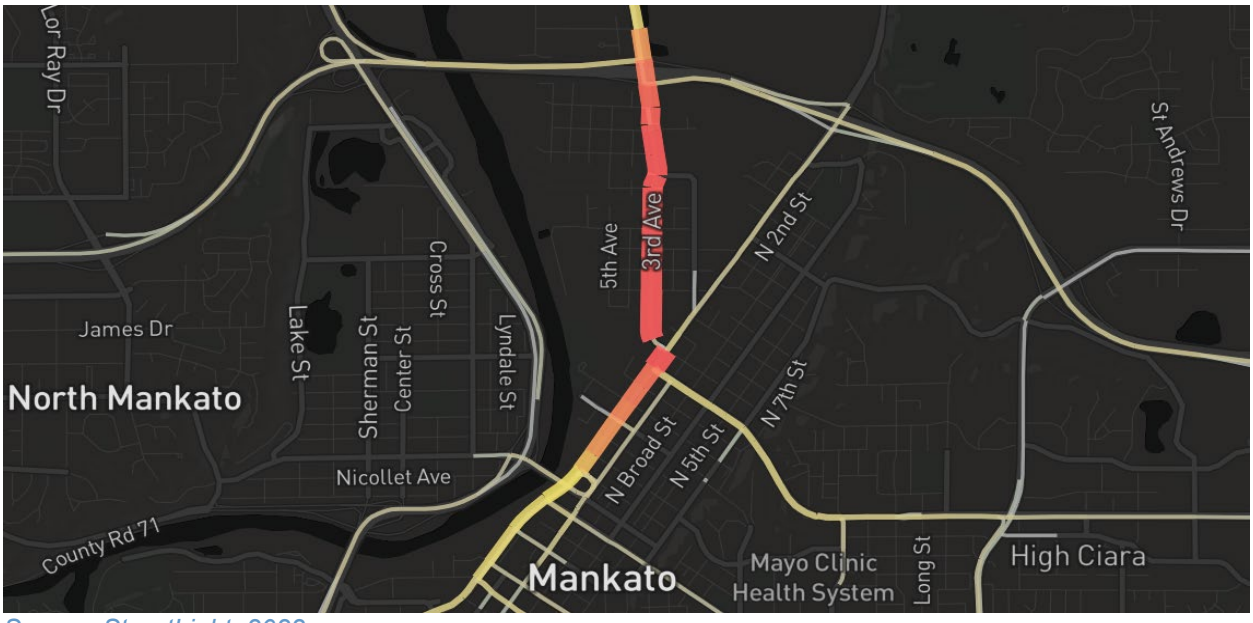
Truck Routing

How trucks use CSAH 5 (Third Avenue) to access destinations to the north and south of the study area was analyzed using StreetLight. The year 2019 was aggregated and only weekday routing was considered. For trucks traveling north toward Kasota or south to downtown Mankato, CSAH 5 (Third Avenue) is heavily used as a key connector as opposed to other roadways such as TH 22 and Riverfront Drive, respectively (Figure 17 and Figure 18).

FIGURE 17: TRUCK ROUTING TO KASOTA

Source: StreetLight, 2022

FIGURE 18: TRUCK ROUTING TO DOWNTOWN MANKATO



Source: StreetLight, 2022

Truck Destinations

The CSAH 5 (Third Avenue) corridor serves as a major origination point for interregional commercial freight traffic. To better understand where trucks a destined along CSAH 5 (Third Avenue), Traffic Analysis Zone (TAZ) boundaries were analyzed to understand demand by destination area. Approximately, 90 percent of trucks traveling to the study area utilize US 14 to arrive at the destination. The areas with the most truck activity include businesses south of Summit Avenue along both sides of CSAH 5 (Third Avenue), the ADM facility south of US 14 along the east side of CSAH 5 (Third Avenue), and the superblock that includes Kato Manufacturing (Figure 19).

FIGURE 19: HEAVY AND MEDIUM TRUCK DESTINATIONS

Source: StreetLight, 2022

Trucks Usage by Intersection

The use of corridor intersections by freight traffic varies widely.

The below list displays the top seven CSAH 5 (Third Avenue) intersections by freight truck usage which demonstrates key locations where trucks are originating and destined to.

- Lundin Boulevard: 52 percent
- Summit Avenue: 19
- Cleveland Street: 6 percent
- Lind Street: 6 percent
- CSAH 26 (Industrial Road): 3 percent
- 1st Avenue: 3 percent
- Lind Street East: 6 percent
- CSAH 26 (Industrial Road) East: 3 percent
- 1st Avenue East: 3 percent

Engagement Summary – Round 1

Online Content

The Study included both digital and in-person engagement methods. Engagement included a website (countyroad5study.com) where project information, routine updates, and public engagement opportunities were shared. During Round 1, stakeholders were introduced to the study and encouraged to connect with the study team via email, phone, U.S. mail, or in-person.

Focus Groups

On October 27, 2022, the study team led back-to-back stakeholder focus group meetings consisting of targeted business and property owners along the corridor. The focus groups were held along the corridor at the IUOE 49ers Hall at 308 Lundin Boulevard in Mankato. Project team members introduced the study and facilitated group discussion of corridor challenges, issues, opportunities, and future planning efforts. Major themes of the focus group included:

All four US 14 ramp intersections experience delays, most severely at the eastbound exit onto CSAH 5. Includes both rail and traffic delays.

The Pine Street intersection experiences sightline challenges, as well as challenges with heavy vehicles entering the CSAH 5 (Third Ave) traffic stream.

Long delays at rail crossings are a recurring source of concern regarding travel time reliability, business operation, and emergency response.

Source: SRF Consulting Group, September 27, 2022

Issues Identification and Need Summary

The corridor is important for both local and regional travel by a variety of transportation modes. Key elements from the corridor review process informed the issue identification and summary of needs that are categorized below. Corresponding mitigation strategies are highlighted and were used to inform the alternatives development and alternatives evaluation phases of the Study.

	Identified Issue	Potential Mitigation Strategies
Safety	Crashes clustered around four main corridor areas: North Riverfront Drive to Pine Street, Cleveland Street to Summit Avenue, CSAH 26 (Industrial Road) to 231st Lane, and the northern railroad crossing to the Blue Earth County line	Consider access consolidation. See Study Recommendations section for additional detail
	Northern segment reported crashes due to ice and snow on road surface	Consider enhanced winter maintenance and/or explore opportunities for more direct sunlight on road surface
	North Riverfront Drive to Lind Street segment reported crashes above the Critical Crash Index (1.98)	Consider access consolidation. See Study Recommendations section for additional detail
	US 14 EB ramp intersection above Critical Crash Index (1.67)	Consider intersection control change as discussed in ICE report (see Appendix B)
Traffic Operations	Infrequent delays due to trains crossing. There were four outlier trains that lasted 36 minutes, 37 minutes, and two that were just under two hours	Consider alternate multimodal traffic routes and/or grade separation
Access	Numerous sections have greater access frequency than recommended	Consider access consolidation and/or adding restriction on turning movements
Freight Mobility	High number of freight-centric businesses dependent on corridor, particularly for access to US 14	Develop alternatives that consider freight needs
Bicycle / Pedestrian	Lack of bicycle and pedestrian infrastructure along and across corridor	Consider spot improvements and/or incorporate bike/ped needs into identified alternatives

Chapter 3: Alternatives Development and Evaluation

Alternatives Development

Alternatives for CSAH 5 (Third Avenue) were developed to achieve desired goals derived from study partners and stakeholder feedback. These alternatives were then discussed with agency staff and elected officials, stakeholder representatives, and community members to discuss preferences and feedback. This section details the alternatives developed, the evaluation process, and final recommendations. Input was gathered from the MAPO, City of Mankato, Blue Earth County, Lime Township, and community stakeholders throughout the alternative development and evaluation process.

The following roadway alternatives were considered and evaluated quantitatively and qualitatively. The evaluation process included:

- Review of issues and goals identified by stakeholders and study partners.
- Consideration of current and existing traffic demand conditions.
- Evaluation of roadway alternatives.
- Presentation of alternatives to the community, industry stakeholders, the Mankato City Council, the Blue Earth County Board, the Lime Township Board, the MAPO Technical Advisory Committee (TAC), and the MAPO Policy Board for input on preference and priority.
- Evaluation by the PMT of input collected and confirmation of recommended alternatives.

Goals

Considering the issues and needs identified as part of the existing conditions analysis, the study team identified a set of goals. These goals were used to guide the development and evaluation of the corridor alternatives. The following goals were identified:

1. Increase safety for both motorized and nonmotorized users.
2. Improve overall traffic operations through efficient vehicle mobility and access management.
3. Ensure cost effective, fiscally responsible alternatives are produced.
4. Accommodate the corridor's significance to local and regional highway and rail freight movement and operations.
5. Provide a unified vision for corridor improvements that is supported by local government partners, residents, and businesses.
6. Implement a project that provides equitable benefit with consideration to environmental justice and diverse populations.
7. Improve bicycle and pedestrian connectivity along and across the corridor.

Segment Alternatives

The 4.8-mile-long corridor was broken into six segments based on roadway context and available right-of-way.

- **Segment 1:** Riverfront Drive to 275' North of Brooks Street
- **Segment 2:** 275' North of Brooks Street to Lind Street
- **Segment 3:** Lind Street to ~160 feet North of Lundin Boulevard
- **Segment 4:** ~160 feet North of Lundin Boulevard to ~240 feet South of Kingswood Drive
- **Segment 5:** ~240 feet South of Kingswood Drive to CSAH 26 (Industrial Road)
- **Segment 6:** CSAH 26 (Industrial Road) to Blue Earth County line

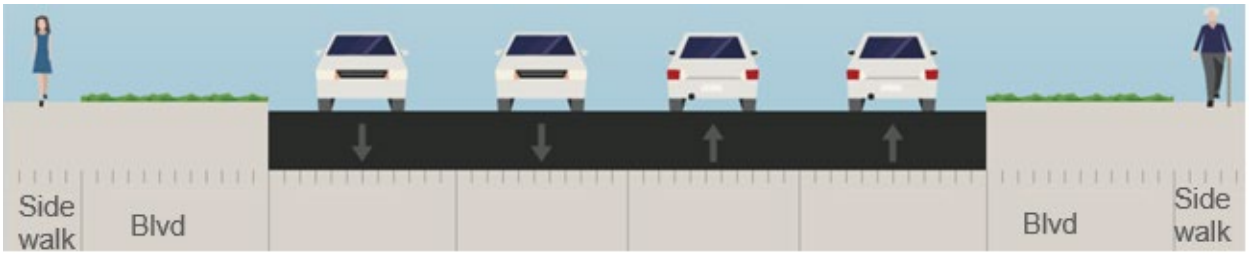
For planning-level purposes, segments were combined based on project implementation. A range of alternatives were developed and evaluated for consideration for the future corridor reconstruction. The alternatives developed and evaluated are as follows:

FIGURE 20: SEGMENT MAP

Segments 1 and 2: Riverfront Drive to Lind Street

Alternative A: No Build (Four- lane undivided)

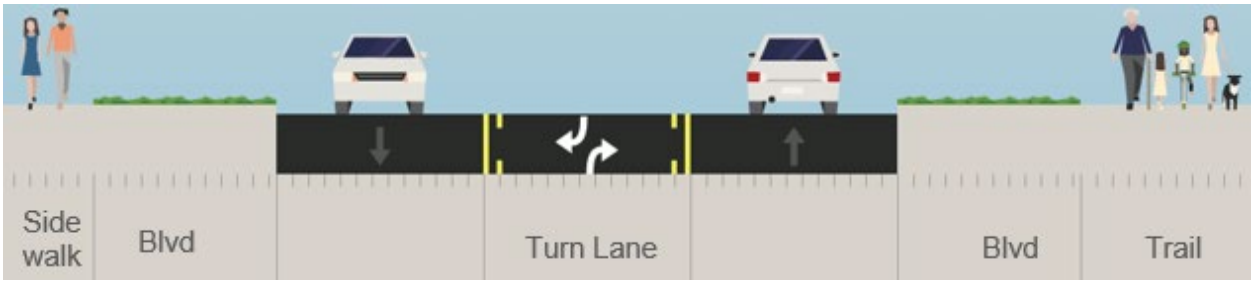
This alternative assumes an "as-is" reconstruction of existing conditions within the segments as they are today. It should be noted that the graphics below are generalized for the segments. The sidewalk adjacent to the roadway is not continuous. The gaps in the sidewalk are discussed later in this document. Note there is no sidewalk along CSAH 5 between Pine Street and Lind Street.



Source: Streetmix, 2023

Alternative B: Three-lane (Two-lane with two-way center-left turn lane (TWCLT))

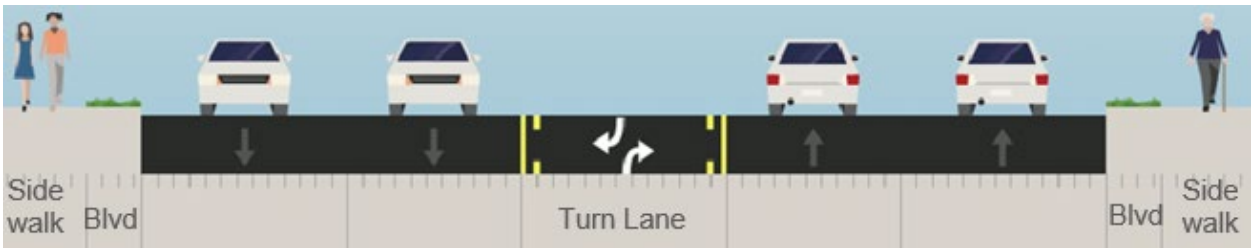
This alternative proposes reducing the four-lane cross-section to a three-lane with a center turn lane to facilitate both righthand and lefthand turns.



Source: Streetmix, 2023

Alternative C: Five-lane (Four-lane with two-way center-left turn lane (TWCLT))

This alternative proposes expanding the existing four-lane section to five lanes, with an added center left turn lane to facilitate both righthand and lefthand turns.

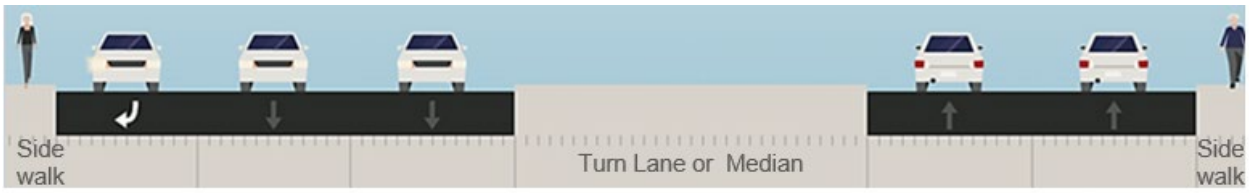


Source: Streetmix, 2023

Segment 3: Lind Street to ~160 feet North of Lundin Boulevard (150' ROW)

Alternative 3A: No Build (Four-lane divided, median varies in width)

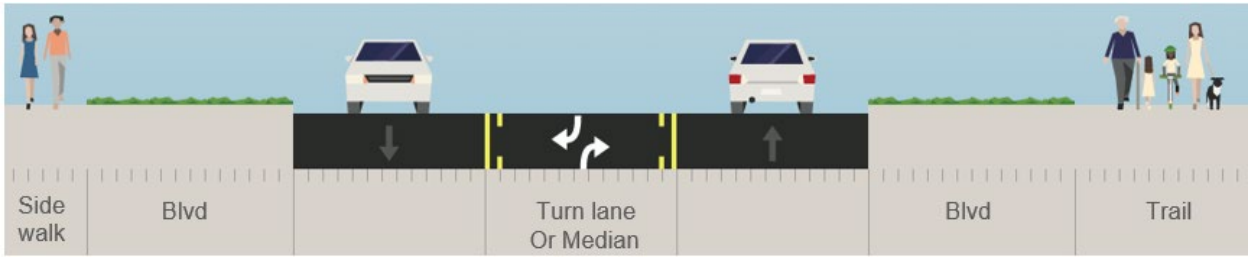
This alternative assumes an "as-is" reconstruction of existing conditions within this segment as they are today.



Source: Streetmix, 2023

Alternative 3B: Three-lane (Two-lane with two-way center-left turn lane (TWCLT))

This alternative proposes reducing the existing five-lane cross-section to a three-lane with a center turn lane to facilitate both righthand and lefthand turns.

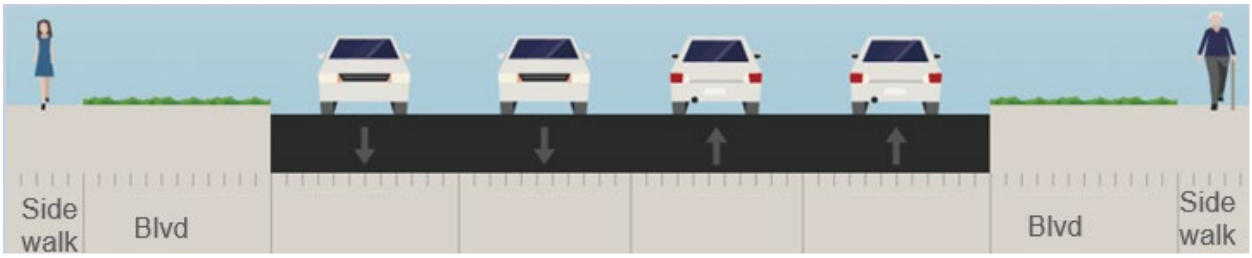


Source: Streetmix, 2023

Segments 4 and 5: ~160 feet North of Lundin Boulevard to CSAH 26

Alternative A: No Build (Four-lane undivided)

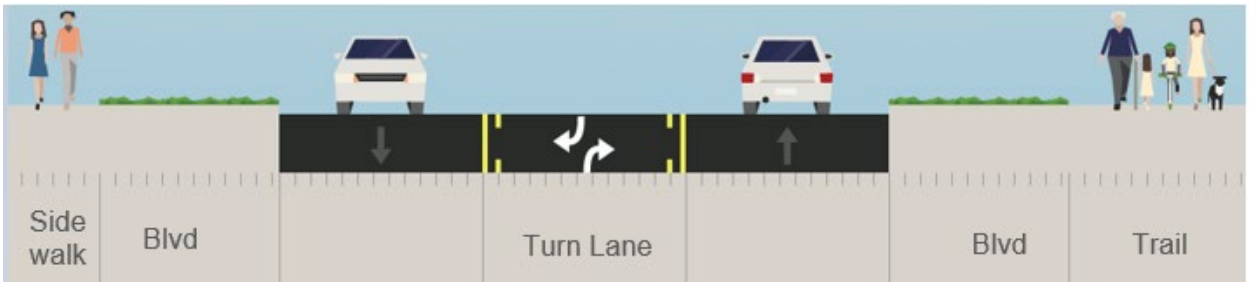
This alternative assumes an "as-is" reconstruction of existing conditions within the segments as they are today. The sidewalk adjacent to the roadway is not continuous. The gaps in the sidewalk are discussed later in this document. Note there is no sidewalk on the west side from just north of Lundin Blvd to Kingswood Drive and no sidewalk on both sides from Kingswood Drive to CSAH 26.



Source: Streetmix, 2023

Alternative B: Three-lane (Two- lane with two-way center-left turn lane (TWCLT))

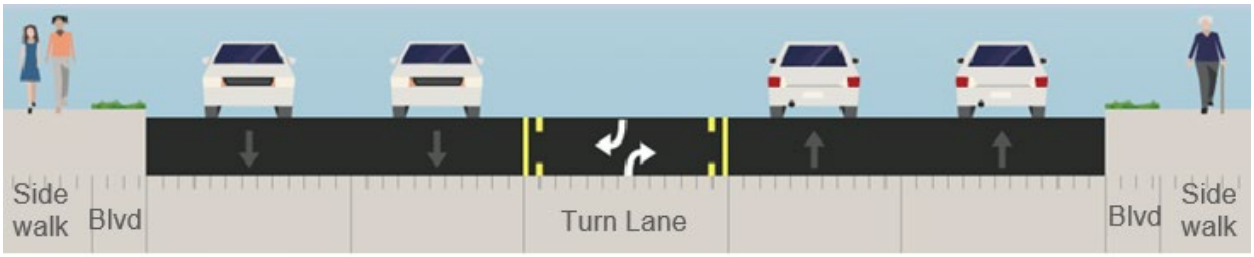
This alternative proposes reducing the four-lane cross-section to a three-lane with a center turn lane to facilitate both righthand and lefthand turns.



Source: Streetmix, 2023

Alternative C: Five-lane (Four-lane with two-way center-left turn lane (TWCLT))

This alternative proposes expanding the existing four-lane section to five lanes, with an added center left turn lane to facilitate both righthand and lefthand turns.

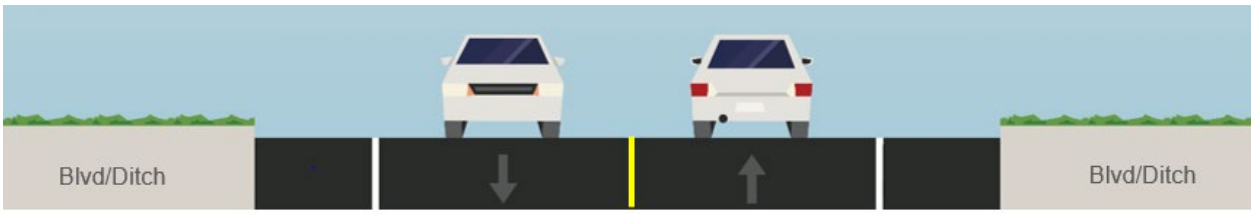


Source: Streetmix, 2023

Segment 6: CSAH 26 (Industrial Road) to Blue Earth County Line (100' ROW)

Alternative 6A: No Build (Two-lane w/ passing lanes at intersections)

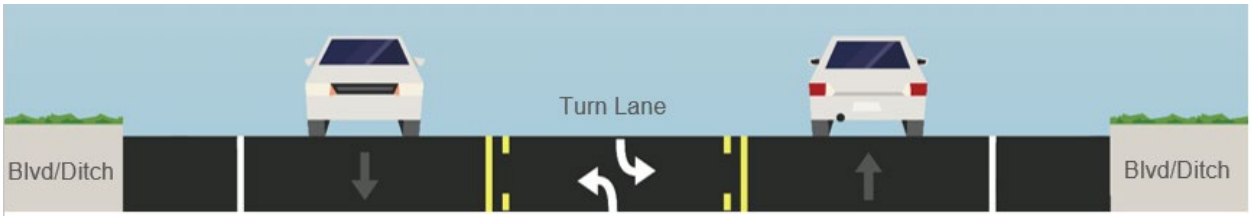
This alternative assumes an "as-is" reconstruction of existing conditions within this segment as they are today.



Source: Streetmix, 2023

Alternative 6B: Three-lane (Two- lane with two-way center-left turn lane (TWCLT))

This alternative proposes expanding the existing two-lane cross-section to a three-lane with a center turn lane to facilitate both righthand and lefthand turns.



Source: Streetmix, 2023

Alternatives Evaluation

The study team screen alternatives against their ability to:

- Reduce the number and severity of crashes at identified segments and intersections.
- Remain compliant with access spacing guidelines.
- Service existing and future multimodal traffic needs, including accommodation of future land use changes in the Jefferson Quarry.
- Reduce congestion on/off US 14.
- Provides reasonable access to and from local communities.
- Minimizes property impacts.
- Encourage economic development.
- Minimize system connectivity disruptions.
- Maintain or improve heavy goods movement.

Evaluation Criteria

The following criteria were used to measure each alternative and identify a locally supported option.

- **Traffic Operations:** To what extent is the alternative expected to improve or preserve existing and future multimodal traffic operations along and across CSAH 5 (Third Avenue), including consideration of the US 14 interchange.
- **Safety:** To what extent is the alternative expected to improve multimodal safety along and across the corridor.
- **Maintenance:** To what extent is the alternative fiscally responsible regarding short-and long-term maintenance and preservation costs.
- **Ped / Bike:** To what extent does the alternative improve the safety, comfort, and connectivity of walkers, rollers, and bicyclists.
- **Freight Impacts:** To what extent is the alternative expected to improve or preserve existing and future freight movements, access, and travel times.
- **Planning Level Cost Estimate**: What is the estimated planning level improvement cost.

Segment Evaluation

Each of the alternatives were evaluated against the criteria shown above. The results are discussed in the sections below.

Segment 1: Riverfront Drive to 275' North of Brooks Street

The results of the alternatives evaluation are shown in Table 14. Below are some considerations for each alternative. Planning-level costs were also developed for each alternative and do not account for right-of-way costs.

Alternative 1A: No Build

Opportunities:

- Maintains existing roadway capacity which will adequately be able to accommodate future traffic volumes.

Challenges:

- Maintains existing lane configuration which is unsafe for turning vehicles.
- Provides minimum pedestrian / bicycle infrastructure.
- Documented safety issues. Potential right-of-way impacts if turn lanes are added at intersections or access points.

Alternative 1B: Three-lane

Opportunities:

- Provides space for left-turning vehicles which would improve safety at intersections.
- Expands pedestrian / bicycle infrastructure.

Challenges:

- Reduces traffic volume capacity. The Volume to Capacity (V/C) ratio considering the 2045 forecasted traffic volumes would be 0.38-0.45 which means the roadway would adequately be able to accommodate future traffic volumes.

Alternative 1C: Five-lane

Opportunities:

- Expands traffic volume capacity.
- Provides space for left-turning vehicles which would improve safety at intersections.

Challenges:

- Higher maintenance costs.
- Wider roadway incentivizes speeding.
- Reduces safety and comfort of multimodal users as there is not adequate space for a larger boulevard or wider trail.

TABLE 14: SEGMENT 1 ALTERNATIVES EVALUATION

Alternative	Traffic Operations	Safety	Maintenance	Ped / Bike	Freight	Cost
A Existing						$4.8M
B Three-Lane						$4.4M
C Five-Lane						$6M

= positive impact, = neutral impact, = negative impact Source: SRF Consulting Group, 2022

Segment 2: 275' North of Brooks Street to Lind Street

The results of the alternatives evaluation are shown in Table 15. Below are some considerations for each alternative. Planning-level costs were also developed for each alternative and do not account for right-of-way costs.

Alternative 2A: No Build

Opportunities:

- Maintains existing roadway capacity which will adequately be able to accommodate future traffic volumes.

Challenges:

- Maintains existing lane configuration which is unsafe for turning vehicles.
- Provides minimum pedestrian / bicycle infrastructure.
- Documented safety issues. Potential right-of-way impacts if turn lanes are added at intersections or access points.

Alternative 2B: Three-lane

Opportunities:

- Provides space for left-turning vehicles which would improve safety at intersections.
- Expands pedestrian / bicycle infrastructure.

Challenges:

- Reduces traffic volume capacity. The V/C ratio considering the 2045 forecasted traffic volumes would be 0.38-0.45 which means the roadway would adequately be able to accommodate future traffic volumes.

Alternative 2C: Five-lane

Opportunities:

- Expands traffic volume capacity.
- Provides space for left-turning vehicles which would improve safety at intersections.

Challenges:

- Higher maintenance costs.
- Wider roadway incentivizes speeding.
- Reduces safety and comfort of multimodal users as there is not adequate space for a larger boulevard or wider trail.

TABLE 15: SEGMENT 2 ALTERNATIVES EVALUATION

Alternative	Traffic Operations	Safety	Maintenance	Ped / Bike	Freight	Cost
A Existing	●	●	●	●	●	$1.1M
B Three-Lane	●	●	●	●	●	$1.2M
C Five-Lane	●	●	●	●	●	$1.4M

● = positive impact, ● = neutral impact, ● = negative impact Source: SRF Consulting Group, 2022

Segment 3: Lind Street to ~160 feet North of Lundin Boulevard

The results of the alternatives evaluation are shown in Table 16. Below are some considerations for each alternative. Planning-level costs were also developed for each alternative and do not account for right-of-way costs.

Alternative 3A: No Build

Opportunities:

- Provides space for left-turning vehicles which would improve safety at intersections.
- Maintains existing roadway capacity which will adequately be able to accommodate future traffic volumes.

Challenges:

- Provides minimum pedestrian / bicycle infrastructure.
- Documented safety issues.

Alternative 3B: Three-lane

Opportunities:

- Provides space for left-turning vehicles which would improve safety at intersections.
- Expands pedestrian / bicycle infrastructure.

Challenges:

- Reduces traffic volume capacity. The V/C ratio considering the 2045 forecasted traffic volumes would be 0.32-0.93 which means the roadway would be nearing capacity. It should be noted that traffic volumes have been declining in recent years with a reduction of 5% between 2018 and 2023.

TABLE 16: SEGMENT 3 ALTERNATIVES EVALUATION

Alternative	Traffic Operations	Safety	Maintenance	Ped / Bike	Freight	Cost.
A Existing	●	●	●	●	●	$4.5M
B Three-Lane	●	●	●	●	●	$3.3M

● = positive impact, ● = neutral impact, ● = negative impact Source: SRF Consulting Group, 2022

Intersection Control Evaluation

An intersection control evaluation (ICE) report was completed for the US 14 ramps (see Appendix B). The existing and future traffic volumes were analyzed to determine the intersection control best suited to meet current and future needs. Alternatives considered as part of the ICE report included the existing side-street stop control, all-way stop control, traffic signal control, and single lane roundabouts. The final recommendation of the ICE report is to leave the intersection control as is (side-street stop control) and continue to monitor traffic operations and safety in the future. If there is a change in either, then intersection control should be evaluated again.

Segment 4: ~160 feet North of Lundin Boulevard to ~240 feet South of Kingswood Drive

The results of the alternatives evaluation are shown in Table 17. Below are some considerations for each alternative. Planning-level costs were also developed for each alternative and do not account for right-of-way costs.

Alternative 4A: No Build

Opportunities:

- Maintains existing roadway capacity which will adequately be able to accommodate future traffic volumes.

Challenges:

- Maintains existing lane configuration which is unsafe for turning vehicles.
- Provides minimum ped / bike infrastructure.
- Documented safety issues. Potential right-of-way impacts if turn lanes are added at intersections or access points.

Alternative 4B: Three-lane

Opportunities:

- Provides space for left-turning vehicles which would improve safety at intersections.
- Expands pedestrian / bicycle infrastructure.

Challenges:

- Reduces traffic volume capacity. The Volume to Capacity (V/C) ratio considering the 2045 forecasted traffic volumes would be 0.53 which means the roadway would adequately be able to accommodate future traffic volumes.

Alternative 4C: Five-lane

Opportunities:

- Expands traffic volume capacity.
- Provides space for left-turning vehicles which would improve safety at intersections.

Challenges:

- Higher maintenance costs.
- Wider roadway incentivizes speeding.
- Reduces safety and comfort of multimodal users as there is not adequate space for a larger boulevard or wider trail.

TABLE 17: SEGMENT 4 ALTERNATIVES EVALUATION

Alternative	Traffic Operations	Safety	Maintenance	Ped / Bike	Freight	Cost
A Existing	●	●	●	●	●	$2.3M
B Three-Lane	●	●	●	●	●	$2.1M
C Five-Lane	●	●	●	●	●	$2.4M

● = positive impact, ● = neutral impact, ● = negative impact Source: SRF Consulting Group, 2022

Segment 5: ~240 feet South of Kingswood Drive to CSAH 26 (Industrial Road)

The results of the alternatives evaluation are shown in Table 18. Below are some considerations for each alternative. Planning-level costs were also developed for each alternative and do not account for right-of-way costs.

Alternative 5A: No Build

Opportunities:

- Maintains existing roadway capacity which will adequately be able to accommodate future traffic volumes.

Challenges:

- Maintains existing lane configuration which is unsafe for turning vehicles.
- Provides minimum ped / bike infrastructure.
- Documented safety issues. Potential right-of-way impacts if turn lanes are added at intersections or access points.

Alternative 5B: Three-lane

Opportunities:

- Provides space for left-turning vehicles which would improve safety at intersections.
- Expands pedestrian / bicycle infrastructure.

Challenges:

- Reduces traffic volume capacity. The Volume to Capacity (V/C) ratio considering the 2045 forecasted traffic volumes would be 0.53 which means the roadway would adequately be able to accommodate future traffic volumes.

Alternative 5C: Five-lane

Opportunities:

- Expands traffic volume capacity.
- Provides space for left-turning vehicles which would improve safety at intersections.

Challenges:

- Higher maintenance costs.
- Wider roadway incentivizes speeding.
- Reduces safety and comfort of multimodal users as there is not adequate space for a larger boulevard or wider trail.

TABLE 18. SEGMENT 5 ALTERNATIVES EVALUATION

Alternative	Traffic Operations	Safety	Maintenance	Ped / Bike	Freight	Cost
A Existing	●	●	●	●	●	$1.7M
B Three-Lane	●	●	●	●	●	$1.8M
C Five-Lane	●	●	●	●	●	$2.4M

● = positive impact, ● = neutral impact, ● = negative impact Source: SRF Consulting Group, 2022

Segment 6: CSAH 26 (Industrial Road) to Blue Earth County Line

The results of the alternatives evaluation are shown in Table 19 below. Below are some considerations for each alternative. Planning-level costs were also developed for each alternative and do not account for right-of-way costs.

Alternative 6A: No Build

Opportunities:

- Maintains existing roadway capacity which will adequately be able to accommodate future traffic volumes.

Challenges:

- Maintains existing lane configuration which is unsafe for turning vehicles.
- Documented safety issues. Potential right-of-way impacts if turn lanes are added at intersections or access points.

Alternative 6B: Three-lane

Opportunities:

- Expands traffic volume capacity.
- Provides space for left-turning vehicles which would improve safety at intersections.

Challenges:

- Higher maintenance costs.
- Additional right-of-way may be needed which would negatively impact adjacent property owners.

TABLE 19. SEGMENT 6 ALTERNATIVES EVALUATION

Alternative	Traffic Operations	Safety	Maintenance	Ped / Bike	Freight	Cost.
A Existing	●	●	●	●	●	$11.8M
B Three-Lane	●	●	●	●	●	$13.4M

● = positive impact, ● = neutral impact, ● = negative impact Source: SRF Consulting Group, 2022

Pedestrian & Bicycle Considerations

The existing pedestrian and bicycle infrastructure were analyzed. Proposed multimodal improvements in various agency plans, including the City of Mankato Complete Streets Plan and Policy were also reviewed. Recommendations from these plans were evaluated against available space and public right-of-way to develop an analysis of potential pedestrian and bicyclist infrastructure improvements. The type and extent of possible multimodal improvements varied depending on a given corridor segment. An analysis of sidewalk connectivity and feasibility considerations is below:

Sidewalk Connectivity

There is an opportunity to add sidewalks to fill existing gaps for people walking along CSAH 5 (Third Avenue). Gaps currently exist in the following segments:

- Pine Street to Cleveland Street (both sides)
- Just north of Lundin Blvd to Kingswood Drive (west side)
- Kingswood Drive to CSAH 26 (Industrial Road) (both sides)

Additionally, there is opportunity to ensure the existing sidewalk is compliant with the Americans with Disabilities Act (ADA). Where feasible, there are opportunities to add boulevard space to separate the sidewalk from the roadway to create a more comfortable environment for walking. For example, this would include the existing section from Cleveland Street to Summit Avenue.

Sidewalk Feasibility Considerations

Pine Street to Cleveland Street

This entire subsection is anticipated to accommodate a five-foot sidewalk within the existing right-of-way with varying boulevard widths (minimum four feet) except the locations described below (see Figure 21).

- Brooks Street to 1st Avenue (east side). There is currently 80 feet of right-of-way total and 15 feet from the back of the curb on the east side to the right-of-way line. In this section there could be a five-foot sidewalk accommodated along the back of the curb, with possible construction outside the right-of-way in adjacent parking lots.
- 1st Avenue to Harper Street (east side). There are 66 feet of right-of-way total and five-to ten-feet between the back of the curb on the east side and right-of-way line. In this section there could be a five-foot sidewalk along the back of the curb, with possible construction outside the right-of-way in adjacent parking lots.

FIGURE 21: SIDEWALK GAPS PINE TO CLEVELAND

Source: Google Earth, 2022

- Harper Street to Lind Street – (east side). There is currently 66 feet right-of-way total and seven feet between the back of the curb on the east side and right-of-way line. In this section there could be a five-foot sidewalk along the back of the curb, with possible construction outside the right-of-way in adjacent parking lots.

Adjacent land use on the east side is industrial and the demand for pedestrian facilities is likely low so therefore sidewalk is only recommended on the west side where it can be accommodated within the existing right-of-way. Sidewalk design in this section would need to account for the crossing arms and surfacing across the tracks at the railroad crossing between Pine Street and Brooks Street.

To accommodate this infrastructure, local agencies should coordinate to determine the viability of relocating hydrants, streetlights, power poles, mailboxes, and signs along roadway.

Driveway south of Summit Avenue to Kingswood Drive (west side only)

There is an opportunity to add sidewalks to fill existing gaps. Gaps currently exist in the following segments (see Figure 22):

- Driveway south of Summit to driveway south of Kingswood. In this segment there is 110 – 120 feet of right-of-way, 13 – 25 feet from the back of the curb to right-of-way. This section could accommodate a five-foot sidewalk with a boulevard.
- Driveway just south of Kingswood to Kingswood. There is 90 feet of right-of-way. There are five feet between the back of the curb and the right-of-way. This section could potentially accommodate a five-foot sidewalk on the back of the curb.

To accommodate this infrastructure, local agencies should coordinate to determine the viability of relocating hydrants and signs along the roadway. Additionally, adjacent land use on the east side is industrial and the demand for pedestrian facilities is likely low so therefore sidewalk is not recommended on the east side unless there is a change in land use.

FIGURE 22: SIDEWALK GAPS SUMMIT TO KINGSWOOD

Source: Google Earth, 2022

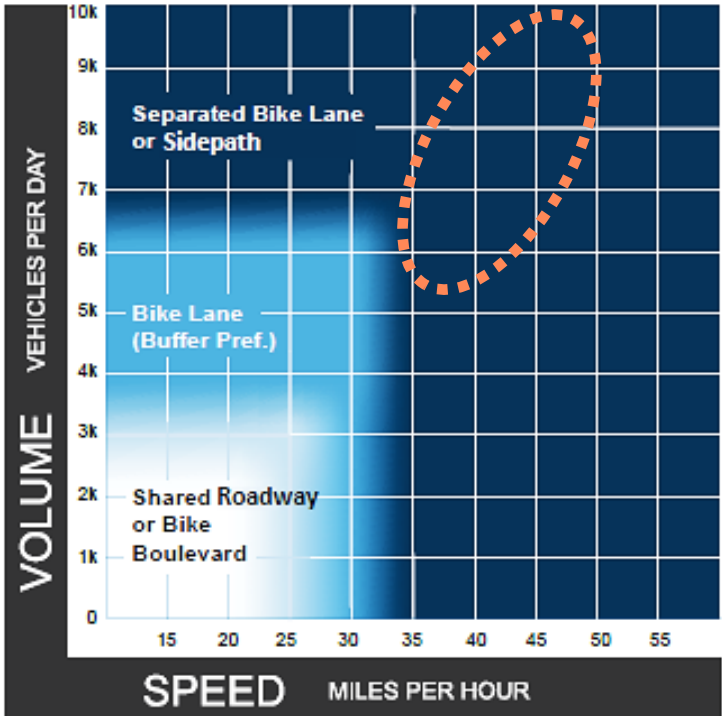
Enhanced Bicycle Connectivity

Existing and planned infrastructure were reviewed, along with results of community engagement, to understand current community desires and feasibility of improved bicycle connectivity. Bicycle infrastructure and overall network connectivity were considered, as well as the potential for the addition of shared-use paths along one or both sides of CSAH 5 (Third Avenue) from Riverfront Drive to CSAH 26 (Industrial Road). This aligns with the City of Mankato's Complete Streets Plan.

MnDOT provides guidance for bicycle and pedestrian facilities. This guidance is based on a roadway's traffic volumes and traffic speeds. The study team considered this guidance when discussing changes to the existing bicycle and pedestrian facilities along CSAH 5 (Third Avenue). This guidance applies to the potential addition of a shared-use path along one side of CSAH 5 (Third Avenue) from CSAH 26

(Industrial Road) to 238th Lane to provide multimodal connectivity to existing residences and future development planned for the quarries (see
Figure 23). A shared use path is recommended based on MnDOT Bicycle and Facility Design Guidance.

FIGURE 23. MNDOT BICYCLE FACILITY DESIGN GUIDANCE



Source: MnDOT Bicycle Facility Design Guidance. Note: Illustration is based upon volume and speed, a shared-use path is appropriate for bicycle connections.

Enhanced Pedestrian and Bicycle Crossing(s)

To help gain an understanding of bicycle and pedestrian movements, a pedestrian demand analysis was performed at each intersection using StreetLight. This analysis generated the following conclusions:

- South of US 14 - Crossing demand is highest in the Germania Park neighborhood south of US 14. In this area, the demand is evident at the crossings of Maxfield Street (highest), Spruce Street, and Chestnut Street.
- North of US 14 - North of US 14, the highest demand is at Summit Avenue.
- A bicyclist O-D analysis indicates that crossing demand is highest at the uncontrolled crossing immediately north of US 14 for the regional trail.

Additionally, it is recommended that daily pedestrian and bicycle traffic data be collected to determine crossing demand. A marked crosswalk should be considered where sidewalk gaps exist to maintain a continuous route for bicycles and pedestrians. For four-lane undivided roadways, an enhanced crossing with markings and a rectangular rapid flashing beacon (RRFB) is recommended per FHWA guidance.

Additional Considerations

Localized Improvements

Several individual localized improvements which may be brought forward for future consideration based on changing traffic patterns, freight movements, or funding opportunities were also discussed. These localized improvements include:

- Potential traffic control change at Cleveland due to Jefferson Quarry redevelopment. Additional traffic evaluation will be needed to determine appropriate recommendations, if any.
- Potential traffic control change at the US 14 ramps. As noted above, safety and operations at these intersections should continue to be monitored in the future as traffic volumes in recent years have been declining. The projected growth shown in the MAPO LRTP conflicts with recent counts collected and should be revisited when the LRTP is updated in the coming years.
- Adding center-left turn lanes in key segments. There is potential for right-of-way impacts with the addition of turn lanes at intersections so that will need to be weighed against the safety and operation benefits. The table on the following page from the AASHTO design guidelines details the guidance for when a left-turn lane should be considered at an intersection. Currently none of the intersections analyzed along CSAH 5 warrant adding additional left-turn lanes. It should be noted that peak hour traffic count data was only collected the intersections of North Riverfront Drive, Pine Street, Cleveland Street, US 14 Eastbound Ramp, US 14 Westbound Ramp, Summit Avenue, CSAH 26 (Industrial Blvd), 231st Lane, 274th Lane, and Lime Valley Road. A detailed crash analysis and operations analysis was therefore only completed at these 10 intersections. Additional data collection will need to occur at the other intersections along CSAH 5 in order to determine if turn lanes are warranted.
- Access consolidation along the corridor. As noted in the existing conditions analysis, many of the segments along CSAH 5 (Third Avenue) do not meet access spacing requirements. Additional discussion with property owners will need to occur to determine the potential for relocation, consolidation or closure.

Table 9-24. Suggested Left-Turn Lane Guidelines Based on Results from Benefit–Cost Evaluations for Unsignalized Intersections on Arterials in Urban Areas (*16*)

Left-Turn Lane Peak-Hour Volume (veh/h)	Three-Leg Intersection, Major-Road Volume (veh/h/ln) that Warrants a Left-Turn Lane	Four-Leg Intersection, Major-Road Volume (veh/h/ln) that Warrants a Left-Turn Lane
5	450	50
10	300	50
15	250	50
20	200	50
25	200	50
30	150	50
35	150	50
40	150	50
45	150	< 50
50 or More	100	< 50

Note: These guidelines apply where the major road is uncontrolled and the minor-road approaches are stop- or yield-controlled. Both the left-turn peak-hour volume and the major-road volume warrants should be met as shown in Figure 9-35.

Rail Crossings

There is a range of options available for local agencies to consider, with the recognition that railroad operators such as Union Pacific Railroad are granted a significant amount of autonomy by federal regulations resulting in little to no local agency authority over the use and operation of rail crossings.

Southern Railroad Crossing

Source: Google Streetview, 2022

Alternatives

- The recommendations provided in the Mankato Quiet Zone Assessment and Implementation Plan (2021) were reviewed. The Mankato Quiet Zone Assessment advanced two options for future consideration: Option 1 for median improvements (est. $119,000), and Option 2 for installation of a four-quadrant gate (est. $694,000).
- The potential grade for separation of CSAH 5 (Third Avenue) at the rail crossing was also discussed. Factors impacting this alternative include the implementation cost estimate of between $20 million and $50 million and potential impacts to adjacent private property.
- An Advance Warning System Feasibility Study was also discussed. This potential study would determine the viability and costs associated with a system to notify travelers if the crossing was blocked by a passing train.

Northern Railroad Crossing

Source: Google Streetview, 2022

Alternatives

- The potential grade for separation of CSAH 5 (Third Avenue) at the rail crossing was discussed. Factors impacting this alternative include the implementation cost estimate of between $20 million and $50 million and potential impacts to adjacent private property.
- An Advance Warning System Feasibility Study was also discussed. This potential study would determine the viability and costs associated with a system to notify travelers if the crossing was blocked by a passing train.

Third Avenue Realignment

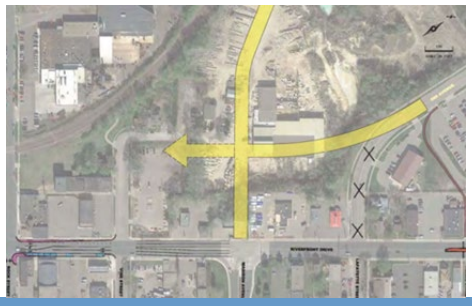
The Riverfront Drive Corridor Study (2017) identified four realignment options for the Madison Avenue and CSAH 5 (Third Avenue) intersection and adjacent area. Two of the options were supported by Blue Earth County. Potential changes to this intersection are opportunity driven and will be impacted by the future decisions of private landowners, available funding sources, and community preferences. The four options are described on the next page.

Option 1

Option 1 realigns Third Avenue to tie into Madison Avenue at Riverfront Drive. This would create a fourth leg on the Madison Avenue/Riverfront Drive intersection. This option was supported by Blue Earth County as a viable option for future consideration as it maintains a direct and free flow condition on CSAH 5 (Third Avenue) to Riverfront Drive.

Option 2

Option 2 includes extending Madison Avenue and tying Third Avenue into that extension at a new intersection. The existing CSAH 5 (Third Avenue) connection to Riverfront Drive would be closed. This option was supported by Blue Earth County as a viable option for future consideration.



Option 3

Option 3 includes the extension of Madison Avenue into the mine property and the extension of Adams Street to connect into the Madison Avenue extension. CSAH 5 (Third Avenue) would tie to the Adams Street extension. The county state aid designation of CSAH 5 (Third Avenue) would need to continue onto Adams Street to Riverfront Drive. Blue Earth County was not supportive of this option as it does not provide a direct connection for CSAH 5 (Third Avenue) to Riverfront Drive.

Option 4

Option 4 was considered to address the operational and safety issues of these two intersections if a mine redevelopment project does not happen. This option reduces the CSAH 5 (Third Avenue)/Riverfront Drive access to a right-in/right-out movement. The left-turns in and out of this location would need to be relocated to a full access further north on Riverfront Drive such as Maxfield Street or Chestnut Street. This option was not supported by Blue Earth County as it would require a major shift in traffic patterns for their county road and the industrial/freight users along CSAH 5 (Third Avenue).

Engagement Summary – Round 2

Study alternatives and evaluative criteria were presented to a range of agency, industry, and public stakeholders. Round 2 engagement efforts included:

Online Content

Public engagement included both digital and in-person engagement methods. The project website was updated with a survey where respondents were asked to rank their level of support for various alternatives.

Focus Group

On March 16, 2023, the study team led a third stakeholder focus group meeting consisting of targeted business and property owners along the corridor. The focus group was held along the corridor at the IUOE 49ers Hall at 308 Lundin Boulevard in Mankato. Project team members delivered a presentation to explain each alternative and facilitated group discussion of stakeholder reactions, feedback, and preferences. Primary feedback included the corridor's importance to local and regional freight movements, including as an access point to US 14.

Open House

On March 16, 2023, the study team hosted a public open house at the IUOE 49ers Hall at 308 Lundin Boulevard in Mankato. Attendees to the open house were invited to view a presentation which explained each alternative before the conversation was opened to general discussion. Primary feedback included the intermittent long delays due to trains and the corridor's importance as a route used by both commuters, freight, and local multimodal travelers.

Source: Blue Earth County, 2023

Agency Presentations

The study team delivered presentations to the governing bodies of MAPO agencies overlapping the study area. The agency presentation dates are as follows:

Mankato City Council

On March 6, 2023, the study team presented information to the Mankato City Council on the study process to date, key existing conditions, alternatives development and evaluation, and next steps. Discussion by councilmembers at the meeting included the appropriate areas for sidewalk infrastructure, balancing transportation modes including freight, the potential Third Avenue realignment to form a complete intersection at Madison Avenue, as well as a potential intersection realignment further north along Riverfront Drive.

Lime Township Board

On March 7, 2023, the study team presented the same information to the Lime Township Board. Discussion by Township Board members at the meeting included the desirable type of intersection control at the US 14 interchange. The group was not in favor of a single lane roundabout. There was some support for a multilane roundabout like the US 14 and CSAH 12 intersection, which services large amounts of freight for the Walmart distribution center.

There was support for three-lane sections and the associated pedestrian and bicyclist facilities, as well as the safety benefits afforded by the three-lane section center left turn lane. Discussion also included the challenges created by trains blocking the tracks.

Blue Earth County Board

On March 14, 2023, the study team presented the same information to the Blue Earth County Board. Discussion by County Board members at the meeting included the appropriate intersection control for the US 14 ramps, ideal lane configurations, rail delays, and the corridor's multiple purposes as a provider of freight and commuter services.

MAPO Technical Advisory Committee

On May 18, 2023, the study team presented the same information to the MAPO TAC. Discussion by TAC members included properly balancing lane configurations with the high number of access points, balancing the roadway's curb-to-curb footprint with the adjacent community context, accommodating large vehicle movements, and maximizing safety through road design.

MAPO Policy Board

On June 1, 2023, the study team delivered a presentation to the MAPO Policy Board. Discussion by Policy Board members included strategies to mitigate rail crossing delays, the corridor's importance to freight movements, and connecting the corridor to the local and regional active transportation network.

Chapter 4: Study Recommendations

Study Recommendations

The Study Project Management Team (PMT) based its recommendations upon a range of factors, including:

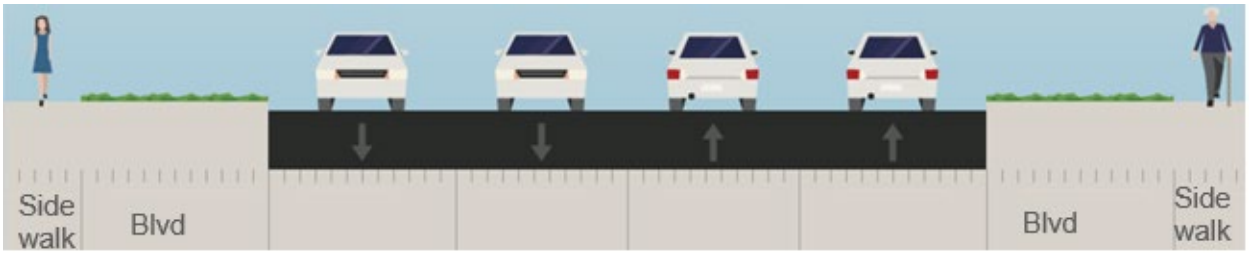
- Engagement with community members, business stakeholders, and elected officials.
- Input and data analysis from representatives of jurisdictional agencies along and adjacent to the corridor (Blue Earth County, the City of Mankato, Lime Township, and MnDOT).
- Review of the cross-sectional evaluation matrices.

The Study PMT has recommended the following as the locally preferred alternative for future implementation. The following sections detail recommendations for roadway, intersection, and pedestrian/bicycle crossing enhancements. This conceptual design is subject to change, as final engineering and project design are completed following the conclusion of this Study.

Segments 1 and 2

Lane Configuration

The recommendation for Segments 1 and 2 (Riverfront Drive to Lind Street) is to maintain the existing four-lane cross section with improvements to sidewalk facilities. This section of the corridor is a key route for a range of users including daily commuters and heavy commercial freight, and the existing cross section is anticipated to best meet current and future needs.



Source: Streetmix, 2023

Pedestrian/Bicyclist Improvements

The recommendation is to follow the proposed sidewalk improvements laid out in the City of Mankato Complete Streets Plan and Policy, which identifies a proposed sidewalk along the west side of CSAH 5 (Third Avenue) from Pine Street to the North Minnesota River Trail just north of the US 14 intersection.

The Pine Street-to-Cleveland Street subsection is anticipated to be able to accommodate a five-foot sidewalk with varying boulevard widths (minimum four feet), except for the locations noted in the Pedestrian & Bicycle Considerations section. Adjacent land use on the east side is industrial and the demand for pedestrian facilities is likely low so therefore sidewalk is only recommended on the west side where it can be accommodated within the existing right-of-way.

There is a goal of improving multimodal connectivity for better connections to the North Minnesota River Trail and the Sakatah Singing Hills Trail. However, that should be balanced with the vehicle and freight needs along the corridor. PMT discussion included that it may be more appropriate for travelers on the trail network to utilize Riverfront Drive to connect to the Sakatah Trail, versus CSAH 5 (Third Avenue).

Finally, it is recommended that daily pedestrian and bicycle traffic data be collected to determine crossing demand. A marked crosswalk should be considered where sidewalk gaps exist to maintain a continuous route for bicycles and pedestrians. For four-lane undivided roadways, an enhanced crossing with markings and a rectangular rapid flashing beacon (RRFB) is recommended per FHWA guidance.

Southern Railroad Crossing

The recommendation is to carry forward for consideration the recommendations of the Mankato Quiet Zone Study (2021). The Quiet Zone Study advanced two options; four-quadrant gates for four-lane roadway and median for three-lane roadway. Agencies are recommended to coordinate among public and private stakeholders to determine a preferred option. Once a preferred option is identified, agencies should continue to coordinate to leverage support and potential funding sources. Local agencies may also consider a Grade Separation Feasibility Study and an Advance Warning System Feasibility Study if desired.

Localized Improvements

Consolidating access along the corridor is recommended. A detailed access inventory and preliminary recommendations for closure or consolidation is provided in Appendix C. This information is preliminary, and it is recommended that additional discussions with property owners occur to determine the potential for relocation, consolidation, or closure. The access spacing in this segment is currently more than twice what is recommended. The critical index for the segment between Riverfront Drive and Lind Street is 1.98 which indicates there is a safety concern. The majority of the crashes occurring in this segment are mid-block. Reducing the number of direct access points to CSAH 5 (Third Avenue) is anticipated to remove potential conflict points and create an overall improvement in safety. Additionally, center-left turn lanes could also improve safety if access were not able to be consolidated, however adding turn lanes while maintaining four travel lanes would have right-of-way impacts.

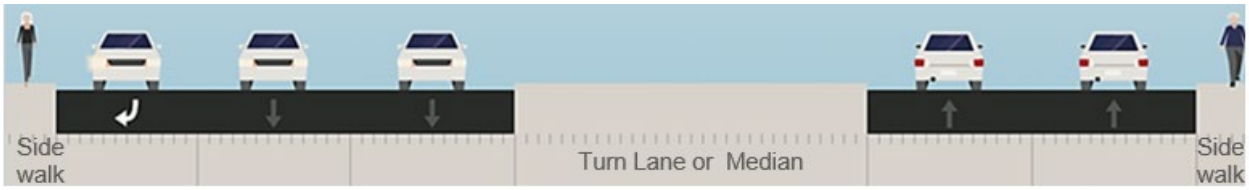
Public engagement indicated periodic instances of delivery trucks queuing onto CSAH 5 (Third Avenue) near the ADM facility within Segment 2. Local agencies are recommended to coordinate with ADM to alleviate this queueing, as well as continue to pursue strategies to increase the total amount of semi-truck parking in the MAPO area.

Finally, traffic volumes and crash frequency at the public street intersections within this segment do not warrant adding additional right- or left-turn lanes.

Segment 3

Lane Configuration

The recommendation for Segment 3 (Lind Street to Lundin Boulevard) is to maintain the existing five-lane cross section. This segment provides a range of services to multiple user groups, including freight trucks entering and exiting US 14. The existing cross section is anticipated to best meet current and future needs.



Source: Streetmix, 2023

Pedestrian/Bicyclist Improvements

The recommendation is to follow the proposed sidewalk improvements laid out in the City of Mankato Complete Streets Plan and Policy, which identifies a proposed sidewalk continuing northward along the west side of CSAH 5 (Third Avenue) to provide a connection to the existing North Minnesota River Trail. Between Lind Street and Cleveland Street, adjacent land use on the east side is industrial and the demand for pedestrian facilities is likely low so therefore sidewalks are only recommended on the west side where it can be accommodated within the existing right-of-way.

An additional recommendation is for consideration of improvements to the pedestrian / bicyclist crossing just north of US 14. The crossing's current configuration, which consists of paint and a refuge island, may be better suited for enhanced crossing treatment, including a potential Rapid Rectangular-Flashing Beacon (RRFB) or other warning system.

Similar to Segments 1 and 2, there is a goal of improving multimodal connectivity for better connections to the North Minnesota River Trail and the Sakatah Singing Hills Trail. The PMT discussed that it may be more appropriate for travelers on the trail network to utilize Riverfront Drive to connect to the Sakatah Trail, versus CSAH 5 (Third Avenue).

Finally, it is recommended that daily pedestrian and bicycle traffic data be collected to determine crossing demand. A marked crosswalk should be considered where sidewalk gaps exist to maintain a continuous route for bicycles and pedestrians. For four-lane undivided roadways, an enhanced crossing with markings and a rectangular rapid flashing beacon (RRFB) is recommended per FHWA guidance.

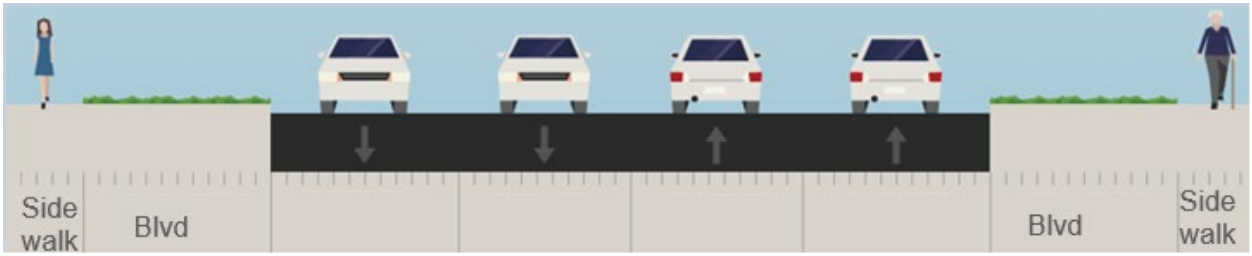
US 14 Ramps

Decisions regarding the US 14 ramps must consider a range of dynamic factors. Among these factors are the long-term forecasts for increased traffic volume growth, the recent drop in traffic volumes over the previous several years, larger trends in the trucking industry and general commuting behaviors, and forthcoming development in the corridor area. The final recommendation of the ICE report is to leave the intersection control as is (side-street stop control) and continue to monitor traffic operations and safety in the future. If there is a change in either, then intersection control should be evaluated again.

Segments 4 and 5

Lane Configuration

The recommendation for Segments 4 and 5 (Lundin Boulevard to CSAH 26) is to maintain the existing four-lane cross section. This section of the corridor contains a dense range of separate users, including businesses with individual turning movements and access points. The existing cross section is anticipated to best meet current and future needs.



Source: Streetmix, 2023

Pedestrian/Bicyclist Improvements

The recommendation is to follow the proposed sidewalk improvements laid out in the City of Mankato Complete Streets Plan and Policy, which identifies sidewalk on both sides of CSAH 5 (Third Avenue) between Riverfront Drive and Kingswood Drive and a multiuse trail north of Kingswood Drive. Additionally, adjacent land use on the east side between Summit Avenue and Kingswood Drive where the sidewalk gap exists is industrial and the demand for pedestrian facilities is likely low so therefore sidewalk is not recommended on the east side unless there is a change in land use.

Finally, it is recommended that daily pedestrian and bicycle traffic data be collected to determine crossing demand. A marked crosswalk should be considered where sidewalk gaps exist to maintain a continuous route for bicycles and pedestrians. For four-lane undivided roadways, an enhanced crossing with markings and a rectangular rapid flashing beacon (RRFB) is recommended per FHWA guidance.

Localized Improvements

Consolidating access along the corridor is recommended. A detailed access inventory and preliminary recommendations for closure or consolidation is provided in Appendix C. This information is preliminary, and it is recommended that additional discussions with property owners occur to determine the potential for relocation, consolidation, or closure. Between Mohr Drive and CSAH 26, access frequency is more than twice what is recommended. Despite this high frequency of access points, the crash frequency in this segment is not a concern. Crash frequency should be monitored in the future and opportunities to reduce the number of direct access points to CSAH 5 (Third Avenue) should be considered as it would remove potential conflict points and create an overall improvement in safety.

Consider realigning the intersections of 575th Lane and Lime Valley Road to remove the skew and create better sight lines at the intersections. This will improve safety at both intersections.

Future CHS railroad planning includes a spur track north of Industrial Road which will diverge from the main track to provide access to the adjacent industrial area. This has the potential to increase rail capacity and potentially affect rail movements within the study area. Local agencies

are recommended to monitor rail investment plans and coordinate to mitigate potential impacts to other transportation modes using CSAH 5 (Third Avenue).

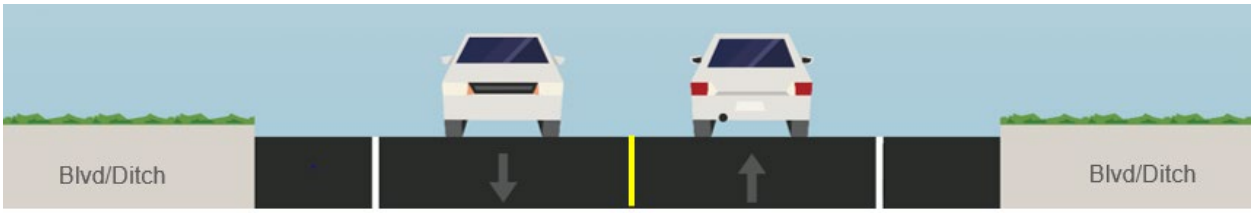
Segment 6

Lane Configuration

The recommendation for Segment 6 (CSAH 26 to the Blue Earth County Line) is to maintain the existing two-lane cross section with the targeted installation of turn lanes at strategic intersections. Public engagement conducted did not indicate a significant amount of community interest in installing dedicated multimodal facilities in this segment, particularly due to rural context and lack of nearby multimodal destinations. This is something that could be considered in the future.

Public engagement did indicate a desire for expanded shoulders within this segment to better allow space for bicyclists and motor vehicles sharing the road. Local agencies could consider the desire for expanded shoulders along CSAH 5 (Third Avenue) in Segment 6.

It is recommended that measures be considered to mitigate the number of deer crossings in this segment. Measures to separate deer from the roadway may include the installation of preventative fencing, or targeted deployment of noise deterrents and/or scent repellants.



Source: Streetmix, 2023

Localized Improvements

Consolidating access along the corridor is recommended. The access spacing in this segment is currently more than twice what is recommended. A detailed access inventory and preliminary recommendations for closure or consolidation is provided in Appendix C. This information is preliminary, and it is recommended that additional discussions with property owners occur to determine the potential for relocation, consolidation or closure. Reducing the number of direct access points to CSAH 5 (Third Avenue) is anticipated to remove potential conflict points and create an overall improvement in safety. Center left-turn lanes should be considered where there are high frequency of crashes and closely spaced driveways (see Figure 14 for crash clusters and Appendix C for detailed access inventory for location of driveways). Currently the segment crash rate in Segment 6 is not above the critical index so it is recommended that crash frequency continue to be monitored in the future for changes.

Public engagement indicated a desire to ease the lane transition along CSAH 5 (Third Avenue) from a four-lane to a two-lane roadway at Industrial Road (CSAH 26). Local agencies are recommended to explore opportunities to convert the transition point just north of Industrial Road into a more gradual shift to better allow northward-traveling vehicles time and space to adapt to the lane transition. An alternative would be to remove the lane transition north of CSAH 26 (Industrial Road) and convert the northbound leg of the intersection of CSAH 5/CSAH 26 into a thru/left and right-turn lane.

Northern Railroad Crossing

The recommendation is to monitor the number of train crossings and associated delays and consider at-grade enhancements. An Advanced Warning System Feasibility Study, which would determine the viability and costs associated with a system to notify travelers if the crossing was blocked by a passing train, could be considered. A Grade Separation Feasibility Study to better understand the viability, costs, and benefits of separating train and vehicular traffic could also be considered in the future.

Implementation and Next Steps

Implementing agencies, including Blue Earth County, the City of Mankato, and MnDOT, are encouraged to continue to collaborate as design and construction projects are identified in the future. Doing so will ensure improvements are undertaken in a context-sensitive and cost-efficient manner.

Short Range

Blue Earth County has included a near-term $4.8 million CSAH 5 Urban Repair and Resurface project in its county Transportation Improvement Program. The project will include a full reconstruction, including storm sewer improvements. The project is scheduled for implementation in 2025 and is scoped from North Riverfront Drive to just north of US 14. The project intends to address deteriorating roadway conditions, improve safety and mobility, and provide a smooth 10 ton per axel pavement serving freight traffic, among other road users.

The City of Mankato is participating in costs for intersection control improvements, sidewalk and trails, and 100 percent of any City utility replacements.

Local agencies are encouraged to monitor opportunities to implement localized “spot” improvements at intersections south of US 14. These types of improvements may potentially be implemented on an opportunity-driven basis.

Long Range

Long range improvements for the corridor north of US 14 will occur beyond the four-year planning schedule of the County’s Transportation Improvement Program. This Study is recommended to be reviewed and, if appropriate, to serve as a basis for future improvements once infrastructure or safety conditions justify reconstruction.

Local agencies are encouraged to monitor opportunities to implement localized “spot” improvements at intersections north of US 14. These types of improvements may potentially be implemented on an opportunity-driven basis.

Funding Strategies

It is recommended that funding solicitations are reviewed as they arise to determine their applicability for future projects in the study area and consider opportunities. A significant source of upcoming funds will be through the Infrastructure Investment and Jobs Act (IIJA) which will provide increased funds to a variety of existing federal formula programs, as well as funding for newly created funding programs. It is recommended that this be closely tracked as opportunities arise. Below are a few funding opportunities that could be considered for the CSAH 5 (Third Avenue) corridor.

Active Transportation Program

This is a state funding source administered by MnDOT. This is a program funded through State Bonding. Projects that implement bicycle and pedestrian improvements are eligible. The maximum award amount is $500,000 per project and no local match is required.

Transportation Alternatives (TA) Program

This is a federal funding source that is administered through MnDOT. There is technically not an explicit maximum though the recommended cap per project is $1 million due to limited available fund per ATP. A 20 percent local match is required.

Highway Safety Improvement Program (HSIP)

This is a federal funding source that is administered through MnDOT. The solicitation for funding historically occurs on a two-year solicitation cycle. The maximum award amount is $500,000 per project and a 10 percent local match is required.

Local Road Improvement Program

State funding source administered by MnDOT. Funding is typically held annually. The maximum aware amount for the 2021 round was $1,250,000 per project and no match is required if all project costs are eligible.

Surface Transportation Block Grant Program

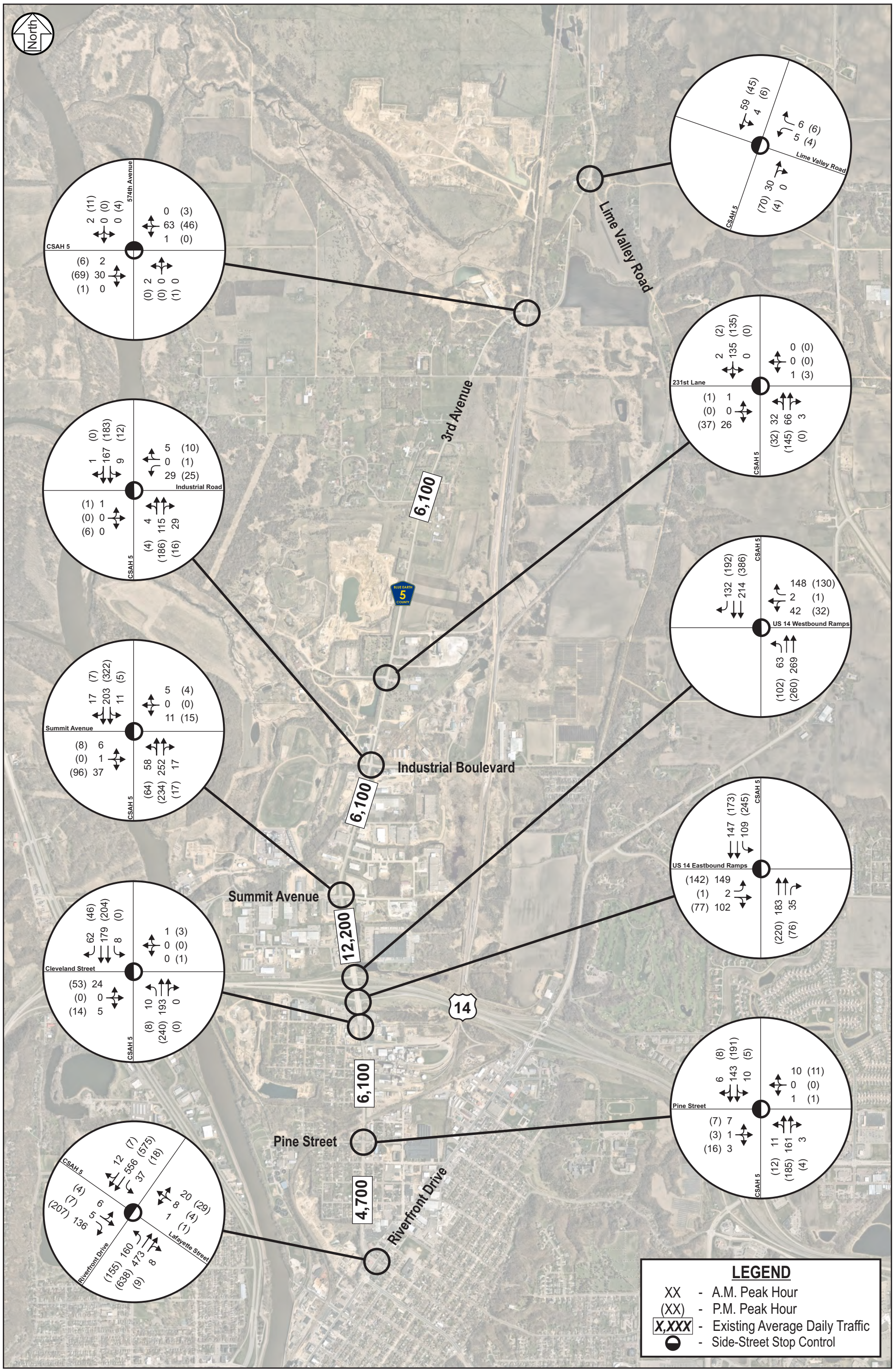
This is a federal funding source administered through MnDOT. This funding is flexible, and it is suggested to closely coordinate with the ATP to learn more.

Railroad Crossing Elimination Grant Program

This is a federal funding source administered through the FRA. Eligible projects include grade separation or closure, including through the use of a bridge, embankment, tunnel, or combination thereof; track relocation, improvement or installation of protective devices, signals, signs, measures to improve safety related to a separation or track relocation project, or other means to improve safety (including technological solutions).

Appendices

APPENDIX A: TRAFFIC OPERATIONS ANALYSIS



Existing Conditions

CSAH 5 (Third Ave) Corridor Study
City of Mankato

Figure 1

02015202
August 2022

10: CSAH 5 & Lime Valley Road Performance by approach

Approach	WB	NB	SB	All
Denied Del/Veh (s)	0.1	0.0	0.1	0.1
Total Del/Veh (s)	2.6	0.4	0.3	0.6

20: 574th Avenue & CSAH 5 Performance by approach

Approach	EB	WB	NB	SB	All
Denied Del/Veh (s)	0.0	0.0	0.1	1.7	0.0
Total Del/Veh (s)	0.4	0.2	3.8	2.2	0.3

30: CSAH 5 & 231st Lane/Access Performance by approach

Approach	EB	WB	NB	SB	All
Denied Del/Veh (s)	3.7	0.1	0.0	0.1	0.4
Total Del/Veh (s)	3.2	5.8	0.7	1.0	1.1

40: CSAH 5 & Access/Industrial Road Performance by approach

Approach	EB	WB	NB	SB	All
Denied Del/Veh (s)	0.1	0.1	0.0	0.0	0.0
Total Del/Veh (s)	2.3	5.6	0.7	0.2	0.9

50: CSAH 5 & Summit Avenue Performance by approach

Approach	EB	WB	NB	SB	All
Denied Del/Veh (s)	2.1	2.0	0.0	0.0	0.2
Total Del/Veh (s)	4.1	6.5	1.0	1.0	1.4

60: CSAH 5 & US 14 Westbound Exit Ramp/US 14 Westbound Entrance Ramp Performance by approach

Approach	WB	NB	SB	All
Denied Del/Veh (s)	2.2	0.0	0.5	0.7
Total Del/Veh (s)	5.6	1.5	0.9	2.1

70: CSAH 5 & US 14 Eastbound Exit Ramp/US 14 Eastbound Entrance Ramp Performance by approach

Approach	EB	NB	SB	All
Denied Del/Veh (s)	1.9	0.0	0.0	0.7
Total Del/Veh (s)	8.8	0.4	1.6	3.8

80: CSAH 5 & Cleveland Street/Access Performance by approach

Approach	EB	WB	NB	SB	All
Denied Del/Veh (s)	0.1	5.0	0.1	0.0	0.0
Total Del/Veh (s)	7.1	4.0	0.7	0.3	0.9

90: CSAH 5 & Pine Street Performance by approach

Approach	EB	WB	NB	SB	All
Denied Del/Veh (s)	0.1	0.1	0.0	0.0	0.0
Total Del/Veh (s)	4.5	2.4	0.6	0.5	0.7

100: E Lafayette Street/CSAH 5 & Riverfront Drive Performance by approach

Approach	EB	WB	NB	SB	All
Denied Del/Veh (s)	0.7	0.3	2.9	0.0	0.5
Total Del/Veh (s)	1.8	0.9	9.3	6.8	2.1

Total Network Performance

Denied Del/Veh (s)	0.9
Total Del/Veh (s)	5.4

Intersection: 10: CSAH 5 & Lime Valley Road

Movement	WB	WB
Directions Served	L	R
Maximum Queue (ft)	14	51
Average Queue (ft)	1	3
95th Queue (ft)	8	21
Link Distance (ft)	2478	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		50
Storage Blk Time (%)		0
Queuing Penalty (veh)		0

Intersection: 20: 574th Avenue & CSAH 5

Movement	EB	NB	SB
Directions Served	LTR	LTR	R
Maximum Queue (ft)	4	31	22
Average Queue (ft)	0	2	1
95th Queue (ft)	3	13	11
Link Distance (ft)	1553	303	
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			25
Storage Blk Time (%)			0
Queuing Penalty (veh)			0

Intersection: 30: CSAH 5 & 231st Lane/Access

Movement	EB	WB	NB
Directions Served	R	LTR	LT
Maximum Queue (ft)	69	12	43
Average Queue (ft)	19	1	5
95th Queue (ft)	55	8	25
Link Distance (ft)		638	251
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	50		
Storage Blk Time (%)	1		
Queuing Penalty (veh)	0		

Intersection: 40: CSAH 5 & Access/Industrial Road

Movement	EB	WB	WB	SB
Directions Served	LT	L	TR	LT
Maximum Queue (ft)	18	76	63	17
Average Queue (ft)	1	22	6	1
95th Queue (ft)	8	58	29	9
Link Distance (ft)	456	2104	2104	165
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 50: CSAH 5 & Summit Avenue

Movement	EB	EB	WB	WB	NB	NB	SB
Directions Served	LT	R	LT	R	LT	TR	LT
Maximum Queue (ft)	51	70	49	57	70	4	57
Average Queue (ft)	7	26	9	7	14	0	5
95th Queue (ft)	31	64	34	32	49	3	26
Link Distance (ft)	1395		874		1587	1587	2671
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)		50		50			
Storage Blk Time (%)	0	1	0	0			
Queuing Penalty (veh)	0	0	0	0			

Intersection: 60: CSAH 5 & US 14 Westbound Exit Ramp/US 14 Westbound Entrance Ramp

Movement	WB	WB	NB	SB
Directions Served	LT	R	L	R
Maximum Queue (ft)	86	93	89	23
Average Queue (ft)	31	44	21	2
95th Queue (ft)	66	76	64	13
Link Distance (ft)	1246			
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)		215	325	330
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 70: CSAH 5 & US 14 Eastbound Exit Ramp/US 14 Eastbound Entrance Ramp

Movement	EB	EB	NB	NB	NB	SB
Directions Served	L	TR	T	T	R	L
Maximum Queue (ft)	164	81	7	4	27	80
Average Queue (ft)	65	41	0	0	1	23
95th Queue (ft)	119	70	5	3	12	60
Link Distance (ft)		1131	372	372		
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)	310				225	300
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 80: CSAH 5 & Cleveland Street/Access

Movement	EB	WB	NB	SB	SB
Directions Served	LTR	R	L	L	R
Maximum Queue (ft)	67	18	42	32	4
Average Queue (ft)	22	1	4	2	0
95th Queue (ft)	52	10	23	17	3
Link Distance (ft)	945				
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)		50	140	275	250
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 90: CSAH 5 & Pine Street

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LT	LT
Maximum Queue (ft)	31	42	29	28
Average Queue (ft)	8	8	2	2
95th Queue (ft)	31	32	15	14
Link Distance (ft)	1347	726	1750	970
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 100: E Lafayette Street/CSAH 5 & Riverfront Drive

Movement	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	L	T	TR	LT	R	LT	R
Maximum Queue (ft)	107	42	9	14	39	55	51	83
Average Queue (ft)	37	16	0	1	8	17	12	46
95th Queue (ft)	75	43	5	8	31	51	41	75
Link Distance (ft)			1100	1100	679		650	650
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)	100	200				25		
Storage Blk Time (%)	0				3	2		
Queuing Penalty (veh)	1				1	0		

Network Summary

Network wide Queuing Penalty: 2

10: CSAH 5 & Lime Valley Road Performance by approach

Approach	WB	NB	SB	All
Denied Del/Veh (s)	0.1	0.0	0.1	0.1
Total Del/Veh (s)	2.8	1.2	0.2	0.9

20: 574th Avenue & CSAH 5 Performance by approach

Approach	EB	WB	NB	SB	All
Denied Del/Veh (s)	0.0	0.0	0.1	1.5	0.1
Total Del/Veh (s)	0.8	0.1	2.8	3.3	0.9

30: CSAH 5 & 231st Lane/Access Performance by approach

Approach	EB	WB	NB	SB	All
Denied Del/Veh (s)	3.4	0.1	0.0	0.1	0.4
Total Del/Veh (s)	3.0	6.5	0.6	1.1	1.1

40: CSAH 5 & Access/Industrial Road Performance by approach

Approach	EB	WB	NB	SB	All
Denied Del/Veh (s)	4.3	0.1	0.0	0.0	0.1
Total Del/Veh (s)	3.1	5.7	1.0	0.3	1.1

50: CSAH 5 & Summit Avenue Performance by approach

Approach	EB	WB	NB	SB	All
Denied Del/Veh (s)	2.4	1.2	0.0	0.1	0.3
Total Del/Veh (s)	4.7	7.3	1.2	1.0	1.6

60: CSAH 5 & US 14 Westbound Exit Ramp/US 14 Westbound Entrance Ramp Performance by approach

Approach	WB	NB	SB	All
Denied Del/Veh (s)	2.3	0.0	0.4	0.6
Total Del/Veh (s)	6.2	3.1	1.2	2.6

70: CSAH 5 & US 14 Eastbound Exit Ramp/US 14 Eastbound Entrance Ramp Performance by approach

Approach	EB	NB	SB	All
Denied Del/Veh (s)	2.1	0.0	0.0	0.5
Total Del/Veh (s)	17.8	0.6	2.7	5.7

80: CSAH 5 & Cleveland Street/Access Performance by approach

Approach	EB	WB	NB	SB	All
Denied Del/Veh (s)	0.1	3.4	0.0	0.0	0.1
Total Del/Veh (s)	7.8	3.2	0.5	0.2	1.2

90: CSAH 5 & Pine Street Performance by approach

Approach	EB	WB	NB	SB	All
Denied Del/Veh (s)	0.1	0.1	0.0	0.0	0.0
Total Del/Veh (s)	4.7	2.8	0.6	0.4	0.7

100: E Lafayette Street/CSAH 5 & Riverfront Drive Performance by approach

Approach	EB	WB	NB	SB	All
Denied Del/Veh (s)	0.6	0.2	3.6	0.0	0.4
Total Del/Veh (s)	1.6	0.8	6.7	5.7	1.9

Total Network Performance

Denied Del/Veh (s)	0.9
Total Del/Veh (s)	6.7

Intersection: 10: CSAH 5 & Lime Valley Road

Movement	WB	WB	SB
Directions Served	L	R	LT
Maximum Queue (ft)	13	10	5
Average Queue (ft)	1	0	0
95th Queue (ft)	7	4	4
Link Distance (ft)	2478		2528
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)		50	
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 20: 574th Avenue & CSAH 5

Movement	EB	NB	SB	SB
Directions Served	LTR	LTR	LT	R
Maximum Queue (ft)	8	18	39	53
Average Queue (ft)	0	1	3	11
95th Queue (ft)	4	11	20	40
Link Distance (ft)	1553	303	1699	
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				25
Storage Blk Time (%)			0	1
Queuing Penalty (veh)			0	0

Intersection: 30: CSAH 5 & 231st Lane/Access

Movement	EB	EB	WB	NB
Directions Served	LT	R	LTR	LT
Maximum Queue (ft)	17	60	30	39
Average Queue (ft)	1	25	3	4
95th Queue (ft)	11	53	19	22
Link Distance (ft)	972		638	251
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)		50		
Storage Blk Time (%)		0		
Queuing Penalty (veh)		0		

Intersection: 40: CSAH 5 & Access/Industrial Road

Movement	EB	EB	WB	WB	NB	SB
Directions Served	LT	R	L	TR	LT	LT
Maximum Queue (ft)	6	52	68	56	20	25
Average Queue (ft)	0	8	18	11	1	2
95th Queue (ft)	4	34	50	40	8	14
Link Distance (ft)	456		2104	2104	2671	165
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)		50				
Storage Blk Time (%)		0				
Queuing Penalty (veh)		0				

Intersection: 50: CSAH 5 & Summit Avenue

Movement	EB	EB	WB	WB	NB	SB
Directions Served	LT	R	LT	R	LT	LT
Maximum Queue (ft)	82	74	66	48	71	15
Average Queue (ft)	11	42	12	4	17	1
95th Queue (ft)	47	74	43	26	52	7
Link Distance (ft)	1395		874		1587	2671
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)		50		50		
Storage Blk Time (%)	0	2	1	0		
Queuing Penalty (veh)	0	0	0	0		

Intersection: 60: CSAH 5 & US 14 Westbound Exit Ramp/US 14 Westbound Entrance Ramp

Movement	WB	WB	NB	SB	SB
Directions Served	LT	R	L	T	R
Maximum Queue (ft)	69	105	123	4	31
Average Queue (ft)	23	46	42	0	2
95th Queue (ft)	56	80	91	3	15
Link Distance (ft)	1246			1587	
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)		215	325		330
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 70: CSAH 5 & US 14 Eastbound Exit Ramp/US 14 Eastbound Entrance Ramp

Movement	EB	EB	NB	NB	NB	SB
Directions Served	L	TR	T	T	R	L
Maximum Queue (ft)	189	75	12	33	36	117
Average Queue (ft)	78	33	1	2	2	43
95th Queue (ft)	154	63	7	14	16	88
Link Distance (ft)		1131	372	372		
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)	310				225	300
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 80: CSAH 5 & Cleveland Street/Access

Movement	EB	WB	WB	NB
Directions Served	LTR	LT	R	L
Maximum Queue (ft)	93	12	30	26
Average Queue (ft)	34	1	3	2
95th Queue (ft)	69	7	18	14
Link Distance (ft)	945	306		
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)			50	140
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 90: CSAH 5 & Pine Street

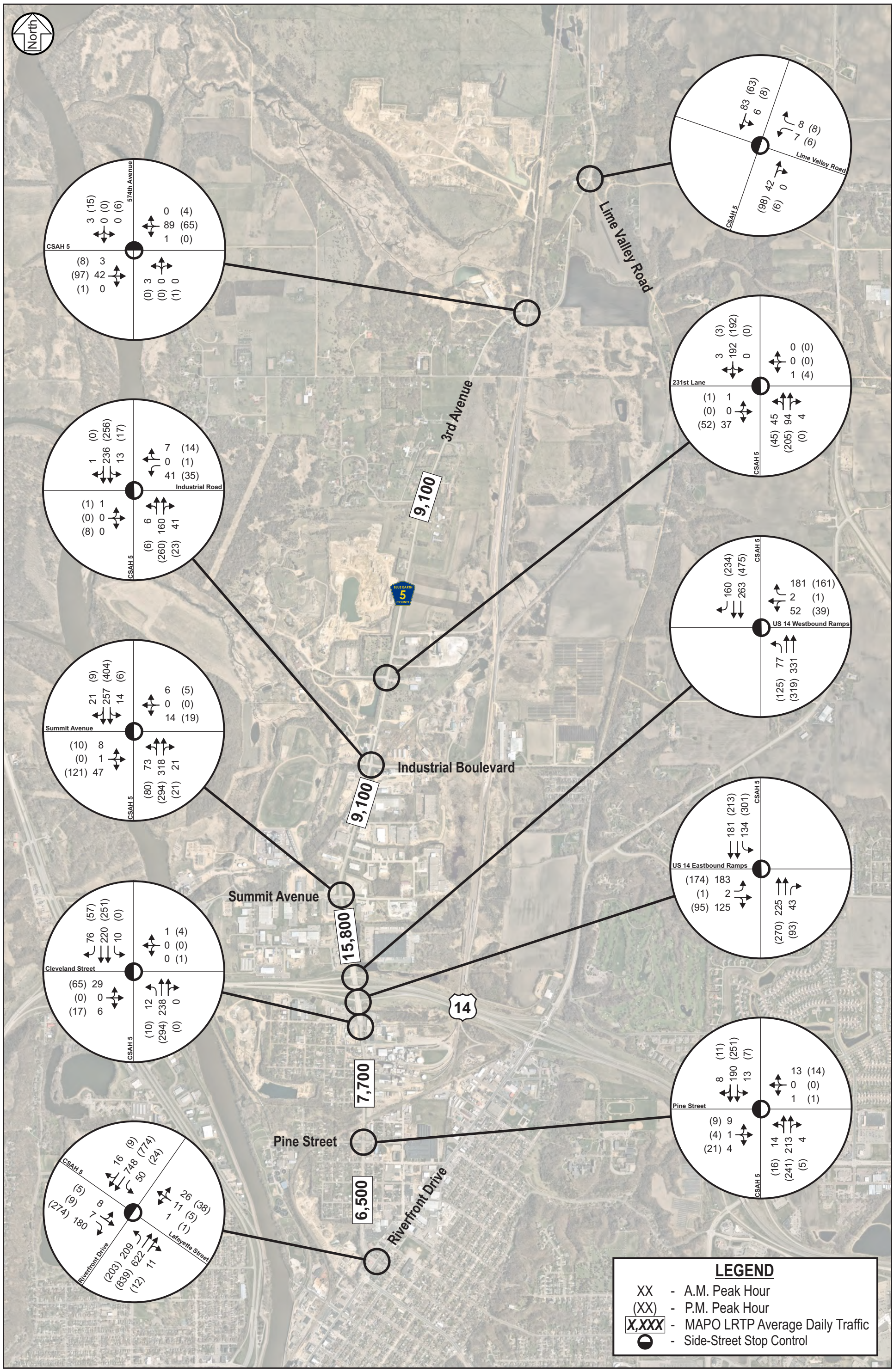
Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LT	LT
Maximum Queue (ft)	44	31	40	6
Average Queue (ft)	18	9	3	0
95th Queue (ft)	45	30	21	4
Link Distance (ft)	1347	726	1750	970
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 100: E Lafayette Street/CSAH 5 & Riverfront Drive

Movement	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	L	T	TR	LT	R	LT	R
Maximum Queue (ft)	96	35	9	10	44	47	35	113
Average Queue (ft)	36	7	0	0	6	23	9	55
95th Queue (ft)	70	29	3	8	27	53	32	90
Link Distance (ft)			1100	1100	679		650	650
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)	100	200				25		
Storage Blk Time (%)	0				2	4		
Queuing Penalty (veh)	1				1	0		

Network Summary

Network wide Queuing Penalty: 2



2045 No Build Conditions

CSAH 5 (Third Ave) Corridor Study

City of Mankato

Figure 2

02015202
August 2022

10: CSAH 5 & Lime Valley Road Performance by approach

Approach	WB	NB	SB	All
Denied Del/Veh (s)	0.1	0.0	0.1	0.1
Total Del/Veh (s)	2.7	0.7	0.3	0.6

20: 574th Avenue & CSAH 5 Performance by approach

Approach	EB	WB	NB	SB	All
Denied Del/Veh (s)	0.0	0.0	0.1	1.7	0.0
Total Del/Veh (s)	0.5	0.3	4.3	2.9	0.5

30: CSAH 5 & 231st Lane/Access Performance by approach

Approach	EB	WB	NB	SB	All
Denied Del/Veh (s)	3.8	0.1	0.0	0.1	0.4
Total Del/Veh (s)	3.2	8.3	0.9	1.1	1.2

40: CSAH 5 & Access/Industrial Road Performance by approach

Approach	EB	WB	NB	SB	All
Denied Del/Veh (s)	0.1	0.1	0.0	0.0	0.0
Total Del/Veh (s)	6.0	5.5	1.0	0.2	1.0

50: CSAH 5 & Summit Avenue Performance by approach

Approach	EB	WB	NB	SB	All
Denied Del/Veh (s)	2.3	1.4	0.0	0.0	0.2
Total Del/Veh (s)	4.2	7.5	1.3	1.2	1.6

60: CSAH 5 & US 14 Westbound Exit Ramp/US 14 Westbound Entrance Ramp Performance by approach

Approach	WB	NB	SB	All
Denied Del/Veh (s)	2.3	0.0	0.4	0.7
Total Del/Veh (s)	7.0	1.7	1.0	2.7

70: CSAH 5 & US 14 Eastbound Exit Ramp/US 14 Eastbound Entrance Ramp Performance by approach

Approach	EB	NB	SB	All
Denied Del/Veh (s)	2.0	0.0	0.0	0.7
Total Del/Veh (s)	12.1	0.6	1.9	5.1

80: CSAH 5 & Cleveland Street/Access Performance by approach

Approach	EB	WB	NB	SB	All
Denied Del/Veh (s)	0.1	3.4	0.0	0.0	0.0
Total Del/Veh (s)	8.1	2.3	0.8	0.4	1.1

90: CSAH 5 & Pine Street Performance by approach

Approach	EB	WB	NB	SB	All
Denied Del/Veh (s)	0.2	0.1	0.0	0.0	0.0
Total Del/Veh (s)	5.4	2.8	0.7	0.5	0.8

100: E Lafayette Street/CSAH 5 & Riverfront Drive Performance by approach

Approach	EB	WB	NB	SB	All
Denied Del/Veh (s)	0.7	0.3	3.1	0.0	0.5
Total Del/Veh (s)	2.6	1.2	18.7	8.4	2.9

Total Network Performance

Denied Del/Veh (s)	0.9
Total Del/Veh (s)	7.0

Intersection: 10: CSAH 5 & Lime Valley Road

Movement	WB	WB	SB
Directions Served	L	R	LT
Maximum Queue (ft)	22	41	5
Average Queue (ft)	2	2	0
95th Queue (ft)	11	18	4
Link Distance (ft)	2478		2528
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)		50	
Storage Blk Time (%)	0	0	
Queuing Penalty (veh)	0	0	

Intersection: 20: 574th Avenue & CSAH 5

Movement	NB	SB
Directions Served	LTR	R
Maximum Queue (ft)	36	48
Average Queue (ft)	3	4
95th Queue (ft)	22	24
Link Distance (ft)	303	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		25
Storage Blk Time (%)		0
Queuing Penalty (veh)		0

Intersection: 30: CSAH 5 & 231st Lane/Access

Movement	EB	EB	WB	NB
Directions Served	LT	R	LTR	LT
Maximum Queue (ft)	16	71	29	72
Average Queue (ft)	1	25	1	9
95th Queue (ft)	9	58	11	39
Link Distance (ft)	972		638	251
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)		50		
Storage Blk Time (%)		0		
Queuing Penalty (veh)		0		

Intersection: 40: CSAH 5 & Access/Industrial Road

Movement	EB	WB	WB	NB	SB
Directions Served	LT	L	TR	LT	LT
Maximum Queue (ft)	24	77	57	9	37
Average Queue (ft)	2	25	9	1	1
95th Queue (ft)	13	59	37	5	13
Link Distance (ft)	456	2104	2104	2671	165
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 50: CSAH 5 & Summit Avenue

Movement	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	LT	R	LT	R	LT	TR	LT	TR
Maximum Queue (ft)	51	71	55	55	78	22	49	11
Average Queue (ft)	8	30	12	7	22	1	4	0
95th Queue (ft)	32	63	39	32	62	16	26	6
Link Distance (ft)	1395		874		1587	1587	2671	2671
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)		50		50				
Storage Blk Time (%)	0	1	1	0				
Queuing Penalty (veh)	0	0	0	0				

Intersection: 60: CSAH 5 & US 14 Westbound Exit Ramp/US 14 Westbound Entrance Ramp

Movement	WB	WB	NB	SB	SB
Directions Served	LT	R	L	T	R
Maximum Queue (ft)	98	107	101	6	17
Average Queue (ft)	35	54	25	0	2
95th Queue (ft)	75	91	68	4	11
Link Distance (ft)	1246			1587	
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)		215	325		330
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 70: CSAH 5 & US 14 Eastbound Exit Ramp/US 14 Eastbound Entrance Ramp

Movement	EB	EB	NB	NB	NB	SB	SB	SB
Directions Served	L	TR	T	T	R	L	T	T
Maximum Queue (ft)	219	91	9	20	17	82	11	12
Average Queue (ft)	84	45	0	1	1	29	0	0
95th Queue (ft)	166	76	7	10	8	66	5	7
Link Distance (ft)		1131	372	372			424	424
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)	310				225	300		
Storage Blk Time (%)								
Queuing Penalty (veh)								

Intersection: 80: CSAH 5 & Cleveland Street/Access

Movement	EB	WB	NB	NB	SB	SB	SB
Directions Served	LTR	R	L	T	L	T	R
Maximum Queue (ft)	82	23	34	8	23	4	4
Average Queue (ft)	29	2	3	0	2	0	0
95th Queue (ft)	67	13	21	6	14	3	3
Link Distance (ft)	945			1380		372	
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)		50	140		275		250
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 90: CSAH 5 & Pine Street

Movement	EB	WB	NB	SB	SB
Directions Served	LTR	LTR	LT	LT	TR
Maximum Queue (ft)	53	34	25	40	15
Average Queue (ft)	13	10	2	3	1
95th Queue (ft)	41	34	15	21	11
Link Distance (ft)	1347	726	1750	970	970
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 100: E Lafayette Street/CSAH 5 & Riverfront Drive

Movement	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	L	T	LT	R	LT	R
Maximum Queue (ft)	132	5	54	13	82	57	61	97
Average Queue (ft)	54	0	21	0	17	25	14	54
95th Queue (ft)	104	2	51	5	59	58	45	87
Link Distance (ft)		1106		1100	679		650	650
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)	100		200			25		
Storage Blk Time (%)	1				13	4		
Queuing Penalty (veh)	2				3	0		

Network Summary

Network wide Queuing Penalty: 6

10: CSAH 5 & Lime Valley Road Performance by approach

Approach	WB	NB	SB	All
Denied Del/Veh (s)	0.1	0.0	0.1	0.1
Total Del/Veh (s)	3.0	1.1	0.4	1.0

20: 574th Avenue & CSAH 5 Performance by approach

Approach	EB	WB	NB	SB	All
Denied Del/Veh (s)	0.0	0.0	0.1	1.4	0.1
Total Del/Veh (s)	1.0	0.3	3.5	3.2	1.0

30: CSAH 5 & 231st Lane/Access Performance by approach

Approach	EB	WB	NB	SB	All
Denied Del/Veh (s)	3.7	0.1	0.0	0.1	0.4
Total Del/Veh (s)	3.6	9.7	0.7	1.2	1.2

40: CSAH 5 & Access/Industrial Road Performance by approach

Approach	EB	WB	NB	SB	All
Denied Del/Veh (s)	4.2	0.1	0.0	0.0	0.1
Total Del/Veh (s)	3.3	6.5	1.4	0.3	1.3

50: CSAH 5 & Summit Avenue Performance by approach

Approach	EB	WB	NB	SB	All
Denied Del/Veh (s)	2.3	1.2	0.0	0.0	0.3
Total Del/Veh (s)	5.0	10.1	1.5	1.1	2.0

60: CSAH 5 & US 14 Westbound Exit Ramp/US 14 Westbound Entrance Ramp Performance by approach

Approach	WB	NB	SB	All
Denied Del/Veh (s)	2.3	0.0	0.4	0.6
Total Del/Veh (s)	9.2	3.4	1.5	3.4

70: CSAH 5 & US 14 Eastbound Exit Ramp/US 14 Eastbound Entrance Ramp Performance by approach

Approach	EB	NB	SB	All
Denied Del/Veh (s)	2.2	0.0	0.0	0.5
Total Del/Veh (s)	78.1	0.8	3.9	21.4

80: CSAH 5 & Cleveland Street/Access Performance by approach

Approach	EB	WB	NB	SB	All
Denied Del/Veh (s)	0.1	3.5	0.0	0.0	0.1
Total Del/Veh (s)	9.2	3.3	0.8	0.3	1.5

90: CSAH 5 & Pine Street Performance by approach

Approach	EB	WB	NB	SB	All
Denied Del/Veh (s)	0.1	0.1	0.0	0.0	0.0
Total Del/Veh (s)	4.4	3.1	0.7	0.5	0.9

100: E Lafayette Street/CSAH 5 & Riverfront Drive Performance by approach

Approach	EB	WB	NB	SB	All
Denied Del/Veh (s)	0.6	0.2	3.5	0.0	0.5
Total Del/Veh (s)	2.4	1.0	9.2	8.9	2.9

Total Network Performance

Denied Del/Veh (s)	0.9
Total Del/Veh (s)	13.3

Intersection: 10: CSAH 5 & Lime Valley Road

Movement	WB	WB	SB
Directions Served	L	R	LT
Maximum Queue (ft)	11	21	26
Average Queue (ft)	1	1	1
95th Queue (ft)	7	16	9
Link Distance (ft)	2478		2528
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)		50	
Storage Blk Time (%)		0	
Queuing Penalty (veh)		0	

Intersection: 20: 574th Avenue & CSAH 5

Movement	EB	NB	SB	SB
Directions Served	LTR	LTR	LT	R
Maximum Queue (ft)	23	24	35	60
Average Queue (ft)	1	1	5	17
95th Queue (ft)	9	11	24	50
Link Distance (ft)	1553	303	1699	
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				25
Storage Blk Time (%)			0	1
Queuing Penalty (veh)			0	0

Intersection: 30: CSAH 5 & 231st Lane/Access

Movement	EB	EB	WB	NB
Directions Served	LT	R	LTR	LT
Maximum Queue (ft)	43	73	53	61
Average Queue (ft)	2	30	5	8
95th Queue (ft)	21	63	28	33
Link Distance (ft)	972		638	251
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)		50		
Storage Blk Time (%)	0	1		
Queuing Penalty (veh)	0	0		

Intersection: 40: CSAH 5 & Access/Industrial Road

Movement	EB	EB	WB	WB	NB	SB
Directions Served	LT	R	L	TR	LT	LT
Maximum Queue (ft)	6	50	62	55	6	27
Average Queue (ft)	0	9	22	13	0	3
95th Queue (ft)	4	36	52	42	4	16
Link Distance (ft)	456		2104	2104	2671	165
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)		50				
Storage Blk Time (%)		0				
Queuing Penalty (veh)		0				

Intersection: 50: CSAH 5 & Summit Avenue

Movement	EB	EB	WB	WB	NB	NB	SB
Directions Served	LT	R	LT	R	LT	TR	LT
Maximum Queue (ft)	60	72	60	54	76	4	24
Average Queue (ft)	11	46	16	6	27	0	1
95th Queue (ft)	41	76	45	30	64	3	10
Link Distance (ft)	1395		874		1587	1587	2671
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)		50		50			
Storage Blk Time (%)	1	3	1	0			
Queuing Penalty (veh)	1	0	0	0			

Intersection: 60: CSAH 5 & US 14 Westbound Exit Ramp/US 14 Westbound Entrance Ramp

Movement	WB	WB	NB	SB	SB
Directions Served	LT	R	L	T	R
Maximum Queue (ft)	108	117	112	8	45
Average Queue (ft)	36	51	49	0	6
95th Queue (ft)	84	90	89	6	25
Link Distance (ft)	1246			1587	
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)		215	325		330
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 70: CSAH 5 & US 14 Eastbound Exit Ramp/US 14 Eastbound Entrance Ramp

Movement	EB	EB	NB	NB	NB	SB
Directions Served	L	TR	T	T	R	L
Maximum Queue (ft)	394	498	22	22	46	166
Average Queue (ft)	196	127	1	1	5	68
95th Queue (ft)	396	509	8	10	25	134
Link Distance (ft)		1131	372	372		
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)	310				225	300
Storage Blk Time (%)	16	0				
Queuing Penalty (veh)	16	0				

Intersection: 80: CSAH 5 & Cleveland Street/Access

Movement	EB	WB	WB	NB
Directions Served	LTR	LT	R	L
Maximum Queue (ft)	87	11	56	41
Average Queue (ft)	39	0	6	3
95th Queue (ft)	72	6	30	21
Link Distance (ft)	945	306		
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)			50	140
Storage Blk Time (%)			0	
Queuing Penalty (veh)			0	

Intersection: 90: CSAH 5 & Pine Street

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LT	LT
Maximum Queue (ft)	47	53	47	31
Average Queue (ft)	21	11	4	2
95th Queue (ft)	47	39	23	16
Link Distance (ft)	1347	726	1750	970
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 100: E Lafayette Street/CSAH 5 & Riverfront Drive

Movement	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	L	T	TR	LT	R	LT	R
Maximum Queue (ft)	120	3	52	25	13	56	54	53	170
Average Queue (ft)	51	0	14	1	0	10	30	13	69
95th Queue (ft)	91	2	42	12	5	38	56	42	122
Link Distance (ft)		1106		1100	1100	679		650	650
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	100		200				25		
Storage Blk Time (%)	1					5	6		
Queuing Penalty (veh)	2					2	0		

Network Summary

Network wide Queuing Penalty: 22

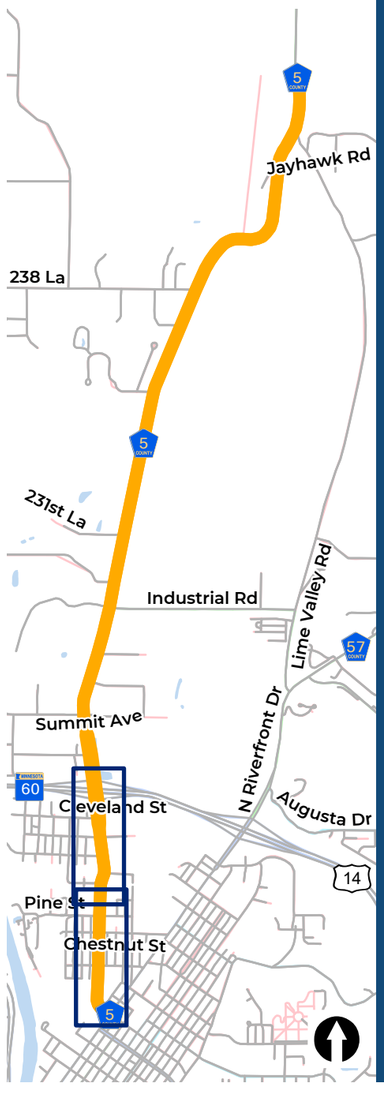
APPENDIX B: INTERSECTION CONTROL EVALUATION

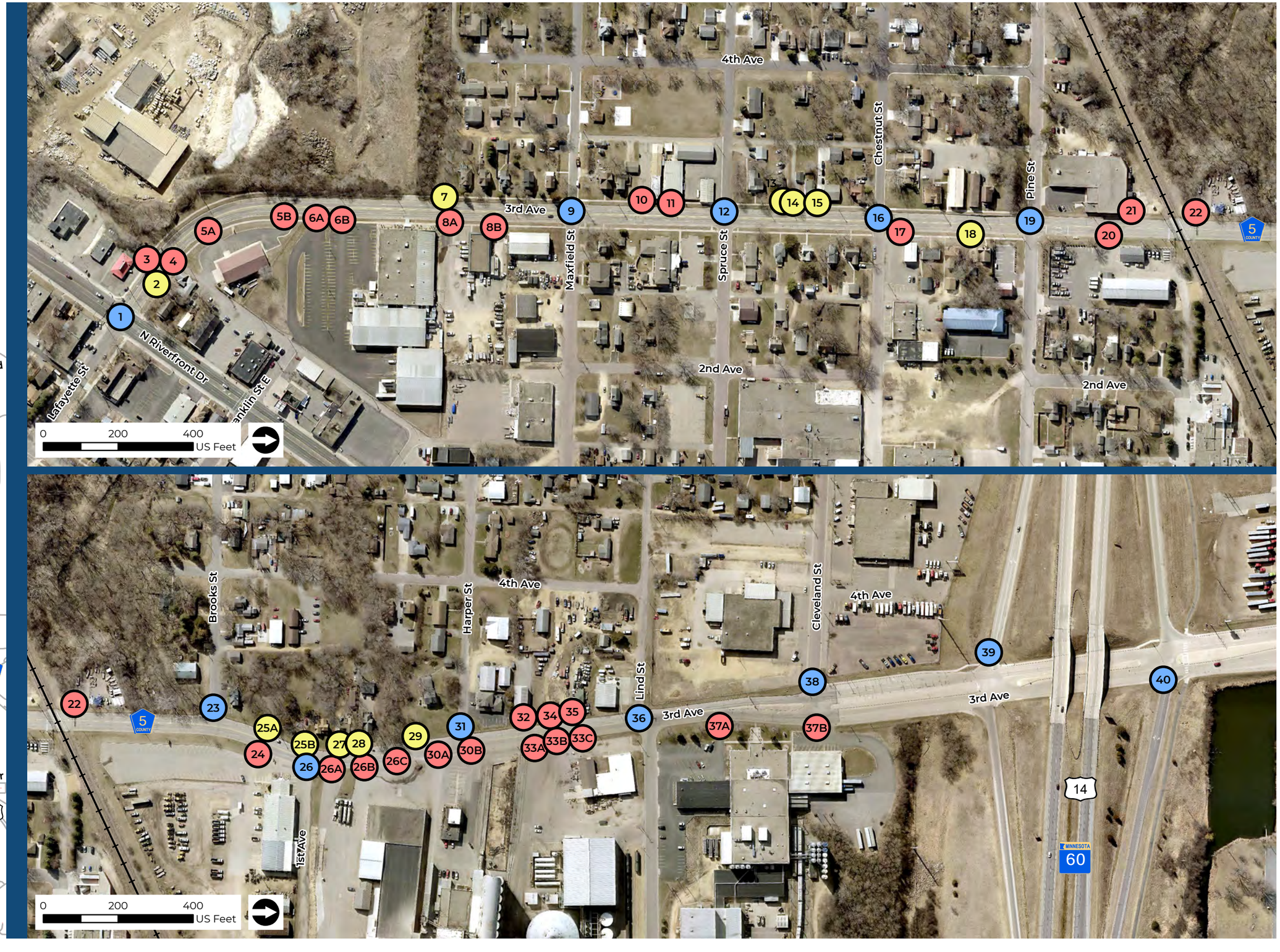
APPENDIX C: ACCESS ANALYSIS

THIRD AVE CORRIDOR STUDY

Figure #A. Access

- Commercial Access
- Residential Access
- Public Access

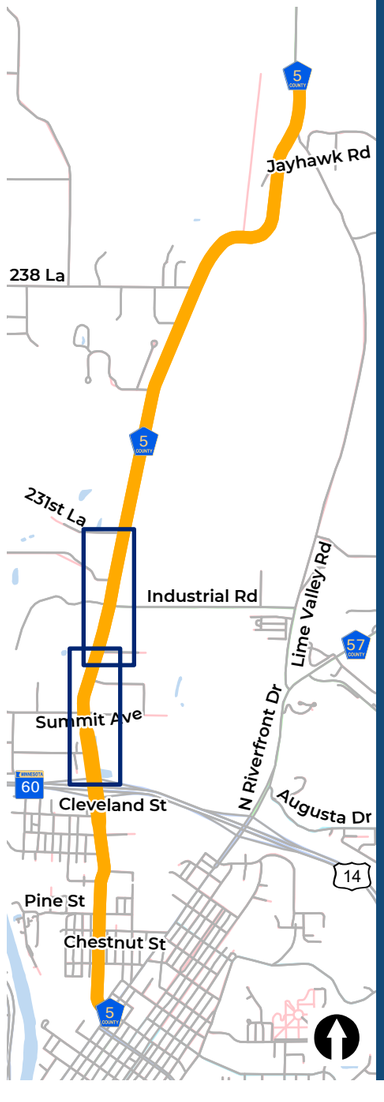


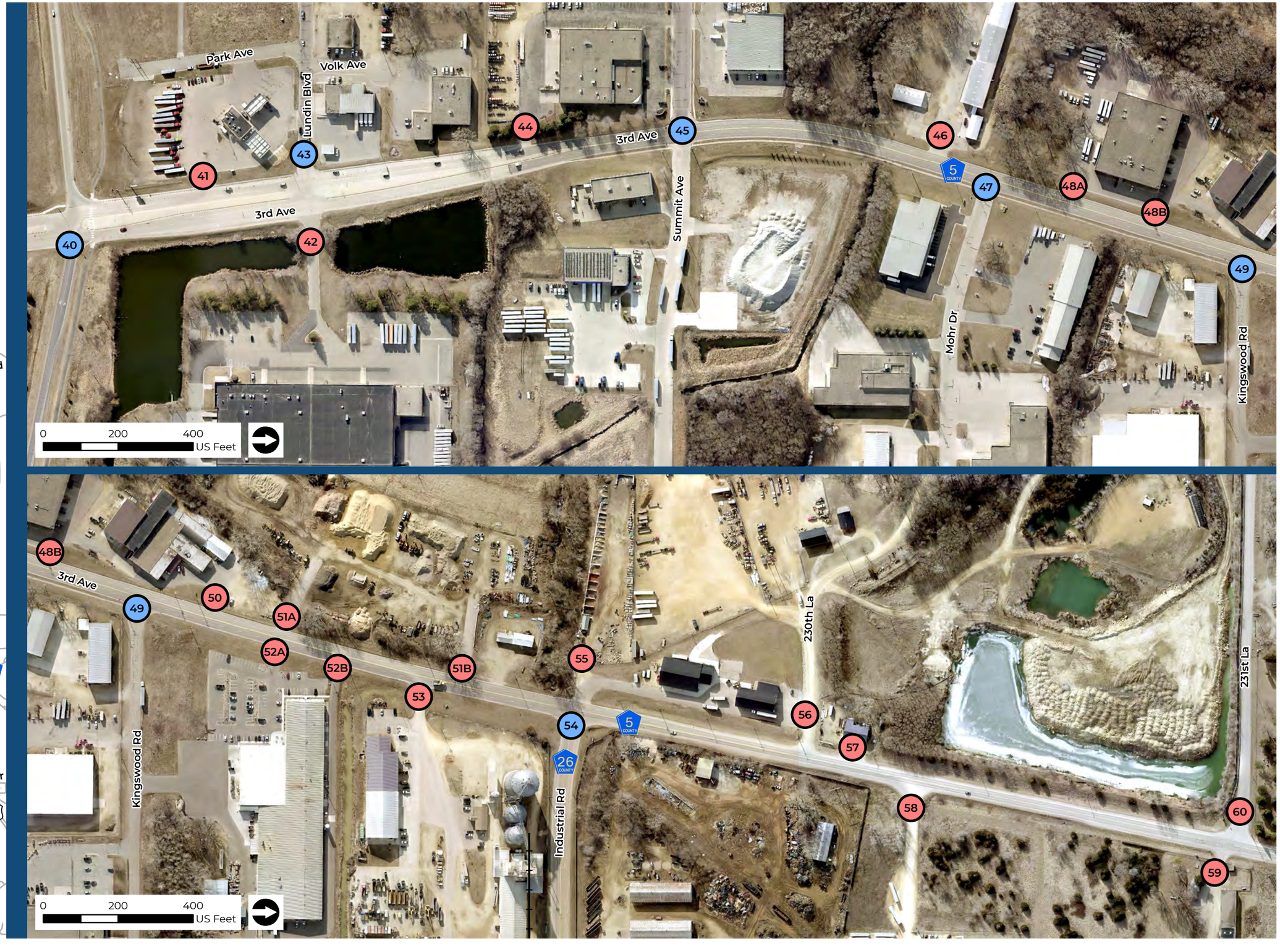


THIRD AVE CORRIDOR STUDY

Figure #B. Access

- Commercial Access
- Residential Access
- Public Access

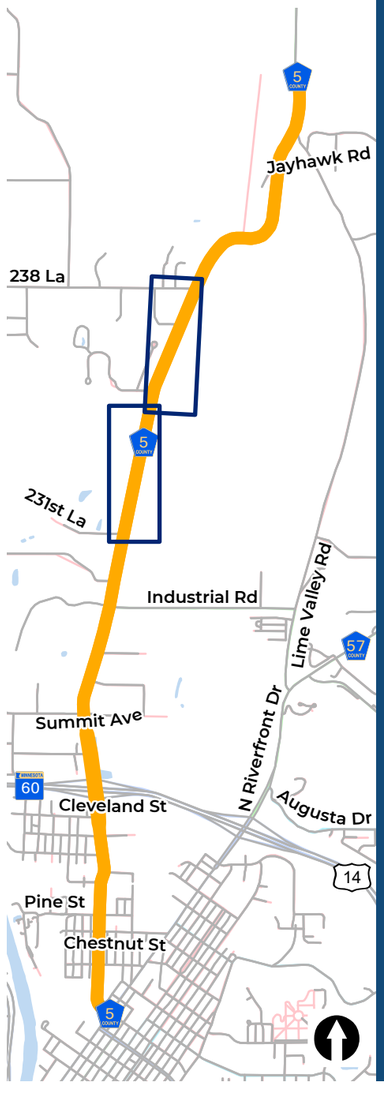


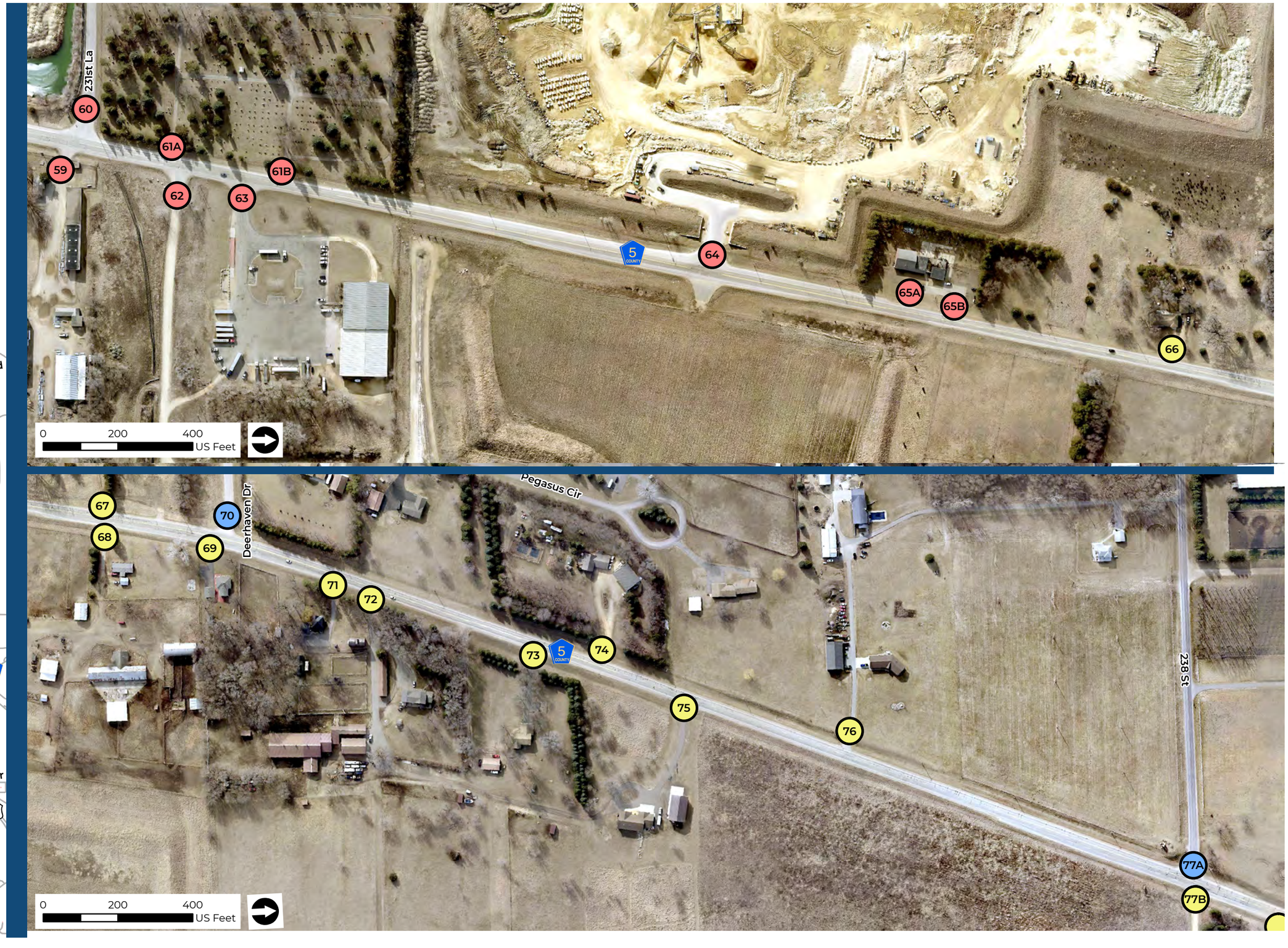


THIRD AVE CORRIDOR STUDY

Figure #B. Access

- Commercial Access
- Residential Access
- Public Access

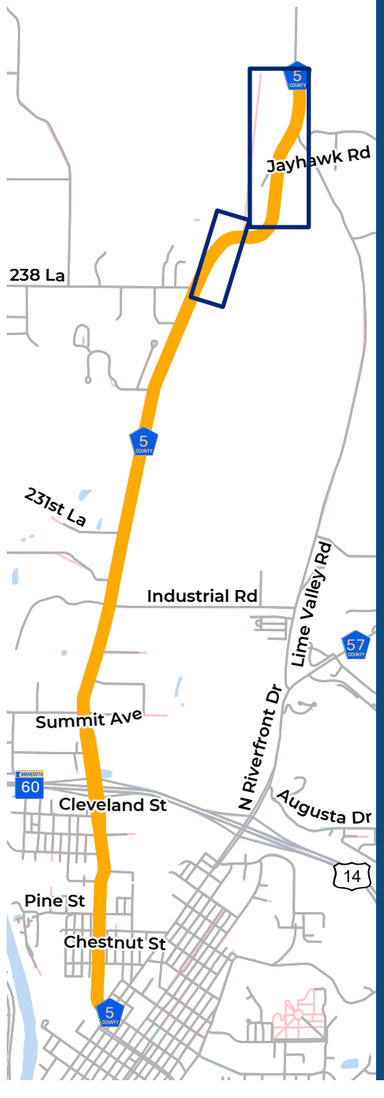


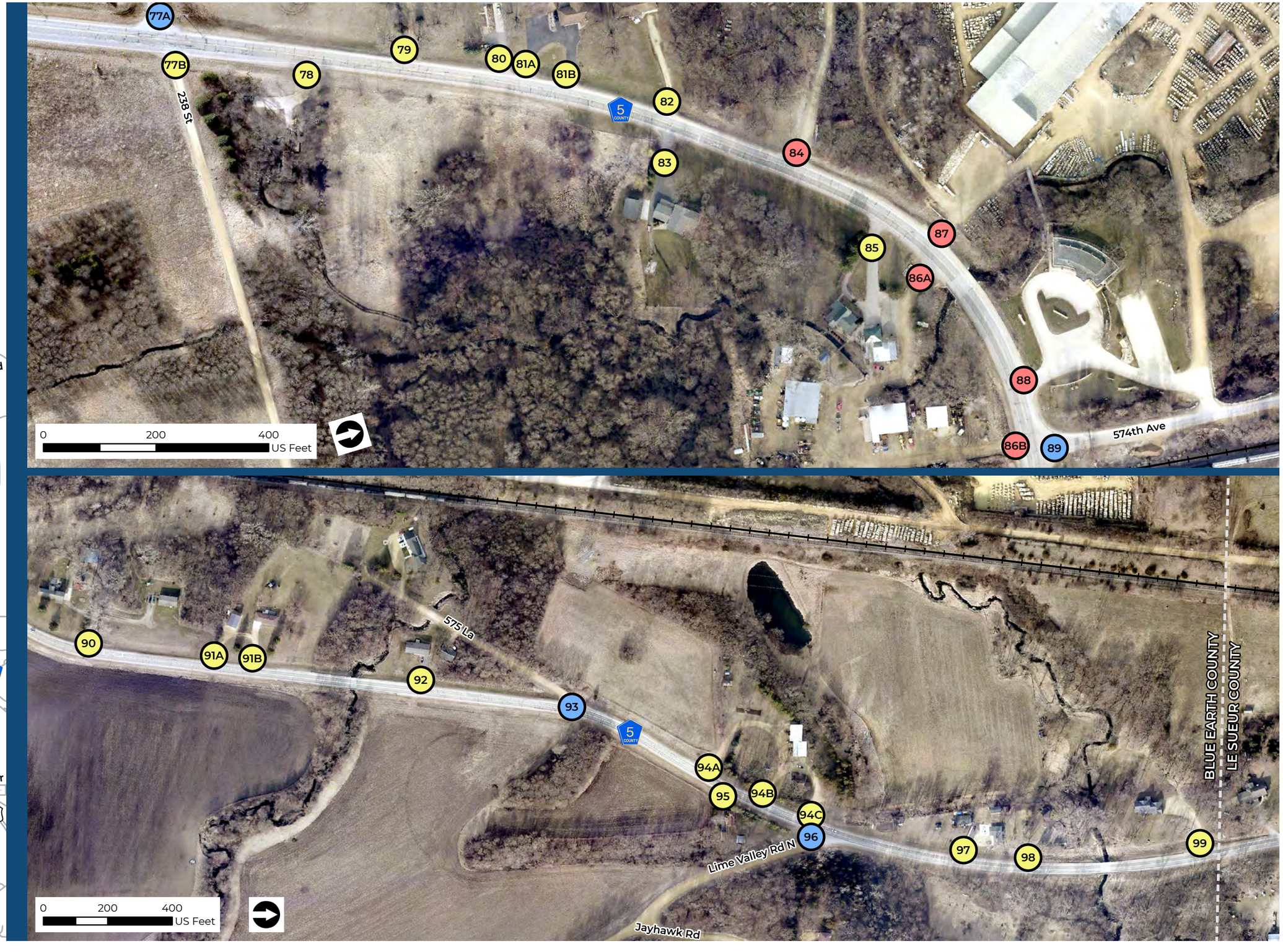


THIRD AVE CORRIDOR STUDY

Figure #D. Access

- Commercial Access
- Residential Access
- Public Access





Appendix C: Detailed Access Inventory

Access ID	Access Location	Type of Access Controls	Existing Access Configuration		Cross Street Function	Turn Lanes	Recommendations
			Full	Ri-Ro			
1	N Riverfront Drive	Side-Street Stop	X		Public Street	Southbound Right (CSAH 5), Eastbound Left and Westbound Left (N Riverfront Drive)	
2		None	X		Residential		
3	Pizza Hut Driveway	None	X		Commercial		
4	Alley	None	X		Commercial/ Residential		
5A	South Central Glass Driveway 1	None	X		Commercial		Consider closing or consolidating access 5A and 5B and using alley access (Access ID 4)
5B	South Central Glass Driveway 2	None	X		Commercial		Consider closing or consolidating access 6A and 6B
6A	Amcor Driveway 1	None	X		Commercial		Consider closing or consolidating access 6A and 6B
6B	Amcor Driveway 2	None	X		Commercial		
7		None	X		Residential		
8A	Amcor and Schmidt Shared Driveway	None	X		Commercial		Consider closing or consolidating access 8A and 8B
8B	Schmidt Driveway	None	X		Commercial		Consider closing or consolidating access 8A and 8B
9	Maxfield Street	Side-Street Stop	X		Public Street		
10	G&L Auto Supply	None	X		Commercial		Consider closing access and using alley access behind building
11	Overhead Door Company	None	X		Commercial		Consider closing access and using alley access behind building
12	Spruce Street	Side-Street Stop	X		Public Street		
13		None	X		Residential		Consider closing access and using alley access behind house
14		None	X		Residential		Consider closing access and using alley access behind house
15		None	X		Residential		Consider closing access and using alley access behind house
16	Chestnut Street	Side-Street Stop	X		Public Street		
17	Around the Clock Express Driveway	None	X		Commercial		Close access on CSAH 5 and use access on Chestnut Street
18		None	X		Residential		Consider closing access and using alley access behind house
19	Pine Street	Side-Street Stop	X		Public Street		
20	GreenCare Driveway	None	X		Commercial		Business has access via an alley from Pine Street, could consider closing access on CSAH 5
21	Goodrich Construction	None	X		Commercial		Business has access from Pine Street, could consider closing access on CSAH 5
22	GreenCare Driveway	None	X		Commercial		
23	Brooks Street	Side-Street Stop	X		Public Street		

Appendix C: Detailed Access Inventory

Access ID	Access Location	Type of Access Controls	Existing Access Configuration		Cross Street Function	Turn Lanes	Recommendations
			Full	Ri-Ro			
24	MPM Minnesota Paving & Materials Driveway	None	X		Commercial		Consider closing access and using access on 1st Avenue
25A		None	X		Residential		Consider closing or consolidating access 25A and 25B and using alley access behind house
25B		None	X		Residential		Consider closing or consolidating access 25A and 25B and using alley access behind house
26	1st Avenue	Side-Street Stop	X		Public Street		
26A	Hubbard Feeds	None	X		Commercial		Consider consolidating into 1 access point (26A, 26B, 26C)
26B	Hubbard Feeds	None	X		Commercial		Consider consolidating into 1 access point (26A, 26B, 26C)
26C	Hubbard Feeds	None	X		Commercial		Consider consolidating into 1 access point (26A, 26B, 26C)
27		None	X		Residential		
28		None	X		Residential		
29		None	X		Residential		
30A	ADM Driveway 1		X		Commercial		Discuss access and circulation needs with business. Also have access on Lind Street, could consider removing or consolidating access on CSAH 5.
30B	ADM Driveway 2		X		Commercial		Discuss access and circulation needs with business. Also have access on Lind Street, could consider removing or consolidating access on CSAH 5.
31	Harper Street	Side-Street Stop	X		Public Street		
32	7 Systems Construction Driveway		X		Commercial		
33A	ADM Driveway 3		X		Commercial		Discuss access and circulation needs with business. Also have access on Lind Street, could consider removing or consolidating access on CSAH 5.
33B	ADM Driveway 4		X		Commercial		Discuss access and circulation needs with business. Also have access on Lind Street, could consider removing or consolidating access on CSAH 5.
33C	ADM Driveway 5		X		Commercial		Discuss access and circulation needs with business. Also have access on Lind Street, could consider removing or consolidating access on CSAH 5.
34	Best Auto Sales Driveway 1		X		Commercial		Consider closing access and using access on 4th Avenue or Lind Street. Could also combine access 34 and 35.
35	Best Auto Sales Driveway 2		X		Commercial		Consider closing access and using access on 4th Avenue or Lind Street. Could also combine access 34 and 35.
36	Lind Street	Side-Street Stop	X		Public Street		
37A	Berry Driveway 1		X		Commercial		Close access on CSAH 5 and use access to parking lot on Lind Street.
37B	Berry Driveway 2		X		Commercial		Large driveway width, could consider reducing width.
38	Cleveland Street	Side-Street Stop	X		Public Street	Northbound Left, Southbound Left and Right	
39	US 14 EB Ramp	Side-Street Stop	X		Public Street	Eastbound Left and Thru-Right, Southbound Left, Northbound Right	

Appendix C: Detailed Access Inventory

Access ID	Access Location	Type of Access Controls	Existing Access Configuration		Cross Street Function	Turn Lanes	Recommendations
			Full	Ri-Ro			
40	US 14 WB Ramp	Side-Street Stop	X		Public Street	Westbound Right and Thru-Left, Northbound Left, Southbound Right	
41	Shell Driveway			X			Consider closing and using access on Lundin Blvd or Volk Avenue.
42	True Valley Driveway		X		Commercial	Northbound Left and Right, Southbound Left and Right	
43	Lundin Blvd	Side-Street Stop	X		Public Street	Northbound Left and Right, Southbound Left and Right	
44	Consolidated Communications Driveway			X	Commercial		Close access and use Summit Avenue access.
45	Summit Avenue	Side-Street Stop	X		Public Street		
46	Quality Refinishers Supply Driveway		X		Commercial		
47	Mohr Drive	Side-Street Stop	X		Public Street		
48A	Budweiser Driveway 1		X		Commercial		Discuss access and circulation needs with business to understand if accesses can be consolidated.
48B	Budweiser Driveway 2		X		Commercial		Discuss access and circulation needs with business to understand if accesses can be consolidated.
49	Kingswood Drive	Side-Street Stop	X		Public Street		
50	Linder Enterprises Driveway		X		Commercial		
51A	Lake Washington Sanitary District Driveway 1						Consider consolidating accesses.
51B	Lake Washington Sanitary District Driveway 2						Consider consolidating accesses.
52A	Jones Metal, Inc Driveway 1		X		Commercial		Business has access from Kingswood Drive, could consider closing access on CSAH 5 or consolidating accesses.
52B	Jones Metal, Inc Driveway 2		X		Commercial		Business has access from Kingswood Drive, could consider closing access on CSAH 5 or consolidating accesses.
53	New Vision Co-op Driveway		X		Commercial		
54	Industrial Road (CSAH 26)	Side-Street Stop	X		Public Street		
55	Total Landscape Supply Driveway		X		Commercial		Business has access on 230th Lane, could consider closing access on CSAH 5.
56	230th Lane	Side-Street Stop	X		Public Street		

Appendix C: Detailed Access Inventory

Access ID	Access Location	Type of Access Controls	Existing Access Configuration		Cross Street Function	Turn Lanes	Recommendations
			Full	Ri-Ro			
57	Jordan Sands Driveway		X		Commercial		
58	Estes Express Lines Driveway		X		Commercial		
59	North Kato Supply Driveway		X		Commercial		
60	231st Lane	Side-Street Stop	X		Public Street		
61A	Pilgrims Rest Cemetery Driveway 1		X		Commercial		Property has access from 231st Lane could consider closing CSAH 5 access.
61B	Pilgrims Rest Cemetery Driveway 2		X		Commercial		Property has access from 231st Lane could consider closing CSAH 5 access.
62	Jordan Sands Driveway		X		Commercial		
63	Central Farm Service (CFS) Driveway		X		Commercial		
64	Jordan Sands Driveway		X		Commercial		
65A	Here We Grow Driveway 1		X		Commercial		Consider consolidating accesses.
65B	Here We Grow Driveway 2		X		Commercial		Consider consolidating accesses.
66			X		Residential		
67	Jordan Sands Driveway		X		Commercial		
68			X		Residential		
69			X		Residential		
70	Deerhaven Drive	Side-Street Stop	X		Public Street		
71			X		Residential		
72			X		Residential		
73			X		Residential		
74			X		Residential		
75			X		Residential		
76			X		Residential		
77A	238th Lane	Side-Street Stop	X		Public Street		
77B			X		Residential		
78			X		Residential		
79			X		Residential		

Appendix C: Detailed Access Inventory

Access ID	Access Location	Type of Access Controls	Existing Access Configuration		Cross Street Function	Turn Lanes	Recommendations
			Full	Ri-Ro			
80			X		Residential		
81A			X		Residential		Consider consolidating accesses.
81B			X		Residential		Consider consolidating accesses.
82			X		Residential		
83			X		Residential		
84	Vetter Stone Driveway 1		X		Commercial		Discuss access and circulation needs with business to understand if accesses can be consolidated.
85			X		Residential		Part of Deegan Construction property, could consider consolidating accesses 85, 86A, 86B.
86A	Deegan Construction Driveway 1		X		Commercial		Consolidate accesses.
86B	Deegan Construction Driveway 1		X		Commercial		Consolidate accesses.
87	Vetter Stone Driveway 2						Discuss access and circulation needs with business to understand if accesses can be consolidated.
88	Vetter Stone Driveway 3						Discuss access and circulation needs with business to understand if accesses can be consolidated.
89	574th Avenue	Side-Street Stop	X		Public Street		
90			X		Residential		
91A			X		Residential		Consolidate accesses.
91B			X		Residential		Consolidate accesses.
92			X		Residential		
93	575th Lane	Side-Street Yield	X		Public Street		
94A			X		Residential		Consolidate accesses.
94B			X		Residential		Consolidate accesses.
94C			X		Residential		Consolidate accesses.
95			X		Residential		
96	Lime Valley Road	Side-Street Stop	X		Public Street		
97			X		Residential		
98			X		Residential		
99			X		Residential		

APPENDIX D: PUBLIC ENGAGEMENT MATERIALS

Public Meeting

March 16, 2023

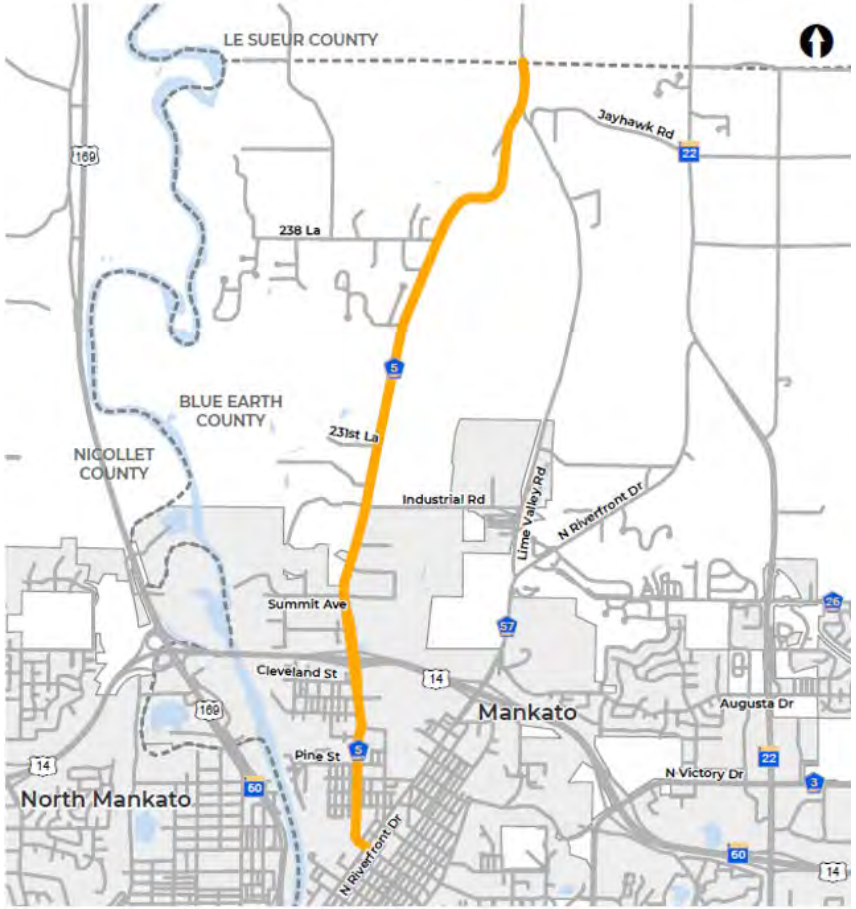
Today’s presentation

- Study Overview
- Schedule
- Engagement
- Existing Conditions/Issues
- Draft alternatives
- Next Steps

THIRD AVE CORRIDOR STUDY

Study Overview

- Led by the Mankato/North Mankato Area Planning Organization (MAPO) in partnership with Blue Earth County, City of Mankato, and Lime Township
- Blue Earth County maintains roadway jurisdiction
- Study is multimodal (pedestrian, bicycle, personal vehicle, freight-truck, freight-rail)
- Intent to guide future reconstruction
- Consider future development (quarries, etc.)

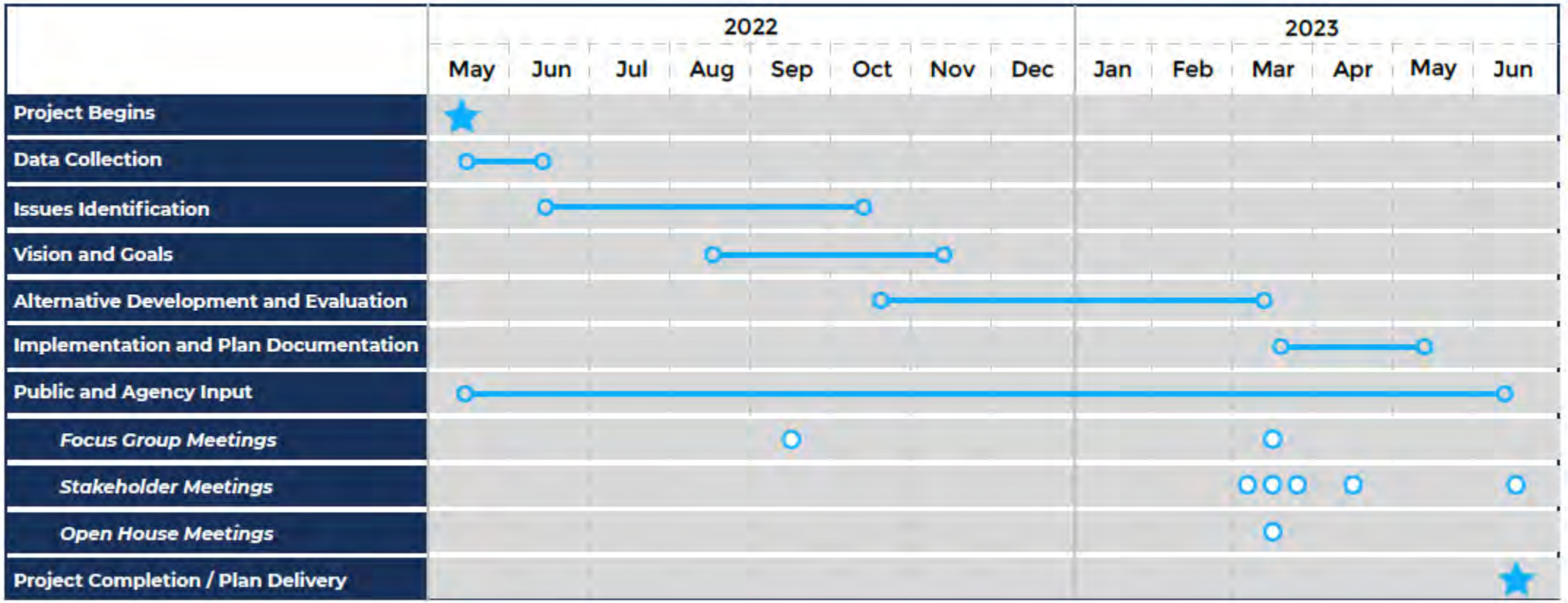


5 COUNTY THIRD AVE CORRIDOR STUDY

Study Goals

- Identify opportunities to better accommodate non-motorized & motorized transportation
- Identify existing & future challenges for safety, traffic operations, maintenance, forthcoming development, etc.
- Engage with stakeholders & the public
- Analyze alternatives based on environmental, social, & economic impacts
- Recommend a preferred alternative
- Develop implementation plan & funding strategies

Project Schedule



5 COUNTY THIRD AVE CORRIDOR STUDY

Engagement

- Website: www.countyroad5study.com
- Focus Groups held in October 2022 with corridor business / property owners
- Major themes:
  - US 14 ramp delays (all 4)
  - Sidestreet delays
  - Corridor sightline challenges
  - Delays due to rail
  - Freight movements

Issues and Needs Identified

- Majority of the segments have a crash frequency over the average rate.
- Riverfront to Lind Street has a segment crash rate 2x higher than critical crash rate.
- US 14 ramp intersections have crash rates over critical crash rate.
- US 14 eastbound ramp anticipated to have LOS C/F in 2045.
- Trains block crossings periodically.
- Access frequency is higher than recommended.
- High number of freight-centric businesses dependent on corridor, particularly for access to US 14.
- Heavy commercial vehicle traffic is 4x greater than typically seen.
- Lack of bicycle and pedestrian infrastructure on corridor.

Alternatives Development Goals

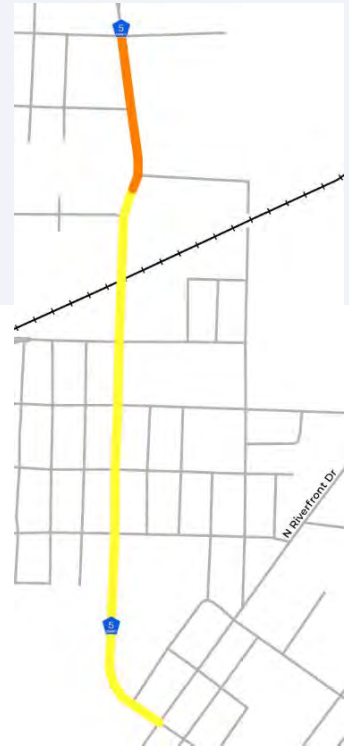
1. Increase safety for both motorized and nonmotorized users.
2. Improve overall traffic operations through efficient vehicle mobility and access management.
3. Ensure cost effective, fiscally responsible alternatives are produced.
4. Accommodate the corridor's significance to local and regional highway and rail freight movement and operations.
5. Provide a unified vision for corridor improvements that is supported by local government partners, residents, and businesses.
6. Implement a project that provides equitable benefit with consideration to environmental justice and diverse populations.
7. Improve bicycle and pedestrian connectivity along and across the corridor.

Alternatives Development

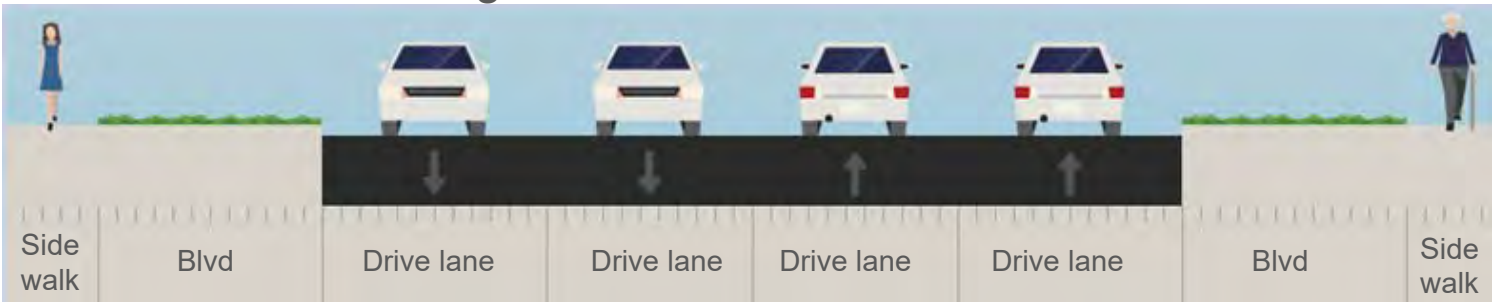
- Six segments based on roadway context and available ROW.

- Alternatives include cross sections, ped/bike improvements, and intersection treatments.

Segments 1 & 2: Riverfront Dr – Lind St

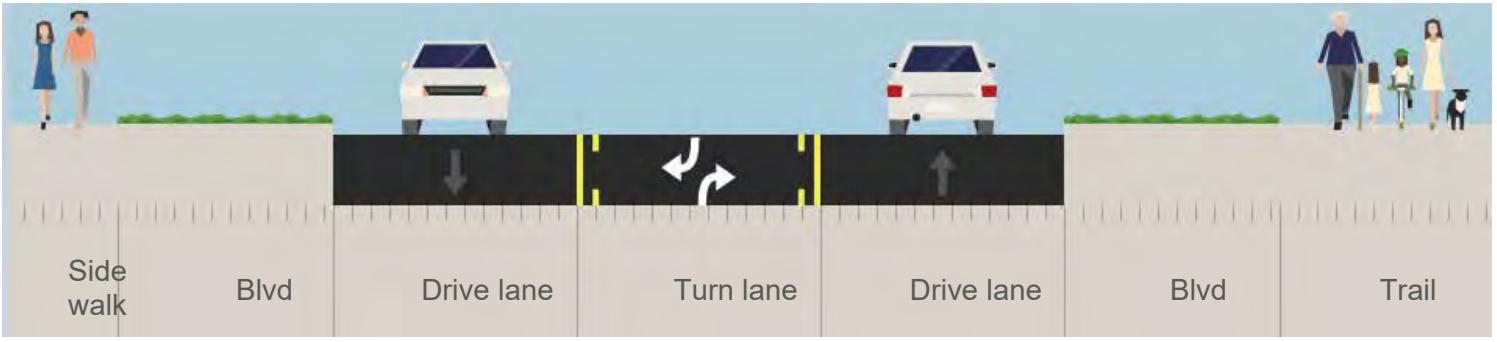


Alternative A: Existing



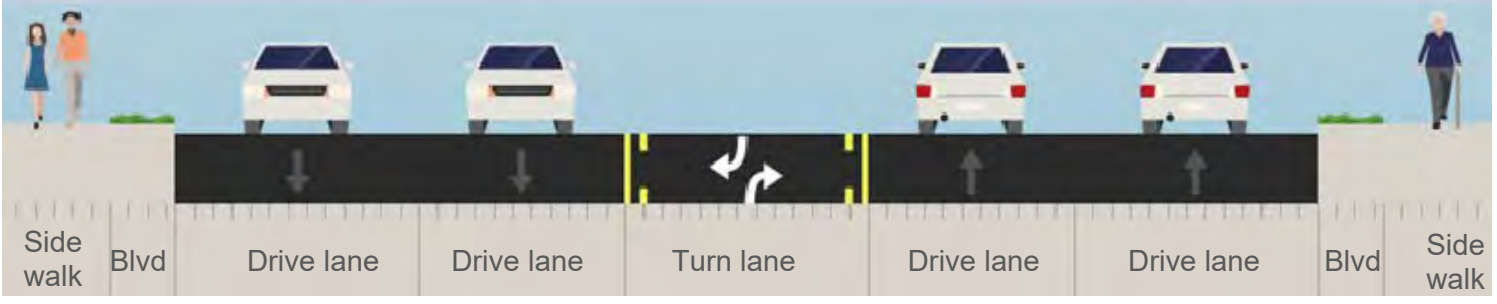
- 2045 AADT 6,500 – 7,700
- V/C ratio = 0.27-0.32
- No turn lanes
- No expanded pedestrian facilities (note: no sidewalk in Seg 2)

Alternative B: Three-lane



- V/C ratio = 0.38 – 0.45
- Turn lanes added
- Expanded pedestrian facilities
- Lowest cost

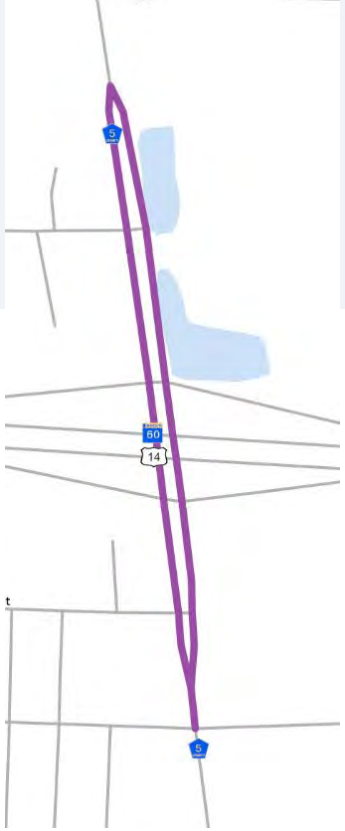
Alternative C: Five-lane



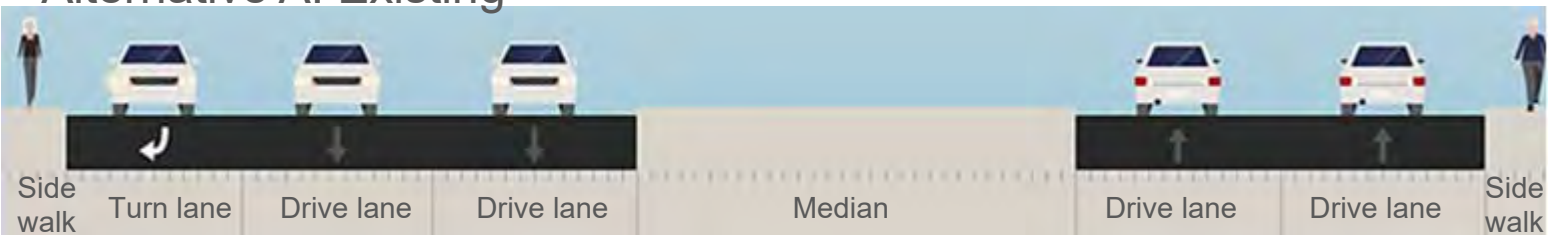
- V/C ratio = 0.27 - 0.32
- Turn lanes added
- No expanded pedestrian facilities (no sidewalk in Seg 2)
- Highest cost

5 COUNTY THIRD AVE CORRIDOR STUDY

Segment 3: Lind St – Lundin Blvd

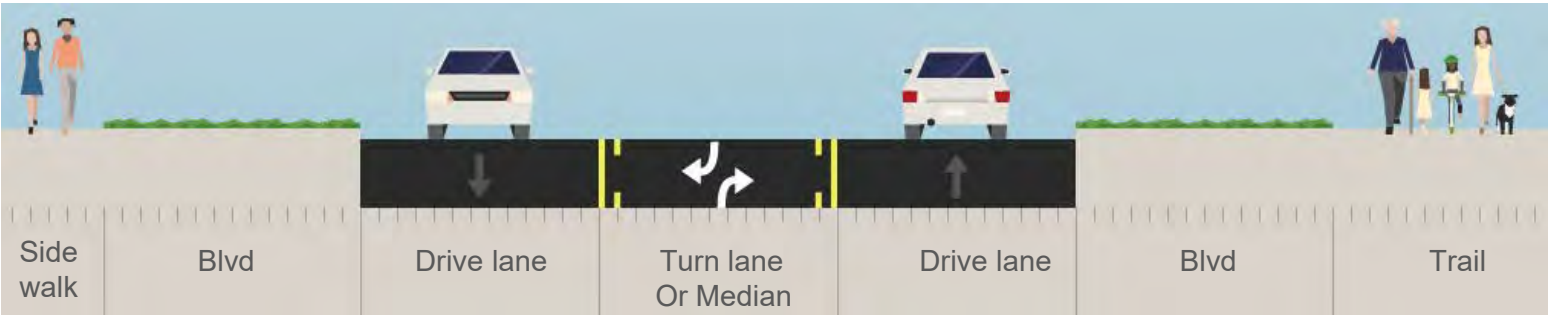


Alternative A: Existing



- 2045 AADT 7,700-15,800, V/C ratio = 0.32-0.65
- Turn lanes at intersections
- Narrow pedestrian facilities

Alternative B: Three-lane

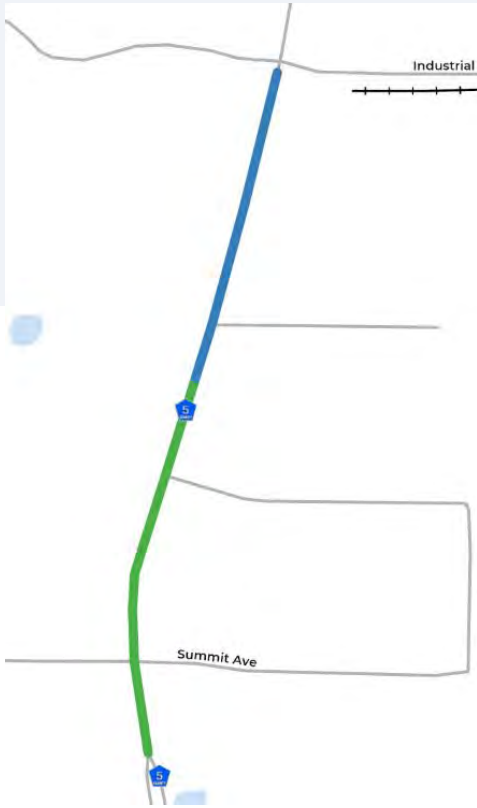


- V/C ratio = 0.32-0.93*
- Turn lanes at intersections
- Expanded pedestrian facilities
- Lowest cost

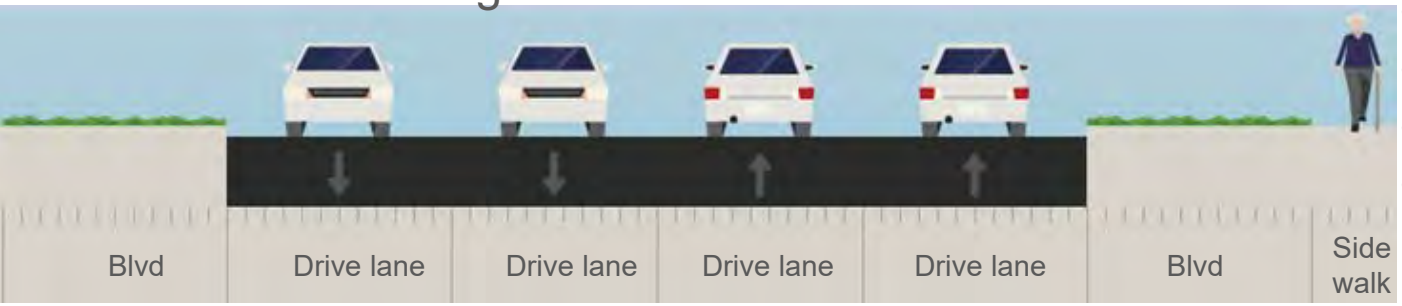
*Traffic volumes have been declining in recent years with a reduction of 5% between 2018 and 2023.

THIRD AVE CORRIDOR STUDY

Segments 4 & 5: Lundin Blvd – CSAH 26

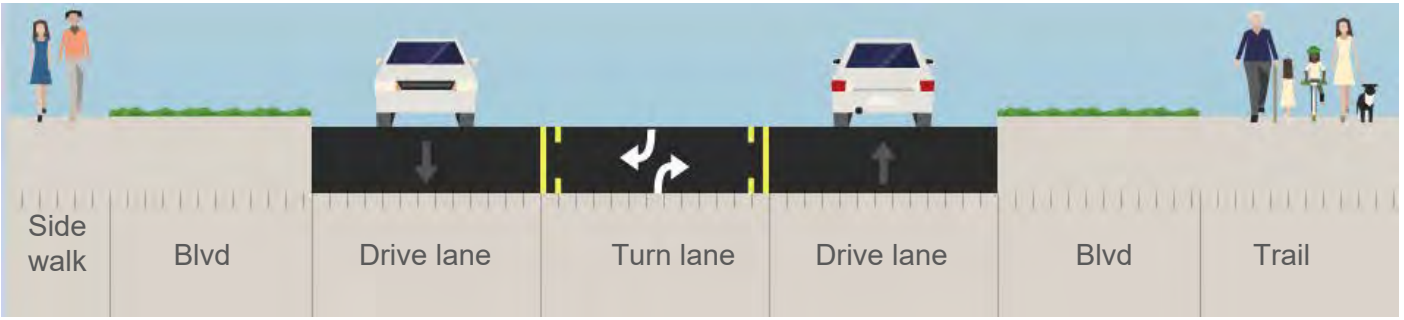


Alternative A: Existing



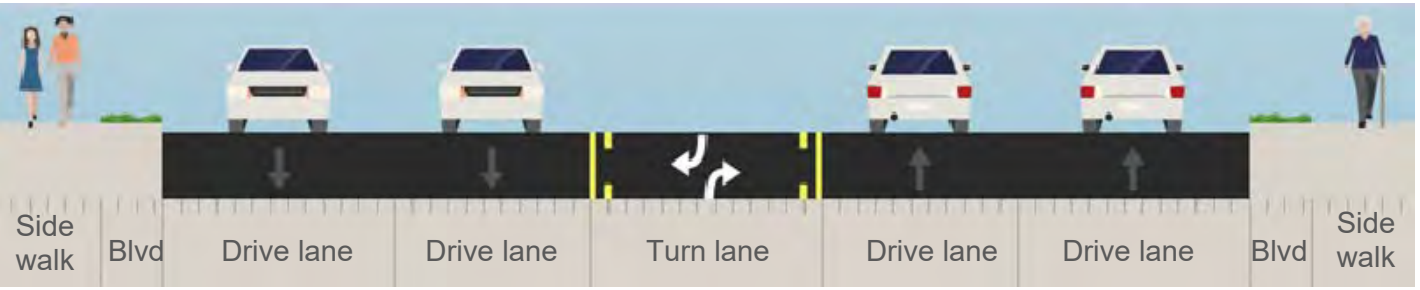
- 2045 AADT 9,100
- V/C ratio = 0.37
- No turn lanes
- No expanded pedestrian facilities (note: sidewalk on one-side in Seg 4 and no sidewalk in Seg 5)

Alternative B: Three-lane



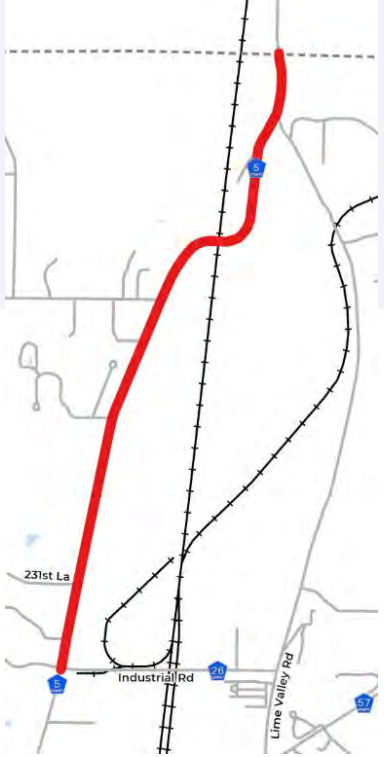
- V/C ratio = 0.53
- Turn lanes added
- Expanded pedestrian facilities
- Lowest cost

Alternative C: Five-lane

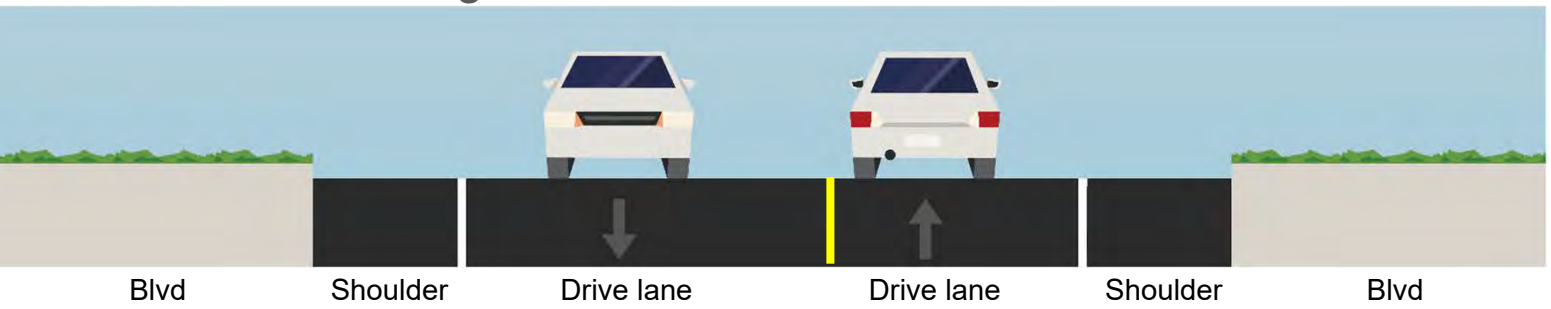


- V/C ratio = 0.37
- Turn lanes added
- Highest cost

Segment 6: CSAH 26 – BEC Line

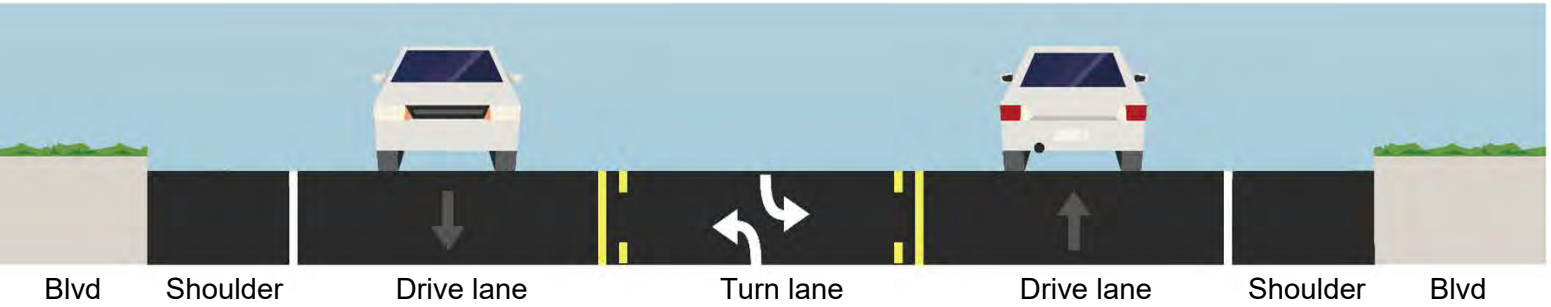


Alternative A: Existing



- 2045 AADT 9,100
- V/C ratio = 0.65
- No turn lanes
- No pedestrian facilities*

Alternative B: Three-lane



- V/C ratio = 0.53
- Turn lanes at intersections = safer
- No pedestrian facilities*

*Currently there is low demand for pedestrian facilities in this segment.

5 COUNTY THIRD AVE CORRIDOR STUDY

Alternatives Evaluation

- **Safety** - Improve vehicle safety along and across the corridor.
- **Traffic Operations** - Improve or preserve traffic operations.
- **Maintenance** – Minimize future maintenance costs.
- **Ped / Bike** – Improve the safety, comfort, and connectivity of walkers, rollers, and bicyclists.
- **Freight Impacts** - Improve or preserve freight movements, access, and travel times.
- **Planning-Level Construction Costs** – Minimize construction costs.

Segments 1 & 2: Riverfront Dr – Lind St

- Considerations
  - Alternative B provides a safer, lower-cost option for all users while reducing traffic volume capacity.
  - Alternative C expands traffic volume capacity with higher maintenance costs and reduction of safety and comfort for multimodal users.

Alternative	Traffic Operations	Safety	Maintenance	Ped / Bike	Freight	Planning Level Cost Est.
A Existing	●	●	●	●	●	-
B Three-Lane	●	●	●	●	●	$5.7M
C Five-Lane	●	●	●	●	●	$7.7M

● = positive impact, ● = neutral impact, ● = negative impact

5 COUNTY THIRD AVE CORRIDOR STUDY

Segment 3: Lind St – Lundin Blvd

- Considerations
  - Alternative A meets existing and future traffic volume demands.
  - Alternative B provides a more balanced option for all users that is lower in cost to maintain while reducing traffic volume capacity.

Alternative	Traffic Operations	Safety	Maintenance	Ped / Bike	Freight	Planning Level Cost Est.
A Existing	●	●	●	●	●	-
B Three-Lane	●	●	●	●	●	$3.3M

● = positive impact, ● = neutral impact, ● = negative impact

Segments 4 & 5: Lundin Blvd – CSAH 26

- Considerations
  - Alternative B provides a safer, lower-cost option for all users while reducing traffic volume capacity.
  - Alternative C expands traffic volume capacity with higher maintenance costs and reduction of safety and comfort for multimodal users.

Alternative	Traffic Operations	Safety	Maintenance	Ped / Bike	Freight	Planning Level Cost Est.
A Existing	●	●	●	●	●	-
B Three-Lane	●	●	●	●	●	$3.9M
C Five-Lane	●	●	●	●	●	$5.3M

● = positive impact, ● = neutral impact, ● = negative impact

5 COUNTY THIRD AVE CORRIDOR STUDY

Segment 6: CSAH 26 – BEC Line

- Considerations:
  - Alternative A meets existing and future traffic volume demands.
  - Alternative B provides a safer option with the addition of turn lanes but would require higher maintenance costs.

Alternative	Traffic Operations	Safety	Maintenance	Ped / Bike	Freight	Planning Level Cost Est.
A Existing	●	●	●	●	●	-
B Three-Lane	●	●	●	●	●	$13.35M

● = positive impact, ● = neutral impact, ● = negative impact

5 COUNTY THIRD AVE CORRIDOR STUDY

Third Avenue Realignment (Opportunity-Driven)

Opportunities

- Improvements to traffic operations.
- Anticipated safety benefits from access reduction (removes side street stop at Third Avenue and Riverfront Drive).
- Improves regional connectivity between Madison Avenue and Third Avenue corridors, including seamless access to US 14.

Challenges

- Acquisition of right-of-way and business impacts.
- Construction cost of roadway realignment.

US 14 Ramps

- By 2045, US 14 EB ramp intersection expected to operate at a LOS F during the p.m. peak hour. Traffic volumes in recent years have been declining.
- Both ramps are above the critical crash rate (all crashes).
- Signal or multi-way stop warrants are not met for existing or 2045 volumes.
- Historical trends indicate the volumes are decreasing. recommended that the intersection continue to be monitored for volume.
- The single lane roundabout alternative has the potential to provide the greatest safety benefit at both intersections. Due to the high volume of heavy commercial traffic along this corridor along with public and industry feedback in opposition to roundabout intersection control, roundabouts are not recommended at this time but could be considered in the future if traffic volumes show notable increases or safety issues warrant.

Eastbound Ramp

Alternative	2045 AM LOS	2045 PM LOS
Side-Street Stop (No Build)	A/B	C/F
All-Way Stop	B	A
Signal	B	B
Single Lane Roundabout	A/A	A/A

Westbound Ramp

Alternative	2045 AM LOS	2045 PM LOS
Side-Street Stop (No Build)	A/A	A/A
All-Way Stop	A	A
Signal	A	A
Single Lane Roundabout	A/A	A/B

Southern Railroad Crossing

- Option 1: median improvement (Mankato Quiet Zone Study)
  - Does not mitigate delays
  - Est. construction cost $119,000
- Option 2: four-quadrant gate improvement (Mankato Quiet Zone Study)
  - Does not mitigate delays
  - Est. construction cost $694,000
- Option 3: Grade Separation
  - Impacts to private property
  - Mitigates delays
  - Est. construction cost $20M - $50M

Northern Railroad Crossing

- Consider Advanced Warning System
- Consider grade separation feasibility study

THIRD AVE CORRIDOR STUDY

Next Steps

- Visit study website: www.countyroad5study.com
- Provided your feedback via survey XXX
- Study complete in June 2023
- Contact:
  - Molly Stewart – Project Manager, SRF Consulting Group
  - mstewart@srfconsulting.com
  - (763) 452-4784

THIRD AVE CORRIDOR STUDY

Questions / Discussion

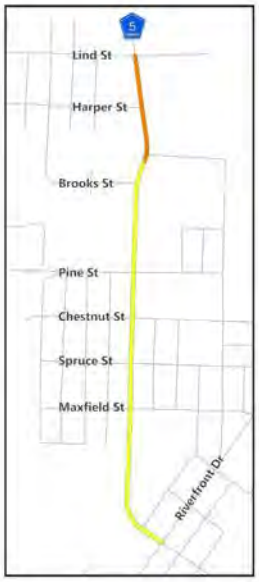
County Road 5 (Third Avenue Corridor)

5 COUNTY **THIRD AVE CORRIDOR STUDY**

County Road 5 (Third Avenue Corridor)

The Mankato/North Mankato Area Planning Organization (MAPO) along with Blue Earth County, the City of Mankato, and Lime Township are leading a collaborative effort to develop a future vision for County Road 5 (Third Avenue) from Riverfront Drive in Mankato to the Blue Earth County line. The corridor has been divided into six segments (see graphic) and the alternatives being considered for each segment are detailed below. Please provide your preferences for each segment.

Segments 1 & 2: Riverfront Drive - Lind Street



Segments 1 & 2 Alternatives Evaluation

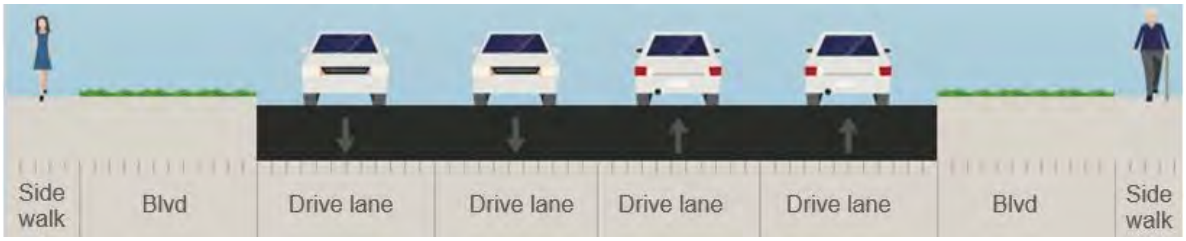
Alternative	Traffic	Safety	Maintenance	Ped / Bike	Freight	$
A Existing	●	●	●	●	●	-
B Three-Lane	●	●	●	●	●	$5.7M
C Five-Lane	●	●	●	●	●	$7.7M

● = positive impact, ● = neutral impact, ● = negative impact

Considerations

- **Alternative B** provides a safer, lower-cost option for all users while reducing traffic volume capacity.
- **Alternative C** expands traffic volume capacity with higher maintenance costs and reduction of safety and comfort for multimodal users.

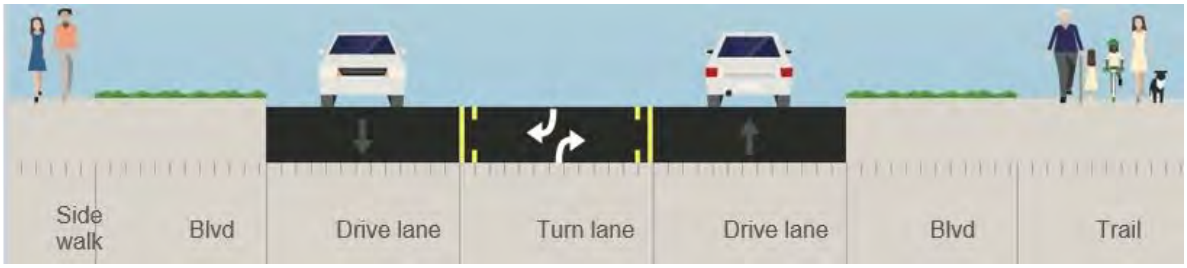
Alternative A: Existing



1. What is your level of support for Alternative A: Existing?

Strongly oppose	Oppose	Neutral	Support	Strongly support
☆	☆	☆	☆	☆

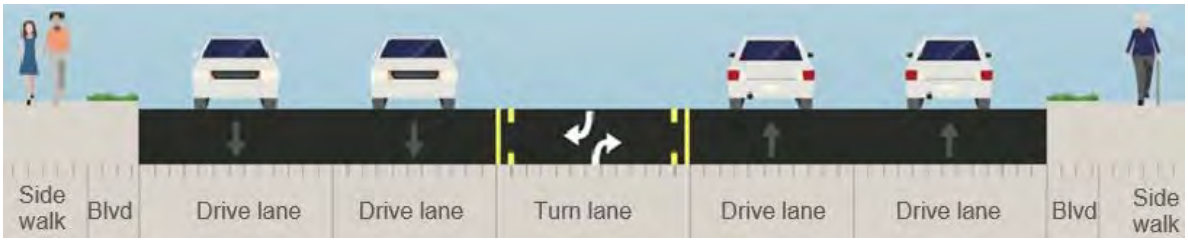
Alternative B: Three-lane



2. What is your level of support for Alternative B: Three-lane?

Strongly oppose	Oppose	Neutral	Support	Strongly support
☆	☆	☆	☆	☆

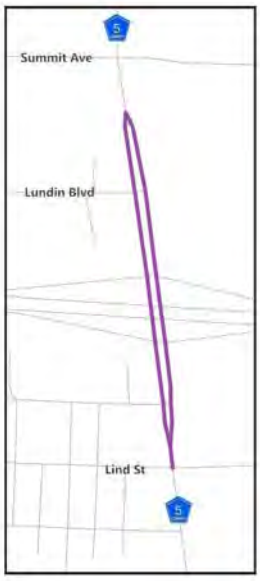
Alternative C: Five-lane



3. What is your level of support for Alternative C: Five-lane?

Strongly oppose	Oppose	Neutral	Support	Strongly support
☆	☆	☆	☆	☆

Segment 3: Lind Street - Lundin Blvd



Segment 3 Alternatives Evaluation

Alternative	Traffic	Safety	Maintenance	Ped / Bike	Freight	$
A Existing	●	●	●	●	●	-
B Three-Lane	●	●	●	●	●	$3.3M

● = positive impact, ● = neutral impact, ● = negative impact

Considerations

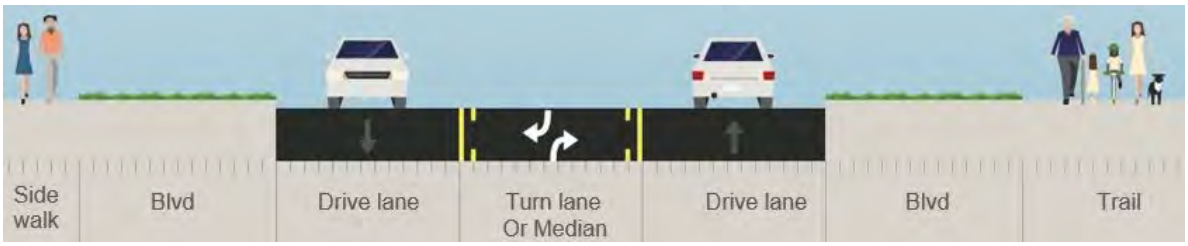
- **Alternative A** meets existing and future traffic volume demands.
- **Alternative B** provides a more balanced option for all users that is lower in cost to maintian while reducing traffic volume capacity.

Alternative A: Existing

4. What is your level of support for Alternative A: Existing?

Strongly oppose	Oppose	Neutral	Support	Strongly support
★	★	★	★	★

Alternative B: Three-lane



5. What is your level of support for Alternative B: Three-lane?

Strongly oppose	Oppose	Neutral	Support	Strongly support
★	★	★	★	★

Segments 4 & 5: Lundin Blvd - CSAH 26

Segments 4 & 5 Alternatives Evaluation

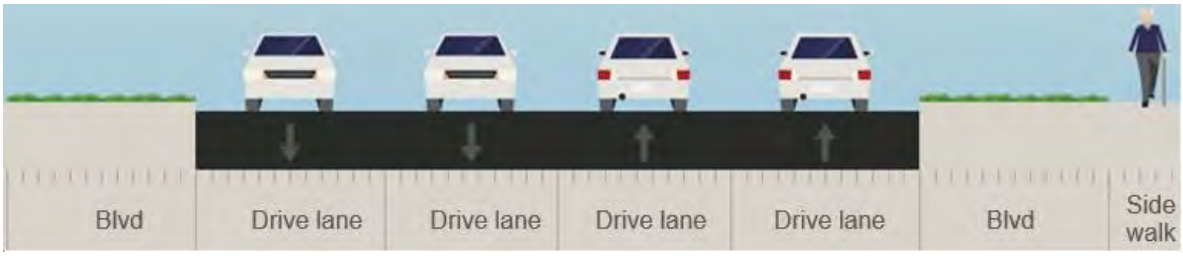
Alternative	Traffic	Safety	Maintenance	Ped / Bike	Freight	$
A Existing	●	●	●	●	●	-
B Three-Lane	●	●	●	●	●	$3.9M
C Five-Lane	●	●	●	●	●	$5.3M

● = positive impact, ● = neutral impact, ● = negative impact

Considerations

- **Alternative B** provides a safer, lower-cost option for all users while reducing traffic volume capacity.
- **Alternative C** expands traffic volume capacity with higher maintenance costs and reduction of safety and comfort for multimodal users.

Alternative A: Existing



6. What is your level of support for Alternative A: Existing?

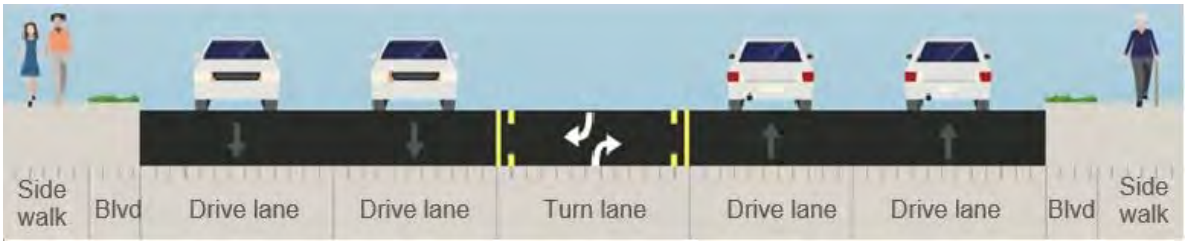
Strongly oppose	Oppose	Neutral	Support	Strongly support
★	★	★	★	★

Alternative B: Three-lane

7. What is your level of support for Alternative B: Three-lane?

Strongly oppose	Oppose	Neutral	Support	Strongly support
☆	☆	☆	☆	☆

Alternative C: Five-lane



8. What is your level of support for Alternative C: Five-lane?

Strongly oppose	Oppose	Neutral	Support	Strongly support
☆	☆	☆	☆	☆

Segment 6: CSAH 26 - BEC Line

Segment 6 Alternatives Evaluation

Alternative	Traffic	Safety	Maintenance	Ped / Bike	Freight	$
A Existing	●	●	●	●	●	-
B Three-Lane	●	●	●	●	●	$13.35M

● = positive impact, ● = neutral impact, ● = negative impact

Considerations

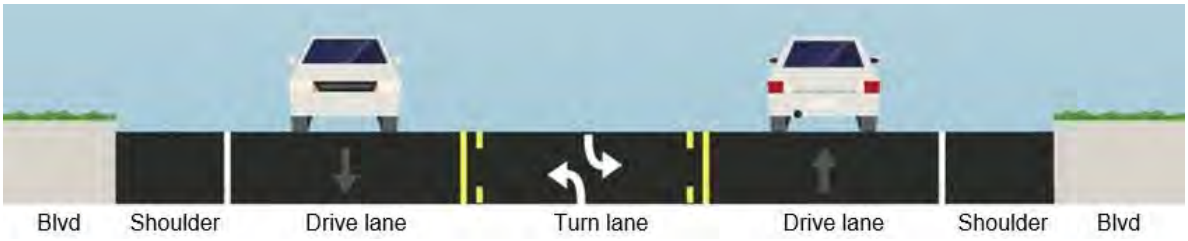
- **Alternative A** meets existing and future traffic volume demands.
- **Alternative B** provides a safer option with the addition of turn lanes but would require higher maintenance costs.

Alternative A: Existing

9. What is your level of support for Alternative A: Existing?

Strongly oppose	Oppose	Neutral	Support	Strongly support
☆	☆	☆	☆	☆

Alternative B: Three-lane



10. What is your level of support for Alternative B: Three-lane?

Strongly oppose	Oppose	Neutral	Support	Strongly support
☆	☆	☆	☆	☆

11. Describe your reasons for traveling through the CSAH 5 (Third Avenue) Corridor (select all that apply).

- ☐ Commuter (just passing through)
- ☐ Commuter (employed in Mankato/Blue Earth County)
- ☐ Corridor-area Business Owner
- ☐ Corridor-area resident
- ☐ Other (please specify)

12. What is your primary mode of transportation when traveling along and across the corridor?

- [ ] Walking, wheelchair, or personal assistance device
- [ ] Bicycle
- [ ] Personal automobile
- [ ] Heavy commercial vehicle of freight truck
- [ ] Other (please specify)

13. OPTIONAL: What is your age?

- ◯ Under 18
- ◯ 18-24
- ◯ 25-34
- ◯ 35-44
- ◯ 45-54
- ◯ 55-64
- ◯ 65+

14. OPTIONAL: How do you describe your race, ethnicity, or national origin?

- [ ] White
- [ ] Black or African American
- [ ] Hispanic or Latino
- [ ] Asian or Asian American
- [ ] American Indian or Alaska Native
- [ ] Native Hawaiian or other Pacific Islander
- [ ] Middle Eastern or North African
- [ ] Other (please specify)

15. OPTIONAL: What is your yearly household income?

- ◯ Under $15,000
- ◯ Between $15,000 and $29,999
- ◯ Between $30,000 and $49,999
- ◯ Between $50,000 and $74,999
- ◯ Between $75,000 and $99,999
- ◯ Between $100,000 and $150,000
- ◯ Over $150,000

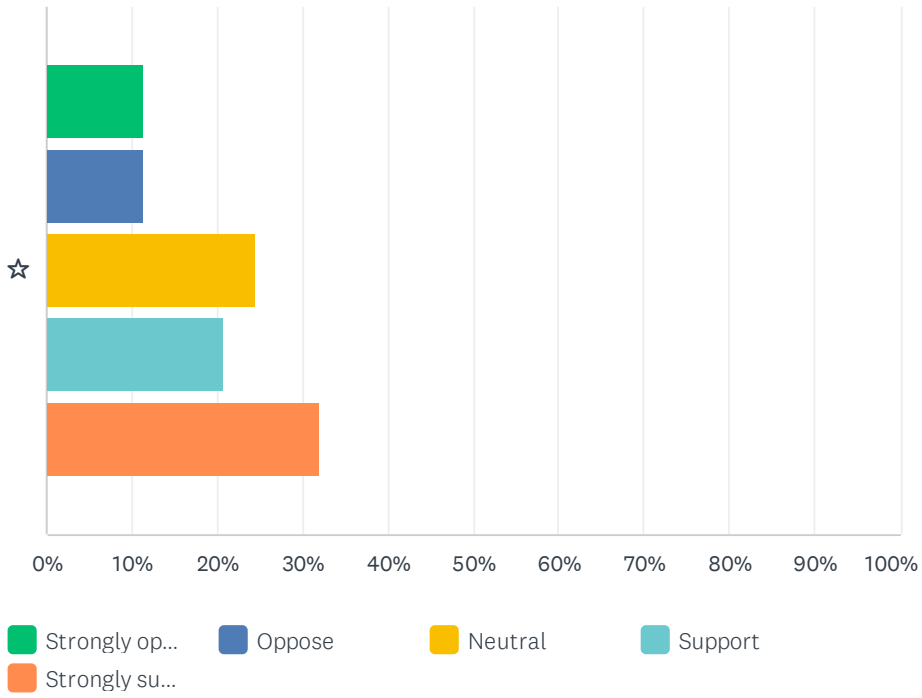
16. OPTIONAL: What is your gender identity?

- ◯ Male
- ◯ Female
- ◯ Non-binary
- ◯ Other (please specify)

17. Please provide any additional comments you have about CSAH 5 (Third Avenue)

Q1 What is your level of support for Alternative A: Existing?

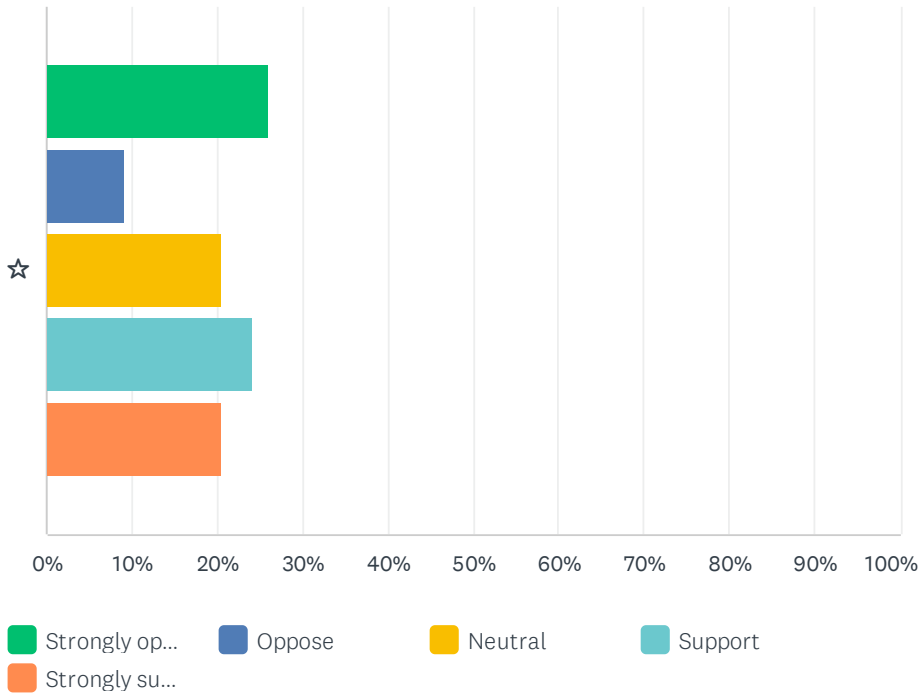
Answered: 53 Skipped: 4



	STRONGLY OPPOSE	OPPOSE	NEUTRAL	SUPPORT	STRONGLY SUPPORT	TOTAL	WEIGHTED AVERAGE
☆	11.32% 6	11.32% 6	24.53% 13	20.75% 11	32.08% 17	53	3.51

Q2 What is your level of support for Alternative B: Three-lane?

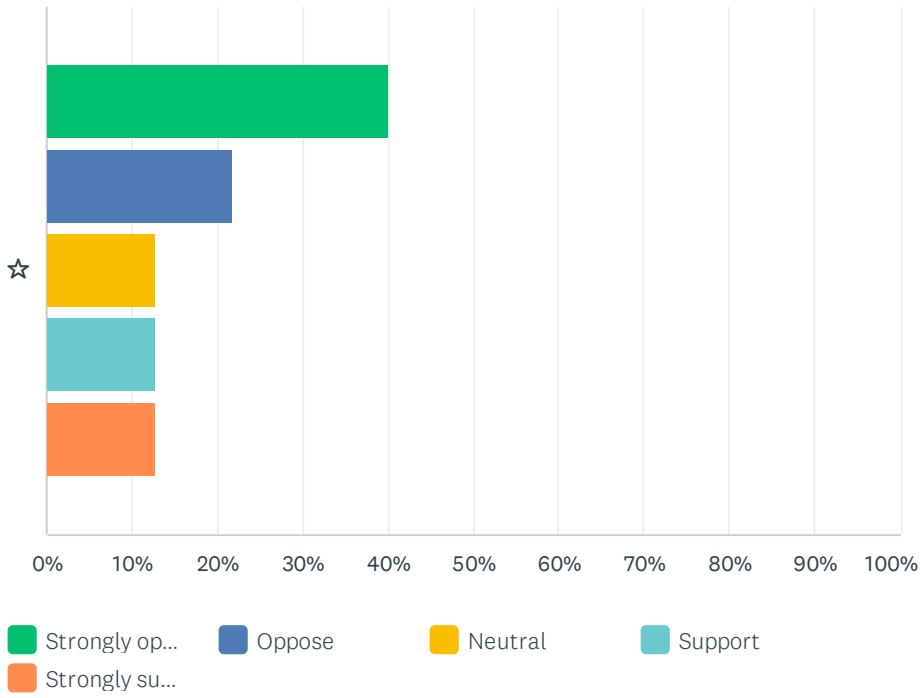
Answered: 54 Skipped: 3



	STRONGLY OPPOSE	OPPOSE	NEUTRAL	SUPPORT	STRONGLY SUPPORT	TOTAL	WEIGHTED AVERAGE
☆	25.93% 14	9.26% 5	20.37% 11	24.07% 13	20.37% 11	54	3.04

Q3 What is your level of support for Alternative C: Five-lane?

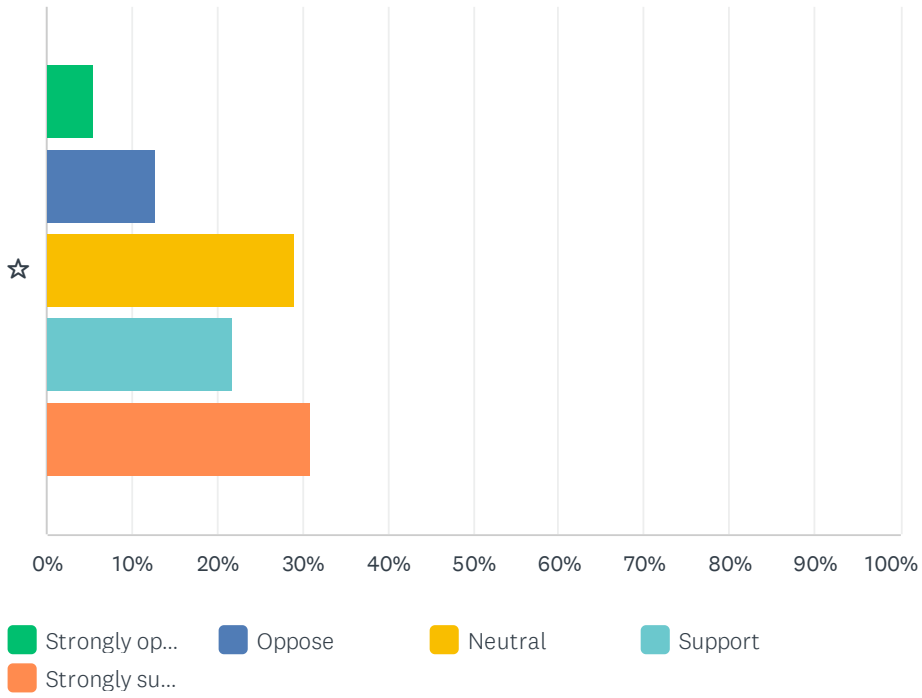
Answered: 55 Skipped: 2



	STRONGLY OPPOSE	OPPOSE	NEUTRAL	SUPPORT	STRONGLY SUPPORT	TOTAL	WEIGHTED AVERAGE
☆	40.00% 22	21.82% 12	12.73% 7	12.73% 7	12.73% 7	55	2.36

Q4 What is your level of support for Alternative A: Existing?

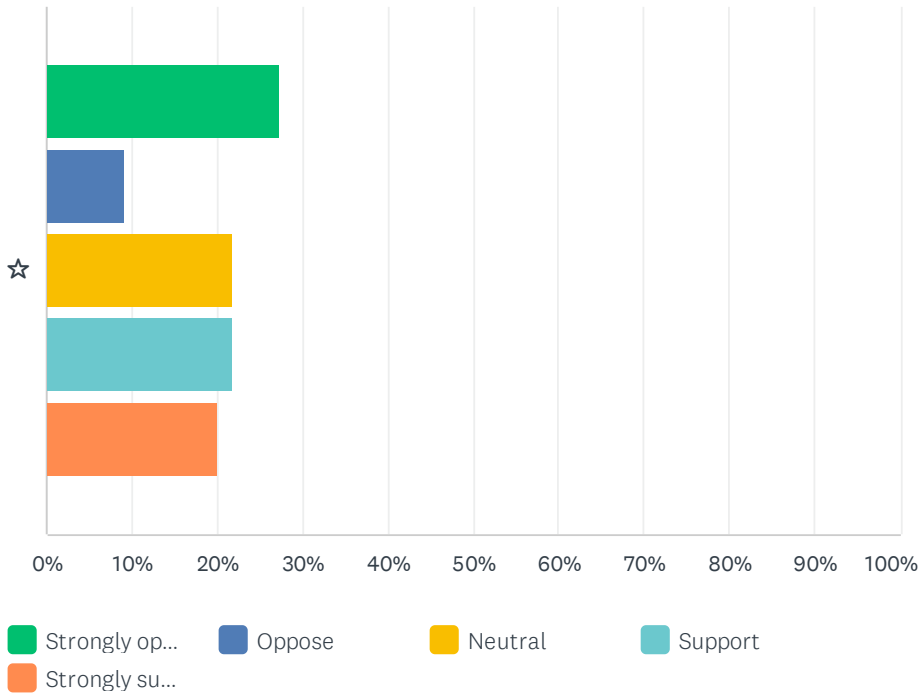
Answered: 55 Skipped: 2



	STRONGLY OPPOSE	OPPOSE	NEUTRAL	SUPPORT	STRONGLY SUPPORT	TOTAL	WEIGHTED AVERAGE
☆	5.45% 3	12.73% 7	29.09% 16	21.82% 12	30.91% 17	55	3.60

Q5 What is your level of support for Alternative B: Three-lane?

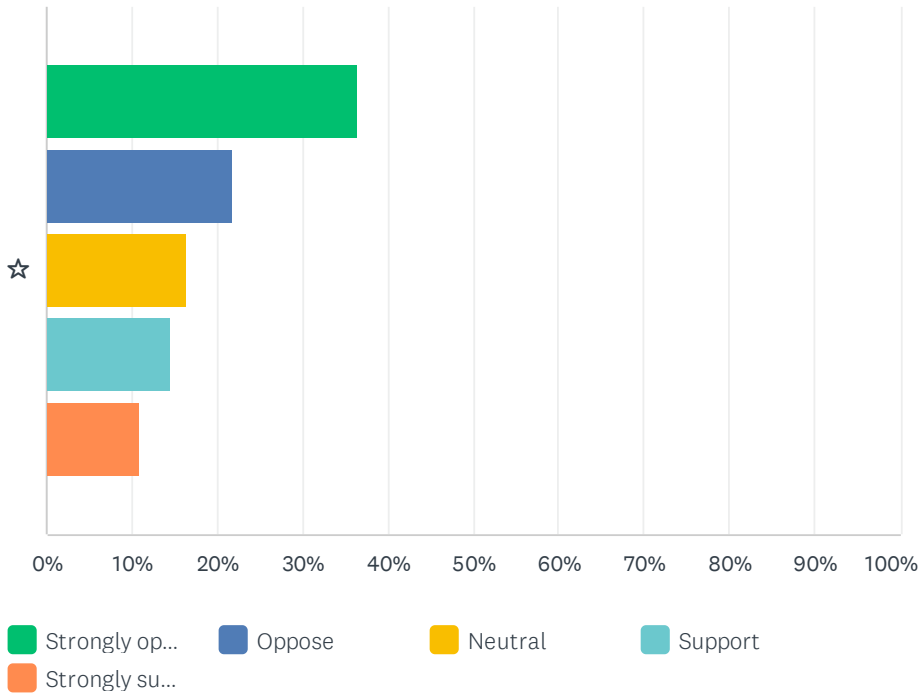
Answered: 55 Skipped: 2



	STRONGLY OPPOSE	OPPOSE	NEUTRAL	SUPPORT	STRONGLY SUPPORT	TOTAL	WEIGHTED AVERAGE
☆	27.27% 15	9.09% 5	21.82% 12	21.82% 12	20.00% 11	55	2.98

Q6 What is your level of support for Alternative C: Five-lane?

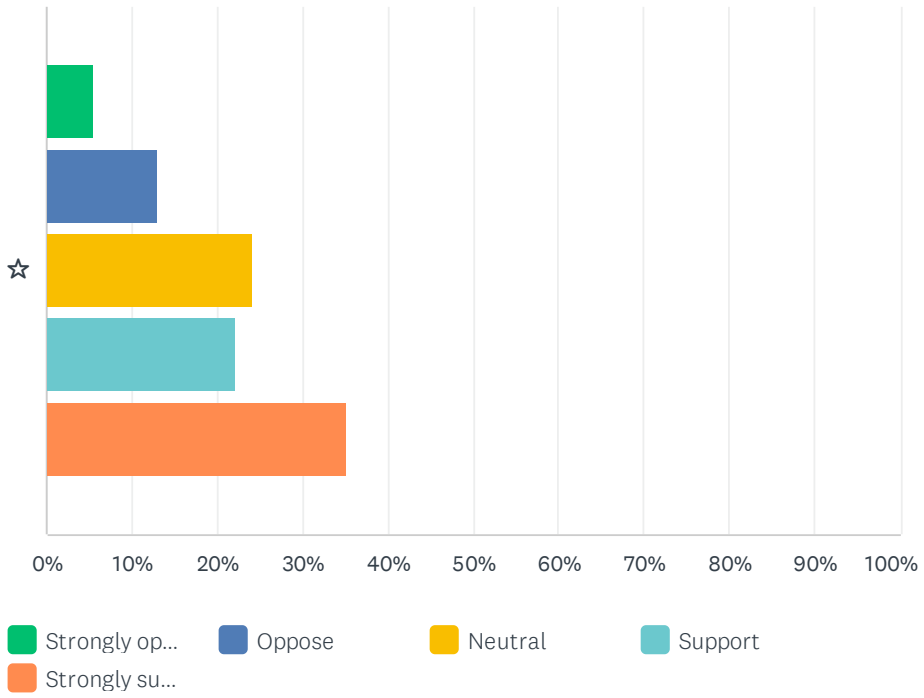
Answered: 55 Skipped: 2



	STRONGLY OPPOSE	OPPOSE	NEUTRAL	SUPPORT	STRONGLY SUPPORT	TOTAL	WEIGHTED AVERAGE
☆	36.36% 20	21.82% 12	16.36% 9	14.55% 8	10.91% 6	55	2.42

Q7 What is your level of support for Alternative A: Existing?

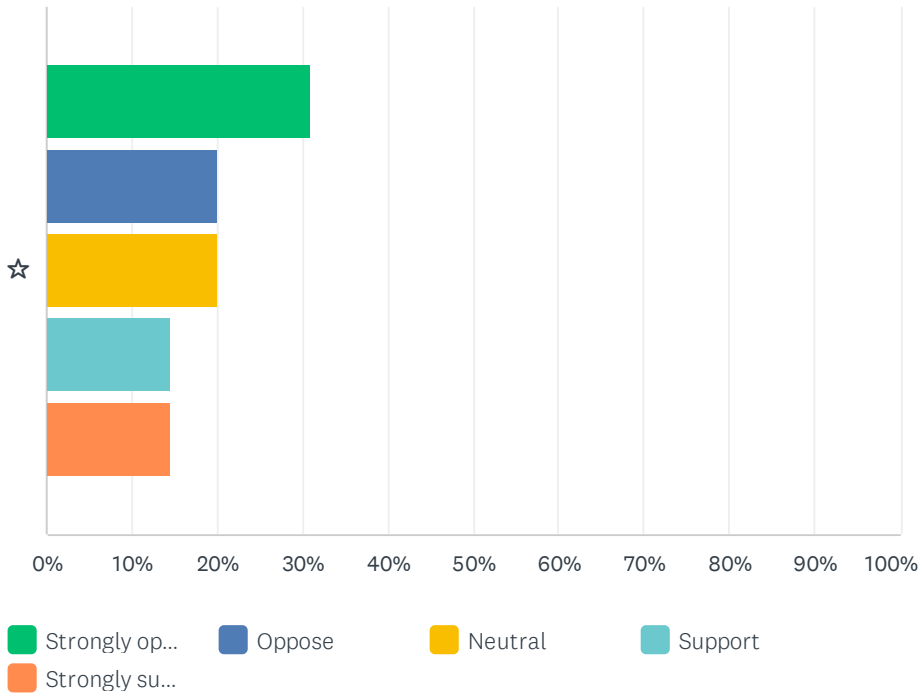
Answered: 54 Skipped: 3



	STRONGLY OPPOSE	OPPOSE	NEUTRAL	SUPPORT	STRONGLY SUPPORT	TOTAL	WEIGHTED AVERAGE
☆	5.56% 3	12.96% 7	24.07% 13	22.22% 12	35.19% 19	54	3.69

Q8 What is your level of support for Alternative B: Three-lane?

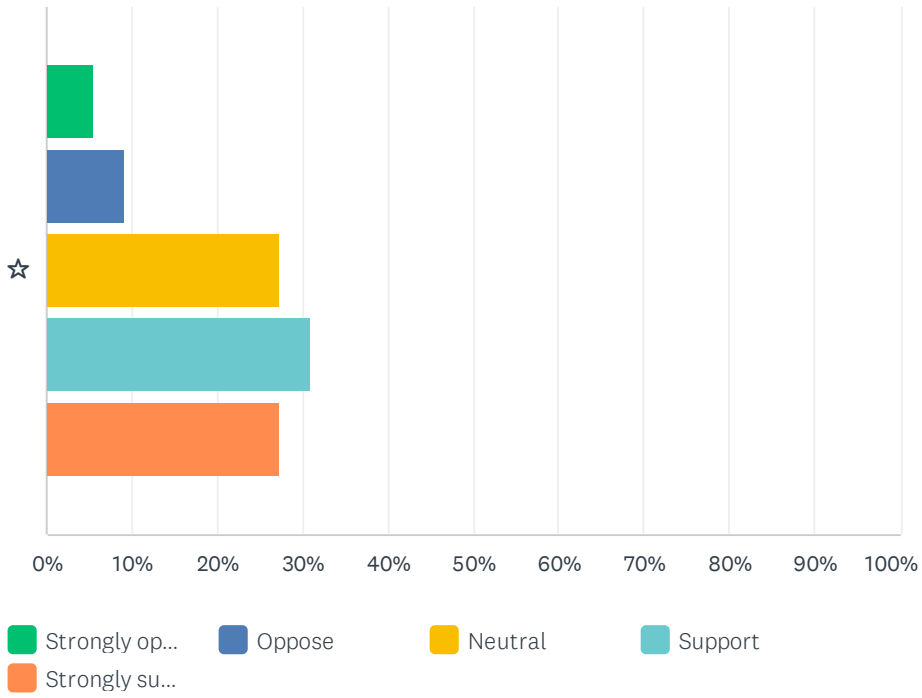
Answered: 55 Skipped: 2



	STRONGLY OPPOSE	OPPOSE	NEUTRAL	SUPPORT	STRONGLY SUPPORT	TOTAL	WEIGHTED AVERAGE
☆	30.91% 17	20.00% 11	20.00% 11	14.55% 8	14.55% 8	55	2.62

Q9 What is your level of support for Alternative A: Existing?

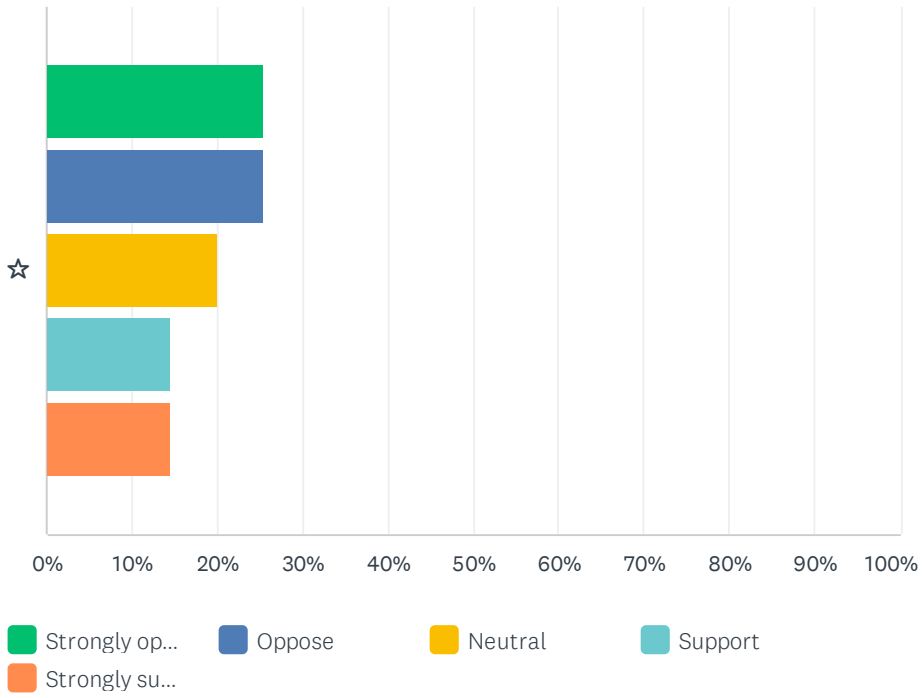
Answered: 55 Skipped: 2



	STRONGLY OPPOSE	OPPOSE	NEUTRAL	SUPPORT	STRONGLY SUPPORT	TOTAL	WEIGHTED AVERAGE
☆	5.45% 3	9.09% 5	27.27% 15	30.91% 17	27.27% 15	55	3.65

Q10 What is your level of support for Alternative B: Three-lane?

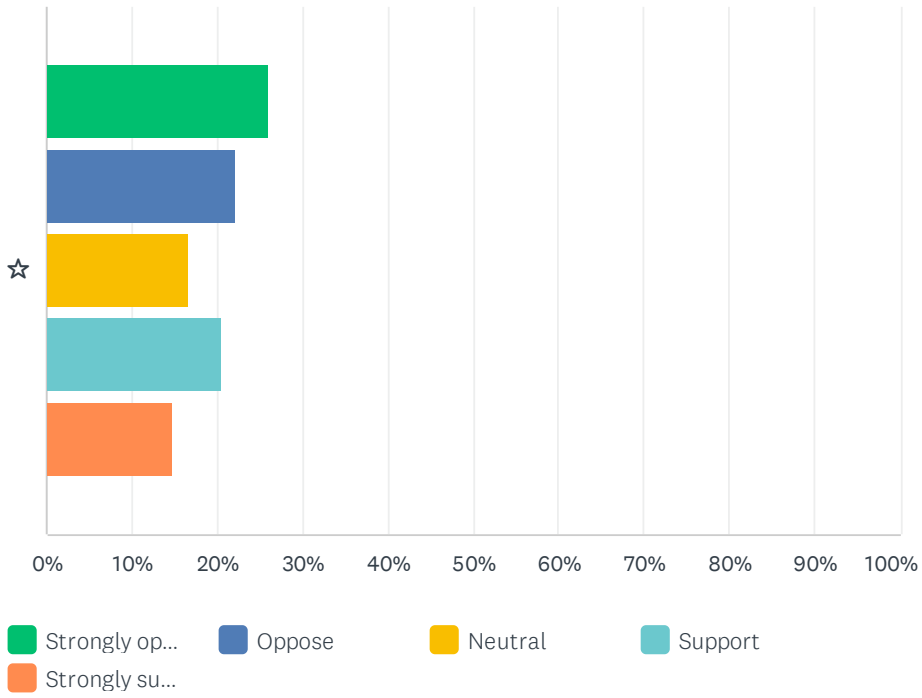
Answered: 55 Skipped: 2



	STRONGLY OPPOSE	OPPOSE	NEUTRAL	SUPPORT	STRONGLY SUPPORT	TOTAL	WEIGHTED AVERAGE
☆	25.45% 14	25.45% 14	20.00% 11	14.55% 8	14.55% 8	55	2.67

Q11 What is your level of support for Alternative C: Five-lane?

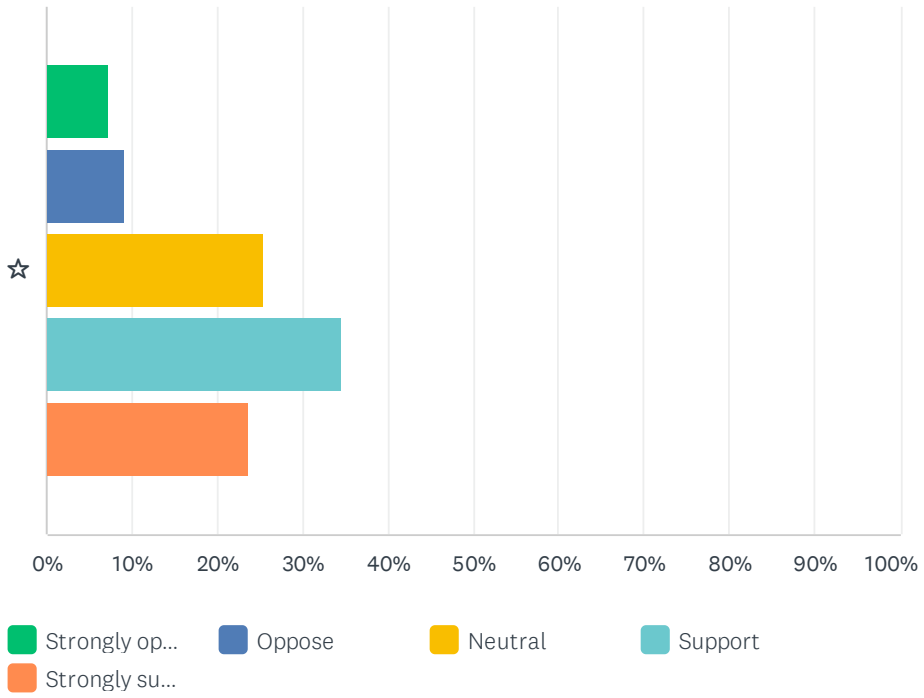
Answered: 54 Skipped: 3



	STRONGLY OPPOSE	OPPOSE	NEUTRAL	SUPPORT	STRONGLY SUPPORT	TOTAL	WEIGHTED AVERAGE
☆	25.93% 14	22.22% 12	16.67% 9	20.37% 11	14.81% 8	54	2.76

Q12 What is your level of support for Alternative A: Existing?

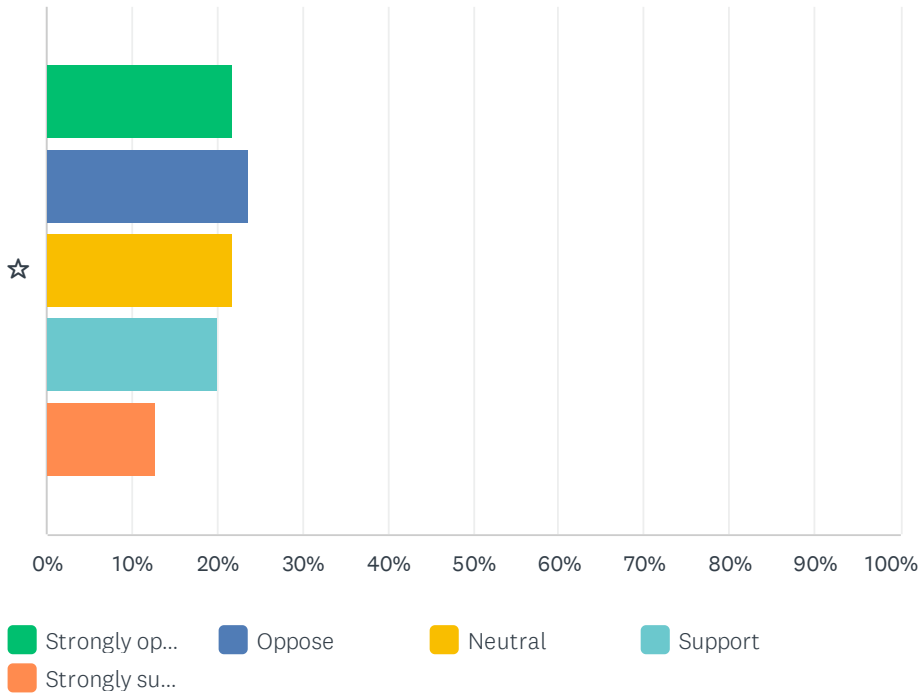
Answered: 55 Skipped: 2



	STRONGLY OPPOSE	OPPOSE	NEUTRAL	SUPPORT	STRONGLY SUPPORT	TOTAL	WEIGHTED AVERAGE
☆	7.27% 4	9.09% 5	25.45% 14	34.55% 19	23.64% 13	55	3.58

Q13 What is your level of support for Alternative B: Three-lane?

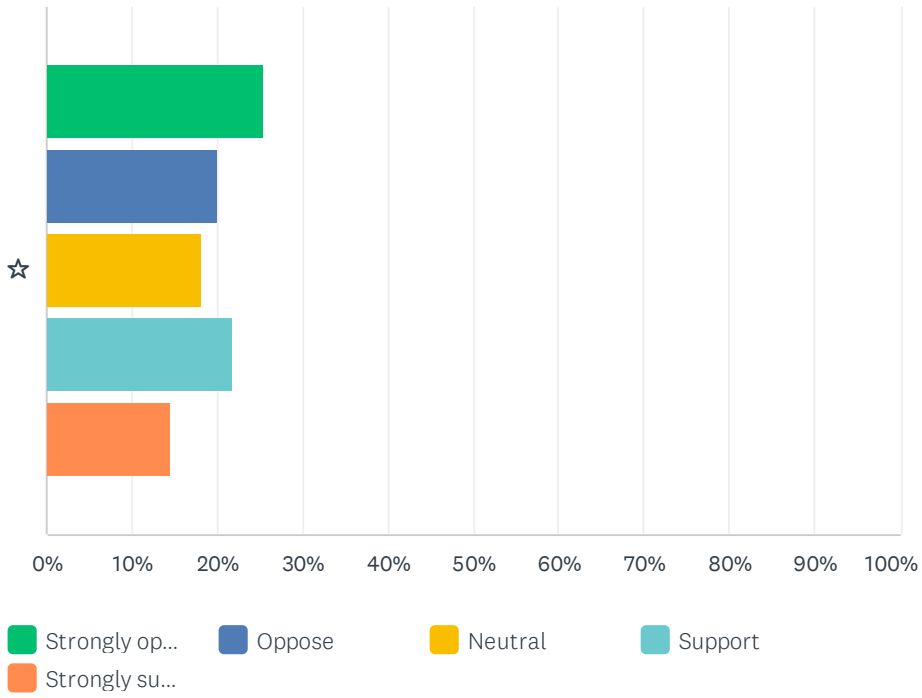
Answered: 55 Skipped: 2



	STRONGLY OPPOSE	OPPOSE	NEUTRAL	SUPPORT	STRONGLY SUPPORT	TOTAL	WEIGHTED AVERAGE
☆	21.82% 12	23.64% 13	21.82% 12	20.00% 11	12.73% 7	55	2.78

Q14 What is your level of support for Alternative C: Five-lane?

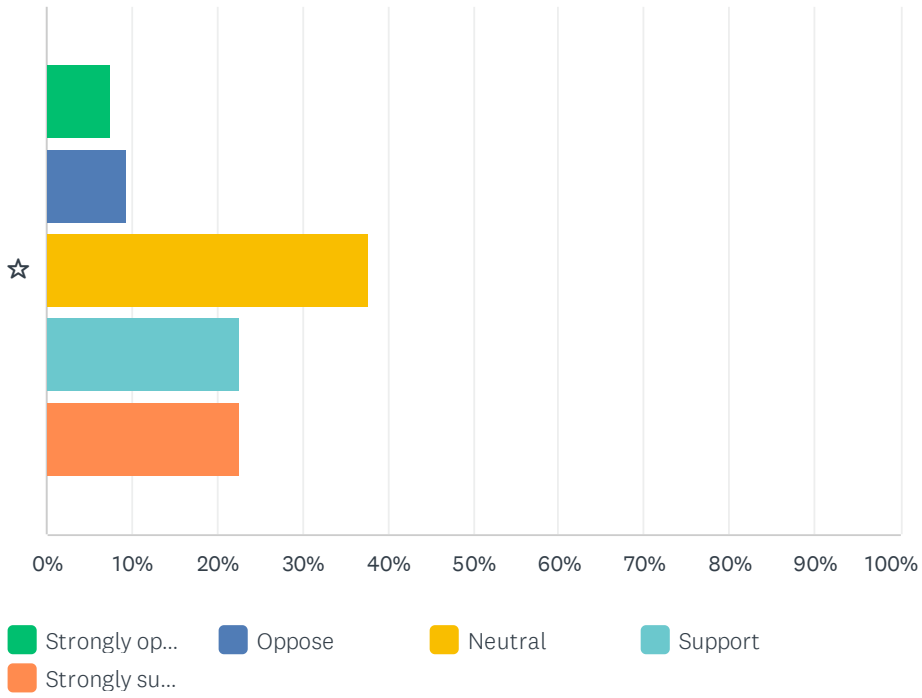
Answered: 55 Skipped: 2



	STRONGLY OPPOSE	OPPOSE	NEUTRAL	SUPPORT	STRONGLY SUPPORT	TOTAL	WEIGHTED AVERAGE
☆	25.45% 14	20.00% 11	18.18% 10	21.82% 12	14.55% 8	55	2.80

Q15 What is your level of support for Alternative A: Existing?

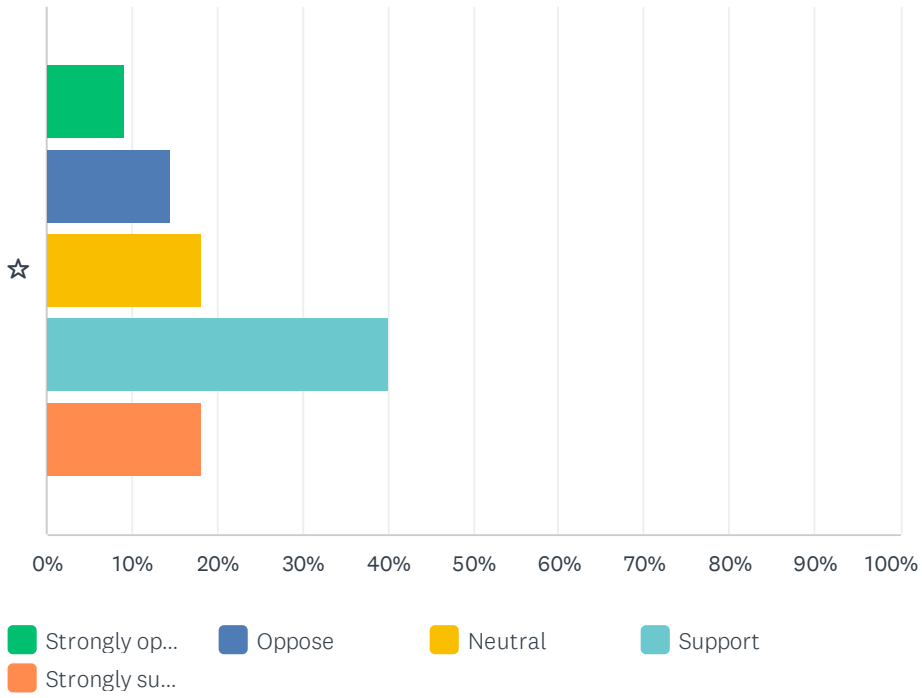
Answered: 53 Skipped: 4



	STRONGLY OPPOSE	OPPOSE	NEUTRAL	SUPPORT	STRONGLY SUPPORT	TOTAL	WEIGHTED AVERAGE
☆	7.55% 4	9.43% 5	37.74% 20	22.64% 12	22.64% 12	53	3.43

Q16 What is your level of support for Alternative B: Three-lane?

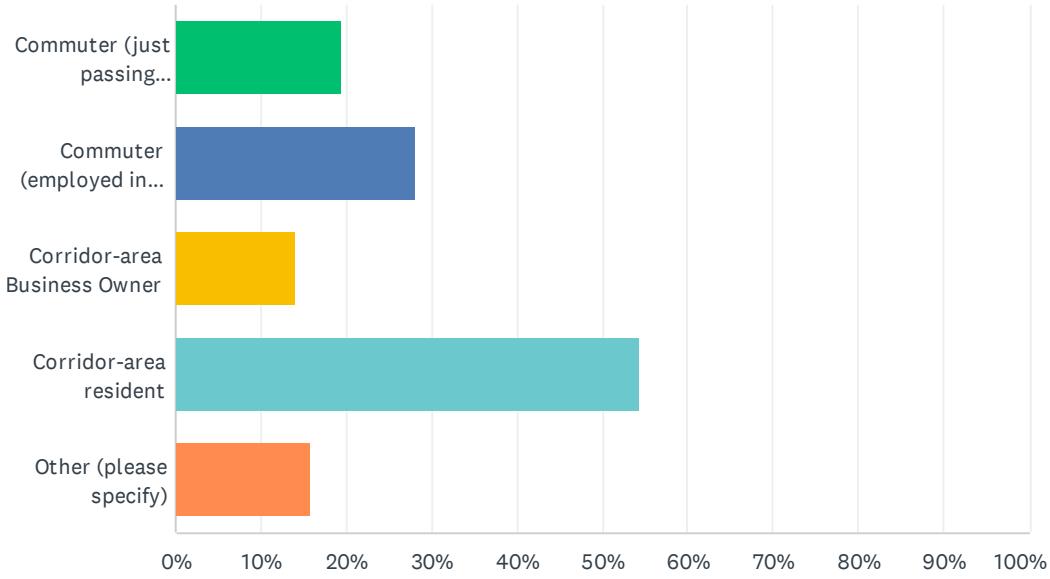
Answered: 55 Skipped: 2



	STRONGLY OPPOSE	OPPOSE	NEUTRAL	SUPPORT	STRONGLY SUPPORT	TOTAL	WEIGHTED AVERAGE
☆	9.09% 5	14.55% 8	18.18% 10	40.00% 22	18.18% 10	55	3.44

Q17 Describe your reasons for traveling through the CSAH 5 (Third Avenue) Corridor (select all that apply).

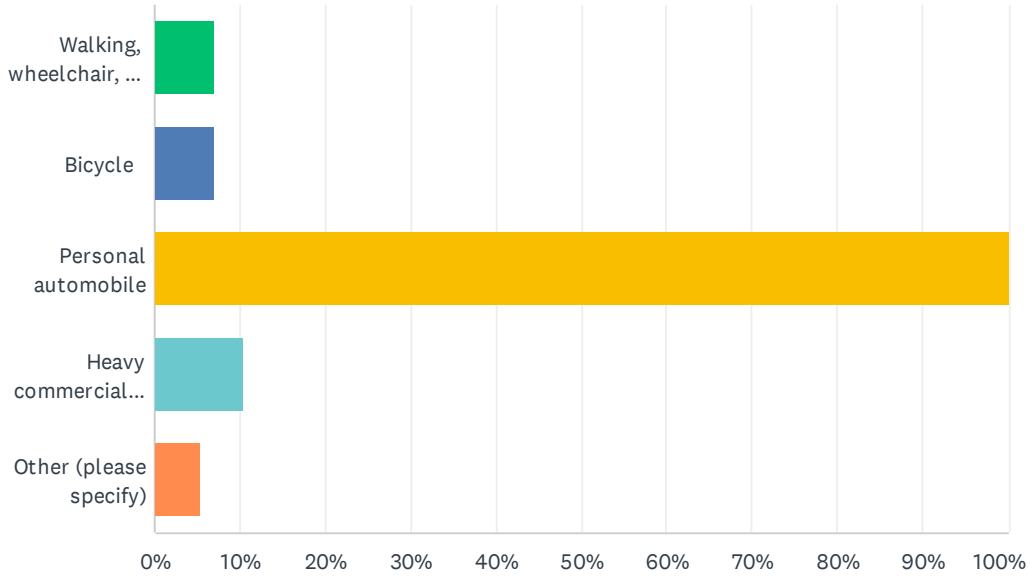
Answered: 57 Skipped: 0



ANSWER CHOICES	RESPONSES	
Commuter (just passing through)	19.30%	11
Commuter (employed in Mankato/Blue Earth County)	28.07%	16
Corridor-area Business Owner	14.04%	8
Corridor-area resident	54.39%	31
Other (please specify)	15.79%	9
Total Respondents: 57		

Q18 What is your primary mode of transportation when traveling along and across the corridor?

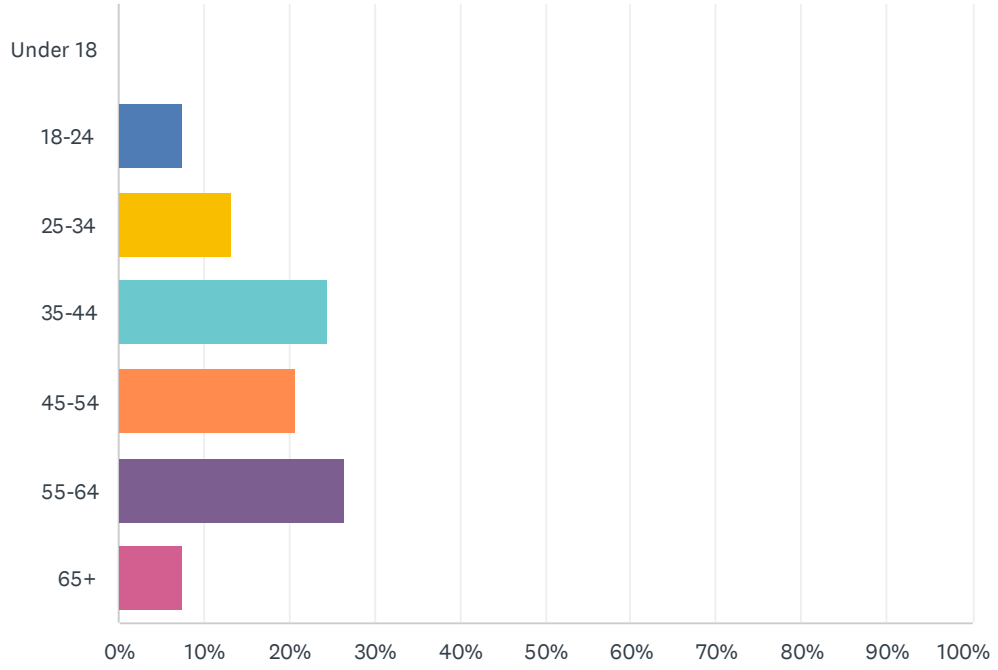
Answered: 57 Skipped: 0



ANSWER CHOICES	RESPONSES	
Walking, wheelchair, or personal assistance device	7.02%	4
Bicycle	7.02%	4
Personal automobile	100.00%	57
Heavy commercial vehicle of freight truck	10.53%	6
Other (please specify)	5.26%	3
Total Respondents: 57		

Q19 OPTIONAL: What is your age?

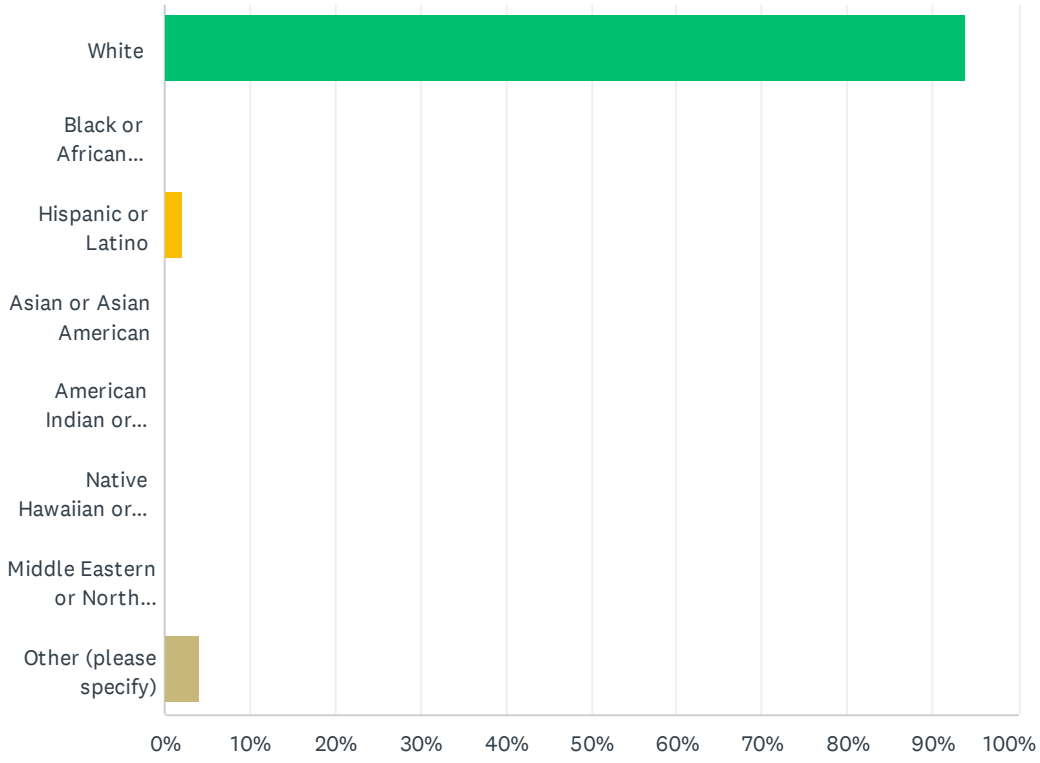
Answered: 53 Skipped: 4



ANSWER CHOICES	RESPONSES	
Under 18	0.00%	0
18-24	7.55%	4
25-34	13.21%	7
35-44	24.53%	13
45-54	20.75%	11
55-64	26.42%	14
65+	7.55%	4
TOTAL		53

Q20 OPTIONAL: How do you describe your race, ethnicity, or national origin?

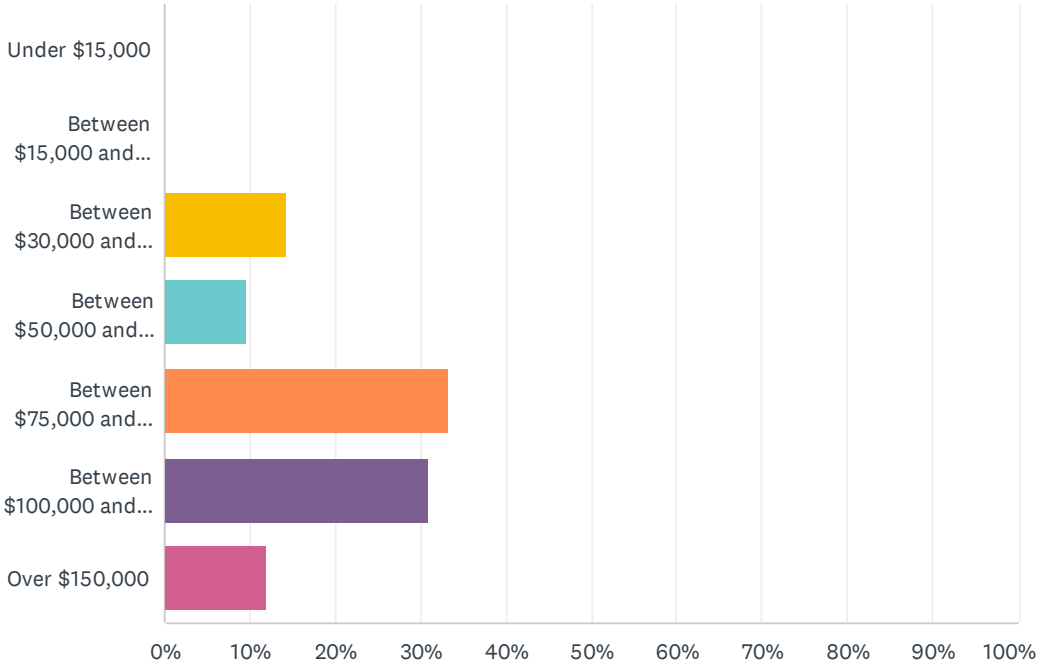
Answered: 49 Skipped: 8



ANSWER CHOICES	RESPONSES	
White	93.88%	46
Black or African American	0.00%	0
Hispanic or Latino	2.04%	1
Asian or Asian American	0.00%	0
American Indian or Alaska Native	0.00%	0
Native Hawaiian or other Pacific Islander	0.00%	0
Middle Eastern or North African	0.00%	0
Other (please specify)	4.08%	2
Total Respondents: 49		

Q21 OPTIONAL: What is your yearly household income?

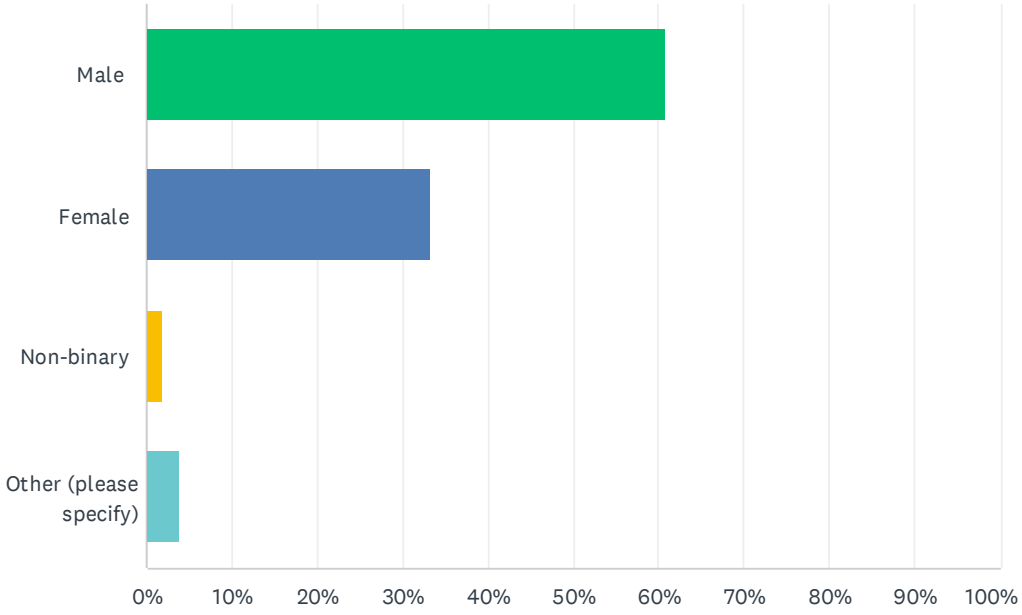
Answered: 42 Skipped: 15



ANSWER CHOICES	RESPONSES	
Under $15,000	0.00%	0
Between $15,000 and $29,999	0.00%	0
Between $30,000 and $49,999	14.29%	6
Between $50,000 and $74,999	9.52%	4
Between $75,000 and $99,999	33.33%	14
Between $100,000 and $150,000	30.95%	13
Over $150,000	11.90%	5
TOTAL		42

Q22 OPTIONAL: What is your gender identity?

Answered: 51 Skipped: 6



ANSWER CHOICES	RESPONSES	
Male	60.78%	31
Female	33.33%	17
Non-binary	1.96%	1
Other (please specify)	3.92%	2
TOTAL		51

Q23 Please provide any additional comments you have about CSAH 5 (Third Avenue)

Answered: 33 Skipped: 24

#	RESPONSES	DATE
1	Would like to see the plans to engage with the railroad about Third Ave train crossings and the schedule. Install a "road closed" train crossing while the crossing is in use. Road closed warning ⚠️ would be placed at Riverfront and HWY 14 entrances so drivers can plan alternative route easily.	4/2/2023 10:33 AM
2	- For segment 6, I don't consider turning a huge issue as most high volume turns have turning lanes. - I would strongly consider expanding shoulder in corridor 6 (and rest of corridor) for trail use and connecting to the rest of the corridor and hwy 14 trail access. Existing shoulder is narrow and the corridor receives a fair amount of bikers. -back up of trucks on 3rd Ave for adm is a common occurrence - better align the transition in front of berry plastics and truck dealer - northern rail crossing is highly problematic and getting worse with train frequently stopped blocking road for sometimes hours at a time.	4/2/2023 5:25 AM
3	I'm all for pedestrian and bike friendly streets in general. I'm also a big fan of left turn lanes. The three lane options were my top picks!	3/31/2023 7:37 PM
4	What does color and income have to do with this Side walk is dumb	3/31/2023 12:27 PM
5	I really love the idea of making it safer where the neighborhoods are located. I know my family would feel much more safe. As well as all the folks who are walking and biking. To get to the Sibley path we have to walk on the road now. Sidewalks all the way down would be amazing! Also people drive well over the 30 mph limit and that would hopefully help slow them down. Thank you!	3/31/2023 10:05 AM
6	I love being a property owner on 3rd Ave, but my major concern for a long time has been the noise and traffic (volume and speed) of the corridor. This reduces the appeal of living here and presents a constant safety concern for my children and others who live in this neighborhood. I 100% support alternative B to make this area more residentially, family, and pedestrian friendly!	3/31/2023 9:49 AM
7	Handle the trains blocking the roads all the time before trying to fix something that isn't broken…	3/30/2023 6:44 PM
8	Stupid Project - Third Ave is NOT going to become a choice to access Downtown. It should remain as is. Currently it is utilitarian enough for the businesses that are there. People AREN'T going to utilize 3rd Ave just for Matt J. Graif & Pizza Hut -- sad, but true.	3/30/2023 9:53 AM
9	Lot of money being spent when you have a major issue on Pine St where local residents can not get out if there is a train that stops for hours!!! No one seems to address this problem at all. Build a bridge so Pine St residents can safely leave the area and Third Ave no longer has to wait for the train. I have been stuck there numerous times for hours!! This needs to be taken care of before someone ends up getting hurt!!! I have seen people climbing up and over the train to get to the other side. Take care of these issues along with taking care of third Ave Corridor!!! Thank you for your time.	3/24/2023 12:07 PM
10	As a resident of the corridor one issue to be resolved with any of the changes made to 3rd Avenue RR Crossing our main concern is that we finally get the "whistle free" zone that has been started years ago!!! After speak8ng with Ryan Thielges of BEC it sounds like any change made would result in safety measures being put in place at the time of re-construction. Hoping the City of Mankato and the RR Companies using the Railroad crossings throughout the entirety of Mankato City will cease all whistles after construction is finished.	3/23/2023 10:15 AM
11	Please don's mess this road up like has been done with Riverfront Drive. The only folks that like what has been done there are the alignment and tire shops. With a single lane to drive in and an apparent aversion to fix any potholes on that road it is a complete nightmare. The white stakes that are in place to mark where folks should be driving have been removed and	3/22/2023 4:50 PM

	replaced so many times I wish I owned stock in the company that you are sourcing them from! Utter waste of money and time on many fronts to not achieve much if any gains from what I can see. Leave 3rd Ave off of your project radar and FIX Riverfront instead please!	
12	No consideration has been given to traffic generated by individual businesses on third and each road that intersects 3rd Avenue. No right turn lanes were introduced into the alternatives generated for 3rd Avenue. Segment 3 needs to have a single lane round a bout constructed similar to Riverfront, otherwise just leave as is. Segment 6 should be deleted from this discussion as nothing will be done for 15 years. The South RR crossing needs to be upgraded to a four quadrant whistle free crossing for safety and egress reason...this is the busiest RR Crossing within the City...This crossing has a high frustration level do to stopped trains. Thomas Rieff GreenCare trieff@greecaremankato.com	3/22/2023 2:46 PM
13	Would love to see some kind of signage or light system that would notify a driver that the cty rd 5 railroad crossing is blocked ahead. That crosssing has been known for being blocked for up to 5 hours at a time. That is absolutly ridiculous. There could be a digital sign or light located at the Industrial Road intersection and one at the county line to alert drivers allowing them to change direction before getting to the crossing. Semi's and gravel trucks get stuck at the crossing on the north side of the tracks with no where to turn around.	3/22/2023 12:52 PM
14	Improve hwy 14 to riverfront	3/21/2023 9:14 PM
15	None of these addresses the biggest problem: the railroad crossing. It's not just a nuisance to sit and wait for trains but also a real safety hazard as an impediment to public safety and medical vehicles trying to reach people in desperate need of assistance.	3/19/2023 7:30 AM
16	Any improvements to promote the use of bicycles as transportation to/from Mankato from out of town should be strongly considered for multiple economic & health reasons.	3/18/2023 9:09 PM
17	Leave it as it is. It would be nice to have something done with 14 and the exit ramps to get on and off	3/18/2023 8:39 PM
18	Needs to be more speed monitoring.	3/18/2023 8:07 PM
19	Road is fine the way it is, just in dire need of repairs!	3/18/2023 1:21 PM
20	A big problem on the road is speeding, that ahould be an area that is focused on more.	3/17/2023 11:14 PM
21	Think everything from Hwy 14 going north should be 4 lane with turn lanes. Everything from Hwy 14 going south in the residential areas should be 2 or 3 lane	3/17/2023 3:36 PM
22	Need roundabouts on the TH 14 off ramps similar to the ones on Riverfront. They work great.	3/17/2023 3:01 PM
23	Why I there no sidewalk option on the second model?	3/17/2023 2:44 PM
24	Let's take this opportunity to improve pedestrian and bike infrastructure on this road and make it safer to use. Thank you for doing this study!	3/17/2023 2:10 PM
25	Segment 6 needs an advanced Warning system for the North Railroad Crossing. Trains stop there for more than 30 minutes every day. With all the large gravel truck and semi traffic on 3rd Avenue from Riverfront Drive to Industrial Road, the 3 lane options would be a horrible idea and lead to even more traffic congestion as we're stuck behind large trucks. The Exit/Entrance Ramps to Hwy 14 need traffic lights or roundabouts badly. The number of accidents, including deaths, and the backed up traffic trying to exit Hwy 14 onto 3rd Avenue in the morning, at lunch, and in the afternoon 4pm 5o 6pm, is awful.	3/17/2023 2:07 PM
26	I strongly support anything that will lessen the HUGE trucks and industrial equipment that comes along Third Ave to Riverfront. I wish that there was a way to reduce speed as well as the number of large trucks that come barreling past my house. I live at 1314 3rd Ave, as my family has since the house was built some 100 years ago, and the traffic speed and large trucks have always been an issue. Thank you, Carolyn Manning	3/17/2023 1:52 PM
27	Leave it the way it is and refinish.	3/17/2023 12:07 PM
28	I am in support of a plan that is driven by data and increases the usability and safety of the corridor. My residence is on Deer Place off of 238th on the north end of the corridor and my business is at the south end (1307 3rd ave). Increased pedestrian usability and safety would be wonderful. one noticeable change on the north rail crossing in recent years is the number of times a train is blocking the roadway. That has become much move prevalent.	3/17/2023 8:45 AM

29	Please add traffic circles to the 3rd Ave/CSAH 5 and highway 14 interchange. Please!	3/17/2023 8:43 AM
30	Things that need improving before lane changes - 1. Direct connection to madison ave 2. Fixing the "kink" in the road just after the railroad (between Brooks st and Harper st) 3. Some kind of turn around for large vehicles at the rural rail crossing 4. A bike trail/protected bike lanes between Germania park and old-town mankato	3/16/2023 8:13 PM
31	I'm very concerned with moving any portion of 3rd avenue from a 4 lane to a 3 lane due to congestion from the railroad, truck traffic to ADM, and truck traffic entering and leaving Shell. Further, moving to a 3 lane would negatively impact our ability to turn on to 3rd avenue from highway 14. Thank you for asking for public input	3/16/2023 6:03 PM
32	Bike lanes please	3/16/2023 3:38 PM
33	The current lane 4-lane configuration in town encourages high speeds and is dangerous to cyclists wherever there is not a shoulder (most of the route). ADM must not be allowed to use the road as a truck stop and have drivers park on the highway. 6ft shoulders would be great going north of town for cyclists though there really should be a trail. I regularly see pedestrians and cyclists having to share a 12ft lane with a heavy truck and a sidewalk does address that, there needs to be a trail. Too much pavement and too many driveways on the east side of segment 2. There is a lot of lane drifting on the north and south sides of the median sections, I often get pushed out of my drive lane by trucks going to fast.	3/16/2023 11:33 AM