

# Minnesota Department of Transportation District 4 Freight Plan

## Working Paper 5: Investment Priorities

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# Acronyms and Abbreviations

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Abbreviation	Definition
BNSF	Burlington Northern Santa Fe Railway
HCAADT	High Capacity Annual Average Daily Traffic
MHFP	Minnesota Highway Freight Program
MnDOT	Minnesota Department of Transportation
OSOW	Oversize - Overweight
TTTR	Truck Travel Time Reliability

# Executive Summary

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The Minnesota Department of Transportation (MnDOT) District 4 is made up of 12 counties in West-Central Minnesota: Becker, Big Stone, Clay, Douglas, Grant, Mahnomon, Otter Tail, Pope, Stevens, Swift, Traverse, and Wilkin. The District is home to 4.5 percent of Minnesota’s population but makes up 12.4 percent of its land area. The District 4 Freight Plan is currently under development to provide MnDOT with a clear understanding of the regional multimodal freight assets, performance, and connection to the District’s economy. This understanding will assist MnDOT in making well-informed policy and programming decisions in District 4.

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*The District 4 Freight Plan will provide MnDOT with information and guidance to improve decision-making related to freight transportation.*

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This Working Paper is the fifth in a series of six Working Papers contributing to the District’s Freight Plan and provides information on the priority of unaddressed needs and issues (“gaps”) that were identified in Working Paper 4. These “gaps” were evaluated, scored, and ranked based on MnDOT’s statewide process for evaluating and ranking district-level freight system projects. This scoring and ranking process produced a ranked list of priority freight needs for District 4 to address, as well as a sub-ranking of gaps where investments could provide the greatest benefits for freight transportation safety, mobility, and infrastructure condition.

One of the goals of the District 4 Freight Plan is to ensure that District 4’s critical freight transportation needs can be addressed by future rounds of freight-specific funding or can be incorporated into ongoing planning and project development work. One potential way to address these critical needs through future funding is to prepare data and information that can be used to support future grant applications for programs like the Minnesota Highway Freight Program (MHFP). Therefore, the MHFP’s scoring criteria form the basis of the scoring criteria used in the District 4 Freight Plan’s “gap” scoring and ranking process.

The scoring and ranking process is intended to be a decision-making aid, and not the final decider of which freight issues and needs are most important for District 4. While the “gaps” discussed in this Working Paper have been scored and ranked, MnDOT District 4 with the assistance of key freight stakeholders such as the Advisory Committee, Technical Team, and Area Transportation Partnership made the final determination of which projects would be in the best interest of District 4 to advance to the pre-feasibility assessment stage of this plan. A set of 14 gaps or concepts— out of a possible 206 – are being advanced to the pre-feasibility assessment that will include the conceptual design of possible projects to address the “gap”, and order-of-magnitude construction cost estimates. The results of this pre-feasibility work will be presented in Working Paper 6.

# 1 Freight Project Showcase

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## *Key Findings*

District 4 has been proactively collecting feedback and acting upon freight transportation needs and issues through prior work such as the Manufacturers' Perspectives study. This chapter provides a showcase of some of the freight-relevant project underway or planned in District 4. These projects illustrate how many types of projects can benefit both freight transportation users and the general public, and how various funding sources can be leveraged to fund these improvements.

## 1.1 Introduction

This chapter profiles some of District 4's freight-relevant projects that have been completed or are in progress. Many of the freight needs and issues these projects are intended to address were initially identified through outreach to freight stakeholders in the District. One key element of prior outreach was the District 4 Manufacturers' Perspectives study. This 2015 study was conducted to incorporate businesses' feedback on freight needs into transportation planning and project development. The project included 103 interviews with businesses in District 4, and interviews focused on collecting insight into freight transportation priorities and challenges in the District, as well as Minnesota more generally. MnDOT has sought to incorporate feedback from outreach efforts like the Manufacturers' Perspectives study, and the profiled projects below illustrate how the District and its planning partners are using the feedback they have received.

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*District 4 has leveraged freight stakeholder feedback from projects like the Manufacturers' Perspectives Study to make improvements to the freight transportation system.*

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## 1.2 Infrastructure Projects

### Snow Fence Program

District 4 has areas of relatively low vegetation and flat topography that can result in significant snow blowing and drifting during winter months. This drifting and blowing snow poses a mobility and safety threat to transportation users, and these issues were mentioned in the Manufacturers' Perspectives Study. I-94 and US-10 are particular areas of concern for snowdrifts and are important regional corridors. In response to these safety and mobility concerns, District 4 has partnered with farmers and private landowners to improve windbreaks and protect state highways. This work has also included the construction of structural snow fences, and the District has been awarded \$1.5 million in Minnesota Highway Freight Program (MHFP) funds for the creation of snow fences on I-94 around Moorhead, Downer, and Fergus Falls. These funds will be provided in fiscal year 2023 and are primarily considered as freight safety improvements. Chapter 2 of this Working Paper also highlights additional snow fence sites that may yield freight mobility and safety benefits in the future.

### Randolph Road First/Last Mile Improvements

In 2019, the City of Detroit Lakes was awarded a \$1.5 million MHFP grant to improve first/last mile connections between businesses on and around Randolph Road, and US-10. Specific improvements included the removal of select traffic signals and creation of reduced-conflict intersections and the addition of signals at intersections

that were previously non-signalized. The overall goal of the project was reconfiguring traffic flow to reduce conflicts with traffic on US-10, grade crossings perpendicular to US-10 and Randolph Road and improve safe access to local businesses. The project was completed in 2020.

## Moorhead Railroad Projects

Moorhead has extensive railroad infrastructure that is important for the United States rail system as a whole. In particular, the Burlington Northern Santa Fe (BNSF) tracks that pass through the city are part of one of BNSF's busy transcontinental routes between Chicago and Seattle. Additionally, parts of the city are served by the Otter Tail Valley and Western short line. The high volume and speed of trains in Moorhead mean that rail and grade-crossing safety, congestion, and quality of life concerns are important freight-related topics for residents. These types of freight-related conflicts are being addressed by a variety of projects, including grade separation of roads and railroads, and the implementation of quiet zones where train horns are not needed. Select rail-related projects in Moorhead are presented below:

### *Downtown Moorhead Underpass Project*

BNSF's mainline runs through the center of Moorhead and has many grade crossings with surface streets. These grade crossings are potential points of safety conflict between trains and other transportation users, and frequent train operations that temporarily block crossings can create road congestion. MnDOT and the City of Moorhead are partnering on layout design and environmental documentation for the creation of two new underpasses for US-10 and US-75 at 11th Street. This project will provide freight safety benefits by separating railroad operations from road, pedestrian, and bicyclist facilities, and will reduce local traffic congestion caused by blocked crossings. The projects may also provide quality of life improvements by eliminating potential crossings where train horns must be used. Since this project is currently in planning stages, its overall cost and schedule are yet to be determined.

**Figure 1: Proposed 11<sup>th</sup> Street Underpass in Moorhead**



Source: MnDOT.

### **Main Avenue Grade Separation**

The City of Moorhead undertook a project to reconstruct and realign the intersection of Main Avenue, 20<sup>th</sup> Street, and 21<sup>st</sup> Street, with the overall goal of removing grade crossings on both the BNSF and Otter Tail Valley lines. The project also improves rail mobility by constructing a new track that will connect the BNSF mainline with the Otter Tail Valley Railroad near 21<sup>st</sup> Street, and eliminate the need for some trains to stop and reverse in downtown Moorhead to access the Otter Tail Valley tracks. This project will cost an estimated \$54 million and is expected to be complete in 2022.<sup>1</sup>

### **Quiet Zone Implementation**

The noise created by train horns approaching grade crossings can create significant quality of life impacts for residents and businesses close to grade crossings. In Moorhead, whistle-free “quiet zones” have been developed by closing select crossings, particularly in the downtown area, and investment in additional safety devices at remaining grade crossings. The quiet zone creation process requires careful coordination with federal regulators and affected railroads and is a topic of interest for other communities in District 4 as well.

### **TH-29 Grade Separation**

MnDOT and Pope County are currently working on the construction of an overpass to eliminate MN-29’s grade crossing with a Canadian Pacific railroad line. This project will also improve highway safety by eliminating MN-29’s skewed intersection with MN-55 and replacing this skewed intersection with a new route using two roundabouts. The project is expected to cost \$12 million and be completed in 2022.

## **1.3 Programs, Plans, and Operational Changes**

### **Complete Streets Demonstration in Pelican Rapids**

Highways 59 and 108 in Pelican Rapids are expected to be resurfaced and reconstructed in 2024. Since much of the project area impacts the developed area of downtown Pelican Rapids, MnDOT and Pelican Rapids cooperated to conduct a demonstration of Complete Streets concepts that will be implemented in the 2024 project. A topic particularly important for freight was the potential design of “mini” roundabouts, which are proposed for intersections of 59 and 108. In District 4, as well as other Districts, trucking stakeholders have expressed concern about the design of roundabouts, as certain roundabout shapes or sizes may be more difficult for trucks to safely drive through. As part of this demonstration work, District 4 conducted a mini roundabout demonstration that examined the ease of movement for various commercial vehicles, including semi tractor-trailers, and long-load trailers.

### **I-94 Lake Burgen Interchange Study**

District 4 is currently conducting an interchange planning study on I-94 near Alexandria. One of the key project goals is to provide additional access for freight traffic to county highways 45 and 46. This study is expected to be complete in February 2022.

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<sup>1</sup> SE Main Ave/20 St/21 St Railroad Grade Separation Project. City of Moorhead. 2021.



## 2 Prioritizing Freight Needs and Issues

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### *Key Findings*

With this freight plan, District 4 has the opportunity to further study select improvements or solutions for freight mobility, safety, and infrastructure condition. In order to assist the District with selecting a small set of gaps for pre-engineering feasibility study, all of the identified freight gaps in District 4 were scored and ranked using a statewide evaluation system. A ranked list of gaps was created and used to help District 4 and its planning partners select a subset of gaps for further study.

### 2.1 Introduction

Working Paper 4 summarizes the variety of needs and issues relevant to District 4's freight transportation system. Almost all of these needs and issues were focused on the road network, and most related to either roadway safety or truck mobility. In particular, safety concerns were focused on areas of high crash density, while mobility concerns include trucks' ability to move through roundabouts and intersections, and the impact of blowing and drifting snow on truck mobility.

Working Paper 4 also documents the known State and County-level plans that may address needs and issues. Those needs and issues unaddressed by expected investments reported in documents like the State Highway Investment Plan are referred to as "gaps" that could be addressed by future projects. These gaps are shown in Figure 2 below.

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*Gaps are freight issues and needs that do not overlap with programmed projects.*

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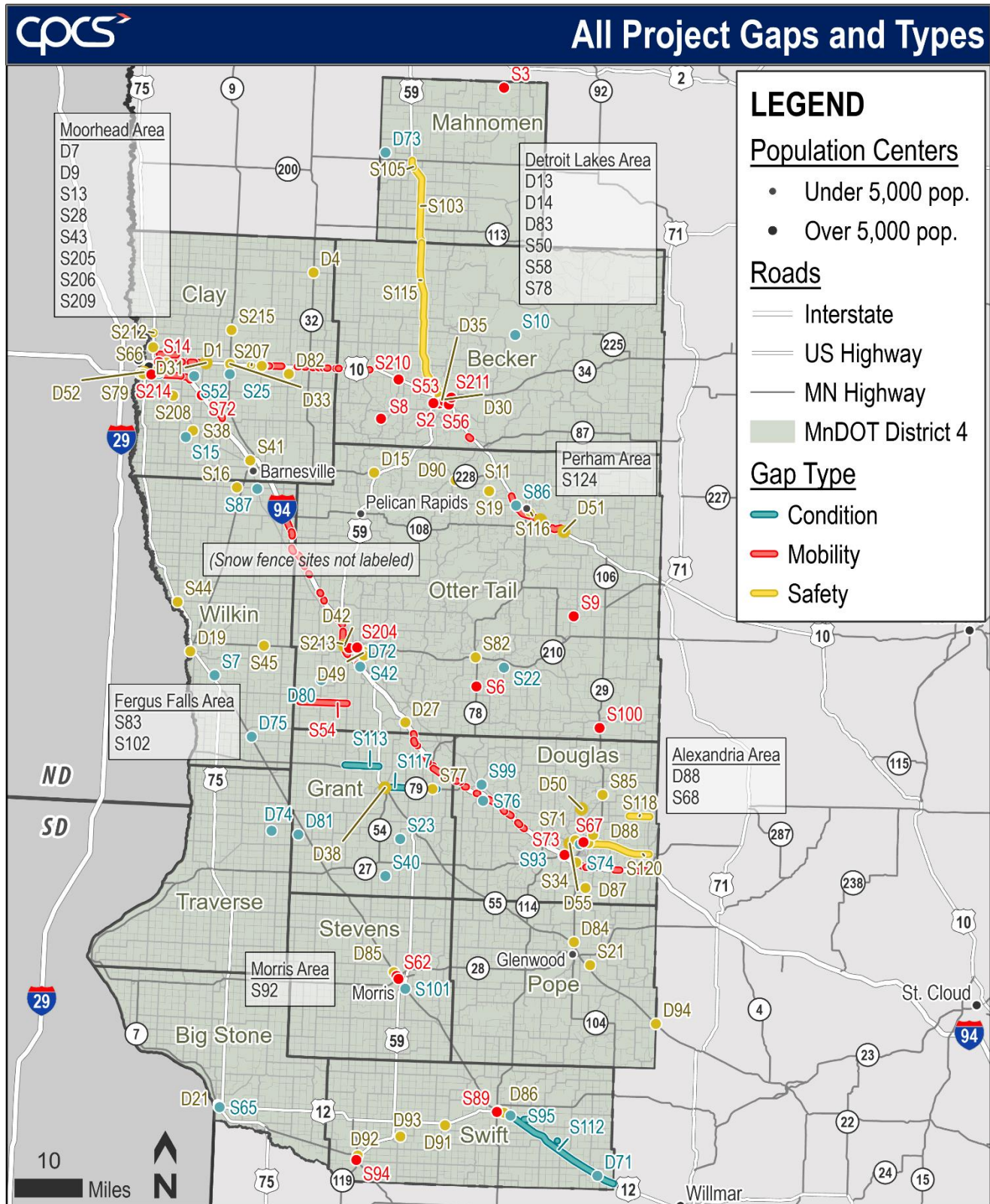
The next steps in developing this freight plan are to determine the relative importance of these gaps, as select gaps will advance to the development of project concepts in the pre-engineering feasibility stage of this plan. Since a small set of gaps can be selected for engineering study, the scoring and ranking process described below is an important tool for helping the District understand the relative importance of gaps, and pick project concepts for advancement to pre-feasibility engineering work.

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*Project concepts are potential solutions to needs or issues identified as gaps, and a small set of project concepts will undergo pre-feasibility engineering analysis.*

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Figure 2: District 4 Project Gaps (Unranked)



## 2.2 Process

Based on work conducted in prior District freight plans, MnDOT has created a common process for scoring and ranking freight needs and issues for all District freight plans. This scoring and ranking approach is intended to:

- Evaluate “gaps” or potential project concepts. It is not intended to evaluate well-defined projects.
- Focus on regional issues (i.e. topics known to be important to each District in Greater Minnesota) vs. those topics that may be more important to the Metro District or more urban areas.
- Use as much data as available at the local level, as possible.

A high-level overview of the scoring and ranking process is provided in **Appendix A**, and rankings are provided in **Appendix B**.

### Categories and Measures for Evaluation

Figure 3 lists the performance categories and performance measures used for the scoring and prioritization of District 4’s freight “gaps.” A few notes on this figure and the evaluation process:

- All measures in the figure below are weighted equally.
- A high overall score is intended to identify what “gaps” have the greatest potential to provide freight benefits for District 4. In this Working Paper, this overall score is referred to as “pure ranking.”
- A sub-set of evaluations are conducted to indicate the “gaps” that score well within the sub-categories of safety, mobility, and condition.

**Figure 3: Categories and Measures for Evaluation**

Category	Ranking Score Measure/Performance Indicator	Safety	Mobility	Condition
Truck Activity	HCAADT	X	X	X
	Truck percent (%) of total vehicles	X	X	X
Safety	Addresses a sustained crash location	X		
	A safety issue identified in a district or county safety plan (provide risk rating)	X		
	Addresses at-grade crossing safety risk	X		
Freight Mobility	Truck Travel Time Reliability		X	
	Addresses a vertical clearance restriction		X	X
	Addresses a weight limited bridge		X	X
Condition	Bridge condition rating			X
Stakeholder Need	Y/N if this issue overlaps with a stakeholder identified need	X	X	X

Additional information on the criteria for each category and measure is provided in **Appendix A**.

## 2.3 Evaluation

The following provides an overview of the scoring process and visualization of the results of each performance indicator listed in Figure 3.

- **Truck Volume Score.** Figure 4 shows truck volumes scores, and these scores were assigned to all identified gaps where HCAADT data was available. Where data was not available, a value of null was assigned to the gap. The primary purpose of this score is to provide context for interpreting other scores.
- **Truck Percent Score.** Figure 5 illustrates the scores assigned to roads based on trucks' share of total traffic volumes. Where data was not available, a null value was assigned to the gap. This score was used as a tiebreaker factor for gaps during the ranking process.
- **Crash Location Score.** Crash location scores were assigned based on the count of truck-involved crashes that overlapped with an area around each gap.
- **Safety Risk Score.** Safety risk scores were assigned to all identified gaps only if the gap was covered by a risk area identified in the District 4 Safety Plan. Gaps that did not overlap with areas that had risk assessments conducted in the D4 Safety Plan received a null score, and this measure was not considered as part of the total possible score for these gaps.
- **Grade Crossing Risk Score.** Grade crossing scores were only assigned to gaps that overlapped with grade crossings. Scores were based on the assigned crossing risk categories provided in MnDOT's prior grade crossing safety risk assessment. Figure 6 illustrates the potential scores associated with grade crossings in District 4. This measure was not considered as part of the total possible score for gaps that did not overlap with railroad crossings.
- **Truck Travel Time Reliability (TTTR).** Figure 7 illustrates the TTTR scores calculated for roads in the District based on MnDOT's StreetLight data. As discussed in Working Paper 4, travel time reliability is generally not a concern in the District. For this screening, TTTR scores were assigned based on the percentile each road segment fell into. This measure was not considered as part of the total possible score for gaps that did not have TTTR data available.
- **Bridge Vertical Clearance Score.** Vertical clearance scores were assigned to gaps based on clearance information from the National Bridge Inventory. This measure was only relevant to a small set of gaps in District 4, and was not considered as part of the total possible score for gaps that did not pass beneath bridges.
- **Bridge Operating Score.** Figure 8 illustrates the bridge operating scores assigned to gaps. This information came from the National Bridge Inventory and reflects the weight capacity of the bridge.
- **Bridge Condition Score.** Bridge condition scores were assigned to gaps identified from MnDOT bridge condition data.

Figure 4: Truck Volume Score

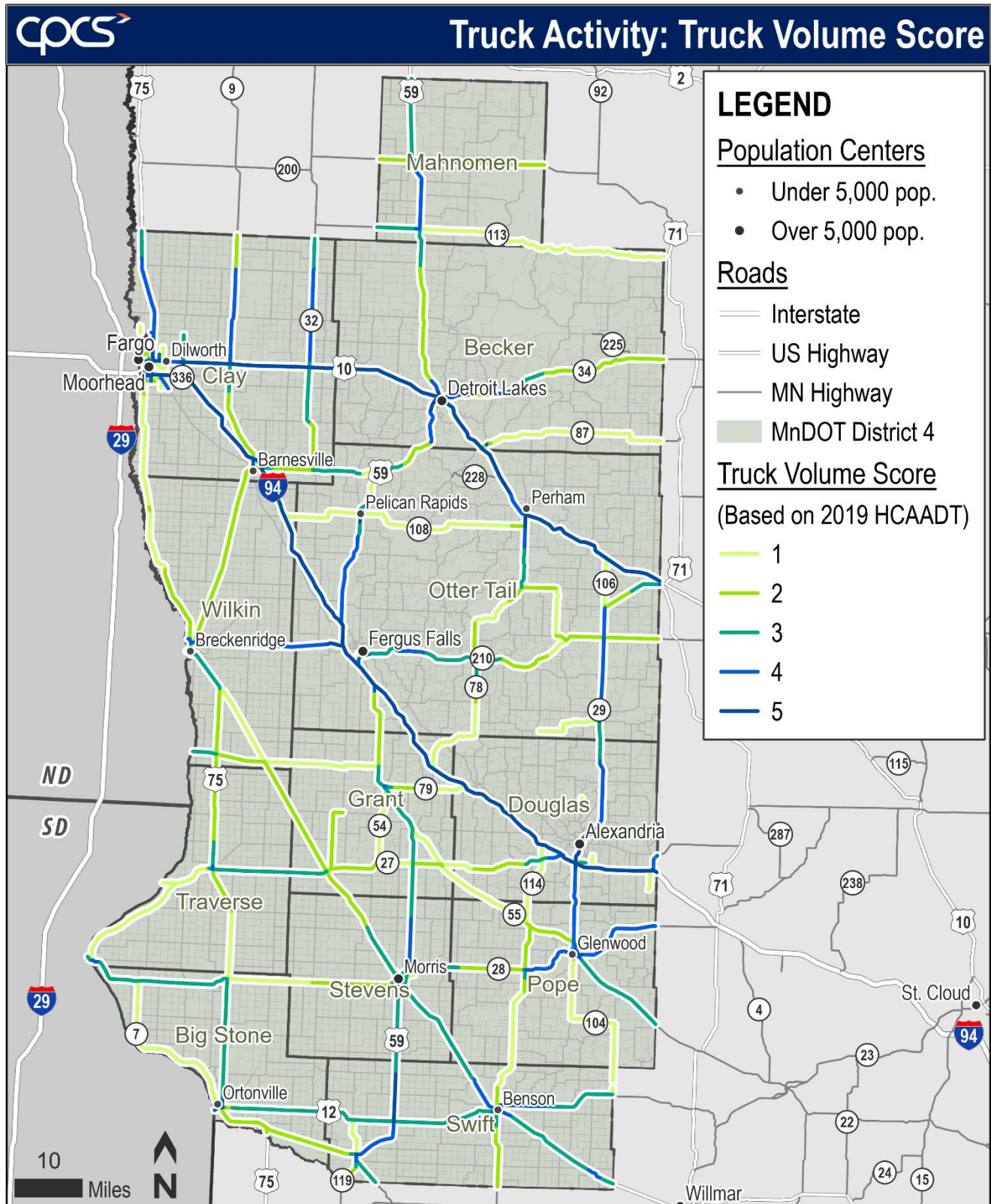


Figure 5: Truck Percent of Total Traffic Volume Score

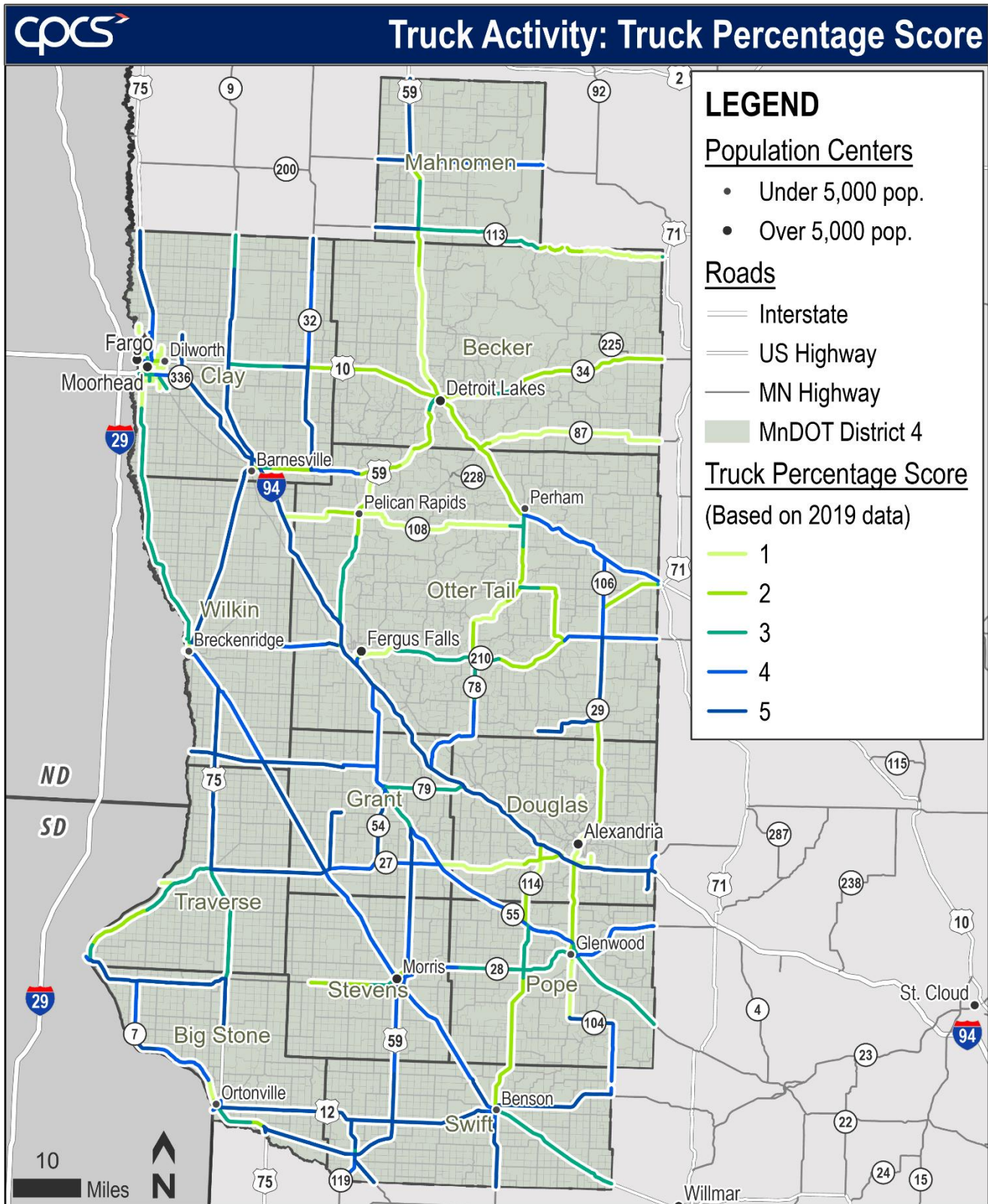


Figure 6: Grade Crossing Risk Scores

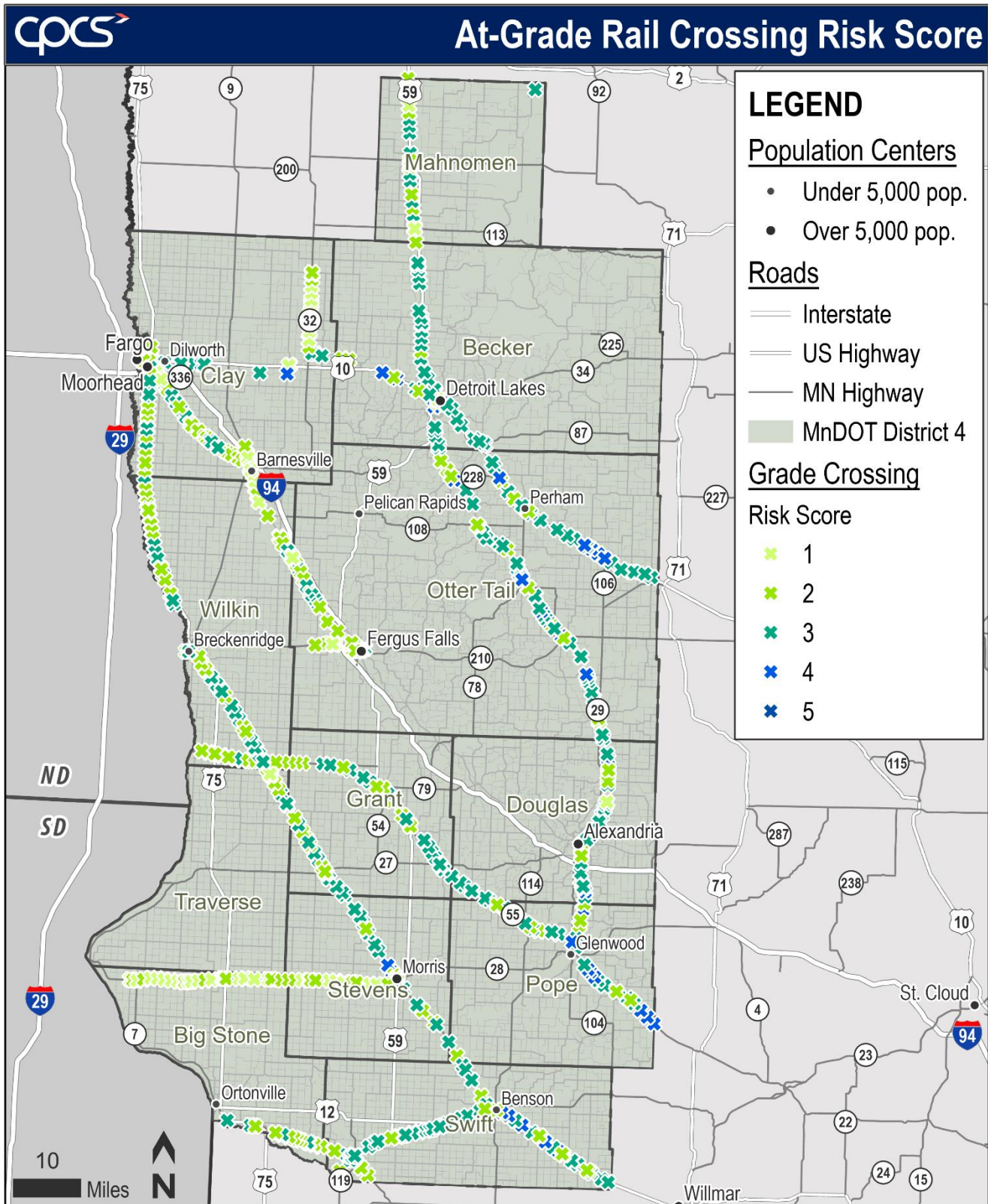


Figure 7: TTTR Scores

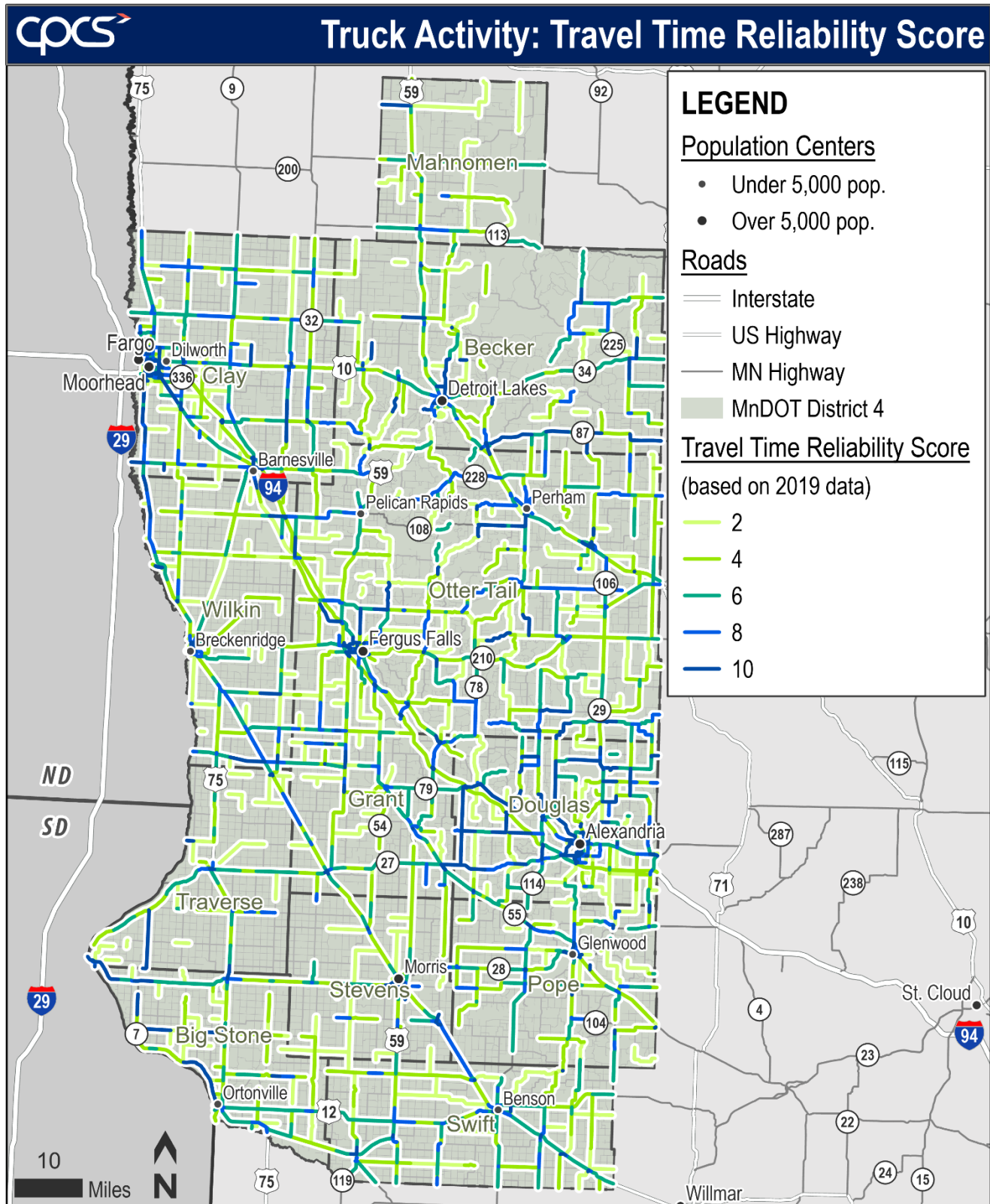
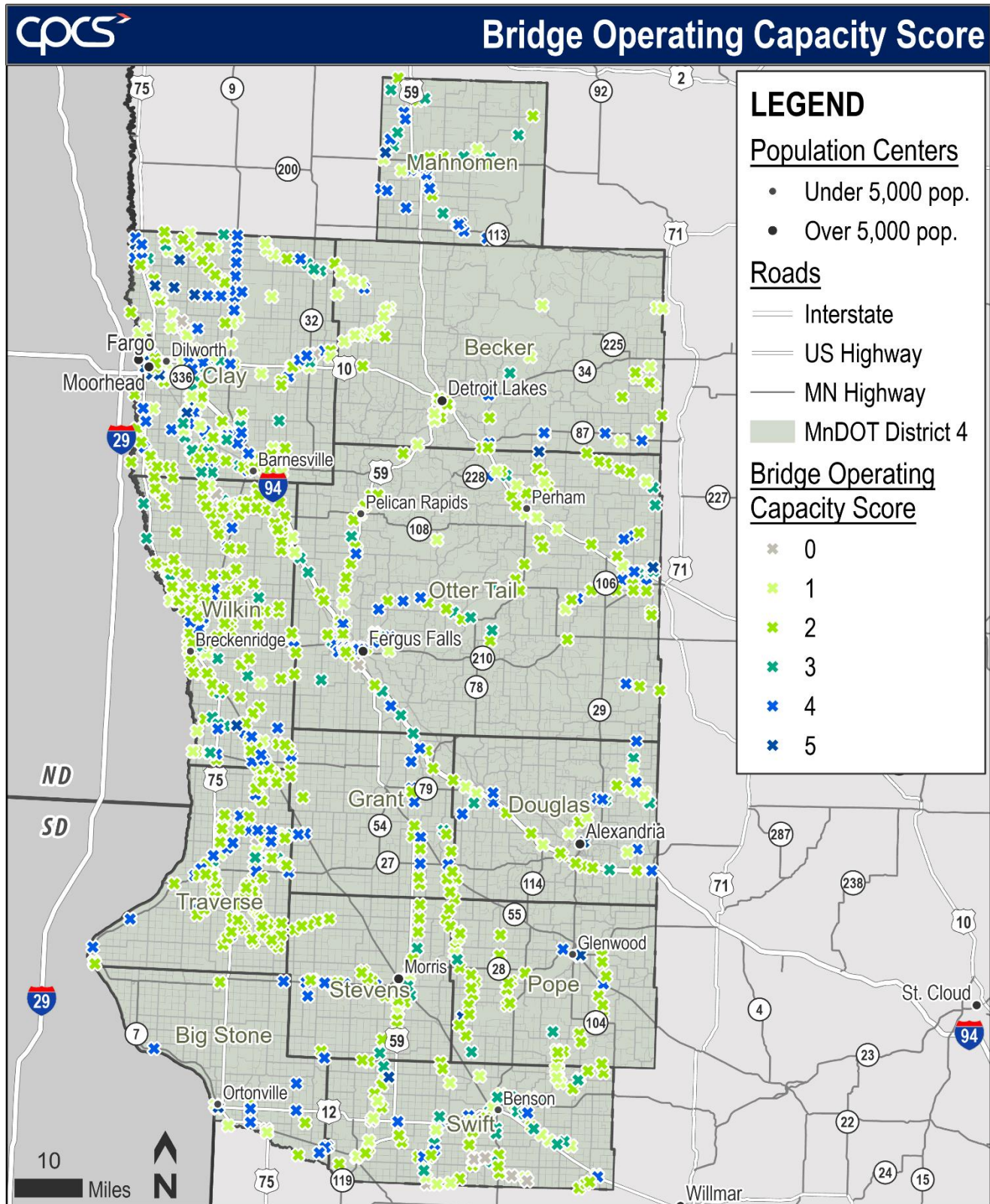




Figure 8: Bridge Operating Scores



## Pure Ranking Evaluation

Once relevant scores were assigned to all gaps, these scores were used to rank projects. The first ranking calculated was “pure rank” or a ranking evaluation based on all available data for each gap. This pure ranking process produces a full rank order of all gaps.

Pure ranking is simply the total of all relevant scores for each gap. It is important to note that not all project concepts have scores for each of the measures. For example, a weight-limited bridge gap is unlikely to have a grade crossing risk score associated with it, and would not receive a grade crossing safety risk score. However, there are cases where project concepts receive scores for multiple and varied types of measures, and as a result with receive a higher score. In turn, they may be ranked higher in the evaluation, depending on the degree of problem associated with the gap’s measures.

In **Appendix B**, a list of the 206 gaps or project concepts in pure rank order is shown. These gaps are mapped in Figure 9. The rankings shown in Appendix B and Figure 9 provide the District with a sense of the highest-scoring projects and help to establish a general understanding of how gaps or project concepts may compare against each other.

In addition to gaps identified in Working Paper 4, this scoring and ranking process incorporated project concepts specifically recommended by MnDOT staff. In particular, snow fence sites on US-10 and I-94 were included in the analysis, to provide District 4 with general information on how these project concepts compare to documented gaps, and how individual fence locations compare to each other.

It is important to note that this scoring and ranking information was only used as a decision-making aid, and not the final decider on what gaps or project concepts would advance for further pre-engineering feasibility study. District staff collaborated with the Technical Team and Advisory Committee to choose the projects that advanced for pre-feasibility study.



## Evaluation by Project Type or Expected Benefit

In addition to a pure ranking, each gap or project concept was assigned a rank based on its need or issue type: safety, condition, and mobility. This sub-ranking exercise provides information on which gaps or project concepts may yield the greatest benefit in these three performance areas. The three need and issue types of safety, condition, and mobility are directly related to goals of the Minnesota Statewide Freight System Plan, were the focus of quantitative analysis conducted in prior District 4 Freight Plan working papers, and are also tied to existing MnDOT funding programs such as the MHFP.

When scored within these categories, top safety, mobility, and condition gaps or project concepts are more clearly identified and are not diluted by being combined with all project types as was done in the pure ranking. This ranking by need or issue type helps District 4 advance projects aligned with specific safety, mobility, and condition goals as appropriate.

### *Safety-Related Evaluation*

Figure 10 lists the top 30 of the 72 safety gaps that were scored and ranked for this project, and all safety gaps are mapped in Figure 11. The table provides two columns that give context for the rankings:

- **Pure Rank** - as mentioned above, the pure rank reflects the importance of a project relative to all other projects.
- **Safety Rank** – this rank reflects the project’s rank among safety projects only.

Many of these safety gaps are related to intersections where slower-moving trucks must enter, exit, or cross faster-moving highway traffic. These needs and issues were identified in stakeholder consultations, prior research and literature, and analysis of MnDOT safety data.

### *Mobility-Related Evaluation*

Figure 12 lists the top 30 of 105 mobility-related gaps in District 4, and Figure 13 illustrates the location of all mobility-related gaps. Many of these mobility gaps relate to proposed snow fence sites on US-10 and I-94 that District 4 chose to add to this scoring and ranking process to better understand their importance to freight transportation. Other comments about mobility include difficulty turning at some intersections, issues with bridge clearance for OSOW loads, and the need for improved signage in some communities. As with safety, a **Mobility Rank** sub-ranking is also presented in Figure 12.

### *Condition-Related Evaluation*

Figure 14 lists District 4’s 29 condition-related gaps, and Figure 15 illustrates the locations of these gaps. Condition was the least-mentioned gap type in District 4, in part because areas of poor condition were often already programmed to be addressed in the State Transportation Improvement Program or county improvement programs. As with the other performance categories, a **Condition Rank** sub-ranking is also presented in Figure 14.

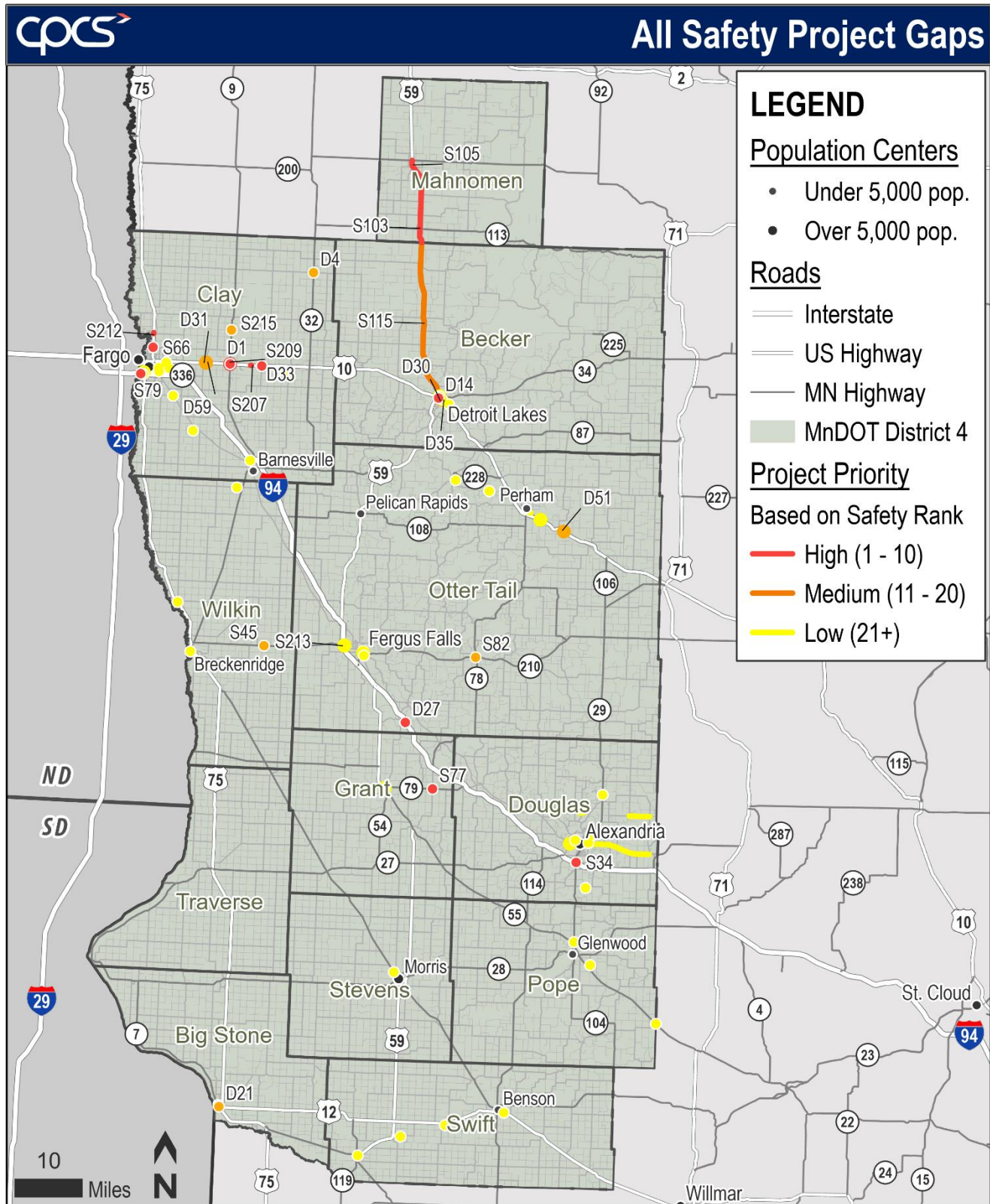
Figure 10: District 4’s Top 30 Freight Safety Gaps

Project ID	Information Source	Highway	Pure Rank	Safety Rank	Additional Information
S207	Committee Meetings	US Hwy 10	28	1	Clay County Rd 86 and US-10 – look at an eastbound acceleration lane
S209	Committee Meetings	US Hwy 10	28	1	US-10 at Clay County Road 23 – improvements needed for trucks or turning traffic
S212	Committee Meetings	US Hwy 75	5	2	Intersection of US-75 and CSAH 22 in Clay County
S43	Other Consultation	US Hwy 75	5	2	Trucks have difficulty crossing intersection with high speed traffic US-75 and MN-18 (28th Avenue). Should be 4 way stop.
S66	Manufacturer's Survey	US Hwy 75	5	2	Fears the new turn lanes may have made the situation worse. Beet trucks back up on Hwy 75 in the turn lanes and people drive through on the main lane. Worried that trucks will turn in front of or into the cars. Add a temporary stoplight during beet season?
S79	Manufacturer's Survey	IS Hwy 94	31	3	Operations are reasonably well; does seem like there are more accidents on I-94 bridge between ND and MN – possibly from automatic deicers; brines tend to leave snowpack on the roads.
D14	CMV Data	US 59TH; US Hwy 10	9	4	More than 2 truck crashes at this location between 2018-2019
S103	Manufacturer's Survey	US Hwy 59	37	5	It would be helpful to add a second lane on each side of 59 between Mahnommen and Detroit Lakes along Hwy 59 since the speed variations between drivers along the Hwy can cause accidents on the current two way traffic lanes there now.
D1	CMV Data	US Hwy 10; MN Hwy 9	29	6	More than 2 truck crashes at this location between 2018-2019
D33	CMV Crash Data	MN Hwy 9	29	6	Segment with high density crash rates
S105	Manufacturer's Survey	3rd St	30	7	Add a second lane on each side of 59 between Mahnommen and Detroit Lakes along Hwy 59, speed variations between drivers along the Hwy can cause accidents on the current two-way traffic lanes there now. Planned yard expansion will increase traffic.

Project ID	Information Source	Highway	Pure Rank	Safety Rank	Additional Information
S34	MetroQuest Survey	50th Ave	11	8	Left turning traffic from 50th Ave W to Hwy 29S backs up both the turn lane and left lane past Twin Blvd. Accesses and people making left turns onto Twin Blvd make the road feel unsafe.
D27	CMV Data	I94 W; Hansel Lake Rest Area	78	9	More than 2 truck crashes at this location between 2018-2019
S77	Manufacturer's Survey	CSAH 10	56	10	We like the flashing stop lights at 79 and 78. A few people died there at Ashby west of Erdahl. We like the flashing stop lights in general.
D30	CMV Crash Data	Washington Ave	16	11	Segment with high density crash rates
D35	CMV Crash Data	Washington Ave	16	11	Segment with high density crash rates
S213	Committee Meetings	IS Hwy 94	38	12	I-94 EB exit ramp next to Walmart in Fergus Falls – safety concern with heavy traffic volume
S115	Manufacturer's Survey	Larson Ave	57	13	It would be helpful to add a second lane on each side of 59 between Mahnomen and Detroit Lakes along Hwy 59 since the speed variations between drivers along the Hwy can cause accidents on the current two way traffic lanes there now.
S215	Other Consultation	MN Hwy 9	84	14	The intersection is a busy one with the precast concrete plant. There are improvements to the 3 mile section of twp road in the future that would warrant further investigation at the intersection with TH 9. For now please add this to the list. I am not sure we will study the intersection with this effort but we would put it on the bigger spreadsheet. We will be gathering more information in the future and may add it at the very end. It is TH 9/70th Ave. north of TH 10.
D51	CMV Crash Data	T-1679	85	15	Segment with high density crash rates
D31	CMV Crash Data	Parke Ave	43	16	Segment with high density crash rates
D59	CMV Crash Data	Parke Ave S	103	16	Segment with high density crash rates
D4	CMV Data	160th Ave N; 1st St SW	58	17	More than 2 truck crashes at this location between 2018-2019

Project ID	Information Source	Highway	Pure Rank	Safety Rank	Additional Information
S45	Other Consultation	MN Hwy 210	79	18	Difficult intersection for trucks in harvest season. "10 mi east of Breckenridge on 210".
D21	CMV Data	US Hwy 12; MN Hwy 7	39	19	More than 2 truck crashes at this location between 2018-2019
S82	Manufacturer's Survey	S Lake Ave	66	20	Highway 210 at the major crossing in Battle Lake and Underwood. He said people had been running stop signs there, but he felt that was largely addressed with the upgraded signs.
S50	Other Consultation	US Hwy 10	67	21	Traffic lights on Randolph Road are short and truck drivers can only get one truck across; leads to red light running issues.
D13	CMV Data	US 59TH; MN Hwy 34	68	22	More than 2 truck crashes at this location between 2018-2019
D47	CMV Crash Data	MN Hwy 34	68	22	Segment with high density crash rates
D54	CMV Crash Data	US Hwy 59	68	22	Segment with high density crash rates

Figure 11: District 4 Safety Gap Locations



Source: CPCS analysis. 2022.

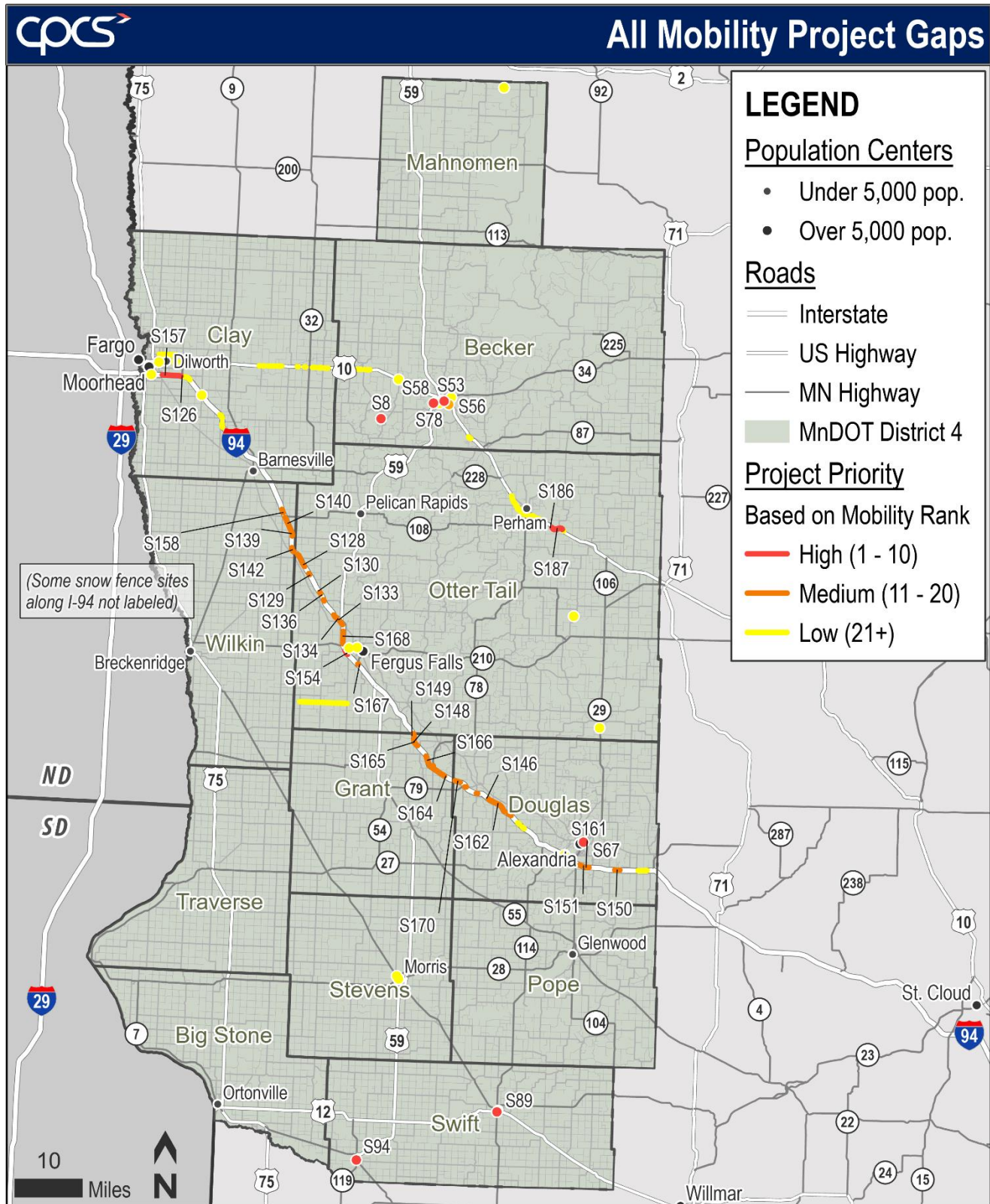


Figure 12: District 4’s Top Freight Mobility Gaps

Project ID	Information Source	Highway	Pure Rank	Mobility Rank	Additional Information
S8	MetroQuest Survey	E Big Cormorant Rd	109	1	N/A
S58	Manufacturer's Survey	US Hwy 59	3	2	Roundabouts need to be larger and flatten the curbs on them (an example is Willow Street Roundabout).
S78	Manufacturer's Survey	US Hwy 59	3	2	The roundabouts south of 75 in Moorhead and Detroit Lakes are a problem because our trucks can't make the curves and still keep our loads balanced.
S126	Snow Fence Shapefile	IS Hwy 94	33	3	N/A
S157	Snow Fence Shapefile	IS Hwy 94	6	4	N/A
S89	Manufacturer's Survey	Church St S	7	5	In Benson, at Hwy 29 and US 12—I don't think anything can go through there. They try to route you past the ethanol plant and past Sandy's (café on 29 on south side of Benson).
S154	Snow Fence Shapefile	IS Hwy 94	4	6	N/A
S94	Manufacturer's Survey	Minnesota St	45	7	Would like to see the interchange be redesigned so it is easier for semi traffic to use the intersection. Right turn lanes and possibly a center left turn lane would be a good idea to be looked at in the near future.
S67	Manufacturer's Survey	3rd Ave E	1	8	Getting through Alexandria is difficult (would like a bypass).
S186	Snow Fence Shapefile	US Hwy 10	2	9	N/A
S187	Snow Fence Shapefile	US Hwy 10	2	9	N/A
S53	Other Consultation	Roosevelt Ave	59	10	New underpass trucks can't get under so need to re-route to get onto US-10.
S56	Manufacturer's Survey	US Hwy 10	12	11	Signage needed for Industrial Park On Highway 10.
S138	Snow Fence Shapefile	IS Hwy 94	17	12	N/A
S139	Snow Fence Shapefile	IS Hwy 94	17	12	N/A

Project ID	Information Source	Highway	Pure Rank	Mobility Rank	Additional Information
S140	Snow Fence Shapefile	IS Hwy 94	17	12	N/A
S141	Snow Fence Shapefile	IS Hwy 94	17	12	N/A
S142	Snow Fence Shapefile	IS Hwy 94	17	12	N/A
S125	Snow Fence Shapefile	IS Hwy 94	18	13	N/A
S127	Snow Fence Shapefile	IS Hwy 94	18	13	N/A
S128	Snow Fence Shapefile	IS Hwy 94	18	13	N/A
S129	Snow Fence Shapefile	IS Hwy 94	18	13	N/A
S130	Snow Fence Shapefile	IS Hwy 94	18	13	N/A
S131	Snow Fence Shapefile	IS Hwy 94	18	13	N/A
S132	Snow Fence Shapefile	IS Hwy 94	18	13	N/A
S134	Snow Fence Shapefile	IS Hwy 94	18	13	N/A
S135	Snow Fence Shapefile	IS Hwy 94	18	13	N/A
S136	Snow Fence Shapefile	IS Hwy 94	18	13	N/A
S137	Snow Fence Shapefile	IS Hwy 94	18	13	N/A
S158	Snow Fence Shapefile	IS Hwy 94	19	14	N/A

Figure 13: District 4 Freight Mobility Gap Locations



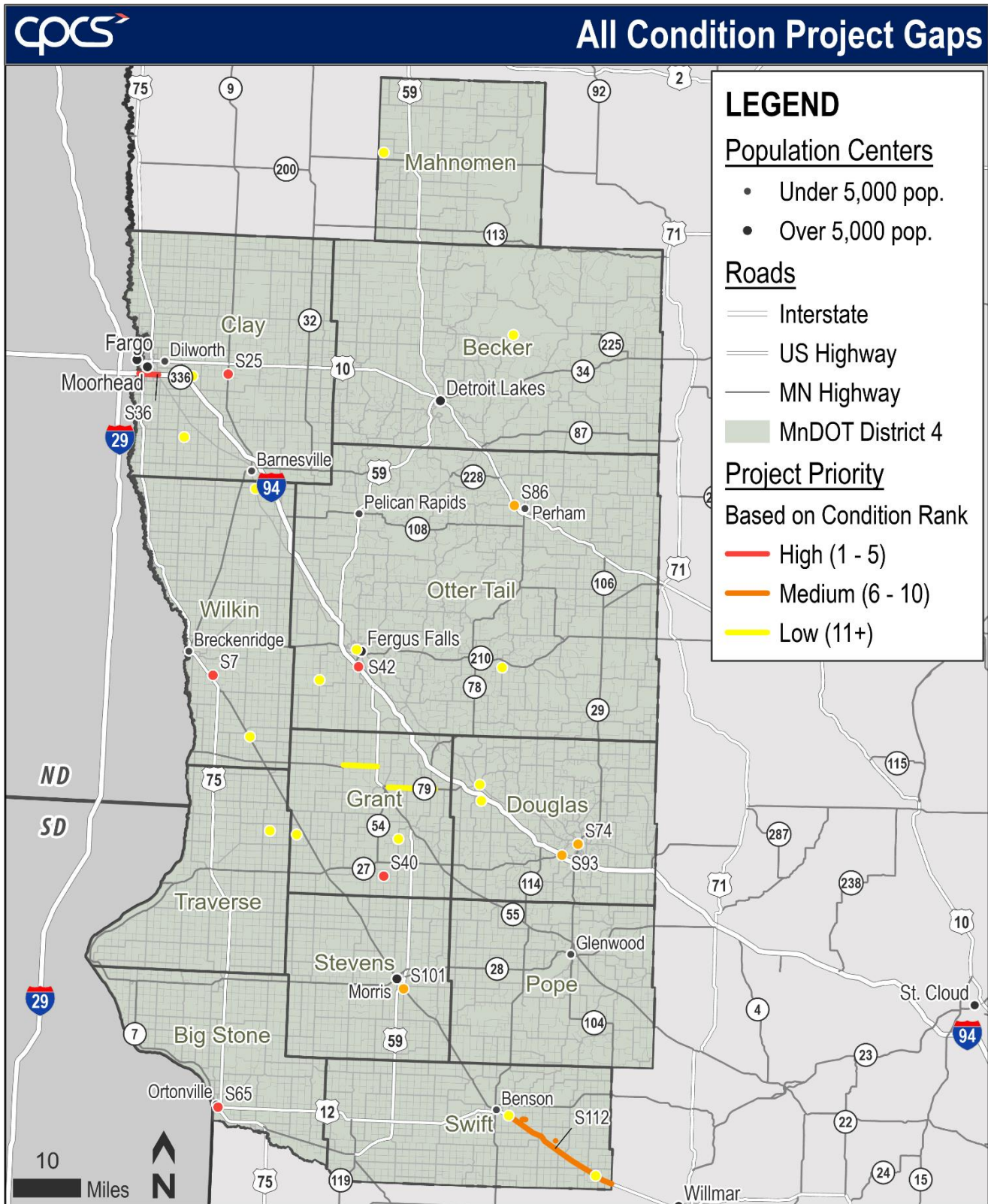
Source: CPCS analysis. 2022

Figure 14: District 4’s Freight Condition Gaps

Project ID	Information Source	Highway	Pure Rank	Condition Rank	Additional Information
S42	MetroQuest Survey	IS Hwy 94	52	1	Potholes on I-94.
S40	MetroQuest Survey	130th St	109	2	N/A
S7	MetroQuest Survey	220th Ave	109	2	N/A
S65	Manufacturer's Survey	Ingersoll Ave	15	3	There’s some congestion at 12 & 7 but not very often—mainly noon at 5 pm.
S25	MetroQuest Survey	17th Ave S	75	4	Low area in main drive track from constant truck traffic.
S36	MetroQuest Survey	IS Hwy 94	76	5	I-94 through Moorhead is rough.
S101	Manufacturer's Survey	MN Hwy 9	53	6	Signage for the Morris industrial park.
S93	Manufacturer's Survey	CSAH 45	8	7	The flashing lights on 27 going into Alexandria need to be timed differently. If you see the light you will not make it because you are travelling on open road at highway speed.
S112	Manufacturer's Survey	160th Ave SE	42	8	Hwy 12 to Willmar is terrible for rough pavement. 23 took them a while to repave.
S86	Manufacturer's Survey	CSAH 34	77	9	Hwy 10 signage identifying access to KLN companies via Hwy 34 could be improved. Drivers who are not familiar with the area may not be aware that this is Hwy 34 may be a better or alternative access point.
S74	Manufacturer's Survey	Broadway St	27	10	There are too many stoplights in Alexandria.
S113	Manufacturer's Survey	CR-46	54	11	Hwy 55 between Hwy 59 and Wendell, MN. Potholes and rough condition. Ditches are deep and little or no shoulders. This road is in tough shape.
S117	Manufacturer's Survey	CSAH 21	55	12	Poor conditions damaging delicate equipment. The area between Erdahl and Elbow Lake will shake the teeth out of you.
S95	Manufacturer's Survey	US Hwy 12	97	13	US 12 and 30th Ave is a very “dark” corner. We’ve ordered a sign that says “receiving to direct trucks. Many have missed it.

Project ID	Information Source	Highway	Pure Rank	Condition Rank	Additional Information
S22	MetroQuest Survey	CSAH 5	110	14	N/A
S52	Other Consultation	28th Ave S	112	14	Bridge condition requires that trucks have to go 15mph when loaded. If trucks don't reduce their speed, house nearby has structural issue. No other route and slow speed leads to local traffic congestion.
S87	Manufacturer's Survey	CSAH 52	113	14	Rough: one place that is a problem is by Barnesville - the bridge on County Road #88.
S10	MetroQuest Survey	T-800	116	14	N/A
S15	MetroQuest Survey	80th St S	116	14	N/A
S23	MetroQuest Survey	CSAH 2	116	14	Routine maintenance is needed. Road has cracks.
S76	Manufacturer's Survey	CR-55	116	14	55 used to have a narrow bridge. Put on an escort. The bridge was updated, but still shows it as narrow, the permitting website wasn't updated.
S99	Manufacturer's Survey	Gran St	119	14	Central Lakes Trail gets driven on by those thinking it is a frontage Rd.
D73	Bridge Condition Data	'TWP 76'	120	15	Bridge Condition < 50%
D74	Bridge Condition Data	'TWP 104'	120	15	Bridge Condition < 50%
D81	Bridge Condition Data	'TWP 98'	120	15	Bridge Condition < 50%
D71	Bridge Condition Data	'TWP 312'	123	15	Bridge Condition < 50%
D72	Bridge Condition Data	'MSAS 116(Mill St)'	115	16	Bridge Condition < 50%
D80	Bridge Condition Data	'CSAH 15'	118	16	Bridge Condition < 50%
D75	Bridge Condition Data	'TWP 95'	124	16	Bridge Condition < 50%

Figure 15: District 4 Freight Condition Gap Locations



# 3 Selection of Gaps and Concepts to Advance to Pre- Feasibility

## Key Findings

A major goal of the District 4 freight plan is to help MnDOT address freight needs and issues through future infrastructure projects. Part of this work involves ensuring that sufficient data or documentation exist to support the creation of projects to solve these needs and issues. Sufficient documentation is also needed to support future grant applications such as those for the Minnesota Highway Freight Program. 14 high-priority gaps or project concepts have been selected for further development into high-level projects or solutions in the next step of the planning process.

## 3.1 Introduction

One of the purposes of the District 4 Freight Plan is to help the District’s important freight transportation needs to be addressed by future rounds of funding. One way to improve their ability to be addressed is to prepare data and information about the types of solutions and level of effort needed to address top needs and issues. This effort includes developing gaps or project concepts into more-clear projects or solutions so that these more-clear projects and solutions can be scored and considered where future investment decisions are made.

This chapter describes the process used to select a small set of gaps or project concepts to pre-feasibility evaluation. This pre-feasibility work will include the conceptual design of one or more projects or solutions to address a gap or project concept and order of magnitude construction cost estimates. This pre-feasibility process will also screen for high-level environmental issues, right-of-way issues, or other conflicts that could arise during the development of solutions.

## 3.2 Selecting Project Concepts to Advance to Pre-Feasibility

A list of the 14 gaps and project concepts that were scored and ranked in District 4 is provided in **Appendix B**. This listing was used as the basis for determining which projects would be carried forward into Task 6 for evaluation. The process for selecting the priority projects involved a combination of internal and external consultation among District 4 freight stakeholders, and included the following steps:

- Gaps and project concepts were scored and ranked according to the scoring processes described in Chapter 2.
- District staff reviewed the prioritized lists and developed an initial list of gaps and concepts for further study. Staff also removed gaps or concepts that were expected to be studied in upcoming plans.
- Maps and lists of top 30 pure rank projects, along with the District’s initial “shortlist” were presented to and reviewed by the Technical Team, Advisory Committee, and Area Transportation Partnership members. These groups provided feedback on additional freight needs and issues that could be considered for pre-feasibility study.
- The initial gap or concept shortlist was revised and expanded based on feedback from the stakeholder groups listed above.

Based on the process above, District 4 selected a set of 14 gaps or project concepts for pre-feasibility evaluation. These items are described in brief below.

- **S66 and S43, US-75 and County Highway 18 north of Moorhead.** These sites were identified as potential safety concerns, as there is a large volume of truck traffic entering, existing, and crossing US-75 at this intersection. This site had a high ranking overall and was in the top ten pure ranked projects.
- **S34, MN-29 and MN-18 in Alexandria.** This site was identified as a potential conflict area between free-flowing and turning traffic.
- **S65 and D21, US-12 and MN-7 in Ortonville.** This area had congestion mentioned by stakeholders, as well as more than two truck crashes between 2018 and 2018.
- **D47, Highland Drive and MN-34 in Detroit Lakes.** This area had a history of a relatively high rate of truck-involved crashes and is in the process of being upgraded. Therefore, MnDOT selected this location to understand how truck access to the local industrial park can be improved during these upgrades.
- **S89, MN-29 and US-12 in Benson.** This location refers to the railroad grade crossings in Benson, which can be blocked for long periods, and MnDOT chose to examine potential grade crossing replacements to reduce traffic mobility impacts of grade crossing blockages.
- **S105, US-59 from I-94 north through Mahnommen County.** This site was identified in the Manufacturers' perspectives study, where a second lane was needed to improve truck mobility and reduce accidents related to speed differences between traffic. MnDOT has previously completed some passing lane studies for these areas, but needs to update cost estimates for these sites.
- **S94, US-59, MN-7, and MN-119 in Appleton.** MnDOT would like to update prior cost estimates from the Appleton Planning and Design Study, which would improve traffic mobility and safety through Appleton.
- **S45, MN-210 East of Breckenridge.** This site was identified as a potential safety concern, as it is the location of a beet piling station that generates large volumes of seasonal agricultural traffic.
- **S44, US-75 and County Highway 3 in Wilkin County.** This intersection is important for southbound agricultural traffic to enter US-75 on the way to Breckenridge and Wahpeton. The sharp skew of this intersection makes it difficult for trucks turning left onto US-75 to see southbound traffic, and this concern was identified by a stakeholder.
- **S73, County Highway 45 and 34<sup>th</sup> Avenue in Alexandria.** This intersection is adjacent to an I-94 interchange as well as a truck stop, and the District has received comments about multiple truckers having difficulty navigating the area to reach the truck stop. This area is also planned for further upgrades in the future, so studying truck improvements now may yield design elements that should be included in future projects.
- **US-10 in Audubon.** This site was added by the District after the scoring and ranking process was complete, based on feedback the District had received comments about difficult turns for traffic entering and exiting US-10 from 4<sup>th</sup> Street in Audubon.
- **US-10 and Clay County Road 23.** This intersection was added by the District after the scoring and ranking process was complete, as the District has received feedback that it may be difficult for trucks to turn on and off of US-10.
- **MN-29 from Glenwood to US-10.** MnDOT would like to update cost estimates from a prior passing lane study. The addition of passing lanes here would improve truck traffic mobility to and from Glenwood, Alexandria, and Wadena.
- **McHugh Road and North Shore Drive intersections with US-10 in Detroit Lakes.** As noted in Chapter 1, MnDOT has utilized Minnesota Highway Freight Program funds to close or redesign intersections in Detroit Lakes, which improved truck mobility and safety. The McHugh Road and North Shore Drive intersections with US-10 are similar sites, with high intersection density close to US-10, and limited room for trucks to safely turn onto frontage roads.



These projects are being advanced to pre-feasibility study in Task 6 and will be documented in Working Paper 6.

## 4 Conclusions and Next Steps

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### 4.1 Conclusions

A slate of 14 gaps and concepts have been chosen to advance to the pre-feasibility stage of this project. This pre-feasibility work will include the conceptual design of potential solutions, identification of challenges with environmental sites, right of way, or other unique site characteristics, and a planning-level cost estimate. This information will help fulfil a key goal of the District 4 Freight Plan – to ensure that critical freight needs in District 4 have the potential to be addressed by future rounds of funding.

### 4.2 Next Steps

This Working Paper represents the results of Task 5, and provides input for Task 6. Working Paper 6 will provide documentation of the gaps and concepts selected for pre-feasibility assessment. All Working Papers will also be combined to provide an executive-level summary of information and recommendations for the District 4 Freight Plan.

# Appendix A. Identifying Investment Priorities

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*A PDF copy of Tech Team meeting 4 slides will be inserted here.*

# Appendix B. Findings

This appendix provides a summary of the ranks assigned to each identified gap or project concept. Note that additional information is not available for snow fence sites, as these items were added for reference.

ID	Source	Highway	Rank				Additional Information
			Pure	Safety	Mobility	Condition	
S67	Manufacturer's Survey	3rd Ave E	1		8		Getting through Alexandria is difficult (would like a bypass).
S186	Snow Fence Shapefile	US Hwy 10	2		9		
S187	Snow Fence Shapefile	US Hwy 10	2		9		
S58	Manufacturer's Survey	US Hwy 59	3		2		Roundabouts need to be larger and flatten the curbs on them (an example is Willow Street Roundabout).
S78	Manufacturer's Survey	US Hwy 59	3		2		The roundabouts south of 75 in Moorhead and Detroit Lakes are a problem because our trucks can't make the curves and still keep our loads balanced.
S154	Snow Fence Shapefile	IS Hwy 94	4		6		
S212	Committee Meetings	US Hwy 75	5	2			Intersection of US-75 and CSAH 22 in Clay County
S43	Other Consultation	US Hwy 75	5	2			Trucks have difficulty crossing intersection with high speed traffic US-75 and MN-18 (28th Avenue). Should be 4 way stop.
S66	Manufacturer's Survey	US Hwy 75	5	2			Fears the new turn lanes may have made the situation worse. Beet trucks back up on Hwy 75 in the turn lanes and people drive through on the main lane. Worried that trucks will turn in front of or into the cars. Add a temporary stoplight during beet season?
S157	Snow Fence Shapefile	IS Hwy 94	6		4		
S89	Manufacturer's Survey	Church St S	7		5		In Benson, at Hwy 29 and US 12—I don't think anything can go through there. They try to route you past the

ID	Source	Highway	Rank				Additional Information
			Pure	Safety	Mobility	Condition	
							ethanol plant and past Sandy's (café on 29 on south side of Benson).
S93	Manufacturer's Survey	CSAH 45	8			7	The flashing lights on 27 going into Alexandria need to be timed differently. If you see the light you will not make it because you are travelling on open road at highway speed.
D14	CMV Data	US 59TH; US Hwy 10	9	4			More than 2 truck crashes at this location between 2018-2019
S133	Snow Fence Shapefile	IS Hwy 94	10		18		
S168	Snow Fence Shapefile	IS Hwy 94	10		18		
S34	MetroQuest Survey	50th Ave	11	8			Left turning traffic from 50th Ave W to Hwy 29S backs up both the turn lane and left lane past Twin Blvd. Accesses and people making left turns onto Twin Blvd make the road feel unsafe.
S56	Manufacturer's Survey	US Hwy 10	12		11		Signage needed for Industrial Park On Highway 10.
S200	Snow Fence Shapefile	US Hwy 10	13		30		
S124	Manufacturer's Survey	US Hwy 10	14		34		Truck route in Perham is confusing and problematic, better signage along the truck route would help.
S65	Manufacturer's Survey	Ingersoll Ave	15			3	There's some congestion at 12 & 7 but not very often—mainly noon at 5 pm.
D30	CMV Crash Data	Washington Ave	16	11			Segment with high density crash rates
D35	CMV Crash Data	Washington Ave	16	11			Segment with high density crash rates
S138	Snow Fence Shapefile	IS Hwy 94	17		12		
S139	Snow Fence Shapefile	IS Hwy 94	17		12		
S140	Snow Fence Shapefile	IS Hwy 94	17		12		

ID	Source	Highway	Rank				Additional Information
			Pure	Safety	Mobility	Condition	
S141	Snow Fence Shapefile	IS Hwy 94	17		12		
S142	Snow Fence Shapefile	IS Hwy 94	17		12		
S125	Snow Fence Shapefile	IS Hwy 94	18		13		
S127	Snow Fence Shapefile	IS Hwy 94	18		13		
S128	Snow Fence Shapefile	IS Hwy 94	18		13		
S129	Snow Fence Shapefile	IS Hwy 94	18		13		
S130	Snow Fence Shapefile	IS Hwy 94	18		13		
S131	Snow Fence Shapefile	IS Hwy 94	18		13		
S132	Snow Fence Shapefile	IS Hwy 94	18		13		
S134	Snow Fence Shapefile	IS Hwy 94	18		13		
S135	Snow Fence Shapefile	IS Hwy 94	18		13		
S136	Snow Fence Shapefile	IS Hwy 94	18		13		
S137	Snow Fence Shapefile	IS Hwy 94	18		13		
S158	Snow Fence Shapefile	IS Hwy 94	19		14		
S147	Snow Fence Shapefile	IS Hwy 94	20		15		
S148	Snow Fence Shapefile	IS Hwy 94	20		15		
S149	Snow Fence Shapefile	IS Hwy 94	20		15		

ID	Source	Highway	Rank				Additional Information
			Pure	Safety	Mobility	Condition	
S165	Snow Fence Shapefile	IS Hwy 94	20		15		
S166	Snow Fence Shapefile	IS Hwy 94	20		15		
S152	Snow Fence Shapefile	IS Hwy 94	21		16		
S163	Snow Fence Shapefile	IS Hwy 94	21		16		
S164	Snow Fence Shapefile	IS Hwy 94	21		16		
S170	Snow Fence Shapefile	IS Hwy 94	21		16		
S145	Snow Fence Shapefile	IS Hwy 94	22		19		
S146	Snow Fence Shapefile	IS Hwy 94	22		19		
S153	Snow Fence Shapefile	IS Hwy 94	22		19		
S162	Snow Fence Shapefile	IS Hwy 94	22		19		
S150	Snow Fence Shapefile	IS Hwy 94	23		20		
S161	Snow Fence Shapefile	IS Hwy 94	23		20		
S155	Snow Fence Shapefile	IS Hwy 94	24		23		
S160	Snow Fence Shapefile	IS Hwy 94	25		24		
S159	Snow Fence Shapefile	IS Hwy 94	26		25		
S74	Manufacturer's Survey	Broadway St	27			10	There are too many stoplights in Alexandria.
S207	Committee Meetings	US Hwy 10	28	1			Clay County Rd 86 and US-10 – look at an eastbound acceleration lane

ID	Source	Highway	Rank				Additional Information
			Pure	Safety	Mobility	Condition	
S209	Committee Meetings	US Hwy 10	28	1			US-10 at Clay County Road 23 – improvements needed for trucks or turning traffic
D1	CMV Data	US Hwy 10; IS Hwy 9	29	6			More than 2 truck crashes at this location between 2018-2019
D33	CMV Crash Data	IS Hwy 9	29	6			Segment with high density crash rates
S105	Manufacturer's Survey	3rd St	30	7			Add a second lane on each side of 59 between Mahnomen and Detroit Lakes along Hwy 59, speed variations between drivers along the Hwy can cause accidents on the current two-way traffic lanes there now. Planned yard expansion will increase traffic.
S79	Manufacturer's Survey	IS Hwy 94	31	3			Operations are reasonably well; does seem like there are more accidents on I-94 bridge between ND and MN – possibly from automatic deicers; brines tend to leave snow pack on the roads.
S214	Committee Meetings	S 20th St	32		32		20th street bridge over I-94 in Moorhead – a barrier to OSOW truck movement
S126	Snow Fence Shapefile	IS Hwy 94	33		3		
S156	Snow Fence Shapefile	IS Hwy 94	34		28		
S198	Snow Fence Shapefile	US Hwy 10	35		35		
S183	Snow Fence Shapefile	US Hwy 10	36		37		
S103	Manufacturer's Survey	US Hwy 59	37	5			It would be helpful to add a second lane on each side of 59 between Mahnomen and Detroit Lakes along Hwy 59 since the speed variations between drivers along the Hwy can cause accidents on the current two way traffic lanes there now.
S213	Committee Meetings	IS Hwy 94	38	12			I-94 EB exit ramp next to Walmart in Fergus Falls – safety concern with heavy traffic volume
D21	CMV Data	US Hwy 12; IS Hwy 7	39	19			More than 2 truck crashes at this location between 2018-2019
S185	Snow Fence Shapefile	US Hwy 10	40		29		



ID	Source	Highway	Rank				Additional Information
			Pure	Safety	Mobility	Condition	
S210	Committee Meetings	US Hwy 10	41		31		US-10 / 4th Street intersection in Audubon – improve access to Team Industries and turning vehicle safety in area
S112	Manufacturer's Survey	160th Ave SE	42			8	Hwy 12 to Willmar is terrible for rough pavement. 23 took them a while to repave.
D31	CMV Crash Data	Parke Ave	43	16			Segment with high density crash rates
D19	CMV Data	US Hwy 75; Minnesota Ave	44	23			More than 2 truck crashes at this location between 2018-2019
S94	Manufacturer's Survey	Minnesota St	45		7		Would like to see the interchange be redesigned so it is easier for semi traffic to use the intersection. Right turn lanes and possibly a center left turn lane would be a good idea to be looked at in the near future.
S167	Snow Fence Shapefile	IS Hwy 94	46		17		
S192	Snow Fence Shapefile	US Hwy 10	47		22		
S193	Snow Fence Shapefile	US Hwy 10	47		22		
S171	Snow Fence Shapefile	US Hwy 10	48		30		
S199	Snow Fence Shapefile	US Hwy 10	48		30		
S203	Snow Fence Shapefile	US Hwy 10	48		30		
S172	Snow Fence Shapefile	US Hwy 10	49		31		
S202	Snow Fence Shapefile	US Hwy 10	50		38		
S211	Committee Meetings	IS Hwy 34	51		39		IS Hwy-34 and Highland Drive in Detroit Lakes – look at improving intersection and access
S42	MetroQuest Survey	IS Hwy 94	52			1	Potholes on I-94.
S101	Manufacturer's Survey	IS Hwy 9	53			6	Signage for the Morris industrial park.

ID	Source	Highway	Rank				Additional Information
			Pure	Safety	Mobility	Condition	
S113	Manufacturer's Survey	CR-46	54			11	Hwy 55 between Hwy 59 and Wendell, MN. Potholes and rough condition. Ditches are deep and little or no shoulders. This road is in tough shape.
S117	Manufacturer's Survey	CSAH 21	55			12	Poor conditions damaging delicate equipment. The area between Erdahl and Elbow Lake will shake the teeth out of you.
S77	Manufacturer's Survey	CSAH 10	56	10			We like the flashing stop lights at 79 and 78. A few people died there at Ashby west of Erdahl. We like the flashing stop lights in general.
S115	Manufacturer's Survey	Larson Ave	57	13			It would be helpful to add a second lane on each side of 59 between Mahnomen and Detroit Lakes along Hwy 59 since the speed variations between drivers along the Hwy can cause accidents on the current two way traffic lanes there now.
D4	CMV Data	160th Ave N; 1st St SW	58	17			More than 2 truck crashes at this location between 2018-2019
S53	Other Consultation	Roosevelt Ave	59		10		New underpass trucks can't get under so need to re-route to get onto US-10.
S169	Snow Fence Shapefile	IS Hwy 94	60		19		
S151	Snow Fence Shapefile	IS Hwy 94	61		20		
S62	Manufacturer's Survey	IS Hwy 28	62		26		Intersection improvement – Morris, meeting semis turning on 28 & 9.
S92	Manufacturer's Survey	Atlantic Ave	63		27		It's tough for 100' rig to take that corner on Main & 5th (Hwy 28 & Hwy 9. *Michael Haynes (EDA) said MnDOT is adding a turn lane there and extending the no parking zone.*
S181	Snow Fence Shapefile	US Hwy 10	64		31		
S194	Snow Fence Shapefile	US Hwy 10	65		33		
S196	Snow Fence Shapefile	US Hwy 10	65		33		
S197	Snow Fence Shapefile	US Hwy 10	65		33		

ID	Source	Highway	Rank				Additional Information
			Pure	Safety	Mobility	Condition	
S82	Manufacturer's Survey	S Lake Ave	66	20			Highway 210 at the major crossing in Battle Lake and Underwood. He said people had been running stop signs there, but he felt that was largely addressed with the upgraded signs.
S50	Other Consultation	US Hwy 10	67	21			Traffic lights on Randolph Road are short and truck drivers can only get one truck across; leads to red light running issues.
D13	CMV Data	US 59TH; IS Hwy 34	68	22			More than 2 truck crashes at this location between 2018-2019
D47	CMV Crash Data	IS Hwy 34	68	22			Segment with high density crash rates
D54	CMV Crash Data	US Hwy 59	68	22			Segment with high density crash rates
S28	MetroQuest Survey	24th Ave S	69	29			N/A
S68	Manufacturer's Survey	CSAH 82	69	29			Dangerous intersection, difficult to enter from north. especially when the traffic from Discovery Middle School, up McKay Ave to the north is present.
D83	Rail Crossing Risk Data	Washington Ave	70	36			Grade crossing risk rating of 8 or higher
S143	Snow Fence Shapefile	IS Hwy 94	71		21		
S144	Snow Fence Shapefile	IS Hwy 94	71		21		
S72	Manufacturer's Survey	100th St S	72		25		How about a ramp off of 94 to county road 17? Especially in the summer, there are big backups. Something coming from the east to avoid downtown would help (bypass).
S195	Snow Fence Shapefile	US Hwy 10	73		33		
S174	Snow Fence Shapefile	US Hwy 10	74		37		
S177	Snow Fence Shapefile	US Hwy 10	74		37		
S191	Snow Fence Shapefile	US Hwy 10	74		37		
S25	MetroQuest Survey	17th Ave S	75			4	Low area in main drive track from constant truck traffic.

ID	Source	Highway	Rank				Additional Information
			Pure	Safety	Mobility	Condition	
S36	MetroQuest Survey	IS Hwy 94	76			5	I-94 through Moorhead is rough.
S86	Manufacturer's Survey	CSAH 34	77			9	Hwy 10 signage identifying access to KLN companies via Hwy 34 could be improved. Drivers who are not familiar with the area may not be aware that this is Hwy 34 may be a better or alternative access point.
D27	CMV Data	I94 W; Hansel Lake Rest Area	78	9			More than 2 truck crashes at this location between 2018-2019
S45	Other Consultation	IS Hwy 210	79	18			Difficult intersection for trucks in harvest season. "10 mi east of Breckenridge on 210".
S44	Other Consultation	US Hwy 75	80	25			Difficult intersection for trucks to cross in harvest season. US-75 and CH-3 in Wilkin County.
S83	Manufacturer's Survey	IS Hwy 210	81	26			The stop lights at Hwy #210 and Hwy #59 while great, could be enhanced by a prepare to stop sign or a prepare to stop flashing sign.
S173	Snow Fence Shapefile	US Hwy 10	82		37		
S175	Snow Fence Shapefile	US Hwy 10	82		37		
S176	Snow Fence Shapefile	US Hwy 10	82		37		
S178	Snow Fence Shapefile	US Hwy 10	82		37		
S179	Snow Fence Shapefile	US Hwy 10	82		37		
S180	Snow Fence Shapefile	US Hwy 10	82		37		
S182	Snow Fence Shapefile	US Hwy 10	82		37		
S184	Snow Fence Shapefile	US Hwy 10	82		37		
S189	Snow Fence Shapefile	US Hwy 10	82		37		

ID	Source	Highway	Rank				Additional Information
			Pure	Safety	Mobility	Condition	
S190	Snow Fence Shapefile	US Hwy 10	82		37		
S201	Snow Fence Shapefile	US Hwy 10	83		38		
S215	Other Consultation	IS Hwy 9	84	14			The below intersection is a busy one with the precast concrete plant. There are improvemetns to the 3 mile section of twp road in the future that would warrant further investigation at the intersection with TH 9. For now please add this to the list. I am not sure we will study the interestion with this effort but we would put it on the bigger spreadsheet. We will be gathering more information in the future and may add it at the very end. It is TH 9/70th Ave. north of TH 10.
D51	CMV Crash Data	T-1679	85	15			Segment with high density crash rates
S85	Manufacturer's Survey	IS Hwy 29	86	24			The intersection of Hwy 29/Co Rd 38/Co Rd 46 (old 235) is difficult for trucks. It could be improved.
D84	Rail Crossing Risk Data	IS Hwy 29	87	28			Grade crossing risk rating of 8 or higher
S71	Manufacturer's Survey	CSAH 82	88	29			Added top light at 22 and 82 was a big help. "Four-way by the YMCA".
S206	Committee Meetings	S Main St	88	33			Dilworth Main Street RR crossing – stakeholder concern about safety and mobility (Metro COG and BNSF both mentioned)
S188	Snow Fence Shapefile	US Hwy 10	89		36		
D7	CMV Data	34th St S; S 12th Ave	90	35			More than 2 truck crashes at this location between 2018-2019
S204	Committee Meetings	N Union Ave	91		41		Bridge 5453 in Fergus Falls as a load-posted bridge that is a potential priority replacement for Fergus Falls
S102	Manufacturer's Survey	S Tower Rd	92		40		Probe: Would different signage, to identify truck route designation, be helpful? Yes, Lincoln Avenue, 210 Bypass, and County Road 1 are designated.
D45	CMV Crash Data	T-228	93	27			Segment with high density crash rates
S120	Manufacturer's Survey	CR-81	94	29			Signage: lack of signage about (slow) trucks entering road for vehicles coming from the west. Turn lane: there is no turning lane for westbound traffic in front of business.

ID	Source	Highway	Rank				Additional Information
			Pure	Safety	Mobility	Condition	
							Rumble strips: they feel it is hard for motorists to see the rumble strips.
D15	CMV Data	US Hwy 34; 215th Ave	95	32			More than 2 truck crashes at this location between 2018-2019
S208	Committee Meetings	CSAH 52	96	37			Clay County CSAH 12 and CSAH 52 – skewed intersection with high crash rates and conflicts with turning traffic – want to add turn lanes.
S95	Manufacturer's Survey	US Hwy 12	97			13	US 12 and 30th Ave is a very “dark” corner. We’ve ordered a sign that says “receiving to direct trucks. Many have missed it.
S14	MetroQuest Survey	34th St S	97		40		Trains through the town impede mobility.
D9	CMV Data	US Hwy 75, I94W	98	30			More than 2 truck crashes at this location between 2018-2019
D38	CMV Crash Data	Central Ave	99	34			Segment with high density crash rates
D42	CMV Crash Data	Western Ave	100	38			Segment with high density crash rates
D48	CMV Crash Data	Western Ave	100	38			Segment with high density crash rates
S21	MetroQuest Survey	195th Ave	100	38			N/A
S6	MetroQuest Survey	IS Hwy 78	101		42		N/A
S100	Manufacturer's Survey	IS Hwy 29	102		43		Wants to have a turn lane added in front of his business for safety purposes. Would like to have one added to keep his staff and suppliers from getting rear ended. (Location approximate).
D59	CMV Crash Data	Parke Ave S	103	16			Segment with high density crash rates
D85	Rail Crossing Risk Data	Northridge Dr	104	36			Grade crossing risk rating of 8 or higher
S2	MetroQuest Survey	Rossman Ave	105		44		Trucks cannot park or access fast food or restaurants in area.
S13	MetroQuest Survey	Marion St	106	35			Needs better signage/paint.

ID	Source	Highway	Rank				Additional Information
			Pure	Safety	Mobility	Condition	
S73	Manufacturer's Survey	Evergreen La	107		45		Pilot and 27 and 45, getting into pilot is tricky. Truckers getting confused and making the right turn and/or staying on MN27 when coming from the other direction off I-94, instead of continuing or turning onto CR 45. Entry on MN27 or signage needed.
S205	Committee Meetings	15th Ave N	108		48		Clay County Highway 83 (15th Ave N) paving – suggested as a truck bypass for Dilworth and Quality of Life improvement for downtown Dilworth
D82	Rail Crossing Risk Data	230th St S	108	39			Grade crossing risk rating of 8 or higher
S40	MetroQuest Survey	130th St	109			2	N/A
S7	MetroQuest Survey	220th Ave	109			2	N/A
S8	MetroQuest Survey	E Big Cormorant Rd	109		1		N/A
S11	MetroQuest Survey	385th Ave	109	31			No trail for bikes or peds.
S19	MetroQuest Survey	460th St	109	31			Unsafe intersection.
S38	MetroQuest Survey	90th St S	109	31			N/A
S22	MetroQuest Survey	CSAH 5	110			14	N/A
D90	Rail Crossing Risk Data	South Town Line Rd	111	36			Grade crossing risk rating of 8 or higher
D91	Rail Crossing Risk Data	Front St	111	36			Grade crossing risk rating of 8 or higher
D92	Rail Crossing Risk Data	Hering St	111	36			Grade crossing risk rating of 8 or higher
D93	Rail Crossing Risk Data	E Corp Lmts	111	36			Grade crossing risk rating of 8 or higher
S52	Other Consultation	28th Ave S	112			14	Bridge condition requires that trucks have to go 15mph when loaded. If trucks don't reduce their speed, house

ID	Source	Highway	Rank				Additional Information
			Pure	Safety	Mobility	Condition	
							nearby has structural issue. No other route and slow speed leads to local traffic congestion.
S87	Manufacturer's Survey	CSAH 52	113			14	Rough: one place that is a problem is by Barnesville - the bridge on County Road #88.
S9	MetroQuest Survey	CSAH 67	113		46		N/A
D49	CMV Crash Data	S Peck St	113	41			Segment with high density crash rates
S54	Other Consultation	150th Ave	114		47		CH-112 needs to be further overlaid to allow for higher weight loads getting onto state highways.
D72	Bridge Condition Data	'MSAS 116(Mill St)'	115			16	Bridge Condition < 50%
S10	MetroQuest Survey	T-800	116			14	N/A
S15	MetroQuest Survey	80th St S	116			14	N/A
S23	MetroQuest Survey	CSAH 2	116			14	Routine maintenance is needed. Road has cracks.
S76	Manufacturer's Survey	CR-55	116			14	55 used to have a narrow bridge. Put on an escort. The bridge was updated, but still shows it as narrow, the permitting website wasn't updated.
S3	MetroQuest Survey	110th St	116		47		N/A
S118	Manufacturer's Survey	Fadden Rd	116	38			Rumble strips are great too except they throw you on 71. (I think they're referring to County Rd 71 near Alex).
S16	MetroQuest Survey	250th Ave	116	38			N/A
S41	MetroQuest Survey	CR-55	116	38			N/A
D86	Rail Crossing Risk Data	20th Ave SE	117	36			Grade crossing risk rating of 8 or higher
D88	Rail Crossing Risk Data	Birch Ave	117	36			Grade crossing risk rating of 8 or higher
D94	Rail Crossing Risk Data	493rd Ave	117	36			Grade crossing risk rating of 8 or higher



ID	Source	Highway	Rank				Additional Information
			Pure	Safety	Mobility	Condition	
D80	Bridge Condition Data	'CSAH 15'	118			16	Bridge Condition < 50%
S99	Manufacturer's Survey	Gran St	119			14	Central Lakes Trail gets driven on by those thinking it is a frontage Rd.
S116	Manufacturer's Survey	CSAH 80	119	38			Narrow and hilly roads by Barrett can be tough in the winter. The worst road in the area is the unpaved portion of Coney St in Perham.
D73	Bridge Condition Data	'TWP 76'	120			15	Bridge Condition < 50%
D74	Bridge Condition Data	'TWP 104'	120			15	Bridge Condition < 50%
D81	Bridge Condition Data	'TWP 98'	120			15	Bridge Condition < 50%
D87	Rail Crossing Risk Data	4th St SE	121	39			Grade crossing risk rating of 8 or higher
D50	CMV Crash Data	CSAH 11	122	40			Segment with high density crash rates
D71	Bridge Condition Data	'TWP 312'	123			15	Bridge Condition < 50%
D75	Bridge Condition Data	'TWP 95'	124			16	Bridge Condition < 50%
D52	CMV Crash Data	24th Ave S	125	41			Segment with high density crash rates
D55	CMV Crash Data	CR-90	125	41	8		Segment with high density crash rates