Needs Assessment

Minnesota Weight Enforcement Investment Plan

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Minnesota Department of Transportation

Minnesota State Patrol

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Acronyms/Definitions

Acronym	*Definition*
AADT	Annual Average Daily Traffic
CHIP	Capital Highway Investment Plan
CMV	Commercial Motor Vehicle
CSAH	County State-Aid Highway
CVI	Commercial Vehicle Inspector
CVSP	Commercial Vehicle Safety Plan
CY17	Calendar Year 2017
DOT	Department of Transportation
FAF4	Freight Analysis Framework, Version 4
FMCSA	Federal Motor Carrier Safety Administration
FHWA	Federal Highway Administration
GIS	Geographic Information System
HCAADT	Heavy Commercial Annual Average Daily Traffic
MCSAP	Motor Carrier Safety Assistance Program
MnDOT	Minnesota Department of Transportation
MSP	Minnesota State Patrol
OFCVO	Office of Freight and Commercial Vehicle Operations
OOS	Out-of-Service
OSOW	Over-Size Over-Weight
OTSM	Office of Transportation System Management
PBBT	Performance Based Brake Testers
PCMS	Portable Changeable Message Sign
PA Other	Principal Arterials Other
STIP	State Transportation Improvement Program
VMT	Vehicle Miles Traveled
VWS	Virtual Weigh Station
WEIP	Weight Enforcement Investment Plan
WIM	Weigh-in-Motion

1 Introduction

The Minnesota Department of Transportation (MnDOT) in partnership with the Minnesota State Patrol (MSP) is developing a 10-year Weight Enforcement Investment Plan (WEIP) for their commercial motor vehicle (CMV) enforcement facilities. Discussions for a future plan began in Spring 2017 through a Commercial Vehicle Enforcement Planning Workshop where attendees participated in a practical vision card exercise to identify which strategies to implement in the next 10 years. The first phase of this plan was to develop a classification system and concept of operations for each facility type that accounted for existing enforcement sites as well as potential future sites. A summary of the classification system levels developed is shown in Table 1-1.

Table 1-1: Classification Summary Table

Class	*minnesota SITES*	*Description*
A Major	St Croix Red River	Full weigh station (scale and building) with weigh-in-motion (WIM) on ramps and internal bypass system
B Intermediate	Worthington Erskine Saginaw Dayton Port	Smaller weigh station (scale and building) with no internal bypassing
C Minor	Forest Lake SB Clark's Grove NB	Pull-off site with enhancements for additional equipment and technology. May or may not include a building.
D Pull-Off	Carlton NB/SB Nodine NB/SB Clark's Grove SB	Pull-off site only. Operate with Portable Changeable Message Signs (PCMS) and portable WIM mats or portable scales. Parking lot type and size may vary from existing sites to something much smaller.
E Virtual/ Technology	WIM Sites with Cameras US 52 Butler	MnDOT planning-purpose WIM site or a virtual weigh station (VWS) WIM site with integrated cameras and identified location(s) downstream to safely pull commercial vehicles over

Draft evaluation criteria were developed in the concept of operations as factors with which to evaluate existing and proposed enforcement sites. The draft evaluation criteria consisted of five main categories: Enforcement/Safety, Infrastructure, Freight, Geographic and Roadway Characteristics. The goal of the evaluation critera was to enable MnDOT and MSP to objectively evaluate all highway corridors statewide. The criteria used in this evaluation was revised from the concept of operations based on data availabilty and usability. For example. FAF4 Tonnage was replaced with Vehicle Miles Traveled. The final criteria is detailed in Section 3 below.

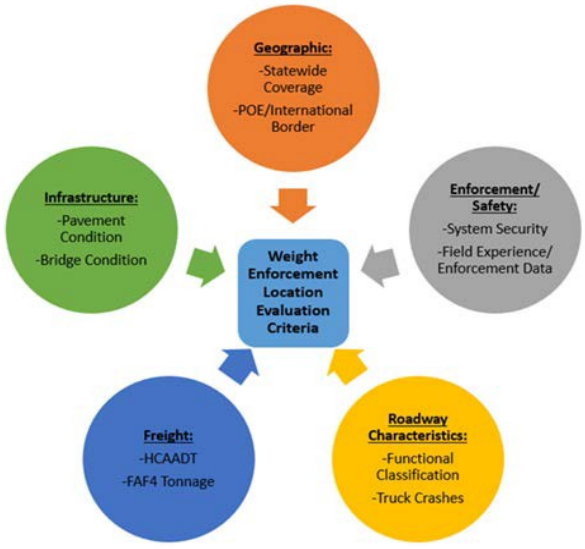


Figure 1-1: Draft Evaluation Criteria

The second phase of the 10-Year Weight Enforcement Investment Plan is a comprehensive needs assessment. Needs have been gathered from internal and external stakeholders statewide and incorporated in the development of the 10-year investment plan. The plan document itself will be produced separately from this Needs Assessment Report. Representatives from each of the MnDOT and State Patrol Districts had an opportunity to attend a meeting held on-site in each region to discuss existing and future needs for the statewide weight enforcement and safety program. The needs identified in this report will be further evaluated in the WEIP report to determine which specific needs will be included in the 10-year investment plan. The following section details the collaboration and outreach meetings and a summary of the input collected for evaluation.

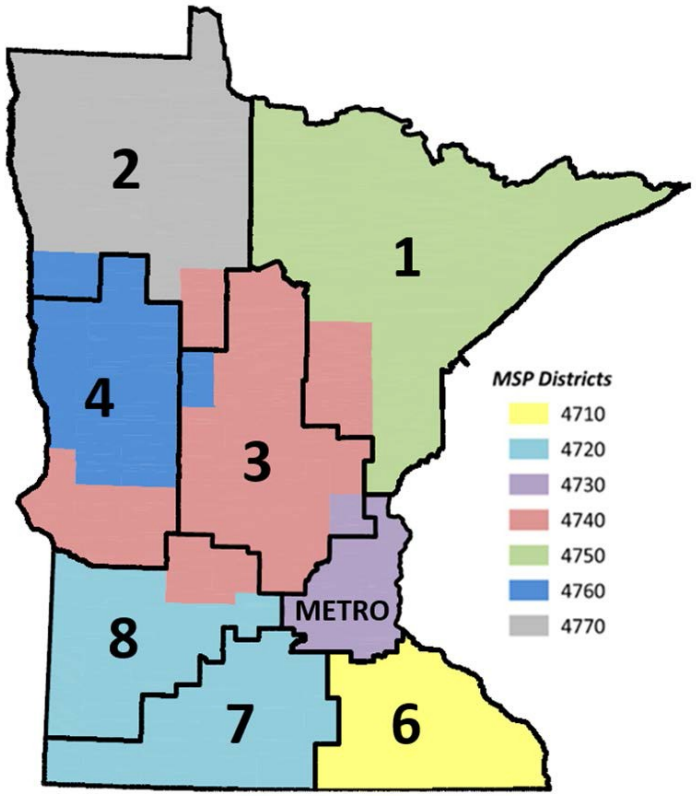
1.1 State Collaboration District Meetings

A needs assessment meeting was held in each MnDOT District from February 2018 to May 2018. The results of the meetings are documented in this section. A PowerPoint presentation and handouts (agenda, project description, and maps) were developed specifically for each region of the state. Each meeting lasted 1.5 to 2 hours and covered the following topics:

- Attendee introductions and sign in sheet
- Project overview (goals, purpose, District map)
- Enforcement patrol experience in the District
- Needs at existing weigh station and WIM facilities (improvements, operations, maintenance, staffing)
- Infrastructure that needs protection (pavement, bridges)
- Future needs in the District (enforcement sites, facilities, operations, rest area usage)
- Construction project coordination in the District between MSP and MnDOT to incorporate new enforcement facilities
- Group exercise that had participants place green dots at high priority sites on a District map and discuss why they were needed

The MnDOT Office of Freight and Commercial Vehicle Operations (OFCVO), Minnesota State Patrol, and Lakeside Engineers had representatives at every meeting. There were State Patrol staff from each State Patrol District at each meeting and several MnDOT District stakeholders, including representation from management, pavement engineers, bridge engineers, maintenance engineers, design engineers, planners, and state aid programs. Figure 1-1 displays an overlay of the State Patrol District with the MnDOT Districts. The schedule and attendance numbers are shown in Table 1-2 below.

Figure 1-1: State Patrol and MnDOT Districts



In addition to the eight meetings in each of the Districts, an internal meeting was held at the Transportation Building in Saint Paul with MnDOT Central Office personnel to discuss infrastructure needs and the future coordination of the weigh enforcement and safety program. Representatives from central office OFCVO, Statewide Bridge Office, Truck Parking, Building Services, and Electrical Services attended the meeting. The largest area of concern expressed was protecting load-posted bridges and low clearance bridges throughout the state. In addition, new structures or buildings planned at weigh stations in the next 10 years need to be incorporated into the future 20-Year Strategic Building Plan for state buildings.

Table 1-2: District Meeting Schedule

DISTRICT	*MEETING LOCATION*	*SCHEDULE*	*ATTENDANCE*
1	Duluth	Friday, February 9, 2018 (10:00am to 12:00pm)	13
2	Bemidji	Monday, March 26, 2018 (10:00am to 12:00pm)	19
3	Baxter	Thursday, March 29, 2018 (11:15am to 12:45pm)	13
4	Detroit Lakes	Thursday, February 15, 2018 (10:00am to 12:00pm)	21
Metro	Roseville	Friday, March 23, 2018 (10:30am to 12:00pm)	15
6	Rochester	Friday, February 16, 2018 (10:45am to 12:15pm)	13
7	Mankato	Wednesday, March 28, 2018 (11:15am to 12:45pm)	13
8	Willmar	Monday, May 7, 2018 (11:15am to 12:45pm)	17
Central Office	St Paul	Friday, February 16, 2018 (3:00 pm to 4:30 pm)	10

**Attendance figures include consultants and state staff*

1.2 External Freight Stakeholder District Meetings

External stakeholder meetings were conducted at MnDOT Districts 3, 6, 7 and 8 from February 2018 to May 2018. A PowerPoint presentation and handouts (agenda, project description, and maps) were developed specifically for each external meeting. Each meeting lasted one hour and covered the following topics:

- Attendee introductions and sign-in sheet
- Project overview (goals, purpose, District map)
- Existing enforcement patrol operations in the District
- Needs for additional enforcement in the counties and townships (harvest seasons, aggregate, distribution sites, OSOW shipments)
- Infrastructure that needs protection in the counties (load-posted pavement and bridges, low clearance bridges, poor pavement)
- Future needs in the District (local road enforcement sites, weigh scales, law enforcement presence, increased freight flows)

The OFCVO, MSP, and Lakeside Engineers had representatives at every external stakeholder meeting. There were county engineers at each external stakeholder meeting and some private industry representatives at the District 6 meeting. The schedule and attendance numbers are shown in Table 1-3.

Table 1-3: District External Stakeholder Meeting Schedule

DISTRICT	*MEETING LOCATION*	*SCHEDULE*	*ATTENDANCE*
3	Baxter	Thursday, March 29, 2018 (10:00am to 11:00am)	15
6	Rochester	Friday, February 16, 2018 (9:30am to 10:30am)	18
7	Mankato	Wednesday, March 28, 2018 (10:00am to 11:00am)	13
8	Willmar	Monday, May 7, 2018 (10:00am to 11:00am)	16

2 Needs Identified

The meetings in each District, both State Collaboration and External Freight Stakeholders meetings, elicited valuable input from participants. Meeting participation ranged from 13 to 21 attendees. Topics discussed included: enforcement issues, rest area usage, MSP staffing, bridge protection, pavement protection, needs at existing weigh station and WIM facilities, and proposed locations for future investment in enforcement technology. Meeting minutes were developed for each meeting that summarized the topics discussed in each District. These minutes are located in Appendix A and contain detailed information on attendees, needs discussed, and results of the group exercise.

2.1 General Topics

There were many different needs identified during the February-May 2018 District meetings, through discussions with program management personnel, and during the Spring 2017 Commercial Vehicle Enforcement Planning Workshop. The needs identified were organized into eight different categories for further evaluation, as follows:

- **Investment in Existing Facilities** – Improvements to the existing facilities are needed over the next 10 years to continue effective operations of those sites.
- **Inspection Buildings** – Construction of inspection buildings would assist with inspections during inclement weather and for low profile vehicles.
- **Coordination of Enforcement Pull-Off Areas** – Pull-off areas are needed to provide for safer areas to perform inspections and improve the use of technology.
- **Improved Weigh-in-Motion (WIM) Utilization** – Several strategies were discussed to improve the overall utilization of WIM technology.
- **Portable Scale Replacement Plan** – State Patrol requires an equipment acquisition plan to replace their portable scales in the future.
- **Increased Minnesota State Patrol Staffing** – Additional staff is needed to conduct more inspections throughout the state.
- **Education and Outreach** – Ongoing education and outreach is needed to inform others on the importance of the commercial vehicle enforcement program.
- **Additional Weight Enforcement Facilities** – New facilities can enhance operations and enforcement presence on key corridors.

2.2 Specific Locations

A key component to the District meetings was a map-based dot placement exercise designed to solicit input on needs throughout the District. A large map was provided at each meeting for attendees to place a dot on the map, including a purpose statement for the need, such as known safety, enforcement or infrastructure issues. Throughout the state, 77 locations were identified by District MnDOT and State Patrol staff as a potential need for additional safety and weight enforcement or were listed as an existing site. These locations ranged from a Class A major weigh station to a Class E virtual WIM site or pull-off site. The following tables summarize the needs identified for specific locations during each District meeting. These needs are not listed in any priority order and were assigned a unique simple identifier using the District number and a sequential number.

Table 2-1: District 1 Identified Needs

D.#	HWY	Location	Identified Needs
1.1	I-535	Blatnik Bridge / WIM #38	Weight-posted bridge protection; EB WIM monitoring; Coordination with Wisconsin
1.2	US 2	Between MN 33 and I-35 (near Munger)	Bypass route monitoring with WIM
1.3	US 53	Between MN 33 and I-35 (near Twig)	Bypass route monitoring with WIM; Bridge protection EB
1.4	US 53	WIM #29	Calibration of existing site to improve accuracy and functionality
1.5	MN 61	WIM #30*	Needs camera for WIM; Needs a safe pull-off location
1.6	I-35	Carlton Pull-Off Sites	Higher truck volume corridor within the District; Enhance existing facility and building; Increase staffing to utilize site
1.7	US 2 / MN 33	Saginaw Weigh Station	Improved signing, Inspection Shed
1.8	US 169	Between Grand Rapids and Hill City* (near Bear Creek Rd)	Route monitoring with WIM
		District-wide Needs	Increase education efforts; Additional MSP staffing

**Location was identified after the District meeting*

Table 2-2: District 2 Identified Needs

D.#	HWY	Location	Identified Needs
2.1	MN 11	Between Warroad and Baudette	Pull-off site for truck inspections; Route monitoring with WIM; Border with Canada
2.2	MN 92	Between CSAH 2 and CSAH 8	Pull-off site for truck inspections; Route monitoring with WIM
2.3	CSAH 87	Between US 71 and MN 64	Load Restrictions for trucks; Pull-off site for truck inspections
2.4	US 59	Between Erskine and Thief River Falls	Pull-off site for truck inspections; Route monitoring with WIM
2.5	US 75	Between MN 11 and MN 175	Pull-off site for truck inspections; Route monitoring with WIM
2.6	US 2 / US 59	Erskine Weigh Station (NB&SB)	Existing weigh station, Inspection Shed
		District-wide Needs	Pull-off locations; Additional MSP staffing; Coordination between the District and MSP

Table 2-3: District 3 Identified Needs

D.#	HWY	Location	Identified Needs
3.1	US 12	Between MN 25 and Delano	Route monitoring with WIM
3.2	I-94	Between MN 101 and MN 24	WIM EB and WB; Pull-off sites for truck inspections; Permanent facility; Crash risks
3.3	MN 28	Between Sauk Centre and Little Falls	Aggregate truck enforcement; Pull-off site for truck inspections
3.4	US 169	Between US 10 and MN 95	Route monitoring with WIM
3.5	MN 23	Between I-94 and MN 15	Route monitoring with WIM
3.6	US 10	Between St. Cloud and Little Falls	Route monitoring with WIM
3.7	US 71	Between Long Prairie and Wadena	Route monitoring with WIM
		District-wide Needs	Additional MSP staffing; Coordination between the District and MSP (plans, funding, resources)

Table 2-4: District 4 Identified Needs

D.#	HWY	Location	Identified Needs
4.1	I-94	Red River Weigh Station (EB)	Inspection shed; Bypass route monitoring with WIM
4.2	US 10	Railroad Bridge over US 10 (Moorhead 16th St to 17 St)	Bridge protection (several bridge hits at this location)
4.3	US 10	WIM #43	Improvements to WIM (function and communications); Camera at WIM
4.4	MN 210	Between ND/MN border and Fergus Falls (near Foxhome, MN)	Pull-off site for truck inspections; Potential construction project coordination in 2020; Bypass route monitoring with WIM
4.5	I-94	Between Fergus Falls and Alexandria (near Hansel Lake Rest Area)	Potential rest area project coordination; Route monitoring with WIM
4.6	US 59	Between Fergus Falls and Detroit Lakes* (near Sauers Lake Rest Area)	Route monitoring with WIM; Potential rest area project coordination
4.7	US 12	At SD/MN border (Ortonville)	OSOW enforcement
4.8	US 10	Between Detroit Lakes and Wadena* (near Frazee Rest Area)	Route monitoring with WIM; Potential rest area project coordination
4.9	I-94	I-94 WB between Moorhead and Fergus Falls (Barnesville, near County 25)	WB route monitoring with WIM
4.10	US 12	Near Benson (near 40th Ave)	Potential construction project coordination
		District-wide Needs	Increase staffing to enhance enforcement; Coordination between the District and MSP

**Location was identified after the District meeting*

Table 2-5: Metro District Identified Needs

D.#	HWY	Location	Identified Needs
M.1	I-494	Between US 12 and MN 55	Route monitoring with WIM
M.2	I-35W	Between I-494 and MN 13	Route monitoring with WIM
M.3	I-94	St. Croix Weigh Station (WB)	Mainline WIM; Inspection Shed
M.4	I-94	Between MN 610 and MN 101	Permanent weigh scale facility
M.5	US 12	Near Metro District west border	Route monitoring with WIM
M.6	MN 101	Between US 10 and I-94	Route monitoring with WIM
M.7	US 10	Dayton Port Weigh Station (NB&SB)	Multi-platform scale, Inspection shed
M.8	US 8	Between Chisago City and St. Croix Falls	Route monitoring with WIM
M.9	CSAH 95	West of St. Croix Falls	Route monitoring with WIM
M.10	I-35	Forest Lake Pull-Off Site (SB)	Existing pull-off site; Future enhancements
M.11	US 52	Butler Ave Pull-Off Site/#40 WIM	Future pull-off site and WIM replacement
		District-wide Needs	Weigh station and facility maintenance; Warnings for truck roll over locations

Table 2-6: District 6 Identified Needs

D.#	HWY	Location	Identified Needs
6.1	US 14	Near Winona	Protection of pavement (seasonal harvest loads); Route monitoring with WIM (at state entry point)
6.2	I-90	Between Rochester and Fremont	Route monitoring with WIM
6.3	US 52	WIM #32*	Pull-off site for truck inspections
6.4	I-90	Just west of the WI/MN border	Utilize existing WIM facilities (#59 & #61); Border protection
6.5	I-35	Just North of IA/MN border (NB)	Build a permanent weigh station facility
6.6	US 52	Between St. Paul and Rochester (near Hader)	Pull-off site for truck inspections; Shoulder widening for truck inspections; Potential construction project coordination (Hader Park and Ride)
6.7	I-35	Clarks Grove Pull-Off Site (NB)	Heavy truck volume location due to distribution centers; Improvements to existing location
6.8	US 52	Just North of IA/MN border	Route monitoring with WIM
6.9	US 63	Just North of IA/MN border	Route monitoring with WIM
6.10	US 14	Dodge County (near Claremont)	Potential construction project coordination
6.11	US 61	Between Lake City and Wabasha	Route monitoring with WIM; Border protection
6.12	I-90	Nodine Pull-Off Sites (EB&WB)	Existing pull-off sites
		District-wide Need	Increase staffing to enhance enforcement

**Location was identified after the District meeting*

Table 2-7: District 7 Identified Needs

D.#	HWY	Location	Identified Needs
7.1	US 169	North of St. Peter	Pull-off sites for truck inspections
7.2	US 14	Between New Ulm and Nicollet	Pull-off site for truck inspections; Route monitoring with WIM
7.3	US 169	North of Le Sueur Rest Area	Route monitoring with WIM
7.4	US 14	Between Mankato and Waseca	Route monitoring with WIM
7.5	MN 60	WIM #27	Pull-off site for truck inspections; WIM camera
7.6	US 71	Between MN 30 and US 14	Route monitoring with WIM
7.7	I-90	Worthington Weigh Station (EB)	Existing weigh station, Inspection shed
7.8	I-90	West of Adrian Rest Areas (EB)	Route monitoring with WIM (EB)
		District-wide Need	Increase staffing to enhance enforcement

Table 2-8: District 8 Identified Needs

D.#	HWY	Location	Identified Needs
8.1	MN 269	Between SD border and MN 23 (near Jasper)	Data collection; Enforcement of trucks bypassing the South Dakota I-29 weigh scale
8.2	MN 23	South of MN 19	Route monitoring with WIM
8.3	MN 23	North of MN 19	Route monitoring with WIM
8.4	US 59	South of MN 19	Heavy truck traffic
8.5	US 212	Between Clarkfield and Montevideo	Low clearance bridge protection
8.6	MN 23	Between US 212 and MN 7	Ethanol plant truck traffic
8.7	MN 23	WIM #34 (Between US 212 and MN 7)	Install camera at WIM; Ethanol plant enforcement
8.8	MN 23	West of Willmar	Sugar beet dump site; beet hauler route
8.9	MN 40	Willmar to US 75	Beet hauler route; Poor pavement in this section needs protection
8.10	US 71	North of Willmar, before US 71/MN 23 Split	Increase MSP staffing and enforcement; Sugar beet dump site, route monitoring with WIM
8.11	US 12	East of Dassel	Route monitoring with WIM
8.12	MN 22	West of Hutchinson	Route monitoring with WIM
8.13	MN 15	Between US 212 and MN 7	Route monitoring with WIM
8.14	MN 4	Between MN 19 and MN 23	Poor pavement, additional enforcement to protect the pavement
8.15	MN 212	WIM #33 (East of Olivia)	Pull-off areas for truck enforcement
		District-wide Need	Increase staffing to enhance enforcement

3 Evaluation – Specific Locations

Evaluation criteria of weight enforcement facilities will assist in prioritizing identified locations throughout the state. Five main categories – Roadway Classification, Freight, Enforcement/Safety, Geographic and Infrastructure – were established as part of the Classification Plan and were re-evaluated after the meetings in each District. The final evaluation criteria and methodology is further described below.

3.1 Evaluation Criteria

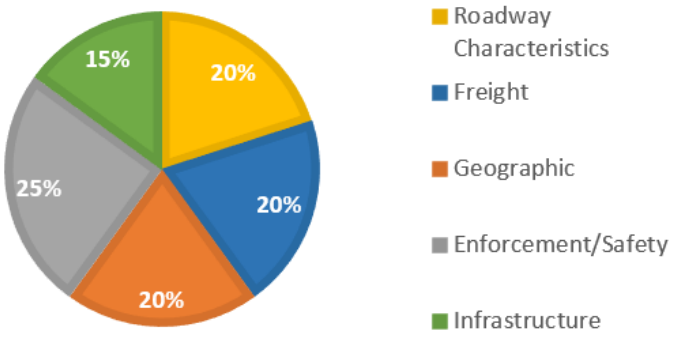
Twelve evaluation criteria were used in the data analysis. Each criterion was assigned a weight factor. The weight factor determined how much each criterion would influence the final point value. The category, criteria, measurement, and weight factors are shown in Table 3-1 below.

Table 3-1: Evaluation Criteria and Weight Factors

CATEGORY	*CRITERIA*	*MEASUREMENT*	*WEIGHT FACTOR*
Roadway Characteristics	Functional Classification	Classification of Road Segment	10
	Truck Crash Rate	Crash Rate by County	10
Freight	Heavy Commercial Average Annual Daily Traffic (HCAADT)	Truck Volume by Segment	15
	Truck Vehicle Miles Traveled (VMT)	VMT by County	5
Enforcement/ Safety	Vehicle Out-of-Service (OOS) Rate	OOS Vehicle Rate by County	10
	Driver Out-of-Service (OOS) Rate	OOS Driver Rate by County	10
	Bypass Route	If identified	5
Geographic	Point of Entry	Inbound/Mid-state/Outbound	10
	Geographic Coverage	Covered/Partially Covered/Not Covered	10
Infrastructure	Infrastructure Protection	If identified	5
	Existing Investment	If Identified	5
	Facility Cost	$ / $$ / $$$	5
		Total Points	**100**

Figure 3-1 shows the breakdown of criteria weighting by evaluation category. The application methodology behind each criterion for the data analysis is described in the following subsections.

Figure 3-1: Evaluation Criteria Categories



3.1.1 Functional Classification

The functional classification of the roadway was determined for each location being analyzed. The five types of roadways present in the evaluation included: Interstates, Principal Arterials-Other (PA Other), Minor Arterials, Major Collectors, and Locals. Functional classification is a hierarchy based on the primary role or service provided by the highway, such as providing mobility versus providing access to property. The data used to identify the functional class was based on MnDOT's 2015 Greater Minnesota Functional Classification study and the current approved Federal Highways Administration classifications. More points were given to roadways with a higher function (Interstates) and fewer points were given incrementally to roadways with a lower function (Locals). The point structure for the analysis was as follows:

- Interstate (10 points)
- PA Other (8 points)
- Minor Arterial (6 points)
- Major Collector (4 points)
- Local (2 points)

3.1.2 Truck Crash Rate

The crash rate was determined for each county based on 2015 crash data statistics provided by State Patrol. This is the same data set is also utilized for the annual Commercial Vehicle Safety Plan development. The crash data was filtered by vehicle type and included only truck-involved crashes. The total number of truck crashes per county was calculated. A county-wide crash rate was calculated using the total number of crashes as a function of the county's estimated truck vehicle miles traveled (VMT). To determine the county's truck VMT the following steps were followed:

- 2016 Total VMT by county (all routes) was collected from MnDOT
- 2016 Truck VMT by county (Interstates, US highways, and State highways only) was collected from MnDOT
- A countywide truck percentage was determined using the Truck VMT by county (Interstates, US highways, and State highways only) and the Total VMT by county (Interstates, US highways, and State highways only)
- The county truck percentage was applied to the 2016 Total VMT by county (all routes)

An average crash rate and standard deviation was determined from the calculated crash rate for all counties. A county was considered to have a high crash rate if the crash rate was one standard deviation or more above the average truck-involved crash rate. A county was considered to have a medium crash rate if it was within one standard deviation above the average crash rate. A county was considered to have a low crash rate if it was below the average crash rate. More points are given to a county with a high truck-involved crash rate since the county would likely benefit from additional enforcement presence. The point structure for the analysis was as follows:

- High (10 points)
- Medium (6 points)
- Low (3 points)

3.1.3 Heavy Commercial Annual Average Daily Traffic (HCAADT)

The truck volume (HCAADT) for each location was gathered from a Geographic Information System (GIS) database of 2016 truck volume data maintained by MnDOT. The volume thresholds were developed in the Concept of Operations document earlier in phase 1 of this project and were used for this analysis. More points were given to locations with higher truck volume. The volume thresholds and point structure for the analysis was as follows:

- >4400 (15 points)
- 1600-4400 (12 points)
- 800-1600 (9 points)
- 400-800 (6 points)
- <400 (3 points)

3.1.4 Truck VMT

The estimated truck vehicle miles of travel (VMT), expressed in estimated million miles traveled annually, for each county was determined from MnDOT records of truck VMT for 2016. The truck VMT included Interstates, US highways, and State highways only. Each site under analysis was assigned a VMT value based on the county in which it was located. More points were given to locations with higher truck VMT, with a decreasing graduated scale to the lower VMT values being compared. The truck VMT thresholds and point structure for the analysis were as follows:

- >100 Million Miles (5 points)
- 80-100 Million Miles (4 points)
- 60-80 Million Miles (3 points)
- 20-60 Million Miles (2 points)
- <20 Million Miles (1 points)

3.1.5 Point of Entry

If a site was geographically protecting a point of entry into the state (inbound roadways from bordering states or Canada that were within 30 miles of the Minnesota border) it received more points than did mid-state locations or outbound locations (opposite direction of travel from inbound locations within 30 miles of the state border). This is a best practice commercial vehicle safety and weight enforcement policy employed by many states and is a strategy that Minnesota currently utilizes at St. Croix, Red River, and Worthington. The point structure for the analysis was as follows:

- Inbound (10 points)
- Mid-State (6 points)
- Outbound (3 points)

3.1.6 Geographic Coverage

Using the existing six weigh stations and four pull-off sites, a 30-mile radius was placed at those locations where everything within that radius is considered "Covered". An additional 60-mile radius was placed at the six weigh stations where everything between the 30 to 60 miles was considered "Partially Covered". This larger 60-mile radius was not located at the pull-off sites due to their intermittent use. Each of the evaluated sites outside of the radius' where considered "Not Covered". This weighting criterion provides a measure to ensure enforcement presence in different areas throughout the state. The point structure for the analysis was as follows:

- Not Covered (10 points)
- Partially Covered (6 points)
- Covered (3 points)

3.1.7 Vehicle OOS Rate

The number of Vehicle Out-of-Service (OOS) orders issued in each county was provided by MSP for 2017. From this data, a Vehicle OOS rate was calculated using the number of Vehicle OOS orders divided by the number of inspections (Levels I, II, and IV only) conducted in the county. More points were given to locations with higher Vehicle OOS rates. Four intervals were defined using the average and standard deviation to determine the thresholds. The Vehicle OOS rate thresholds and point structure for the analysis were as follows:

- >40.2% (10 points)
- 27.0% to 40.2% (7.5 points)
- 13.7% to 27.0% (5 points)
- <13.7% (2.5 point)

3.1.8 Driver OOS Rate

The number of Driver Out-of-Service (OOS) orders issued in each county was provided by MSP for 2017. From this data, a Driver OOS rate was calculated using the number of Driver OOS orders divided by the number of inspections (Levels I, II, III, and IV) conducted in the county. More points were given to locations with higher Driver OOS rates. Four intervals were defined using the average and standard deviation to determine the thresholds. The Driver OOS rate thresholds and point structure for the analysis were as follows:

- >9.5% (10 points)
- 5.6% to 9.5% (7.5 points)
- 1.8% to 5.6% (5 points)
- <1.8% (2.5 point)

3.1.9 Bypass Route

If a site was located on a weight enforcement facility bypass route it received 5 points. Bypass routes were determined during the District meetings if they were identified by enforcement personnel as a bypass route. All other sites received 0 points.

3.1.10 Infrastructure Protection

If a site was identified as necessary for protecting an especially vulnerable bridge or pavement investment it received 5 points. All other sites received 0 points.

3.1.11 Existing Investment

If a location had an existing weigh station facility (for example, the St. Croix weigh station) it received 5 points. This was done to account for an existing investment Minnesota has already made at a location, which may make it more cost effective to continue to use in the future. All other sites received 0 points.

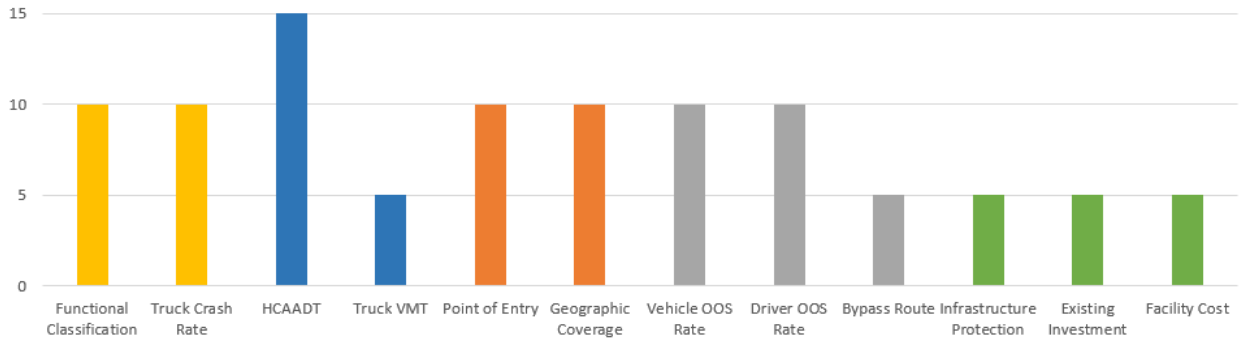
3.1.12 Cost

The estimated generalized cost of each potential location improvement was a factor in receiving points. The lower the cost of the improvement, the more points awarded. The cost thresholds were based on estimated costs articulated in the Concept of Operations document for Class A to Class E facilities. The cost thresholds and point structure for the analysis were as follows.

- $ [<$500,000] (5 points)
- $$ [$500,000 to $3 Million] (3 points)
- $$$ [>$3 Million] (1 point)

The results of the weighting factors are displayed in Figure 3-2. This chart summarizes the weight factors by category to help visualize the breakdown of points assigned for each site.

Figure 3-2: Evaluation Criteria Weight Factors



3.2 Evaluation Methodology

For each of the 77 sites listed in Section 2.2, the data for the 12 evaluation criteria were compiled in a Microsoft Excel spreadsheet. Figure 3-3 is a snapshot from the analysis program that only shows the first two evaluation criteria: Functional Classification and HCAADT. This example illustrates the data for the two criteria and the total number of points assigned under the orange headings, based on the data entered. The spreadsheet used in this evaluation provided similar columns of data for all 12 criteria and the corresponding points assigned. The points allocated for each criterion were added for a Total Score for each site. In addition, the evaluation spreadsheet was developed in such a way as to be able to easily modify the weight factors, if deemed appropriate, to recalculate a Total Score for each site.

Figure 3-3: Evaluation Spreadsheet Example

Number	Highway	Location	County	Functional Classification	Functional Classification Rating	HCAADT	HCAADT Rating
M.3	I-94	St. Croix Weigh Station (WB)	Washington	Interstate	10	9800	15
6.3	US 52	WIM #32	Olmsted	PA Other	8	2800	12
M.1	I-494	Between US 12 and MN 55	Hennepin	Interstate	10	7700	15
M.4	I-94	Between MN 610 and MN 101	Hennepin	Interstate	10	13,700	15
8.10	US 71	North of Willmar, before US 71/MN 23 Split	Kandiyohi	PA Other	8	1700	12

Some of the criteria used accounted for locations that are existing sites. For example, points assigned for Existing Investments and the Facility Cost for new investments benefit the existing sites. Other criteria are constraining on the locations geographically, such as the Point of Entry criterion emphasizing the border locations and the Bypass Route criterion emphasizing nearby adjacent sites.

Therefore, the project team completed both a Constrained and Unconstrained analysis. The Constrained analysis used all 12 evaluation criteria described above to calculate the total points. The maximum number of points for the Constrained analysis was 100 points. The Unconstrained analysis was a method designed to evaluate all sites equally: as if there were no existing enforcement facilities, as if cost was not a factor, and as if protecting points of entry was not a priority. Therefore, the Unconstrained analysis used only seven evaluation criteria, eliminating the Existing Investment, Facility Cost, Point of Entry, Geographic Coverage and Bypass Route criteria from the analysis. The maximum number of points for the Unconstrained analysis was 65 points. By evaluating these sites with two different methods, the results provide two objective contrasting viewpoints on future priorities for comparison.

3.3 Evaluation Results

The identified needs (77 locations total statewide) from each District meeting, as well as existing weight enforcement locations, were entered into the spreadsheet and evaluated using the criteria documented in Section 3.1 above. The points were added for each criterion to produce a total point score. The results were organized into a three-tiered priority ranking of HIGH/MEDIUM/LOW. The range of scores related to HIGH/MEDIUM/LOW priority is shown below for the results of both the Constrained and Unconstrained evaluation. This range was developed by calculating the average number of points for all sites and the standard deviation of point totals for those sites.

Table 3-2: Ranking Thresholds

	Constrained	Unconstrained
HIGH	> 62.8	> 46.1
MEDIUM	56.1 – 62.8	38.4 – 46.1
LOW	< 56.1	< 38.4
Total Possible Points	100	65
Average Score	56.1	38.4
Standard Deviation	6.7	7.7

HIGH priority locations were those with scores greater than one standard deviation above the average point total in the Constrained or Unconstrained analysis. MEDIUM priority locations were those with scores within one standard deviation above the average point total. LOW priority locations were those with scores below the average point total.

This process primarily evaluated specific corridors to determine where additional enforcement presence may be needed in the future. The methodology was developed to allow for the addition of new sites to the analysis in the future. Additionally, updating the input data from year to year will allow future comparisons based on new input.

The rankings were structured to allow flexibility in the decision-making process for future investments. For example, a site with a MEDIUM ranking may only be one point below the cut-line defining the HIGH priority results. The HIGH priority needs (shown in green) statewide are listed in Table 3-3 for the Constrained evaluation and in Table 3-4 for the Unconstrained evaluation. The MEDIUM priority needs (shown in yellow) statewide are listed in Table 3-5 and Table 3-6, respectively. The LOW priority needs are documented in the Appendix, which shows the details for the evaluation.

Table 3-3: High Priority – Constrained Evaluation

D.#	HWY	LOCATION	COUNTY	TOTAL POINTS
M.3	I-94	St. Croix Weigh Station (WB)	Washington	**71**
6.3	US 52	WIM #32	Olmsted	**69**
M.1	I-494	Between US 12 and MN 55	Hennepin	**68**
M.4	I-94	Between MN 610 and MN 101	Hennepin	**68**
8.10	US 71	North of Willmar, before US 71/MN 23 Split	Kandiyohi	**67**
4.1	I-94	Red River Weigh Station (EB)	Clay	**67**
6.2	I-90	Between Rochester and Fremont	Olmsted/Winona	**66**
M.2	I-35W	Between I-494 and MN 13	Dakota/Hennepin	**65**
1.1	I-535	Blatnik Bridge / WIM #38	Saint Louis	**65**
8.15	MN 212	WIM #33 (East of Olivia)	Renville	**64**
8.8	MN 23	West of Willmar	Kandiyohi	**64**
M.11	US 52	Butler Ave Pull Off Site/#40 WIM (NB)	Dakota	**64**
6.12	I-90	Nodine Pull Off Sites (EB&WB)	Winona	**64**

Table 3-4: High Priority – Unconstrained Evaluation

D.#	HWY	LOCATION	COUNTY	TOTAL POINTS
M.1	I-494	Between US 12 and MN 55	Hennepin	**58**
M.4	I-94	Between MN 610 and MN 101	Hennepin	**58**
M.2	I-35W	Between I-494 and MN 13	Dakota/Hennepin	**55**
1.1	I-535	Blatnik Bridge / WIM #38	Saint Louis	**51**
M.3	I-94	St. Croix Weigh Station (WB)	Washington	**50**
M.11	US 52	Butler Ave Pull Off Site/#40 WIM (NB)	Dakota	**50**
M.5	US 12	Near Metro District west border	Hennepin	**50**
6.2	I-90	Between Rochester and Fremont	Olmsted/Winona	**49**
8.10	US 71	North of Willmar, before US 71/MN 23 Split	Kandiyohi	**48**
3.2	I-94	Between MN 101 and MN 24	Wright	**48**
6.3	US 52	WIM #32	Olmsted	**47**
4.1	I-94	Red River Weigh Station (EB)	Clay	**46**

Table 3-5: Medium Priority – Constrained Evaluation

D.#	HWY	LOCATION	COUNTY	TOTAL POINTS
M.5	US 12	Near Metro District west border	Hennepin	**62**
6.7	I-35	Clarks Grove Pull Off Site (NB)	Freeborn	**62**
1.5	MN 61	WIM #30	Saint Louis	**61**
M.10	I-35	Forest Lake Pull Off Site (SB)	Anoka	**61**
3.3	MN 28	Between Sauk Centre and Little Falls	Morrison/Todd	**61**
4.7	US 12	At SD/MN border (Ortonville)	Big Stone	**61**
4.3	US 10	WIM #43	Clay	**60**
4.5	I-94	Between Fergus Falls and Alexandria (near Hansel Lake Rest Area)	Otter Tail/ Grant/Douglas	**60**
7.1	US 169	North of St. Peter	Nicollet	**60**
7.2	US 14	Between New Ulm and Nicollet	Nicollet	**59**
6.1	US 14	Near Winona	Winona	**59**
8.7	MN 23	WIM #34 (Between US 212 and MN 7)	Chippewa	**59**
7.7	I-90	Worthington Weigh Station (EB)	Nobles	**59**
6.8	US 52	Just North of IA/MN border	Fillmore	**59**
6.9	US 63	Just North of IA/MN border	Fillmore	**59**
1.2	US 2	Between MN 33 and I-35 (near Munger)	Saint Louis	**58**
1.3	US 53	Between MN 33 and I-35 (near Twig)	Saint Louis	**58**
1.4	US 53	WIM #29	Saint Louis	**58**
8.14	MN 4	Between MN 19 and MN 23	Renville/Meeker	**58**
3.2	I-94	Between MN 101 and MN 24	Wright	**58**
3.6	US 10	Between St. Cloud and Little Falls	Benton/Morrison	**58**
3.7	US 71	Between Long Prairie and Wadena	Todd	**58**
6.5	I-35	Just North of IA/MN border (NB)	Freeborn	**58**
4.4	MN 210	Between ND/MN border and Fergus Falls (near Foxhome, MN)	Wilkin/Otter Tail	**58**
1.7	US 2 / MN 33	Saginaw Weigh Station	Saint Louis	**57**
6.4	I-90	Just West of the WI/MN border	Winona	**57**
7.8	I-90	West of Adrian Rest Areas (EB)	Nobles	**57**
M.7	US 10	Dayton Port Weigh Station (NB&SB)	Anoka	**57**

Table 3-6: Medium Priority – Unconstrained Evaluation

D.#	HWY	LOCATION	COUNTY	TOTAL POINTS
8.8	MN 23	West of Willmar	Kandiyohi	**45**
M.10	I-35	Forest Lake Pull Off Site (SB)	Anoka	**44**
6.5	I-35	Just North of IA/MN border (NB)	Freeborn	**44**
4.5	I-94	Between Fergus Falls and Alexandria (near Hansel Lake Rest Area)	Otter Tail/Grant/Douglas	**43**
7.1	US 169	North of St. Peter	Nicollet	**43**
6.6	US 52	Between St. Paul and Rochester (near Hader)	Olmsted/Goodhue/Dakota	**43**
6.12	I-90	Nodine Pull Off Sites (EB&WB)	Winona	**43**
6.1	US 14	Near Winona	Winona	**43**
6.4	I-90	Just West of the WI/MN border	Winona	**43**
4.9	I-94	I-94 WB between Moorhead and Fergus Falls (Barnesville, near County 25)	Clay/Wilkin/Otter Tail	**43**
3.1	US 12	Between MN 25 and Delano	Wright	**43**
M.6	MN 101	Between US 10 and I-94	Wright/Hennepin	**43**
M.7	US 10	Dayton Port Weigh Station (NB&SB)	Anoka	**42**
1.5	MN 61	WIM #30	Saint Louis	**41**
7.3	US 169	North of Le Sueur Rest Area	La Sueur	**41**
1.2	US 2	Between MN 33 and I-35 (near Munger)	Saint Louis	**41**
1.3	US 53	Between MN 33 and I-35 (near Twig)	Saint Louis	**41**
1.4	US 53	WIM #29	Saint Louis	**41**
3.6	US 10	Between St. Cloud and Little Falls	Benton/Morrison	**41**
6.7	I-35	Clarks Grove Pull Off Site (NB)	Freeborn	**41**
8.15	MN 212	WIM #33 (East of Olivia)	Renville	**40**
7.2	US 14	Between New Ulm and Nicollet	Nicollet	**40**
4.2	US 10	Railroad Bridge over US 10 (Moorhead 16th St to 17th St)	Clay	**40**
3.3	MN 28	Between Sauk Centre and Little Falls	Morrison/Todd	**40**
8.11	US 12	East of Dassel	Meeker	**39**
6.10	US 14	Dodge County (near Claremont)	Dodge	**39**

4 Needs Assessment

There were many different needs identified throughout this coordination process. These needs were identified during the February-May 2018 District meetings, through discussions with program management personnel, and during the Spring 2017 Commercial Vehicle Enforcement Planning Workshop. The needs identified in Section 2 are further assessed in Sections 4.1 and 4.2 below.

4.1 General Topics

The eight general topics listed in Section 2.1 were evaluated, and the results are articulated in the subsections below. Wherever possible, various data sources were utilized to support the assessment of that topic and to guide the future decision making process for each topic.

4.1.1 Investment in Existing Facilities

Over the past five years, MnDOT has invested in improvements to all six existing weigh station facilities. Because of these recent improvements, each weigh station is currently in good operating condition, with only a limited number of enhancements to the buildings or pavement required or planned.

Table 4-1: Capital Investments at MnDOT Weight Enforcement Facilities in the Past 5 Years

Site	Description	
St. Croix	• Rehabilitation, including pavement, pit/platform, replaced WIM, static scale electronics, new over-height detection, new public address system	• Lighting replaced (combined with Dayton Port) • Camera system replaced – Within facility • Camera replaced – Mainline
Red River	• Rehabilitation including new WIM, static scale electronics, overheight detection, pavement, pit rehabilitation/pavement removal, and fully automated screening	• Camera system replaced – Within facility • Lighting replacement (combined with Erskine and Saginaw)
Worthington	• Pavement and lighting replaced • Building rehabilitation • Platform scale pit rehabilitation	• Replaced scale electronics, open signs, overheight detection and VMS • Camera system replaced
Saginaw	• Replaced VMS, scoreboard, public address system, and overheight detection • Camera system replaced • Replaced scale electronics	• Pit rehabilitation, platform replacement, new load cells • Replaced open signs • Lighting replacement (combined with Erskine and Red River)
Erskine	• Replaced platforms, electronics, and load cells • Replaced scale electronics and overheight detection • Replaced scoreboard, VMS, and public address system	• Replaced open signs • Lighting replacement (combined with Red River and Saginaw) • Camera system replacement – Within facility • Camera replacement – Mainline
Dayton Port	• Replaced scale electronics and overheight detection • Camera system replaced	• Replaced open signs • Lighting replaced (combined with St. Croix

A review of Condition Assessment Reports provided by the MnDOT Buildings Services Section showed that, with the exception of platform scale replacements, only nominal maintenance and improvements will be required within these facilities over the next 10 years. Additionally, at many of the sites the infrastructure pavement is in suitable condition, with needs only identified for pavement rehabilitation at Dayton Port. During the District meetings and in discussions with project team personnel, the additional needs identified at the six existing sites over the next 10 years included:

- Dayton Port platform scale replacement – Condition to be evaluated further by a contractor in 2018
- Dayton Port pavement rehabilitation – Pavement is in poor shape and needs to be rehabilitated
- Dayton Port electronic scoreboard – Installation of electronic scoreboards will enhance driver information
- St Croix platform scale replacement – There are currently two static scales at this site that need replacing, with the intent to potentially replace one each year to maintain operations
- Saginaw cameras - MN 33 mainline cameras will enable screening within the weigh station
- Other routine building maintenance items have been identified through the Building Services Section Condition Assessment Items report

All of these sites, as well as the pull-off sites, were further evaluated with the other sites identified in Section 2.1. Three of these sites serve as Point of Entry locations on Interstate highways from other U.S. states. The other three are on non-interstate routes and screen trucks already operating within the state. The following evaluation demonstrates where the existing sites rank compared to other locations.

Fixed weigh stations are a best practice strategy that most states employ in their commercial vehicle safety and weight enforcement program. They allow for the screening and inspection of trucks on a much larger volume than patrol operations. The number of weigh stations in Minnesota's bordering states (WI, IA, ND, SD) ranges between 4-13 facilities per state, compared to the six fixed sites in Minnesota. Based on the small number of existing sites, the good geographic spacing of those sites, and the State's recent investments in them, it is recommended that Minnesota continue to operate and improve each of these sites.

State	# Weigh Stations
MN	6
WI	13
IA	11
ND	9
SD	4

A need identified during the District 4 meeting was relocating the existing Red River weigh station further downstream on I-94 EB. The advantage of relocation is that trucks would not be able to bypass the weigh station using the bypass routes utilized today. However, this is a high cost solution to reducing the number of trucks currently bypassing the scale. With the current physical infrastructure condition of the Red River weigh station, other strategies should be investigated in lieu of relocating the weigh station, such as WIM monitoring of the routes with increased patrol operations. Large scale traffic data collected and provided by data vendor StreetLight™ in the StreetLight™ InSight application may prove useful in identifying the optimal locations for WIM sites on each of the bypass routes.

4.1.2 Inspection Buildings

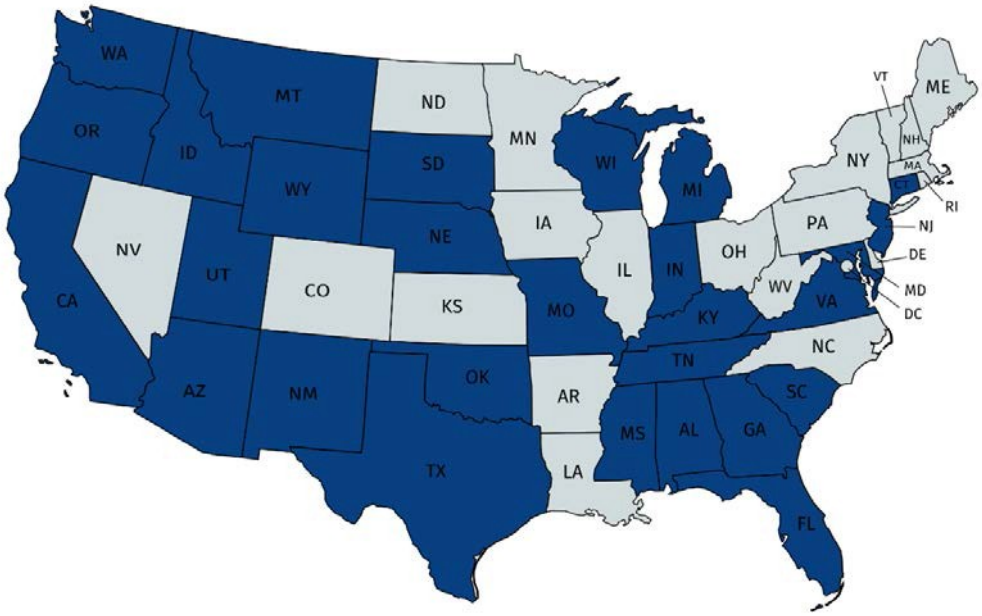
The need for inspection buildings at existing facilities was identified in several District meetings. Inspection buildings provide a climate-controlled environment in which to perform inspections, and the incorporation of a pit allows easier access to the undercarriage of a commercial vehicle. Easier access is

important because trucks are becoming increasingly more difficult to physically access the undercarriage for inspection due to low clearance and new equipment mounted on many trucks to enhance the aerodynamics for increased fuel savings. Potential benefits of an inspection building are many and may include:

- Better quality and more efficient inspections can be completed within a controlled environment.
- Motor Carrier Safety Assistance Program (MCSAP) Level I inspections can be performed year-round in all weather conditions.
- It is a safer location for officers to conduct vehicle inspections.
- It provides easier access under low profile vehicles, such as motor coaches, low boy flatbed trailers, and trailers fitted with aerodynamic under-mounted skirts.
- It provides opportunities to apply additional technology and tools to vehicle inspections, such as Performance Based Brake Testers (PBBT).
- Multi-purpose opportunities will arise, such as using the building for training purposes, meeting space, and storage.

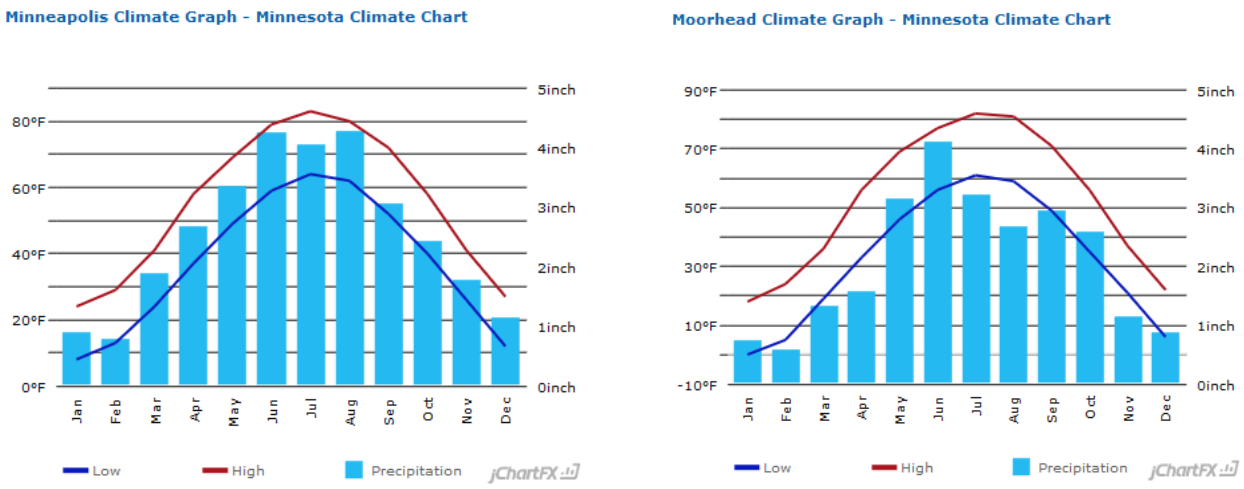
A review of states in the continental United States in 2013 indicated that 28 states *(shown in dark blue in Figure 4-1)* currently have some type of inspection buildings for their commercial vehicle enforcement program.

Figure 4-1: States Using Commercial Vehicle Inspection Buildings



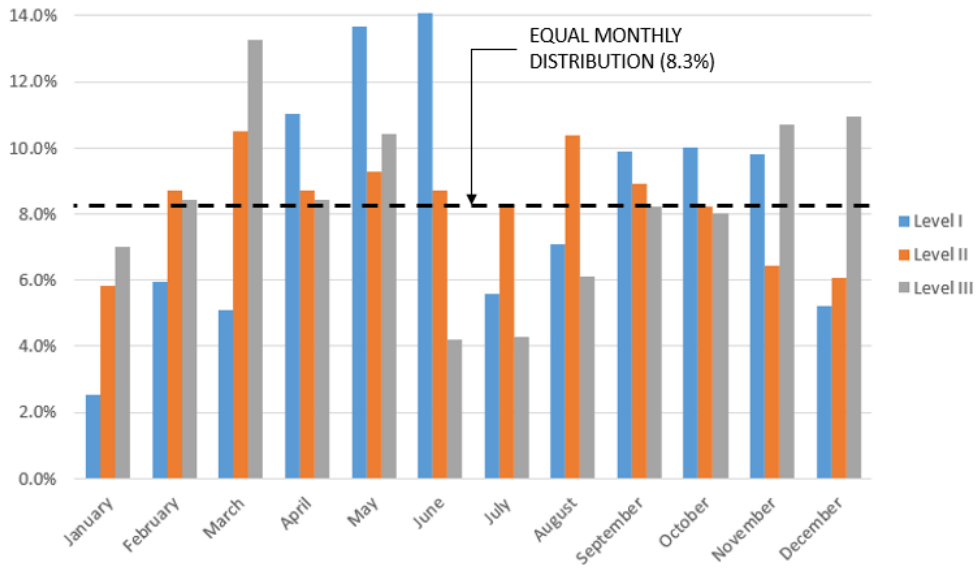
The primary reason to consider inspection buildings is the challenging winter weather in Minnesota. With low temperatures below 20oF typical for three months during the year, combined with other inclement weather events such as snow, rain, and high winds, climate-controlled inspection buildings can have a very beneficial impact on enforcement operations at a weigh station facility. To illustrate, Figure 4-2 shows the average high/low temperature and precipitation totals in the Minneapolis and Moorhead areas.

Figure 4-2 Average Annual Weather Information[1]



In the Classification Plan produced earlier in this project, only Class A type (St Croix and Red River) facilities were identified as those with the highest need for inspection building improvements. Therefore, inspection buildings for St Croix and Red River were identified in the dot exercise and were evaluated to determine their HIGH/MEDIUM/LOW priority ranking. Figure 4-3 displays the percentage of inspections by level for each month using 2017 inspection data from the six fixed weigh stations. The data shows higher numbers of Level I inspections were conducted in warmer months (peaking in June) and fewer Level I inspections in colder months. Conversely, Level III inspections peaked in March and declined in June/July.

Figure 4-3: Distribution of Inspection Levels by Month



[1] https://www.usclimatedata.com/

This weather data suggests there are opportunities to increase the number of Level I inspections at the existing weigh stations if inspection buildings were constructed. However, without providing additional MSP staff, more Level I inspections would likely lead to a decrease in Level II or Level III inspections. To quantify these changes, the average duration of inspections by level at the six weigh stations was determined. This average duration was then utilized to calculate the total number of minutes per month spent performing each inspection level type.

Inspection Type	Average Duration
Level I =	47 minutes
Level II =	36 minutes
Level III =	24 minutes

Using the month of June as a guide, State Patrol conducted 27%, 47% and 26% Level I/II/III inspections, respectively. Inspection buildings would likely increase the percentage of Level 1 inspections. Therefore, the analysis used the percentages in the pie chart shown at right, which decreased the Level II and III inspections and assigned those values to the Level I inspections. Accounting for the duration of inspections and this target distribution, Table 4-2 below shows 2017 actual inspection data for each site and the projected inspection numbers that could possibly result with construction of an enclosed inspection building at each existing weigh station.

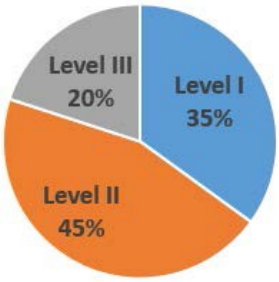


Table 4-2: Actual vs. Projected Weigh Station Inspection Comparison

Facility	Level	2017 Actual	Projected	Difference	% Change
t. Croix	I	844	1636	792	94%
	II	1818	2087	269	15%
	III	2902	947	-1955	-67%
	Total	5564	4670	-894	-16%
Red River	I	345	1071	726	210%
	II	1066	1367	301	28%
	III	2493	620	-1873	-75%
	Total	3904	3058	-846	-22%
Dayton Port	I	174	307	133	76%
	II	300	392	92	31%
	III	576	178	-398	-69%
	Total	1050	877	-173	-17%
Erskine	I	198	358	160	81%
	II	596	456	-140	-23%
	III	310	207	-103	-33%
	Total	1104	1021	-83	-8%
aginaw	I	181	337	156	86%
	II	605	430	-175	-29%
	III	237	195	-42	N/A
	Total	1023	961	-62	-6%
Worthington	I	304	697	393	129%
	II	1436	889	-547	-38%
	III	352	403	51	15%
	Total	2092	1989	-103	-5%

This analysis demonstrates positive impacts to the number of Level I inspections may be realized at St. Croix. Red River and Worthington if inspection buildings were constructed. These are also the three sites that perform the highest number of Level I inspections, both actual and projected. These facilities could significantly increase the number of Level I inspections without an increase in staff. Conclusions from this analysis include:

- Inspection buildings at St. Croix and Red River should be considered. These are Class A sites, and the data analysis shows positive impacts with the addition of inspection buildings.
- An inspection building at Worthington may merit consideration. Even though this is a Class B site, the building, scale, and pavement are newer, so an inspection building could be beneficial over the remaining life cycle of the facility.
- The Dayton Port data projections show less value in an inspection building compared to the Class A facilities. The unique layout, facility size, and current staffing levels indicate this location may not be a good candidate for an inspection building.
- Saginaw and Erskine shows minimal projected impact from adding inspection buildings. These Class B facilities are on lower volume roads, so there is likely to be less potential value added from constructing inspection buildings.

4.1.3 Coordination of Enforcement Pull-Off Areas

Pull-off areas for MSP enforcement personnel to weigh a truck with portable scales and perform an inspection were discussed. These enhancements downstream from a WIM site would also assist in making the technology more effective for enforcement purposes. The District meetings allowed State Patrol personnel to discuss these needs with MnDOT District personnel. In fact, follow-up meetings between MnDOT and State Patrol have occurred with several MnDOT District staff from the region to discuss upcoming construction projects and to identify where widened shoulders could be paved to better enable enforcement operations. Continued coordination should occur routinely between State Patrol Commercial Vehicle Enforcement with each MnDOT district during the roadway and bridge project scoping process. Several potential next steps for this identified need include:

- The list of the needs for specific locations is documented in Section 2.1. This list can serve as potential future pull-off locations within each District deserving further analysis by MnDOT and State Patrol personnel. The goal of these additional pull-off locations would be to improve safety for officers and drivers, while also providing a flat, level surface suitable for weighing a truck.
- All WIM sites with existing cameras should be reviewed to identify adequate pull-off locations downstream. By focusing on these locations, Minnesota would ensure their already deployed technology can be utilized to its fullest extent.

- Regular review of the updated MnDOT 4-year State Transportation Improvement Program (STIP) and 10-year Capital Highway Investment Plan (CHIP) documents jointly between MnDOT and State Patrol will help MnDOT personnel better understand where future opportunities may be available with respect to the identified needs list. Improved coordination with State Patrol during the project scoping process would enable all of these needs to be addressed early in the project development.
- To aid the expansion of pull-off sites statewide, the development of an enforcement pull-off standard detail drawing for MnDOT personnel to use should be developed. There may be different types of pull-off sites, ranging from simply a widened paved shoulder to a site constructed off the roadway *(as shown in the example on the right)*. These pull-off sites would generally be much smaller than a Class D site, such as Nodine.

- Several rest areas were identified as locations utilized for patrol saturation efforts or pull-off sites. Continued coordination with the MnDOT Rest Area program would allow these needs to be discussed during the decision making process to close, maintain or enhance different rest area locations. Specific rest areas used for commercial vehicle enforcement purposes are identified in the meeting minutes in the Appendices.

Addressing the needs identified by State Patrol personnel for pull-off locations will allow them to improve patrol operations and perform more inspections in safe locations throughout the state.

4.1.4 Improved Weigh-in-Motion (WIM) Utilization

Weigh-In-Motion technology utilization was a discussion topic at every District meeting. State Patrol personnel at all of the District meetings agreed that WIM technology can be a useful tool to assist in commercial vehicle enforcement and compliance. State Patrol currently utilizes some WIM sites in collaboration with MnDOT Office of Transportation System Management (OTSM). They also use WIM for ramp sorting at Red River and St Croix, and haves two portable WIM units. Below are several WIM-related initiatives that would improve WIM utilization by State Patrol throughout the state.

- Maintenance: Some existing WIM sites are not fully utilized due to data quality issues. When the data is not consistent, officers lose confidence in the system and may not utilize the technology. More timely maintenance and calibration of the sites would lead to greater confidence in the data by the officers for future use. Coordination with OTSM would help identify sites meriting increased maintenance and calibration needs for enforcement purposes. In addition, pavement deterioration near a WIM site can impact data quality, so improved coordination with MnDOT District personnel would help improve problematic pavement conditions near WIM sites.

Cameras: State Patrol finds the cameras to be a critical tool for utilizing the WIM sites for enforcement purposes. Currently there are 16 WIM sites located throughout the state with camera integration. The District meetings identified a need for additional cameras at sites #27 (MN 60), #30 (MN 61) and #43 (US 10). Two of these sites (#30 and #43) ranked as MEDIUM priority in both the Constrained and Unconstrained evaluations. Rather than simply relying on these evaluation results, further location-specific analysis is recommended (such as, truck volume, historical WIM data of the number of potential overweight trucks, and identification of a downstream pull-off area) before deciding whether to deploy additional camera technology.

- Mainline WIM at Weigh Stations: Mainline WIM in advance of a weigh station could allow the data to be incorporated into the DrivewyzeTM preclearance program. This strategy was documented during the Spring 2017 Planning Workshop. Currently, subscribed trucks are allowed to bypass a weigh station with no weight information provided for each vehicle. Analysis of data from January through July 2017 (shown in the table to the right) indicates the average number of Drivewyze-enabled bypasses per month varies greatly among the six existing locations. Adding mainline WIM detection at these sites would also allow MnDOT and State Patrol to analyze patterns in weight data for trucks that pass when the weigh station is not open. Mainline WIM would also provide an opportunity to begin weight-based screening of trucks on the mainline when the station is open, although this would require investment in additional technology, such as dynamic message signs (DMS).

Average Drivewyze™ Bypasses Per Month	
St. Croix	8455
Red River	813
Worthington	371
Dayton Port	231
Erskine	67
Saginaw	60

- Bypass Route Monitoring: Installing WIM on a bypass route around a fixed facility would allow State Patrol to remotely monitor truck operations on that route. This data would show how travel patterns change when the weigh station is open, what type of vehicle weights are experienced on the corridor, and the optimum days or times for State Patrol to provide active patrol enforcement on the bypass route. Several bypass routes were identified during the District meetings and should be considered for supplemental WIM technology. Those locations included:
    - US 10, Clay County (Red River)
    - US 2, Saint Louis County (Saginaw)
    - US 53, Saint Louis County (Saginaw)
    - MN 210, Wilkin/Otter Tail Counties (Red River)

- New Sites: A prioritized list of potential future sites can be generated from the dot exercise evaluation to identify locations for new WIM sites. These locations would be focused on enforcement, however, the data could be shared with the MnDOT Office of Transportation System Management (OTSM), who may be able to utilize the data for planning purposes and continue the existing partnership of sharing data between MnDOT and State Patrol. In addition to the evaluation results, the number of trucks present and the identification of a pull-off area should be identified before deploying any new WIM technology.

- Portable WIM: State Patrol currently owns two portable WIM units and has successfully deployed them during saturation efforts. However, deployment of these units requires multiple personnel in the field to use them effectively. Other states have used this technology with satisfactory results, and it is recommended that State Patrol continue using them as a tool for saturation efforts. Acquisition of additional units may be beneficial if staffing levels could be increased in the future.

4.1.5 Portable Scale Replacement Plan

The State Patrol currently has 322 Haenni Portable Wheel Load Scales (WL101) for use in their portable scale operations. These scales are assigned to CVIs or Troopers, with sets of six wheel load scales in their vehicles. These scales are an essential tool for effective commercial vehicle enforcement operations. Portable scales provide flexibility for officers to move throughout the counties, districts and state to more effectively concentrate on infrastructure preservation and seasonal weight challenges. These portable scales are maintained and certified by State Patrol staff. Discussion in the District meetings indicated that many of these portable scales have been in service for 15 years or longer. Standard practice is these scales continue to be utilized until they are broken or can no longer be certified for weight enforcement.

One strategy being deployed by the Wisconsin DOT to maximize the availability of portable scales to field personnel is to place a large lock box within a pull-off site. Six portable scales are staged in the lock box and are available for use by any officer conducting weight enforcement operations at the site. The benefits of this strategy are that the portable scales are easily accessible and not every officer is required to transport six portable scales in their assigned vehicle at all times. In addition, the Wisconsin DOT has occasionally funded the procurement of new portable scales for State Patrol use through individual highway construction project funding. The justification for use of this funding method is the scales will remain in use on that highway corridor to perform truck enforcement operations and thus preserve the infrastructure investment resulting from that specific project.

Even though portable scales are an essential patrol operation weight enforcement tool, currently State Patrol has no replacement plan for them. An ideal total number of portable scales needed for deployment to State Patrol personnel can be

determined based on the organizational chart of their Commercial Vehicle Enforcement District. This number would fluctuate based on staffing levels for the program in the future. As a best practice asset management strategy, a planned replacement cycle should be implemented within the program. Based on the current age and expected service life, an estimated number of scales to be replaced each cycle could be determined.

The State Patrol has had success utilizing Haenni Model WL101®, but other newer models include digital readouts and wireless connections to help aggregate data from multiple scales. However, recent discussions with the Wisconsin State Patrol indicated there may be concerns with the digital displays working effectively in severely cold conditions, which could negatively impact operations in Minnesota. Additional research on newer models of portable scales is recommended to ensure that State Patrol continues to procure equipment that meets their operational needs.

4.1.6 Increased Minnesota State Patrol Staffing

State Patrol enforcement staffing levels were discussed at several District meetings, with the need for additional staff identified. Additional commercial vehicle enforcement staff could positively impact the operations at the six existing fixed weigh stations, provide additional patrol coverage throughout the state, and provide more resources to enhance education and outreach opportunities.

Staffing for the existing fixed weigh station sites was analyzed as part of the Classification Plan earlier in this project. This document provided staffing graphs for Class A and Class B facilities for use as guides for determining optimum staffing levels. There are other external factors that may impact those ideal staffing levels, such as facility condition, size and personnel. The existing MSP staffing levels align with the graphs created and can assist in determining where future vacancies should be filled.

One method by which to identify ideal staffing levels is to compare Minnesota's commercial vehicle enforcement program to programs in other states. A four-part analysis was completed to show how Minnesota compared to other similar states using: truck crashes *(shown in Table 4-3)*, the number of truck registrations *(shown in Table 4-4)*, vehicle miles traveled *(shown in Table 4-5)* and population *(shown in Table 4-6)*. Comparable states to Minnesota for all four categories were determined by identifying a peer group of one-third of the 50 states, or 17 states total for each category. The eight states above and eight states below Minnesota in each category were utilized in the analysis, with the number of MCSAP inspections conducted in each state documented. Each comparison included:

- The simple average of the number of state-performed inspections for the peer group states
- The rate of inspections per the comparable measure applied to the Minnesota value

Table 4-3: Inspection Comparison: Truck Crashes

State	CY17 Truck Crashes	CY17 State Inspections	Inspection/ Crash
Kansas	1,587	47,837	30.14
Utah	1,590	33,934	21.34
Connecticut	1,658	16,598	10.01
Colorado	1,775	50,938	28.70
Iowa	1,809	49,997	27.64
Mississippi	1,847	62,276	33.72
Oregon	1,928	33,446	17.35
Washington	2,272	86,429	38.04
Minnesota	**2,603**	**34,921**	13.42
Arkansas	2,710	33,653	12.42
Arizona	2,948	49,386	16.75
Maryland	3,046	118,072	38.76
Kentucky	3,080	79,916	25.95
Wisconsin	3,130	36,075	11.53
Oklahoma	3,257	29,308	9.00
South Carolina	3,306	37,306	11.28
Louisiana	3,956	46,988	11.88
Average	2,500	49,828	21.05
Minnesota Target =		**49,828**	**54,804**

Table 4-4: Inspection Comparison: Truck Registrations

State	Truck Registrations	CY17 State Inspections	Inspection/ Registration (000s)
Maryland	2,001,673	118,072	58.99
Oregon	2,030,265	33,446	16.47
Iowa	2,111,663	49,997	23.68
South Carolina	2,244,716	37,306	16.62
Kentucky	2,316,525	79,916	34.50
Louisiana	2,319,827	46,988	20.25
Massachusetts	2,515,765	25,128	9.99
New Jersey	2,843,150	36,072	12.69
Minnesota	**2,933,622**	**34,921**	11.90
Wisconsin	2,938,122	36,075	12.28
Colorado	2,979,130	50,938	17.10
Alabama	3,001,316	39,689	13.22
Tennessee	3,101,331	69,611	22.45
Arizona	3,115,726	49,386	15.85
Missouri	3,116,291	95,498	30.64
Indiana	3,464,139	69,611	20.09
Washington	3,626,011	86,429	23.84
Average	2,744,663	56,417	21.21
Minnesota Target =		**56,417**	**62,221**

Table 4-5: Inspection Comparison: Vehicle Miles Traveled (Millions)

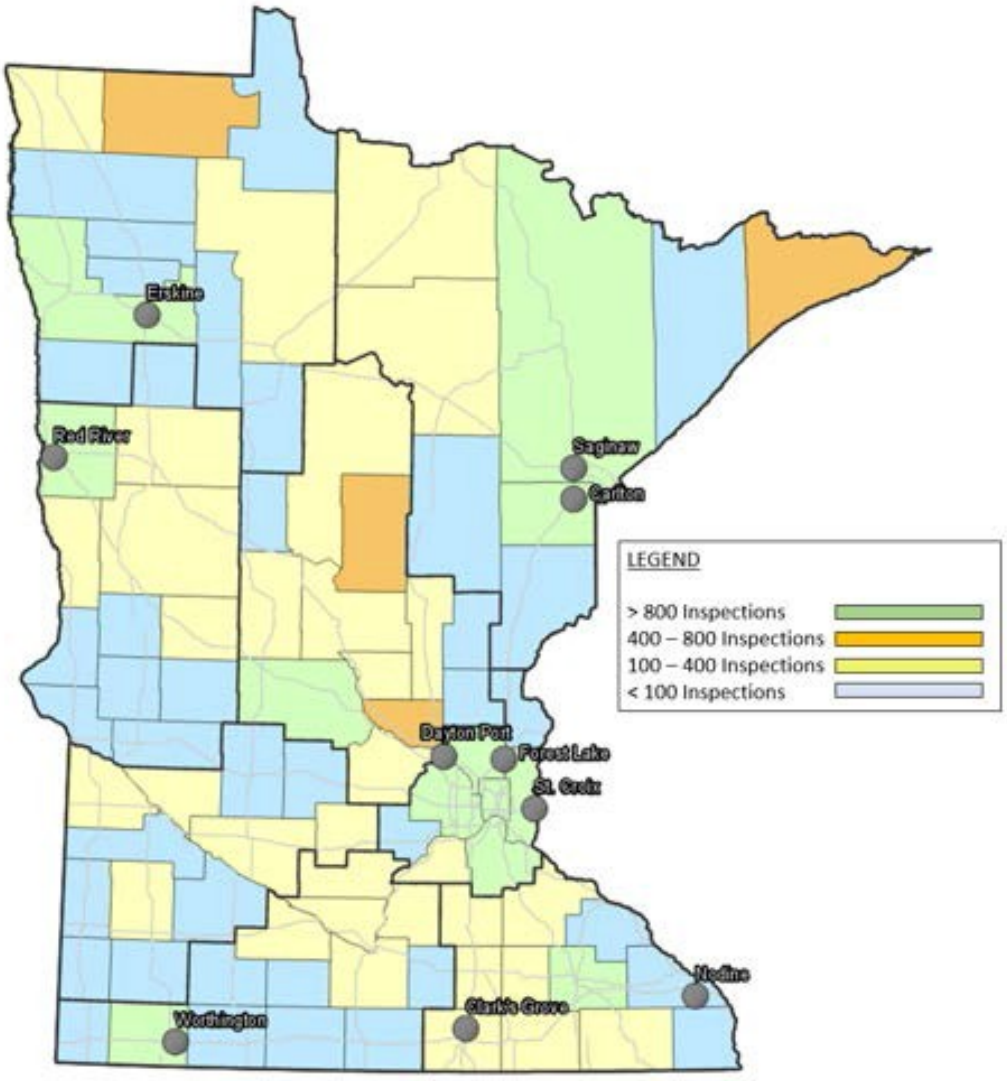
State	VMT (millions)	CY17 State Inspections	Inspection/ VMT (000s)
Arkansas	35,755	33,653	941.22
Oregon	36,719	33,446	910.86
Mississippi	40,755	62,276	1,528.07
Oklahoma	49,013	29,308	597.96
Louisiana	49,156	46,988	955.90
Kentucky	49,313	79,916	1,620.60
Colorado	52,152	50,938	976.73
South Carolina	54,553	37,306	683.85
Minnesota	**59,029**	**34,921**	591.59
Maryland	59,137	118,072	1,996.57
Washington	61,018	86,429	1,416.46
Massachusetts	61,825	25,128	406.44
Wisconsin	64,046	36,075	563.26
Arizona	65,786	49,386	750.71
Alabama	69,227	39,689	573.32
Missouri	74,019	95,498	1,290.19
Tennessee	76,884	69,611	905.41
Average	56,376	54,626	982.89
Minnesota Target =		**54,626**	**58,019**

Table 4-6: Inspection Comparison: Population

State	Population	CY 17 State Inspections	Inspection/ Population (000s)
Iowa	3,145,711	49,997	15.89
Connecticut	3,588,184	16,598	4.63
Oklahoma	3,930,864	29,308	7.46
Oregon	4,142,776	33,446	8.07
Kentucky	4,454,189	79,916	17.94
Louisiana	4,684,333	46,988	10.03
Alabama	4,874,747	39,689	8.14
South Carolina	5,024,369	37,306	7.43
Minnesota	**5,576,606**	**34,921**	6.26
Colorado	5,607,154	50,938	9.08
Wisconsin	5,795,483	36,075	6.22
Maryland	6,052,177	118,072	19.51
Missouri	6,113,532	95,498	15.62
Indiana	6,666,818	69,611	10.44
Tennessee	6,715,984	69,611	10.36
Massachusetts	6,859,819	25,128	3.66
Arizona	7,016,270	49,386	7.04
Average	5,308,766	51,911	9.87
Minnesota Target =		**51,911**	**55,043**

This four-part peer state comparative analysis suggests that Minnesota State Patrol should be striving to perform approximately 55,000 MCSAP inspections per year. This would be about a 57% increase in the number of inspections per year. Achieving such a significant increase in the number of inspections would require additional personnel. One way to achieve this target number of inspections is through additional weigh station facilities. A new Class A weigh station would add about 4,000 – 5,000 inspections per year, based on activity levels at St. Croix and Red River. A new Class B weigh station would add about 1,000 – 2,000 inspections per year, based on activities at existing Class B facilities. Another approach to increase the number of inspections is through additional patrol operations statewide. The map in Figure 4-4 below shows where inspections are currently being conducted throughout the state. A next step for evaluating staffing is to compare another state's program with an inspection level near 55,000 inspections (for example Iowa) to understand their number of staff performing inspections, the ratio of fixed inspections versus patrol inspections, and the ratio of inspections by level.

Figure 4-4: 2017 Inspections by County



4.1.7 Education and Outreach

During the Spring 2017 Planning Workshop, education and outreach was a strategy identified during the practical vision card exercise. This need was identified again during the District meetings. Potential target audiences for additional education and outreach may include:

- Legislators and local elected officials
- Court officials, such as statewide associations of judges and prosecutors
- Local law enforcement personnel
- Trucking industry (carriers, shippers and drivers)
- General public
- MnDOT and State Patrol management

State Patrol currently makes staff available for presentations and training on truck size and weight enforcement. In 2017, State Patrol personnel conducted 327 presentations to the motor carrier industry. In addition, MnDOT publishes a comprehensive handbook titled "Minnesota Truck and Commercial Passenger Regulations", and for a number of years the Minnesota Local Technical Assistance Program (LTAP) has provided their Minnesota Truck-Weight Education Training workshops to carriers and drivers statewide. A future ongoing education and outreach plan should account for all of these ongoing efforts.

MnDOT and State Patrol should work collaboratively to develop a strategic communications and marketing plan. This plan should include providing validation for operating a commercial vehicle enforcement program, justification for future funding for the enforcement program, and education for commercial vehicle laws and regulations. The success of improving efforts in the area of education and outreach will be dependent on identifying a champion for the commercial vehicle enforcement program and providing qualified staff sufficient to deliver the outreach necessary. This staffing component should be considered when identifying appropriate staffing levels, organizational structure and positions.

4.1.8 Additional Weight Enforcement Facilities

The need for additional weight enforcement facilities was discussed at the District meetings. Minnesota currently has six fixed weigh stations, with additional dedicated pull-off sites. Compared to its border states, Minnesota has a relatively small number of existing fixed weigh stations to geographically cover the entire state. Additional weigh station facilities, combined with the appropriate staff to operate them, would help Minnesota achieve a higher number of inspections each year. It would also allow Minnesota to provide additional presence on critical, high truck volume corridors throughout the state.

Specific locations for additional weigh stations were documented through the dot map exercise. These sites were evaluated, as document in Section 3 above. Results of the evaluation are further described in Section 4.2 below.

4.2 Specific Location Evaluation Results

The list of HIGH priority results for both the Constrained analysis (13 sites) and Unconstrained analysis (12 sites) are locations that should be prioritized for enhancing commercial vehicle enforcement operations. Ten of the sites were rated HIGH in both analyses.

For siting of new Class A or Class B weigh stations, four corridors were identified that merit evaluation. These improvements would require significant financial investment and could potentially be considered for a lower class site depending on cost, location availability, staffing, and other factors. Additionally, the concept is to screen trucks on each identified segment, but it is possible that a facility could be constructed on an adjacent segment for various reasons. Additional StreetLight™ data analysis would assist in determining potential future locations for these four corridors:

- I-94 in Wright/Hennepin County between Minneapolis and St Cloud
- I-35 in Dakota County, South of Minneapolis
- I-90 in Olmsted/Winona County between MN/WI border and Rochester
- US 52 in Olmsted County between St Paul and Rochester

The St. Croix and Red River weigh stations were both rated HIGH in the Constrained analysis. With both of these sites functioning as Class A sites, they should be considered for construction of enclosed inspection buildings, with priority given to adding an inspection building at St Croix before Red River based on the evaluation results, truck volume, and number of inspections performed at these sites.

There were several other corridors rated HIGH in either the Constrained and/or Unconstrained analysis that should be considered as candidates for a new Class C or lower facility. These corridors include:

- I-494 in Hennepin County between US 12 and MN 55 – Even though this corridor qualifies for a Class A site, this may not be a realistic option given the dense development in the corridor. A lower class facility option should be considered to provide an enforcement presence on the corridor. The recommendation of a weigh station on I-94 between Minneapolis and St. Cloud may impact the viability of this new location, and additional analysis could be supplemented with StreetLight™ data.

- US 52 at Butler Ave Interchange in Dakota County – The planned concept for this location was rated HIGH and therefore should be considered for continuing its deployment. However, other segments of US 52 rated HIGH, as well, and the enforcement operations on the corridor as a whole should be considered. StreetLight™ data would allow examination of origin and destination truck volumes along the corridor.

- US 12 in Wright/Hennepin County near the Metro District and District 3 border – This corridor was identified in two different District meetings and was rated HIGH/MEDIUM for both Districts.

- I-535 in St Louis County for the Blatnik Bridge – This structure is a critically important transportation linkage between Duluth and Superior. It is currently weight-posted, with future reconstruction plans for the bridge. This location has value in enforcing truck weights for the existing bridge, as well as a future bridge investment. StreetLight™ data could supplement the analysis to identify a method and concept to effectively enforce truck traffic using the structure.

- US 71 in Kandiyohi County near Willmar – The portion of US 71 north of Willmar prior to the MN 23 and US 71 split was rated as HIGH in both the Constrained and Unconstrained evaluation. This segment was identified as needing an increase in enforcement presence due to the transport of sugar beet commodities and due to other truck travel patterns.

- MN 23 in Kandiyohi County West of Willmar – The segment of MN 23, South and West of Willmar also rated HIGH in the Constrained analysis. In conjunction with the US 71 site in Kandiyohi County, additional analysis should be completed to identify the ideal concept for screening and enforcing trucks near Willmar.

- MN 212 in Renville County at WIM #33 (East of Olivia) – This location currently has a WIM site with camera integration for enforcement purposes. With the HIGH rating in the Constrained analysis, additional opportunities to enhance this location, such as through pull-off sites, should be considered.

The list of MEDIUM priorities generated by the evaluation should serve as a resource for MnDOT and State Patrol to evaluate future needs and to compare one site to another. This list should be used when determining future pull-off locations or enhancements to WIM monitoring.

There is value in investing in additional commercial vehicle enforcement resources in all eight Districts throughout the state. This approach would allow for a statewide geographic presence to improve safety and to preserve Minnesota's highway and bridge infrastructure. The top rated location in each District for both the Constrained and Unconstrained analysis are shown in Table 4-7. Some Districts have multiple locations which were tied for the top score.

Table 4-7: Top District Needs

D.#	HWY	LOCATION	COUNTY	CONSTRAINED ANALYSIS	UN-CONSTRAINED ANALYSIS
1.1	I-535	Blatnik Bridge / WIM #38	Saint Louis	✓	✓
2.1	MN 11	Between Warroad and Baudette	Lake of the Woods/ Roseau	✓	
2.6	US 2 / US 59	Erskine Weigh Station (NB&SB)	Polk	✓	
2.3	CSAH 87	Between US 71 and MN 64	Hubbard		✓
3.3	MN 28	Sauk Centre to Little Falls	Morrison/ Todd	✓	
3.2	I-94	Between MN 101 and MN 24	Wright		✓
4.1	I-94	Red River Weigh Station (EB)	Clay	✓	✓
M.3	I-94	St. Croix Weigh Station (WB)	Washington	✓	
M.1	I-494	Between US 12 and MN 55	Hennepin		✓
M.4	I-94	Between MN 610 and MN 101	Hennepin		✓
6.3	US 52	WIM #32	Olmsted	✓	
6.2	I-90	Between Rochester and Fremont	Olmsted/ Winona		✓
7.1	US 169	North of St. Peter	Nicollet	✓	✓
8.10	US 71	North of Willmar	Kandiyohi	✓	✓

5 Needs Assessment Summary

The meetings with District MnDOT and MSP personnel statewide assisted greatly in the identification of needs throughout the state. The map dot exercise aided the project team in identifying potential future weight enforcement sites throughout the state at specific locations. The evaluation methodology was a data-driven process, using roadway characteristic data (crashes, functional classification), freight data (truck volumes, truck VMT), enforcement data (OOS rates, bypass routes), geographic data (point of entry, geographic coverage), and infrastructure elements (infrastructure protection, existing facilities, facility cost). The results of the evaluation yielded a list of HIGH priority locations for MnDOT and State Patrol to focus future investments. The identified needs were further evaluated and assessed to prioritize and guide future decision making. Those needs include:

- **Investment in Existing Facilities** – The existing six weigh stations should continue to be invested in with the list of future needs identified.

- **Inspection Buildings** – Inspection buildings at Class A sites should be considered for implementation.

- **Coordination of Enforcement Pull-Off Areas** – Utilizing the specific locations identified in the District meetings and improved coordination and communication between MnDOT and State Patrol can lead to enhanced planning and implementation of future pull-off sites.

- **Improved Weigh-in-Motion (WIM) Utilization** – Strategies for better utilizing WIM technology include additional maintenance, integrated cameras, mainline WIM, and portable WIM.

- **Portable Scale Replacement Plan** – Planning for the replacement of portable scales will ensure State Patrol has the tools required to perform effective patrol operations.

- **Increased Minnesota State Patrol Staffing** – Based on analysis of comparable states, Minnesota should be striving to increase the number of inspections performed, which will require an increase in staff.

- **Education and Outreach** – Identifying a commercial vehicle enforcement champion and developing a marketing and communications plan will enhance existing education and outreach efforts.

- **Additional Weight Enforcement Facilities** – New facilities ranging from Class A to Class E were evaluated, with HIGH priority locations outlined in Section 4.2.

The needs identified in this report, along with details of the needs assessment, are intended to be incorporated in the Weight Enforcement Investment Plan (WEIP). The organization of these identified needs into eight topic areas provided the framework for the development of the 10-Year WEIP. The WEIP articulates which facility needs should be deployed in the next 10 years, as well as other potential strategies for enhancing future weight enforcement operations.

6 Appendix

Appendix A: District Meeting Minutes
Appendix B: Constrained Evaluation Results
Appendix C: Unconstrained Evaluation Results
Appendix D: Maps

Appendix A: District Meeting Minutes

Commercial Vehicle Weight Enforcement Investment Plan
District 1 State Strategic Collaboration Meeting

Date/Time: February 9, 2018
10:00 am – 12:00 pm

Location: MnDOT District 1 Headquarters
1123 Mesaba Ave, Duluth, MN 55811

Meeting Minutes

1. Attendees

Name	Organization	Name	Organization
Andrew Andrusko	MnDOT OFCVO	Duane Hill	MnDOT District 1
Julie Whitcher	MnDOT OFCVO	Bryan Anderson	MnDOT District 1
Pat Osborn	MnDOT OFCVO	Jim Miles	MnDOT District 1
Rob Holschbach	MnDOT OFCVO	Brian Rahn	Lakeside Engineers
Jon Olsen	Minnesota State Patrol	Amy Worzella	Lakeside Engineers
Darren Juntunen	Minnesota State Patrol	Chris Quesnell	Lakeside Engineers
Jeff Shay	Minnesota State Patrol		

2. Project Overview

Overall, Minnesota State Patrol (MSP) wanted to know if there are any concerns from District 1 as to the management of the scales by MSP and enforcement needs in the District.

3. Existing Facilities

Saginaw Weigh Scale

The Saginaw weigh scale located on US 2 has been updated with building renovations, concrete patching work, electronic message signs at the scale, and a new platform scale within the last two years. Drivewyze is present at the site for preclearance. The overall condition of the building and pavement is good, except for some water damage in the basement which is getting repaired in 2018. Six cameras are installed onsite to monitor the parking lot and ramps. Fiber communications is connected to the building. There are four MSP tech sergeants and three CVI (Civilian Vehicle Inspectors) that are assigned to work in the District that cover this weigh scale and other enforcement sites.

Existing Needs Identified:
Pavement Marking – The lot and ramps are in need of new pavement markings.

Blinker Stop Sign at Platform Scale – A blinker stop sign would aid trucks stopping on the scale. Many times driver focus on the overhead sign that shows the weights and miss the stop sign.

CCTV Cameras – Additional cameras to monitor trucks on MN 33 at the interchange would be welcome. It

Date/Time:	February 9, 2018 10:00 am – 12:00 pm	**Location:**	MnDOT District 1 Headquarters 1123 Mesaba Ave, Duluth, MN 55811

can be challenging to see if trucks bypass the scale on MN 33.

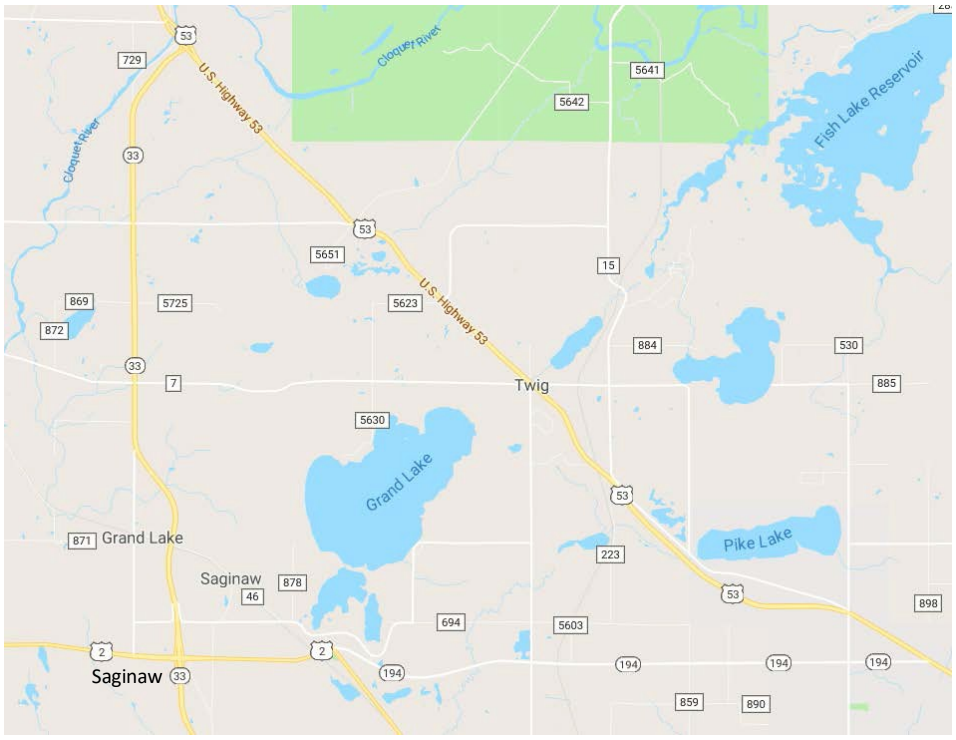
Lighting – The onsite lighting will be updated in 2018. The new lights will be LED.

Truck Parking – Currently there are 14 truck parking spaces. The space is adequate for out of service vehicles and active inspections. Very few trucks park there for rest. Many of the trucks passing through the scale are hauling local loads.

Bypass Routes – There are bypass routes that trucks use to avoid the weigh station.

-US 53 (WB) to County 7 (WB) to MN 33 (WB)

-MN 33 (EB) to County 7 (EB) to US 53 (EB)



Signing – Additional signing that directs trucks to the Saginaw weigh scale on US 2 and MN 33 would be beneficial. The issue is that once the truck exits MN 33, it is difficult for them to see where the entrance to the weigh scale is on US 2 due to the unique configuration of the site. There were dial in CMS signs on MN 33 in the past, but they malfunctioned and were not replaced.

Maintenance – Contractors maintain the grass, pick up the garbage and clean the office twice a week. Snow plowing is done by the District. Sometimes the officer's assist with snow removal and a small tractor is leased for the site during the winter so officers can remove snow near the building and when the District is busy with heavy snow and cannot get to the weigh station.

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I-35 Carlton NB and SB Pull Off Sites

At the Carlton SB Pull Off site is not enough room for enforcement saturations. This site has a building with bathrooms that was built by the University of Minnesota. A safety concern is that many people confuse the entrance ramp at Carlton with the casino entrance and enter the site at high speeds. Some of the parking area is gravel. An overhead sign on I-35 is placed right at the site. This location would become more usable if pavement was added for additional parking and space to inspect trucks, the overhead sign bridge is moved north to indicate if the facility is open or closed, and the possible addition of signs upstream so motorists do not mistake the pull off site entrance ramp for the casino entrance.

The NB Carlton Pull Off has enough room for enforcement saturations. There is no building, so often officers use the building across the street at the SB location for the bathrooms. There are existing flip down signs that indicate if the site is open for inspections. A mainline WIM would be beneficial to screen trucks prior to the entrance along with electronic signing indicating the site is open. This site is under consideration for a temporary building. It would be helpful to have cut outs in the pavement to put portable scales.

Maintenance – Contractors maintain the grass. Snow plowing is done by the District. There is a need to clear snow from the shoulders when there is an enforcement saturation so there is enough room for truck inspections.

WIM #38

There is an existing WIM on I-535 (#38) as trucks cross over the Blatnik bridge. There is a camera and remote access to WIM information at this location. The primary issue at this location is limited places to direct a truck for inspection. The shoulders are not wide enough to pull trucks over on the mainline. Past saturations deployed signs that indicated trucks should exit at the port terminal where they were directed to a DNR lot for inspection. Due to the difficulty of where to take a truck, MSP only does enforcement saturations 1-3 times a year. There is a desire to have more enforcement at this location due to the 80,000 lb. weight limit on the Blatnik bridge which will not be rebuilt until 2028 or later. Wisconsin does not screen trucks prior to the border as vehicles cross the bridge into Minnesota.

WIM #29

The WIM site on US 53 north of Duluth has a camera and remote access to WIM information. The WIM sensors have inconsistent readings which make it difficult to rely on them for enforcement. MSP is present at this site at least once a month for enforcement inspections. MSP will record the actual weights read on the portable scales and compare this to the WIM readings to better calibrate the site. MnDOT is responsible for the WIM maintenance and is contacted when there are issues. There is a location in downtown Cotton where MSP pulls the trucks over based on the WIM screening or other safety issues observed.

WIM #30

A camera is not installed at this WIM location on MN 61 so it does not get utilized often. MSP has access to the weight data at this site. The site is difficult to work for MSP because of lack of places to stop trucks for inspections near the WIM.

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Mobile Operations in the District

MSP performs specific enforcement saturations in the District at different locations. These saturations involve deploying 5-6 staff that weigh trucks with portable WIM and portable scales. One location that is used for saturations and individual truck inspections regularly is the US 53 rest area.

Enforcement saturation sites noted at the meeting:

-Carlton NB Pull Off
-WIM I-535
-WIM US 53
-Rest Area US 53

The four tech sergeants are equipped with portable scales (6 per vehicle). The portable scales (analog) are 20+ years old and due for replacement. The existing analog scales are repaired and certified in house. There are new portable scales on the market that are digital and lighter in weight. If new portable scales are procured training will be needed and the cost to repair and certify the new scales will be higher.

MSP is called on by local counties and cities for truck enforcement.

4. Existing Highway Operations

Enforcement

Logging Trucks – Logging trucks are allowed to haul 96,000 lbs. and are doing damage to the roads with the extra weight. The mills want trucks to load up as much as possible, even if it means damaging the trucks. The hauling companies lose profit if they move lighter loads.

Infrastructure Protection

- Blatnik Bridge – Road weight restrictions in place
- Logging truck routes

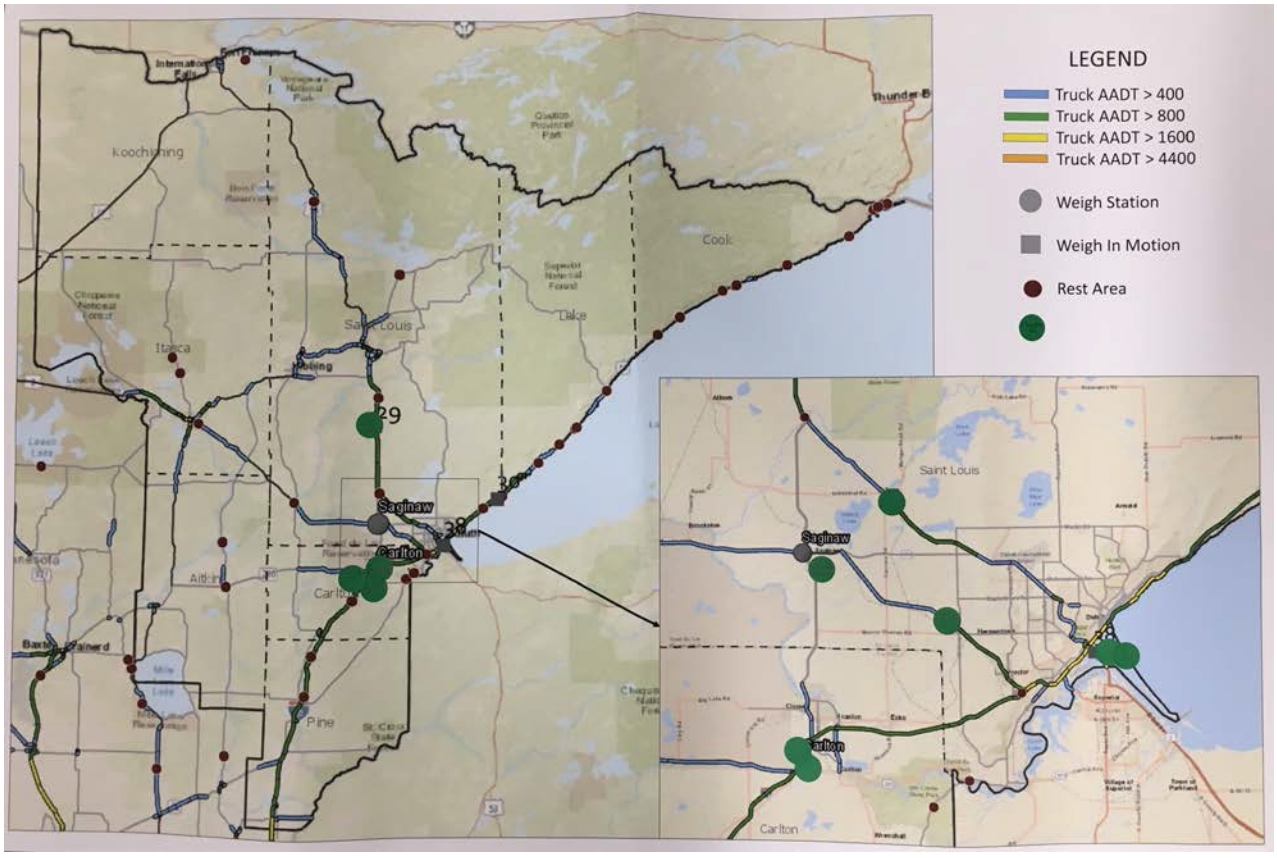
5. Needs Assessment Exercise – Future Investments

Meeting attendees were asked to place green dots on a map indicating specific high priority needs for District 1 pertaining to weigh stations. The results of the exercise are documented in the table and picture below.

Date/Time: February 9, 2018
10:00 am – 12:00 pm

Location: MnDOT District 1 Headquarters
1123 Mesaba Ave, Duluth, MN 55811

Number	District	Location	Purpose
1	1	I-535 Blatnik Bridge	Weight posted bridge protection
2	1	I-535 Blatnik Bridge	Investigate enforcement of vehicle departing the state and potential coordination with Wisconsin
3	1	MN 2 between MN 33 and I-35	Bypass route monitoring with WIM
4	1	US 53 between MN 33 and I-35	Bypass route monitoring with WIM
5	1	Saginaw Weigh Station	Improved bridge clearance signing
6	1	Carlton Pull-Off Site	Higher truck volume corridor within the District
7	1	Carlton Pull-Off Site	Enhance existing building
8	1	Carlton Pull-Off Site	Increase staffing to utilize site
9	1	Carlton Pull-Off Site	Enhance existing facility
10	1	Carlton Pull-Off Site	Enhance existing facility
11	1	Existing US 53 WIM Site (#29)	Calibration of existing site to improve accuracy and functionality
12	1	Statewide	Increase education efforts



6. Coordination Opportunities

Future constructions projects were discussed during the meeting that had the potential to add pull off sites or widen ramps/shoulders for use by MSP staff for safe truck inspections. The construction project planning lists maintained by MnDOT and the pull off site locations desired by MSP should be compared to each other to identify partnering opportunities in the next 10 years. Projects discussed at the meeting include:

Date/Time:	February 9, 2018 10:00 am – 12:00 pm	**Location:**	MnDOT District 1 Headquarters 1123 Mesaba Ave, Duluth, MN 55811

- Can of Worms (2019-2022)
- Blatnik Bridge (2028)
- MN 210 construction project in 2020 near Carlton Pull Offs

Moving the I-535 WIM west of the current location was an idea brought up. The site would screen EB traffic before they cross the bridge into Wisconsin.

There was also a call by MSP to increase education efforts to local politicians, court staff, and lawmakers regarding the impact of overweight vehicles and the importance of what CMV enforcement does for safety and infrastructure protection.

Date/Time:	March 26, 2018 10:00 am – 12:00 pm	**Location:**	MnDOT District 2 Headquarters 3920 Highway 2 West, Bemidji MN 56601

Meeting Minutes

1. Attendees

Name	Organization	Name	Organization
Andrew Andrusko	MnDOT OFCVO	Jeff Erickson	MnDOT District 2
Julie Whitcher	MnDOT OFCVO	Brad Scott	MnDOT District 2
Pat Osborn	MnDOT OFCVO	Laura Carlson	MnDOT District 2
Jon Olsen	Minnesota State Patrol	Jacob Indihar	MnDOT District 2
Mike Theis	Minnesota State Patrol	Jim Bittmann	MnDOT District 2
Brian Rahn	Lakeside Engineers	Lou Tasa	MnDOT District 2
Amy Worzella	Lakeside Engineers	Bill Pirkl	MnDOT District 2
Paul Konickson	MnDOT District 2 (Skype)	Mike Ginnaty	MnDOT District 2
John Anderson	MnDOT District 2 (Skype)	Jim Curran	MnDOT District 2
		Darren Laesch	MnDOT District 2

2. Project Overview

Overall, Minnesota State Patrol (MSP) wanted to know if there are any concerns from the District 2 as to the management of the scales by MSP and enforcement needs in the District.

3. Existing Facilities

Erskine Weigh Scale

The Erskine weigh scale located on US 2 (also serving US 59) has been updated with building renovations, scale electronics, on-site electronic message signs, PA system, overhead regulatory signs, and replaced platform/load cells within the last four to five years. Pavement rehabilitation, new LED lighting, and new cameras are planned for installation in 2018. Drivewyze is present at the site for preclearance. The overall condition of the building is good. There are four staff (two MSP tech sergeants and two CVI (Civilian Vehicle Inspectors) that are assigned to the District. Typically, two CVI staff are assigned to work at Erskine Monday to Friday in varying shifts from 7am to 8pm. The two tech sergeants work areas near Fisher and Bemidji and evasion routes in the District.

Date/Time:	March 26, 2018 10:00 am – 12:00 pm	**Location:**	MnDOT District 2 Headquarters 3920 Highway 2 West, Bemidji MN 56601

Existing Needs Identified:

Truck Parking – The parking space is adequate for active inspections. The Oak Lake rest area on US 2 can be used for parking out of service trucks.

Bypass Routes – There are many bypass routes that trucks use to avoid the weigh station. Trucks use county and local roads that are not load posted. There have been complaints from local citizens about trucks on their roads. These are some of the bypass routes that trucks use to avoid the weigh station.

-Fosston bypass (US 59 and CSAH 1)
-CSAH 9 to CSAH 49 to CSAH 7 to CSAH 8 to MN 92 (west to east, between MN 220 and US 2)
-CSAH 2 to CSAH 27 to CSAH 28 to CSAH 54 (south to north, between MN 92 and MN 89)
-CSAH 21 to CSAH 3 (west to east, between MN 220 and MN 32)

Inspection Shed – An inspection shed is desired at this location by MSP.

Maintenance – Contractors maintain the grass, pick up the garbage and clean the building. Snow plowing is done by the District.

WIM #31
The WIM site on US 2 east of Grand Forks is used frequently by MSP. It has a camera and remote access to WIM information.

WIM #35
This WIM site located on US 2 near Bagley is used infrequently. It has a camera and remote access to WIM information. It could be used more often is additional staff was available to work the area.

WIM #41
The WIM site on CSAH 14 does not have a camera. It would be used if a camera was installed, primarily to monitor heavy aggregate trucks.

Mobile Operations in the District
MSP performs specific enforcement saturations in the District at different locations. These saturations involve deploying several staff that weigh trucks with portable WIM and portable scales.

Enforcement saturation sites and inspection sites noted at the meeting:

-Fishers Landing Rest Area
-Oak Lake Rest Area
-Lengby Rest Area
-Cass Lake Rest Area

Date/Time:	March 26, 2018 10:00 am – 12:00 pm	**Location:**	MnDOT District 2 Headquarters 3920 Highway 2 West, Bemidji MN 56601

The two tech sergeants are equipped with portable scales (6 per vehicle). The portable scales (analog) are 20+ years old and due for replacement. The existing analog scales are repaired and certified in house. There are new portable scales on the market that are digital and lighter in weight. If new portable scales are procured training will be needed and the cost to repair and certify the new scales will be higher.

4. **Existing Highway Operations**

Enforcement

MSP is called on to enforce trucks on local roads. There is a need for additional enforcement in the District when seasonal agriculture loads on county/local roads have weight restrictions during harvest. Beet haulers move crops for a two to three week period. Fall grains have a three to four week period of hauling from mid-August to early September. Potato (southeast portion of the District, CSAH 87) and milk hauling are also concerns in the District. There are springtime travel restrictions on MN 220 due to flooding. The counties in the District would welcome more MSP enforcement of trucks during these time frames.

MSP CVO would appreciate a notification from the District and counties when roads are under seasonal restrictions.

MSP indicated that local and county roads lack places for officers to stage and safe pull off areas to take a truck for an inspection. Some suggestions were to create pull off locations on extended turn lanes or build new pull off areas adjacent to new pavement with state and local projects. The size specifications for the pull off areas were discussed.

Infrastructure Protection

There are no load posted bridges in the District. Most bridge hits are sporadic hits by farm equipment. Most state road bridges have a clearance of 16’ 6” that can accommodate OSOW super load routes.

Pavement on US 2 east of Bagley is in poor condition. Due to the lack of detour routes available, it is very difficult to schedule repair work.

OSOW routes need to be updated for this District. The last documentation was created in 2004.

5. **Needs Assessment Exercise – Future Investments**

Meeting attendees were asked to place green dots on a map indicating specific high priority needs for the District 2 pertaining to weigh stations. The results of the exercise are documented in the table and picture below.

Commercial Vehicle Weight Enforcement Investment Plan
District 2 State Strategic Collaboration Meeting

Date/Time: March 26, 2018
10:00 am – 12:00 pm

Location: MnDOT District 2 Headquarters
3920 Highway 2 West, Bemidji MN 56601

Number	District	Location	Purpose
1	2	CSAH 87 between US 71 and MN 64	Load restrictions for trucks (7 ton limit in Spring)
2	2	CSAH 87 between US 71 and MN 64	Load restrictions for trucks (7 ton limit in Spring)
3	2	US 2 east of Bemidji	Poor detour routes for contruction on US 2 to improve pavement
4	2	MN 92 between CSAH 2 and CSAH 8	Route monitoring with WIM
5	2	US 59 between Erskine and Thief River Falls	Route monitoring with WIM, Pull off area
6	2	US 2 Fishers Landing Rest Area	Keep facililty open for truck inspections
7	2	US 75 between MN 11 and MN 175	Route monitoring with WIM
8	2	MN 11 between Warroad and Baudette	Route monitoring with WIM
9	2	District-wide	Pull off locations
10	2	District-wide	Additional MSP staffing
11	2	District-wide	Coordination between District 2 and MSP CVO Unit
12	2	District-wide	Pull off locations
13	2	District-wide	Pull off locations
14	2	District-wide	Increase MSP staffing

Date/Time:	March 26, 2018 10:00 am – 12:00 pm	**Location:**	MnDOT District 2 Headquarters 3920 Highway 2 West, Bemidji MN 56601

6. Coordination Opportunities

Future constructions projects were discussed during the meeting that had the potential to add pull off sites or widen ramps/shoulders for use by MSP staff for safe truck inspections. The construction project planning lists maintained by MnDOT and counties and the pull off site locations desired by MSP should be compared to each other to identify partnering opportunities in the next 10 years. The MSP CVO unit should be included in project scoping documents in the future.

One suggestion brought up as this meeting was to use Street Light data to track seasonal harvest trips by trucks, primarily in the months of August, September, and October and compare this to off season trips.

Commercial Vehicle Weight Enforcement Investment Plan
District 3 Freight Stakeholder Outreach Meeting

Date/Time: March 29, 2018
10:00 am – 11:00 am

Location: MnDOT District 3 Headquarters
7694 Industrial Park Rd, Baxter, MN 56425

Meeting Minutes

1. Attendees

Name	Organization	Name	Organization
Andrew Andrusko	MnDOT OFCVO	Kelvin Howieson	MnDOT District 3
Julie Whitcher	MnDOT OFCVO	Jon Mason	MnDOT District 3
Rob Holschbach	MnDOT OFCVO	Ken Hansen	MnDOT District 3
Pat Osborn	MnDOT OFCVO	Loren Fellbaum	Todd County
Jon Olsen	Minnesota State Patrol	Chris Byrd	Benton County
Thomas Schmitz	Minnesota State Patrol	Brian Rahn	Lakeside Engineers
Scott Boerner	Minnesota State Patrol	Amy Worzella	Lakeside Engineers
Steve Voss	MnDOT District 3		

2. State Patrol

MSP only has six tech sergeants for truck enforcement in the District. There is a need to increase staff in the District and throughout the state. There are three WIM that are used to aid in truck enforcement.

When MSP performs enforcement saturations in the District, some companies shut down if they know that MSP is patrolling in the area.

Additional safe and legal areas for MSP to stage and pull over trucks would aid in enforcing local roads. There should be coordination between MSP and counties to identify potential locations for enforcement pull off sites and places to park out of service trucks. Alerting MSP about seasonal load restrictions will also help to plan for enforcement strategies in the counties. MSP has received complaints about inspections being performed in the rest areas so they seldom direct trucks to the rest area. Private truck lots do not welcome MSP enforcement.

State law does not allow parking on highway system ramps or shoulders. There can be safety issues with sight distance (trucks blocking other motorist's sight distance). MSP is often called to remove trucks parking on ramps.

3. County Input

MSP is called on by local counties, townships, and cities for truck enforcement. There is a need for additional patrols on the county and local roads to enforce local short haul truck trips.

Date/Time:	March 29, 2018 10:00 am – 11:00 am	**Location:**	MnDOT District 3 Headquarters 7694 Industrial Park Rd, Baxter, MN 56425

The District has issues with trucks parking on shoulders and ramps overnight due to lack of parking lots. The mainline pavement and ramp shoulders are being damaged because of the trucks parking on them.

Bridges and pavement in the District needs protection from trucks hauling agricultural loads. There are very few roads with posted load restrictions. These loads are causing damage to pavements in the counties. Some of the products of interest are grain, sugar beets, corn, potatoes, mulch, logging, manure/fertilizer, and cattle. Garbage and aggregate trucks are also hauling overweight loads. Some locations of concern are:

-Benton County – CSAH 2 (US 10 to MN 25), US 10, MN 25, MN 95
-Benton County – US 10/MN 33 grain elevators
-Old Highway 23 by Payneville (Low and narrow railroad bridge)
-Railroad bridge over CSAH 6 by Howard Lake (just north of US 12, under 12 feet)
-Pedestrian bridges over US 169 (house movers)

There is concern where OSOW permitted loads can travel within the District, especially wind farms. The counties have identified acceptable routes for the wind farm loads and construction vehicles related to wind farm installation (for example, trucks have to deviate to county roads for a portion of US 71 SB that cannot accommodate OSOW). There are different permit restrictions and applications for the Interstate and local roads that can cause confusion to the drivers so they use roads they should not be on. Usually the last three miles of the trip are on local roads which have different permit requirements.

There should be education available or required for haulers and local law enforcement that teaches about overweight and overheight load impacts.

Date/Time: March 29, 2018
11:15 am – 12:35 pm

Location: MnDOT District 3 Headquarters
7694 Industrial Park Road, Baxter MN 56425

Meeting Minutes

1. Attendees

Name	Organization	Name	Organization
Andrew Andrusko	MnDOT OFCVO	Ken Hansen	MnDOT District 3
Julie Whitcher	MnDOT OFCVO	Darren Nelson	MnDOT District 3
Pat Osborn	MnDOT OFCVO	Jim Hallgren	MnDOT District 3
Rob Holschbach	MnDOT OFCVO	Steve Voss	MnDOT District 3
Jon Olsen	Minnesota State Patrol	Brian Rahn	Lakeside Engineers
Thomas Schmitz	Minnesota State Patrol	Amy Worzella	Lakeside Engineers
Scott Boerner	Minnesota State Patrol		

2. Project Overview

Overall, Minnesota State Patrol (MSP) wanted to know if there are any concerns from the District 3 as to the enforcement needs in the District.

3. Existing Facilities

WIM #37

The WIM site on I-94 east of St. Cloud is used frequently by MSP. It has a camera and remote access to WIM information. There are challenges locating safe pull off locations for inspections.

WIM #44

The WIM site on CSAH 1 does not have a camera. The low truck volume at this location and the age/poor condition of the WIM are reasons it is not used for enforcement.

Mobile Operations in the District

MSP performs specific enforcement saturations in the District at different locations. These saturations involve deploying several staff that weigh trucks with portable WIM and portable scales.

Enforcement saturation sites and inspection sites noted at the meeting:

-Middle Spunk Lake Rest Area (I-94) – not during peak traffic volumes
-Enfield Rest Area (I-94) – not during peak traffic volumes
-Rum River Rest Area (US 169) – frequently used
-Brainerd Lakes Rest Area (MN 371) – frequently used
-Central Minnesota Rest Area (US 10) - used frequently

Date/Time:	March 29, 2018 11:15 am – 12:35 pm	**Location:**	MnDOT District 3 Headquarters 7694 Industrial Park Road, Baxter MN 56425

The tech sergeants are equipped with portable scales (6 per vehicle). The portable scales (analog) are 20+ years old and due for replacement. The existing analog scales are repaired and certified in house. There are new portable scales on the market that are digital and lighter in weight. If new portable scales are procured training will be needed and the cost to repair and certify the new scales will be higher.

4. **Existing Highway Operations**

Enforcement

MSP has a list of locations that would benefit from enforcement pull off sites:

-US 10 north of MN 15
-MN 23 west of Wade Park
-I-94 between St. Cloud and Sauk Center
-MN 15 southbound between St. Cloud and I-94
-US 71 between Long Prairie and Browerville (cattle loads)
-US 12 between Montrose and Delano
-I-94 EB between St. Cloud and Clearwater
- Pull off areas near I-94 and Clearwater or Monticello, could be off freeway
- MN 101/US 169 between I-94 and US 10 (garbage and aggregate haulers)
- MN 24 between I-94 and US 10 (bypass)
- I-94 WB west of Monticello (high priority)

Infrastructure Protection

There is one load posted bridge in the District, the Whitefish Creek Bridge which will be replaced in two years. The bridge was built in 1921 and widened in the 1930's. No structural analysis was performed for this bridge.

Pavement on portions of MN 27 is in poor condition. A future construction project will replace the damaged pavement. Other areas of the District with small shoulders may have shoulder width increased if heavy trucks are damaging the shoulders. MN 22 near South Richmond is load posted due to milk haulers.

5. **Needs Assessment Exercise – Future Investments**

Meeting attendees were asked to place green dots on a map indicating specific high priority needs for the District 3 pertaining to weigh stations. The results of the exercise are documented in the table and picture below.

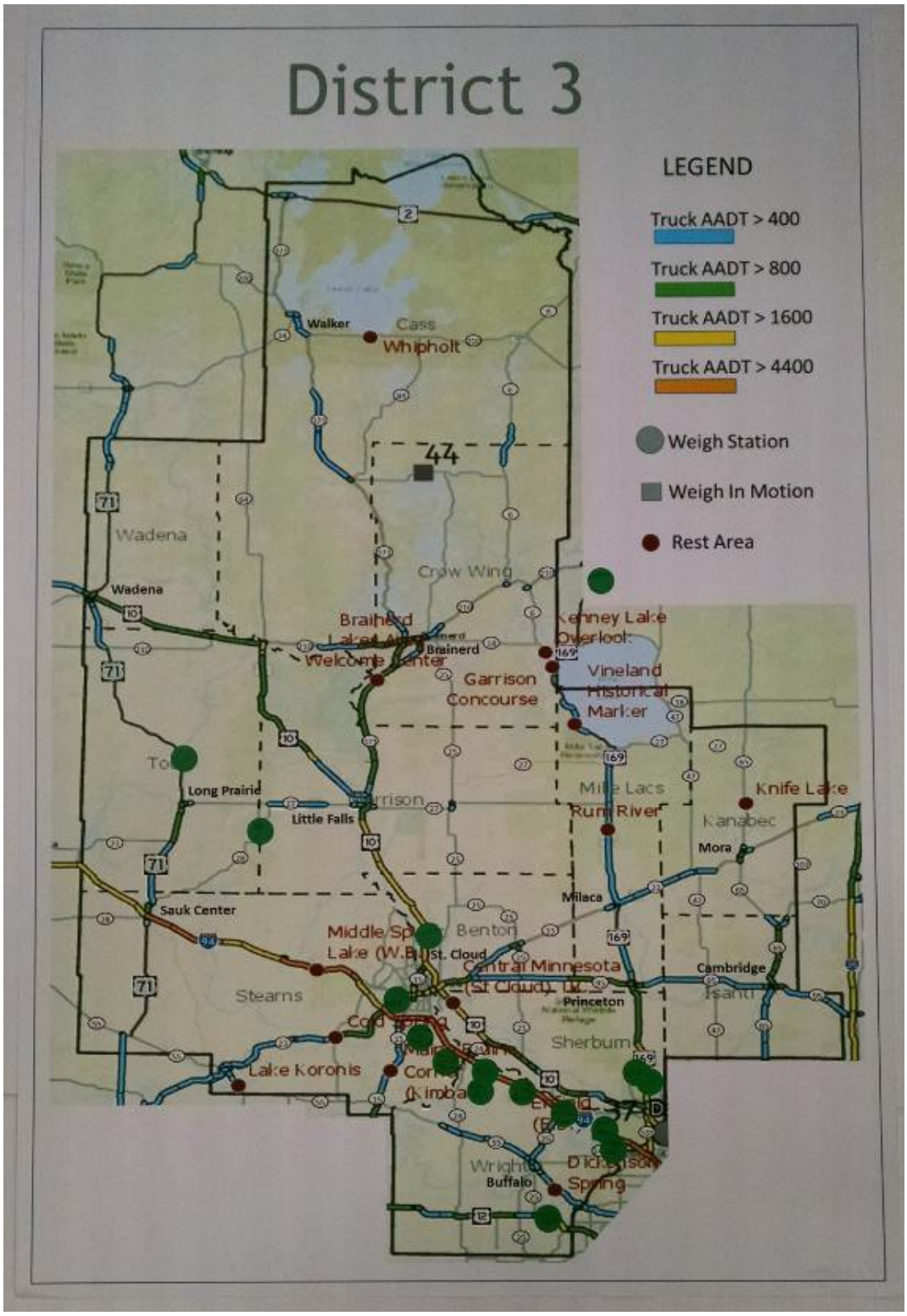
Date/Time: March 29, 2018
11:15 am – 12:35 pm

Location: MnDOT District 3 Headquarters
7694 Industrial Park Road, Baxter MN 56425

Number	District	Location	Purpose
1	3	District-wide	Additional MSP staffing
2	3	US 71 between Long Prairie and Wadena	Route monitoring with WIM
3	3	MN 28 between Sauk Center and Little Falls	Aggregate truck enforcement
4	3	US 10 between St. Cloud and Little Falls	Route monitoring with WIM
5	3	MN 23 between I-94 and MN 15	Route monitoring with WIM
6	3	District-wide	Syncing of plans and funding
7	3	District-wide	Coordination of resources for implementation
8	3	I-94 between MN 24 and MN 25	WIM EB
9	3	I-94 between MN 24 and MN 25	WIM
10	3	I-94 between MN 24 and MN 25	Pull off site
11	3	I-94 and MN 25	Inspection site
12	3	I-94 between MN 25 and MN 101	High truck volumes
13	3	I-94 between MN 23 and MN 101	Crash risks
14	3	US 169 between US 10 and MN 95	Route monitoring with WIM
15	3	US 169 between US 10 and MN 95	Route monitoring with WIM
16	3	US 12 between MN 25 and Delano	Route monitoring with WIM

Commercial Vehicle Weight Enforcement Investment Plan
District 3 State Strategic Collaboration Meeting

Date/Time:	March 29, 2018 11:15 am – 12:35 pm	**Location:**	MnDOT District 3 Headquarters 7694 Industrial Park Road, Baxter MN 56425



Date/Time:	March 29, 2018 11:15 am – 12:35 pm	**Location:**	MnDOT District 3 Headquarters 7694 Industrial Park Road, Baxter MN 56425

6. Coordination Opportunities

Future constructions projects were discussed during the meeting that had the potential to add pull off sites or widen ramps/shoulders for use by MSP staff for safe truck inspections. The construction project planning lists maintained by MnDOT and counties and the pull off site locations desired by MSP should be compared to each other to identify partnering opportunities in the next 10 years. The MSP CVO unit should be included in project scoping documents in the future. Projects discussed at the meeting include:

-I-94 (Monticello to Clearwater) 2020 to 2022
-I-94 (east of Rodgers) old pull of sites that can be rehabilitated

Any future considerations for pull off sites will have to take into account that new right of way (ROW) takes four years to be approved. Projects 5+ years out may be able to accommodate wider shoulders/extra pavement that would require new ROW. Projects under 5 years will have to work within the project limits.

Existing RTMC CCTV cameras on I-94 may be able to aid officers in locating overweight trucks identified by the #37 WIM information and camera images.

Commercial Vehicle Weight Enforcement Investment Plan
District 4 State Strategic Collaboration Meeting

Date/Time: February 15, 2018
10:00 am – 12:00 pm

Location: MnDOT District 4 Headquarters
1000 Highway 10 West, Detroit Lakes, MN 56501

Meeting Minutes

1. Attendees

Name	Organization	Name	Organization
Andrew Andrusko	MnDOT OFCVO	Les Mjerketvedt	MnDOT District 4
Julie Whitcher	MnDOT OFCVO	Jane Butzer	MnDOT District 4
Pat Osborn	MnDOT OFCVO	Justin Knopf	MnDOT District 4
Rob Holschbach	MnDOT OFCVO	Tom Lundberg	MnDOT District 4
Jon Olsen	Minnesota State Patrol	Bridget Miller	MnDOT District 4
Duane Amundson	Minnesota State Patrol	Victoria Nill (Skype)	MnDOT District 4
Rick Schueler	Minnesota State Patrol	Mary Safgren	MnDOT District 4
Mike Theis	Minnesota State Patrol	Chris Thorson	MnDOT District 4
Brian Rahn	Lakeside Engineers	Lori Vanderhider	MnDOT District 4
Amy Worzella	Lakeside Engineers	Shiloh Wahl	MnDOT District 4
		Mark Waisanen	MnDOT District 4

2. Project Overview

Overall, Minnesota State Patrol (MSP) wanted to know if there are any concerns from District 4 as to the management of the scales by MSP and enforcement needs in the District.

3. Existing Facilities

Red River Weigh Scale

The Red River facility was built in 1995/1996. The platform scales are automated and 30,000-40,000 trucks pass through the weigh station each month. Drivewyze is present at the site for preclearance. The overall condition of the building and pavement is good. Five cameras are installed on the exterior of the building to monitor the parking lot and ramps. A weigh in motion sensor (WIM) is located on the on-ramp. Fiber communications is connected to the building. There are three MSP tech sergeants and seven CVI (Civilian Vehicle Inspectors) that are assigned to work at this location.

Date/Time:	February 15, 2018 10:00 am – 12:00 pm	**Location:**	MnDOT District 4 Headquarters 1000 Highway 10 West, Detroit Lakes, MN 56501

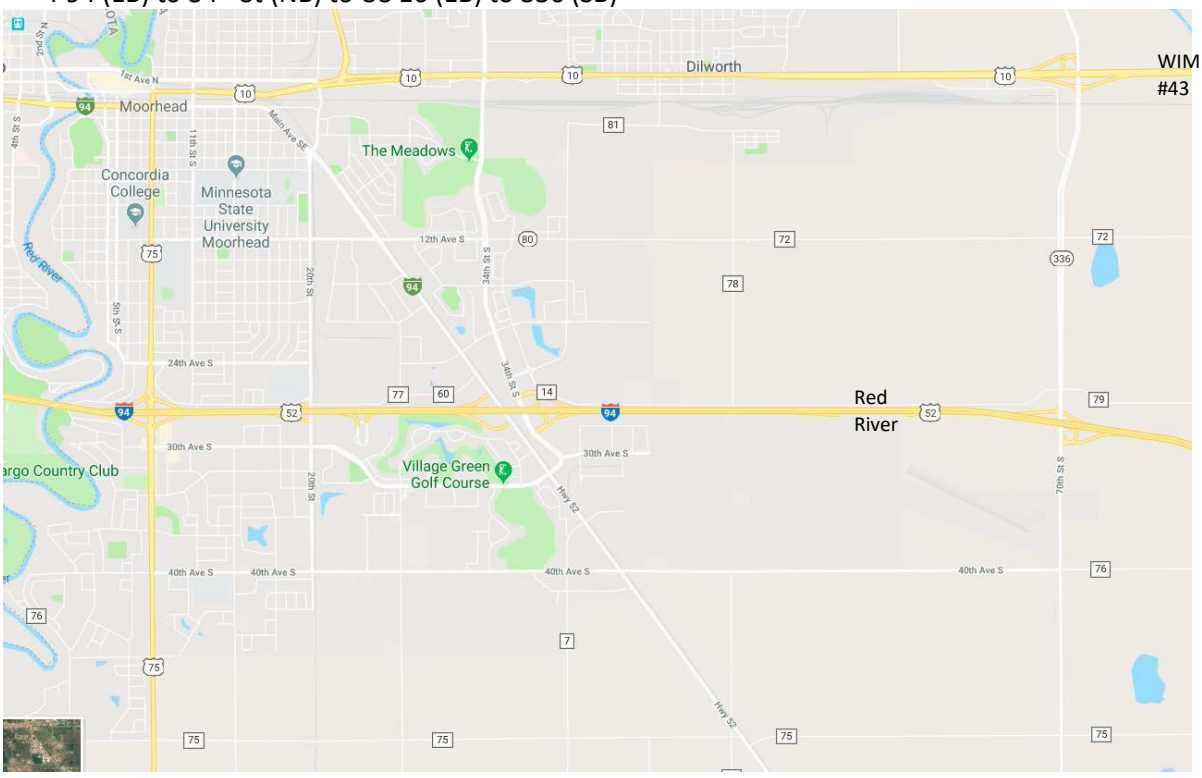
Existing Needs Identified:
Mainline WIM – It is desired to install a mainline WIM just prior to the Red River weigh station off ramp to verify that trucks who quality for preclearance are not overweight.

Lighting – The onsite lighting will be updated in 2018. The new lights will be LED.

Truck Parking – There is not enough parking spaces to allow trucks to park overnight for rest. Currently there are 20 truck parking spaces. The space is needed for out of service vehicles and active inspections. Additional parking spaces at this location would be welcome, but there is likely a lack of available land to expand parking. There are also concerns with vandalism and littering that may occur at night.

Bypass Routes – There are several bypass routes that trucks use to avoid the weigh station. It is difficult to enforce all the bypass routes. There have been complaints from local residents regarding the truck traffic on US 75/8th St.

-US 10 (EB) to 336 (SB)
-US 75/8th St (NB) to US 10 (EB) to 336 (SB)
-US 75/8th St (SB) to County 75 (EB) to MN 336 (NB)
-I-94 (EB) to 34th St (NB) to US 10 (EB) to 336 (SB)



Bypass Signing – Signing that directs trucks to the Red River weigh scale on the bypass routes may direct a truck where they do not want to go and could be illegal. There is a law that indicates a sworn officer cannot direct a truck more than five miles from their intended route. Additional signs on the interstate (I-94) prior to

the bypass routes could direct trucks to stay on the interstate to enter the weigh station and this would be legal because they are posted on the interstate. Pat Osborn mentioned that there are three signs prior to the Worthington weigh station on I-90 EB to direct trucks to the weigh station.

Inspection Buildings – Inspection buildings would be desired at this location. The site is often windy and cold (20 mph winds are not uncommon).

Maintenance – Contractors maintain the grass and pick up the garbage. Snow plowing is done by the District. Sometimes the officer's assist with snow removal and a small tractor or snow blower may assist the officers for snow removal near the building and when the District is busy with heavy snow and cannot get to the weigh station. There was a concern that the propane tanks may not be in a good location. They are located on the west side of the building as the trucks approach. There is a small piece of concrete barrier that protects it now, but additional concrete barrier may make it safer if a truck deviates from the lane and heads toward the propane tanks/building.

WIM #43

There is an existing WIM on US 10 (#43) near 90th St. There is no camera or internet access at this location for MSP to use this site for enforcement. This is a site that would be used often for mobile operations if real time images or snapshot images of trucks were available on a website similar to other WIM/camera installations in the state. Communications to this site may be an issue and needs to be investigated.

Mobile Operations in the District

MSP performs specific enforcement saturations 18 times a year in the District at different locations. These saturations involve deploying 5-6 staff that weigh trucks with portable WIM and portable scales. One location that is used for saturations and individual truck inspections regularly is the old Moorhead weigh scale site.

Enforcement saturation sites noted at the meeting:

-East Grand Forks
-Alexandria
-Moorhead

The three tech sergeants are equipped with portable scales (6 per vehicle). The portable scales (analog) are 20+ years old and due for replacement. The existing analog scales are repaired and certified in house. There are new portable scales on the market that are digital and lighter in weight. If new portable scales are procured, training will be needed and the cost to repair and certify the new scales will be higher.

MSP is called on by local counties and cities for truck enforcement. There are some locally trained MCSAP officers in the District, but they prefer MSP to inspect the trucks.

RWIS Sites – A question was posed if existing RWIS sites could be adapted for enforcement by installing a WIM and camera. This option would need further investigation and coordination within the District.

Date/Time:	February 15, 2018 10:00 am – 12:00 pm	**Location:**	MnDOT District 4 Headquarters 1000 Highway 10 West, Detroit Lakes, MN 56501

4. Existing Highway Operations

Enforcement

Aggregate Business Permits – There is concern that the new aggregate business permits which allow trucks to haul 96,000 lbs. of aggregate are going to damage the roads with the extra weight. Pits are located in the state near US 10 and MN 336 to haul loads and avoid the Red River scale using bypass routes.

Agriculture Seasonal Loads – There are seasonal loads that are checked on in the District such as the beets and grain that have potential to be overweight.

Infrastructure Protection

- US 12 and MN 7 – Road weight restrictions in place so county road pavements do not take more damage.
- Trucks entering the state from North Dakota via MN 210.
- US 9 – Pavement rutting.
- County 26 – Pavement rutting and damage due to trucks.

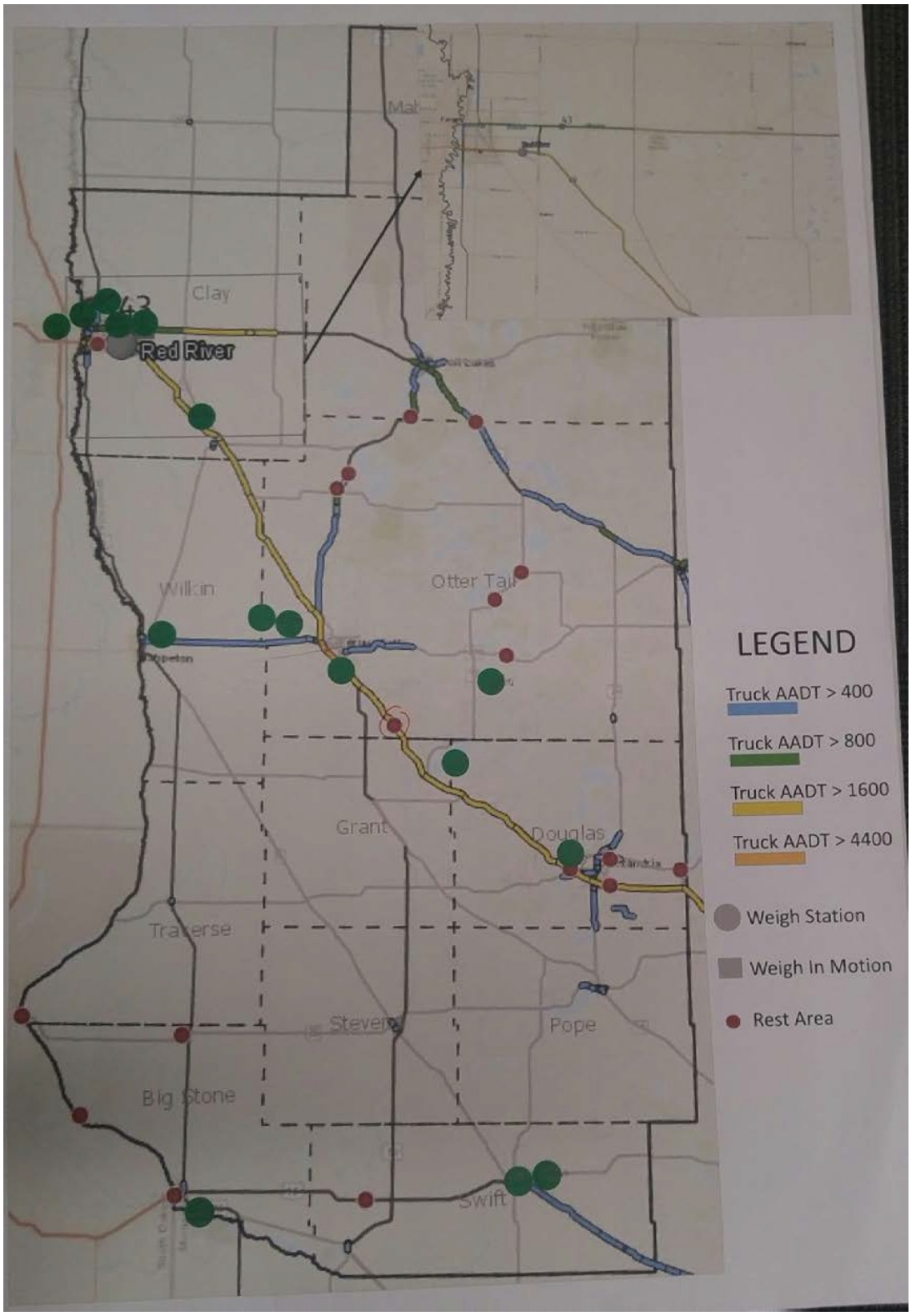
5. Needs Assessment Exercise – Future Investments

Meeting attendees were asked to place green dots on a map indicating specific high priority needs for District 4 pertaining to weight enforcement. The results of the exercise are documented in the table and picture below.

Number	District	Location	Purpose
1	4	Red River Weigh Station	Inspection Shed
2	4	Red River Weigh Station	Bypass route monitoring with WIM
3	4	WIM #43 (US 10)	Improvements to WIM (function and communications)
4	4	WIM #43 (US 10)	Camera at WIM
5	4	Railroad Bridge over US 10 (Moorhead)	Bridge protection. Several bridge hits at this location.
6	4	I-94 WB between Moorhead and Fergus Falls	Westbound route monitoring with WIM
7	4	210 just east of ND/MN border	Pull off site for truck inspections
8	4	210 just west of Fergus Falls	Potential construction project coordination in 2020
9	4	210 between ND border and Fergus Falls	Bypass route monitoring with WIM
10	4	I-94 Between Fergus Falls and Alexandria	Potential rest area project coordination
11	4	MN 9 near Benson	Potential construction project coordination
12	4	MN 9 near Benson	Higher truck volume corridor
13	4	US 12 at SD border	OSOW enforcement
14	4	I-94 just west of Alexandria	Potential rest area project coordination
15	4	I-94 Between Fergus Falls and Alexandria	Route monitoring with WIM
16	4	Statewide	Increase staffing to enhance enforcement

Commercial Vehicle Weight Enforcement Investment Plan
District 4 State Strategic Collaboration Meeting

Date/Time:	February 15, 2018 10:00 am – 12:00 pm	**Location:**	MnDOT District 4 Headquarters 1000 Highway 10 West, Detroit Lakes, MN 56501



Date/Time:	February 15, 2018 10:00 am – 12:00 pm	**Location:**	MnDOT District 4 Headquarters 1000 Highway 10 West, Detroit Lakes, MN 56501

6. Coordination Opportunities

Several future constructions projects were mentioned during the meeting that had the potential to add pull off sites or widen ramps/shoulders for use by MSP staff for safe truck inspections. The construction project planning lists maintained by MnDOT and the pull off site location list created by MSP should be compared to each other to identify partnering opportunities in the next 10 years. Projects discussed at the meeting include:

- Rest Areas from Fergus Falls to Alexandria
- Bergin Lake Interchange
- Rest Area just east of 20th Street (Moorhead)
- MN 9 from Barnesville (I-94) to Breckenridge (MN 210)
- Pull offs near Fergus Falls
- US 59 from Detroit Lakes to Mahnomen
- I-94 (ND border to Moorhead) Reconstruction 2026 EB
- I-94 (Moorhead to ND Border) Reconstruction 2028 WB

Moving the weigh station facility east of the current location and combining the weigh station with a rest area was an idea brought up by the group. Relocating the facility would allow for more truck parking and less bypass routes available to trucks.

There is also a need to coordinate with the Design Engineers Council to talk about the best practices to include pull-off sites and widened pavement (ramp and shoulders) into design plans.

District 4 has created a shoulder widening study and a passing lane/mobility study that should be reviewed by this project.

Commercial Vehicle Weight Enforcement Investment Plan
Metro District State Strategic Collaboration Meeting

Date/Time: March 23, 2018
10:30 am – 12:00 pm

Location: Water's Edge Building, District Headquarters
1500 W. County Rd B-2, Roseville MN 55113

Meeting Minutes

1. Attendees

Name	Organization	Name	Organization
Andrew Andrusko	MnDOT OFCVO	Ron Ranchle	MnDOT Metro District
Julie Whitcher	MnDOT OFCVO	Mike Kamnikar	MnDOT Metro District
Pat Osborn	MnDOT OFCVO	Lynne Bly	MnDOT Metro District
Rob Holschbach	MnDOT OFCVO	Terrence Beltz	FHWA
Michael Wayne	Minnesota State Patrol	Brian Kary	MnDOT RTMC
Timothy Smith	Minnesota State Patrol	Brian Rahn	Lakeside Engineers
Thomas Smith	Minnesota State Patrol	Amy Worzella	Lakeside Engineers
Mark Hibbard	Minnesota State Patrol		

2. Project Overview

Overall, Minnesota State Patrol (MSP) wanted to know if there are any concerns from the Metro District as to the management of the scales by MSP and enforcement needs in the District.

3. Existing Facilities

St. Croix Weigh Scale

The St. Croix weigh scale located on I-94 WB has been updated with building renovations, pavement rehabilitation, electronic message signs, cameras, LED lighting, overheight detectors, PA system, screening system with WIM on the entrance ramp, and a rehabilitated pit/scale within the last four years. Drivewyze is present at the site for preclearance. The overall condition of the building and pavement is good. There are six to eight staff (MSP tech sergeants and CVI (Civilian Vehicle Inspectors) that are typically assigned to work Monday to Friday in two shifts from 6am to 2pm and 2pm to 10pm (3-4 people per shift)).

Existing Needs Identified:
Mainline WIM – A mainline WIM would aid in pre-screening trucks in conjunction with the Drivewyze preclearance system. Some of the present difficulty in installing a mainline WIM is the condition and geometrics of the pavement on I-94 WB prior to the scale. Mainline WIM needs a flat, straight area to obtain accurate readings. A bridge deck may be a good location to install a WIM, but this will need to be investigated for feasibility.

Date/Time:	March 23, 2018 10:30 am – 12:00 pm	**Location:**	Water's Edge Building, District Headquarters 1500 W. County Rd B-2, Roseville MN 55113

Exit Ramp Storage – The exit ramp to the weigh scale is not long enough to store trucks during the morning rush hour. Trucks form a queue that backs up into the mainline traffic and causes congestion. It was suggested that additional vehicle detectors could be installed on the mainline to monitor the queue and have the weight scale close temporarily when trucks begin blocking the mainline. Promoting the use of preclearance applications may alleviate the number of trucks that are required to weigh at the station during peak traffic times.

I-94 Pavement Project – There is a pavement project on I-94 in the next three years that will be near the St. Croix weigh scale. This project may be able to aid in installing a mainline WIM, increase ramp length, and aid in installing new overhead weigh station regulatory signs by coordinating mainline traffic closures.

Truck Parking – The parking space is adequate for out of service vehicles and active inspections. Only during 24-hour saturation details does the parking lot get full.

Bypass Routes – These are the primary bypass routes that trucks use to avoid the weigh station.
-MN 95 (Just prior to the weigh station)
-MN 36 (Stillwater crossing)

Inspection Shed – An inspection shed is desired at this location by MSP.

Maintenance – Contractors maintain the grass, pick up the garbage and clean the building. Snow plowing is done by the District.

Dayton Port Weigh Scale

The Dayton Port weigh scale located on US 10 EB/WB has been updated with scale electronics, cameras, LED lighting, overheight detectors, updated overhead regulatory signs, and a new single pit/scale within the last four years. Drivewyze is present at the site for preclearance. The overall condition of the building is good. The pavement is in need of rehabilitation and work is planned in 2019 to repair it along with installing on-site electronic signs. There is one CVI (Civilian Vehicle Inspector) assigned to work Monday to Friday, with a second CVI staff member planned to start working at this scale in April 2018.

Existing Needs Identified:
Pavement Rehabilitation – The parking lot is too small and there are onsite pavement drainage issues. The pavement is scheduled to be fixed in 2019. Currently out of service trucks are sent to the nearby rest area.

Exit Ramp Storage – The exit ramp is not long enough to store trucks during peak traffic hours. Trucks form a queue that backs up into the mainline traffic and causes congestion. It was suggested that additional vehicle detectors could be installed on the mainline to monitor the queue and have the weight scale close temporarily when trucks begin blocking the mainline. Promoting the use of preclearance applications may alleviate the number of trucks that are required to weigh at the station during peak traffic times. There are also concerns at this site that the entrance ramps to US 10 are not long enough to allow trucks to accelerate safely into the traffic stream. Lengthening both the exit and entrance ramps is desired at this weigh scale.

Date/Time:	March 23, 2018 10:30 am – 12:00 pm	**Location:**	Water's Edge Building, District Headquarters 1500 W. County Rd B-2, Roseville MN 55113

Bypass Routes – There are many bypass routes that trucks use to avoid the weigh scale. Trucks use county and local roads that are not load posted. There have been complaints from local citizens about heavy trucks on their roads. MN 101 has been used for saturation enforcements with portable WIM to enforce bypassing trucks on this route.

Maintenance – Contractors maintain the grass. Snow plowing is done by the District.

Forest Lake Pull Off Sites

The Forest Lake pull off site located on I-35 SB will be updated with scale electronics, a new single pit/scale, ramp WIM, internal electronic signs, operator shelter, and new overhead regulatory signs in 2019-2020 as part of a larger mainline construction project that will improve the ramps. Drivewyze will be present at the site for preclearance. A minimum of one CVI (Civilian Vehicle Inspector) will be assigned to work two shifts (Monday to Friday) per week. Until these improvements are in place, MSP will continue to use this site for enforcement saturations and mobile enforcement inspections.

The Forest Lake pull off site located on I-35 NB will be turned over to the Metro District and not used for CVO operations in the future.

Existing Needs Identified:

Bypass Routes – There are many bypass routes that trucks use to avoid the weigh station. The major routes are listed below:

-US 61
-Lake Drive (MN 97)
-Main Street

Maintenance – Contractors maintain the grass. Snow plowing is done by the District.

WIM #36 and WIM #47

There are existing WIMs on MN 36 (#36 & #47) west of Stillwater. There is a camera and remote access to WIM information at both of these locations. #36 is not calibrated correctly so is seldom used. #47 is fairly new and will be used more in the future.

WIM #37

The WIM site on I-94 north of Minneapolis has a camera and remote access to WIM information. This site is outside of the Metro District but could be used to track overweight trucks entering the District on I-94 EB.

WIM #40

This site is located on US 52 in St. Paul. There is a project to create an inspection site on a ramp upstream (NB) of the WIM. Until then, there is no place for officers to pull over a truck safely. A SB inspection site is desired, but due to land availability to construct a pull off site it is unlikely to be built.

Date/Time:	March 23, 2018 10:30 am – 12:00 pm	**Location:**	Water's Edge Building, District Headquarters 1500 W. County Rd B-2, Roseville MN 55113

WIM #42
The WIM site on US 61 west of the Wisconsin border has a camera and remote access to WIM information. This WIM is used often for enforcement. Trucks are taken to local lots and park and rides for inspections.

WIM #45
The WIM site on CSAH 14 is not used due to its location and low truck volume.

Mobile Operations in the District
MSP performs specific enforcement saturations in the District at different locations. These saturations involve deploying 5-6 staff that weigh trucks with portable WIM and portable scales. One location that is used for saturations and individual truck inspections regularly is the Le Sueur rest area.

Enforcement saturation sites noted at the meeting:
-Le Sueur Rest Area (located in D7)
-Maple Grove Rest Area
-St. Croix Rest Area
-Elm Creek Rest Area
-WIM #42 (US 61)

The eight tech sergeants are equipped with portable scales (6 per vehicle). The portable scales (analog) are 20+ years old and due for replacement. The existing analog scales are repaired and certified in house. There are new portable scales on the market that are digital and lighter in weight. If new portable scales are procured training will be needed and the cost to repair and certify the new scales will be higher.

MSP is called on to enforce speeds in work zones in the Metro District.

4. Existing Highway Operations

Enforcement
Enforcement areas change based on seasonal truck loads. There are currently 25 full staff members that work in the Metro District, including both tech sergeants and CVI staff.

Infrastructure Protection

Truck rollovers are an issue at specific locations on freeways in the Metro District. There are ITS systems in place to warn truck drivers they are traveling too fast. The RTMC has been tracking truck rollover locations and is working with Drivewyze to geofence the areas that trucks should be warned about as they pass though the city.

5. Needs Assessment Exercise – Future Investments
Meeting attendees were asked to place green dots on a map indicating specific high priority needs for the Metro District pertaining to weigh stations. The results of the exercise are documented in the table and picture below.

Commercial Vehicle Weight Enforcement Investment Plan
Metro District State Strategic Collaboration Meeting

Date/Time: March 23, 2018
10:30 am – 12:00 pm

Location: Water's Edge Building, District Headquarters
1500 W. County Rd B-2, Roseville MN 55113

Number	District	Location	Purpose
1	Metro	St. Croix Weigh Station	Inspection Shed
2	Metro	St. Croix Weigh Station	Mainline WIM for preclearance
3	Metro	I-494 and US 52	Truck Rollovers
4	Metro	I-35 and MN 36	Truck Rollovers
5	Metro	I-35 between I-494 and MN 13	Route monitoring with WIM
6	Metro	I-494 between US 12 and MN 55	Route monitoring with WIM
7	Metro	US 12 near Metro District west border	Route monitoring with WIM
8	Metro	I-94 between MN 101 and MN 610	Permanent weigh scale facility
9	Metro	MN 101 between US 10 and I-94	Route monitoring with WIM
10	Metro	Dayton Port Weigh Station	Multi-Platform scale
11	Metro	US 8 between Chisago City and St. Croix Falls	Route monitoring with WIM
12	Metro	CSAH 95 west of St. Croix Falls	Route monitoring with WIM
13	Metro	District-wide	On-site weigh station maintenance
14	Metro	District-wide	Facility maintenance

Commercial Vehicle Weight Enforcement Investment Plan
Metro District State Strategic Collaboration Meeting

Date/Time:	March 23, 2018 10:30 am – 12:00 pm	**Location:**	Water's Edge Building, District Headquarters 1500 W. County Rd B-2, Roseville MN 55113

Date/Time:	March 23, 2018 10:30 am – 12:00 pm	**Location:**	Water's Edge Building, District Headquarters 1500 W. County Rd B-2, Roseville MN 55113

6. Coordination Opportunities

Future constructions projects were discussed during the meeting that had the potential to add pull off sites or widen ramps/shoulders for use by MSP staff for safe truck inspections. The construction project planning lists maintained by MnDOT and the pull off site locations desired by MSP should be compared to each other to identify partnering opportunities in the next 10 years. Projects discussed at the meeting include:

- I-35 (2019)
- I-94 (2019-2020)
- Brockton Auxiliary Lanes

It was mentioned that the Metro District pavement and bridge engineers should be consulted about specific pavements and bridges of concern in the District.

The historical volumes for I-35 and I-94 may show that when the weigh scales were built, there was less traffic that had to be accommodated and ramp lengths were adequate. MSP and MnDOT mentioned that traffic volumes have noticeably increased over the past 5 years in the District.

Commercial Vehicle Weight Enforcement Investment Plan
District 6 Freight Stakeholder Outreach Meeting

Date/Time: February 16, 2018
9:30 am – 10:30 am

Location: MnDOT District 6 Headquarters
2900 48th St NW, Rochester, MN 55901

Meeting Minutes

1. Attendees

Name	Organization	Name	Organization
Andrew Andrusko	MnDOT OFCVO	Tyler Mandler	MnDOT District 6
Julie Whitcher	MnDOT OFCVO	Ronda Allis	MnDOT District 6
Rob Holschbach	MnDOT OFCVO	Kurt Wayne	MnDOT District 6
Jon Olsen	Minnesota State Patrol	Mark Schoenfelder	MnDOT District 6
Christine Boggevic	Minnesota State Patrol	Fausto Cabral	MnDOT District 6
David Hanson	Minnesota State Patrol	Joe Jacobsom	Rochester City Lines
Brian Rahn	Lakeside Engineers	Kerry Ney	Oshkosh Corp/McNeilus
Amy Worzella	Lakeside Engineers	Tom Faella	LaCrosse Area Planning Committee
Guy Kohlnhofer	Dodge County	Brian Pogodzinski	Houston County

2. State Patrol

MSP only has four tech sergeants available for truck enforcement for all 11 counties in the District. There is a need to increase staff in the District and throughout the state.

When MSP performs enforcement saturations in the District, some companies shut down if they know that MSP is patrolling in the area.

Milk haulers are a concern for being overweight.

State law does not allow parking on highway system ramps or shoulders. There can be safety issues with sight distance (trucks blocking other motorist's sight distance).

3. County Input

MSP is called on by local counties and cities for truck enforcement. The counties prefer and welcome MSP to enforce trucks on the county roads. There is a need for additional patrols on the county roads to enforce trucks.

Low posted bridges need protection from seasonal farm trucks hauling loads in the spring. These loads are also causing damage to pavements in the counties.

Date/Time:	February 16, 2018 9:30 am – 10:30 am	**Location:**	MnDOT District 6 Headquarters 2900 48th St NW, Rochester, MN 55901

There is concern where OSOW permitted loads can travel within the District.

There should be education available or required for haulers that teaches them about overweight and overheight load impacts. There is a class that is sometimes offered at the University Extension for this purpose.

4. Private Company Input

There was a question regarding how Minnesota's truck crash rates compared to national truck crash rates.

There is a lack of certified private scales for local haulers to weigh their loads within a reasonable distance of their route.

There is a lack of truck parking in the District. This includes park and rides, waysides, and rest areas. MnDOT will be expanding truck parking at two rest areas in 2020. They are adding nine spots to both the Hayward and Oakland Woods rest areas.

Allowable weights are an issue in MN because MN is more restrictive than bordering states and Canada.

Different private companies should be looked at when considering improvements due to the diversity in truck types and loads that are being hauled in the District, such as heavy trucks, OSOW permit trucks, and flat- bed trucks.

Commercial Vehicle Weight Enforcement Investment Plan
District 6 State Strategic Collaboration Meeting

Date/Time: February 16, 2018
10:45 am – 12:15 pm

Location: MnDOT District 6 Headquarters
2900 48th St NW, Rochester, MN 55901

Meeting Minutes

1. Attendees

Name	Organization	Name	Organization
Andrew Andrusko	MnDOT OFCVO	Tyler Mandler	MnDOT District 6
Julie Whitcher	MnDOT OFCVO	Ronda Allis	MnDOT District 6
Rob Holschbach	MnDOT OFCVO	Kurt Wayne	MnDOT District 6
Jon Olsen	Minnesota State Patrol	Mark Schoenfelder	MnDOT District 6
Christine Boggevic	Minnesota State Patrol	Todd Stevens	MnDOT District 6
David Hanson	Minnesota State Patrol	Brian Rahn	Lakeside Engineers
		Amy Worzella	Lakeside Engineers

2. Existing Facilities

I-35 Clarks Grove Pull off Sites

The Clarks Grove pull off sites located on I-35 NB and SB have been primarily used for enforcement saturations with portable WIM and portable scales due to lack of a building and bathrooms. Drop down signs are deployed to direct trucks to the NB site when a saturation is in progress. Drivewyze is present at the site for preclearance. The overall condition of the pavement is good. There are four MSP tech sergeants that are assigned to work in the District that cover these pull off sites and other enforcement sites.

Existing Needs Identified and Planned:
Platform Scale – A platform scale will be installed in the near future on the NB site (2019-2020) so MSP staff do not have to weigh trucks with portable scales.

Building – A temporary building (inspection trailer with wheels) will be installed in the near future on the NB site when the platform scale is installed. It will not have running water or bathrooms.

VMS Signing – VMS signs will be placed prior to the NB site to direct trucks into the facility. These signs should be able to be activated remotely. Regulatory signs should be added so a CVI can operate the site alone.

Mainline WIM – A mainline WIM will be installed on I-35 NB as part of the platform scale upgrade to aid in screening trucks. The ramp pavement at this site will also be improved to accommodate faster screening of trucks and aid in turning movements. The pavement work is being coordinated with District 6.

Date/Time:	February 16, 2018 10:45 am – 12:15 pm	**Location:**	MnDOT District 6 Headquarters 2900 48th St NW, Rochester, MN 55901

Bypass Routes – There are limited bypass routes that trucks use to avoid these pull off sites due to the nearest interchanges on I-35 being further away from the sites. These sites are not a permanent weigh station sites so trucks only avoid them when an enforcement saturation is in progress.

Maintenance – Contractors maintain the grass. Snow plowing is done by the District.

I-90 Nodine Pull off Sites

The Nodine pull off sites located on I-90 EB and WB have been primarily used for enforcement saturations with portable WIM and portable scales due to lack of a building and bathrooms. Drivewyze is present at the site for preclearance. The overall condition of the pavement is good. There are no plans currently to add additional screening technology at this site.

Maintenance – Contractors maintain the grass. Snow plowing is done by the District.

WIM #32

There is an existing WIM on US 52 north of Rochester. There is a camera and remote access to WIM information at this location. The primary issue here is that there is limited places to direct a truck for inspection. MSP noted this is the most reliable WIM site in the District for weight and speed data.

WIM #39

The WIM at this location near Winona, MN has a camera and remote access to WIM information. The WIM sensors have inconsistent readings due to the poor pavement which make it difficult to rely on them for enforcement. The WIM sensors are located in Wisconsin and WisDOT does not plan on fixing the pavement until 2023. One solution may be to install new WIM in Minnesota close to this location where the pavement is better. Trucks use this route to bypass the weigh scales on I-90 (Nodine and Sparta, WI).

WIM #46

A camera is not installed at this location in Dodge County on 120th Ave so it does not get utilized often. MSP does not have access to the weight data at this site.

WIM #26

The WIM at this location on I-35 north of Clarks Grove has a camera and remote access to WIM information. The WIM sensors currently have inconsistent readings due to calibration issues so MSP has not used this site as frequently as the others. Trucks can be directed to a nearby rest area or one of the Clarks Grove pull off sites for inspection.

WIM #59/#61

MSP staff was not aware there was a WIM with camera at this location. This location could be used in conjunction with the Nodine pull off sites in the future.

In general, there was discussion on calibrating existing WIM sites so they can provide more accurate information to MSP. MnDOT calibrates the WIM at least one time per year, but they may need calibration

more often (2-3 times a year). District 6 may be able to assist with calibrations by having a MnDOT heavy truck (in which the load weight is known) drive over the WIM to check the accuracy of the readings. New WIM can cost $200,000+ per site. New sites should avoid installations where there is rock in the roadbed foundation because it make is more difficult to maintain the sites long term.

Mobile Operations in the District

MSP performs specific enforcement saturations in the District at different locations. These saturations involve deploying 5-6 staff that weigh trucks with portable WIM and portable scales.

Enforcement saturation sites noted at the meeting:

-Clarks Grove NB and SB
-Nodine EB and WB
-WIM #32 on US 52 north of Rochester
-WIM #39 near Winona, MN

The four tech sergeants are equipped with portable scales (6 per vehicle). The portable scales (analog) are 20+ years old and due for replacement. The existing analog scales are repaired and certified in house. There are new portable scales on the market that are digital and lighter in weight. If new portable scales are procured training will be needed and the cost to repair and certify the new scales will be higher.

MSP is called on by local counties and cities for truck enforcement. Some counties have portable scales and staff trained to perform inspections. Many times the counties prefer to have MSP enforce trucks.

3. Existing Highway Operations

Enforcement

MSP noted that truck drivers will change their routes once they know an enforcement saturation is in place. They can only stay in one location a few hours before the trucks find new routes.

Infrastructure Protection

- There are clearance issues on US 52 and I-90
- I-35 NB incoming trucks from Iowa
- Bridge hits on I-35 and I-90 from large equipment auction sites in Blooming Prairie and Owatonna that have unpermitted oversize loads
- MN 30 has poor pavement

4. Needs Assessment Exercise – Future Investments

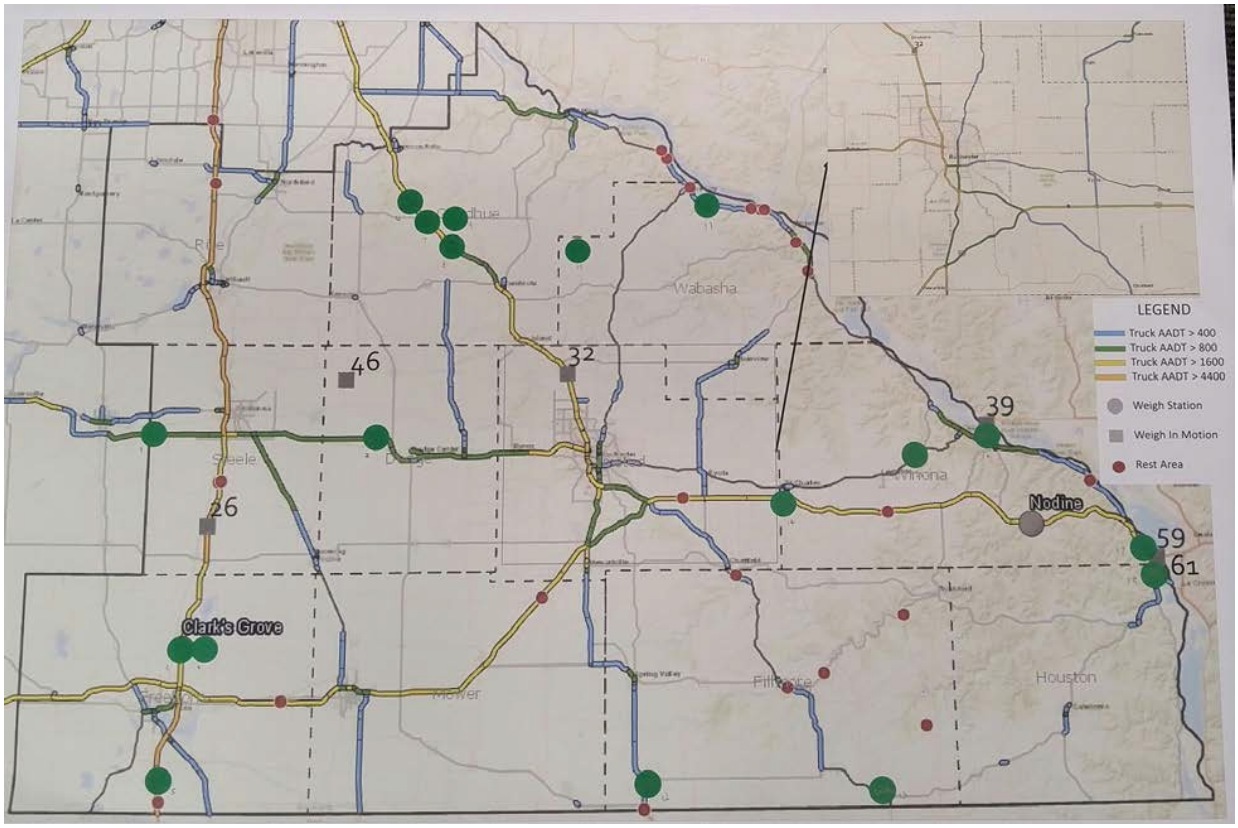
Meeting attendees were asked to place green dots on a map indicating specific high priority needs for District 6 pertaining to weigh stations. The results of the exercise are documented in the table and picture below.

Commercial Vehicle Weight Enforcement Investment Plan
District 6 State Strategic Collaboration Meeting

Date/Time: February 16, 2018
10:45 am – 12:15 pm

Location: MnDOT District 6 Headquarters
2900 48th St NW, Rochester, MN 55901

Number	District	Location	Purpose
1	6	US 14 west of I-35	Coordination of enforcment personnel between Districts
2	6	US 14 in Dodge County	Potential construction project coordination (two lane to four lane)
3	6	I-35 Clarks Grove Pull Off Site	Improvements to existing location
4	6	I-35 Clarks Grove Pull Off Site	Heavy truck volume location due to distribution centers
5	6	I-35 NB at Iowa Border	Build a permanent weigh station
6	6	US 52 between St. Paul and Rochester	Pull off site for truck inspections
7	6	US 52 between St. Paul and Rochester	Shoulder widening for truck inspections
8	6	US 52 between St. Paul and Rochester	Potential construction project coordination (Hader Park and Ride)
9	6	US 52 between St. Paul and Rochester	Potential construction project coordination (Hader Park and Ride)
10	6	Statewide	Increase staffing to enhance enforcement
11	6	US 61 between Lake City and Maple Springs	Route monitoring with WIM
12	6	US 63 at Iowa Border	Route monitoring with WIM
13	6	US 52 at Iowa Border	Route monitoring with WIM
14	6	I-90 between Rochester and Fremont	Route monitoring with WIM
15	6	US 14 in Winona County	Protection of pavement (seasonal harvest loads)
16	6	US 14/16 at Wisconsin Border	Route monitoring with WIM (at state entry pinch point)
17	6	I-90 at Wisconsin Border	Route monitoring with WIM (at state entry pinch point)
18	6	I-90 at Wisconsin Border	Use exiting WIM facilities



Date/Time:	February 16, 2018 10:45 am – 12:15 pm	**Location:**	MnDOT District 6 Headquarters 2900 48th St NW, Rochester, MN 55901

5. Coordination Opportunities

Future constructions projects were discussed during the meeting that had the potential to add pull off sites or widen ramps/shoulders for use by MSP staff for safe truck inspections. The construction project planning lists maintained by MnDOT and the pull off site locations desired by MSP should be compared to each other to identify partnering opportunities in the next 10 years. Projects discussed at the meeting include:

- Rest area parking expansions at Hayward and Oakland Woods
- I-90 pavement resurfacing
- US 52 SB reconstruction
- Bridge work on I-90
- US 52 Hader park and ride

The possibility of building a larger weigh station facility on I-35 NB closer to the Iowa border was discussed by the group. This area should be looked at closer for truck volumes, origin-destination of trucks, real estate issues for location, and how having a larger facility would impact staffing and inspections levels for MSP.

There was discussion to increase education efforts to the public regarding the impact of overweight vehicles and the importance of what CMV enforcement does for safety and infrastructure protection.

MSP CVO wants to be included in future project scoping documents issued by District 6.

District 6 recently completed a Manufacturer's Perspective Study that may contain information useful for this study.

The District 6 materials and bridge engineer should be consulted on historical bridge and pavement issues in the District.

Date/Time: March 28, 2018
10:00 am – 11:00 am

Location: MnDOT District 7 Headquarters
2151 Bassett Drive, Mankato, MN 56001

Meeting Minutes

1. Attendees

Name	Organization	Name	Organization
Andrew Andrusko	MnDOT OFCVO	Gordon Regenscheid	MnDOT District 7
Julie Whitcher	MnDOT OFCVO	Chad Wilde	Blue Earth County
Rob Holschbach	MnDOT OFCVO	Wayne Stevens	Brown County
Pat Osborn	MnDOT OFCVO	Nick Klisch	Cottonwood County
Jon Olsen	Minnesota State Patrol	Tim Stahl	Jackson County
Jean Cemensky	Minnesota State Patrol	Brian Rahn	Lakeside Engineers
		Amy Worzella	Lakeside Engineers

2. State Patrol

MSP only has six troopers, three tech sergeants, and 5 CVI available for truck enforcement for all 23 counties in the District. There is a need to increase staff in the District and throughout the state. There is one fixed weigh scale facility on I-90 EB near Worthington and three WIM that are used to aid in truck enforcement.

When MSP performs enforcement saturations in the District, some companies shut down if they know that MSP is patrolling in the area.

Additional safe and legal areas for MSP to stage and pull over trucks would aid in enforcing local roads. There should be coordination between MSP and counties to identify potential locations for enforcement pull off sites. Alerting MSP about seasonal load restrictions will also help to plan for enforcement strategies in the counties.

State law does not allow parking on highway system ramps or shoulders. There can be safety issues with sight distance (trucks blocking other motorist's sight distance). MSP is often called to remove trucks parking on ramps.

3. County Input

MSP is called on by local counties, townships, and cities for truck enforcement. There is a need for additional patrols on the county and local roads to enforce local short haul truck trips.

There is an increase in truck volume in the District due to large distribution centers, including facilities for FedEx, Amazon, and Walmart. Walmart does not allow trucks to park on their lots overnight, so often the distribution trucks park on shoulders, ramps, and local streets near the facility until it opens. Mankato has trucks parking on shoulders and ramps overnight due to lack of parking lots within or near the city. The

Date/Time:	March 28, 2018 10:00 am – 11:00 am	**Location:**	MnDOT District 7 Headquarters 2151 Bassett Drive, Mankato, MN 56001

mainline pavement and ramp shoulders are being damaged because of the trucks parking on them.

Jackson County has increased truck volume due to ethanol plants and aggregate hauling. A weigh scale in the county would be welcome to enforce trucks.

Load posted bridges and pavement needs protection from trucks hauling agricultural loads. These loads are causing damage to pavements in the counties. Some of the products of interest are grain, hogs, corn, timber, and beans. There has been a significant increase in agriculture loads from 1988 to 2015 (went from 16 million tons to 32 million tons annually).

There is concern where OSOW permitted loads can travel within the District, especially loads for several wind farms that are being built in the next two years in the District. The counties have identified acceptable routes for the wind farm loads and construction vehicles related to wind farm installation. Brown county does not issue OSOW permits to protect the older bridges in this county. There are different permit restrictions for the Interstate and local roads that can cause confusion to the drivers so they use roads they should not be on with larger loads. Special hauling vehicles (grain carts, 6 axle trucks) are allowed if they obtain a permit and comply with the regulations.

There should be education available or required for haulers and local law enforcement that teaches about overweight and overheight load impacts.

Date/Time: March 28, 2018
11:15 am – 12:45 pm

Location: MnDOT District 7 Headquarters
2151 Bassett Drive, Mankato MN 56001

Meeting Minutes

1. Attendees

Name	Organization	Name	Organization
Andrew Andrusko	MnDOT OFCVO	Bob Williams	MnDOT District 7
Julie Whitcher	MnDOT OFCVO	John Zehnder	MnDOT District 7
Pat Osborn	MnDOT OFCVO	Jed Falgren	MnDOT District 7
Rob Holschbach	MnDOT OFCVO	Andrew Lawver	MnDOT District 7
Jon Olsen	Minnesota State Patrol	Chase Fester	MnDOT District 7
Jean Cemensky	Minnesota State Patrol	Brian Rahn	Lakeside Engineers
		Amy Worzella	Lakeside Engineers

2. Project Overview

Overall, Minnesota State Patrol (MSP) wanted to know if there are any concerns from the District 7 as to the management of the scales by MSP and enforcement needs in the District.

3. Existing Facilities

Worthington Weigh Scale

The Worthington weigh scale located on I-90 EB has been updated with a new building, scale electronics, on-site electronic message signs, PA system, overheight detector, overhead regulatory signs, cameras, LED lighting, new pavement, and new platform/load cells within the last four years. Drivewyze is present at the site for preclearance. The site is completely new. There are nine staff (five MSP tech sergeants and four CVI (Civilian Vehicle Inspectors) that are assigned to the District. Typically, two CVI staff are assigned to work at Worthington Monday to Friday in varying shifts from 7am to 6pm and one additional CVI staff member will be assigned to this site in April 2018. The average trucks weighed per day at this weigh scale is 500 trucks.

Existing Needs Identified:

Bypass Routes – There are several bypass routes that trucks use to avoid the weigh scale. Trucks use county and local roads that are not load posted. These are some of the bypass routes that trucks use to avoid the weigh scale.

-MN 60 (future plans may include regulatory signing that directs trucks to weigh on I-90)
-US 59

-US 71
-Several county roads around the Worthington scale

Maintenance – Contractors maintain the grass, pick up the garbage and clean the building. Snow plowing is done by the District.

WIM #27
The WIM site on MN 60 near St. James is used infrequently because it does not have a camera. It would be used more often is a camera was installed and there were pull off sites nearby for inspections.

WIM #49
This WIM site located on I-90 west of the Worthington weigh scale and is used frequently to identify overweight trucks as they head to the scale. It has a camera and remote access to WIM information.

WIM #48
The WIM site on CSAH 5 does not have a camera. It would be used if a camera was installed, primarily to monitor heavy aggregate trucks.

Mobile Operations in the District
MSP performs specific enforcement saturations in the District at different locations. These saturations involve deploying several staff that weigh trucks with portable WIM and portable scales.

Enforcement saturation sites and inspection sites noted at the meeting:
-Adrian Rest Area (I-90)
-Watonwan River Rest Area (MN 60)
-Minnesota Valley Rest Area (US 169 NB) -used monthly
-New Ulm Rest Area (US 14)

The three tech sergeants are equipped with portable scales (6 per vehicle). The portable scales (analog) are 20+ years old and due for replacement. The existing analog scales are repaired and certified in house. There are new portable scales on the market that are digital and lighter in weight. If new portable scales are procured training will be needed and the cost to repair and certify the new scales will be higher.

4. Existing Highway Operations

Enforcement
MSP is called on to enforce trucks on local roads. Tech sergeants patrol Mankato, Le Sueur, and Lavern areas. There will be additional OSOW loads due to three new wind farms in the next two years.

Infrastructure Protection
There are pavements in poor condition, but most of the pavement issues will not be addressed until 10-15 years from now due to funding. MN 60 and I-90 pavements are of concern. Shoulders near ethanol plants are

Date/Time:	March 28, 2018 11:15 am – 12:45 pm	**Location:**	MnDOT District 7 Headquarters 2151 Bassett Drive, Mankato MN 56001

deteriorating at a fast rate because of trucks parking on the shoulder. Some areas have posted no parking on shoulders near these facilities. MN 109 east of Winnebago is an area of concern.

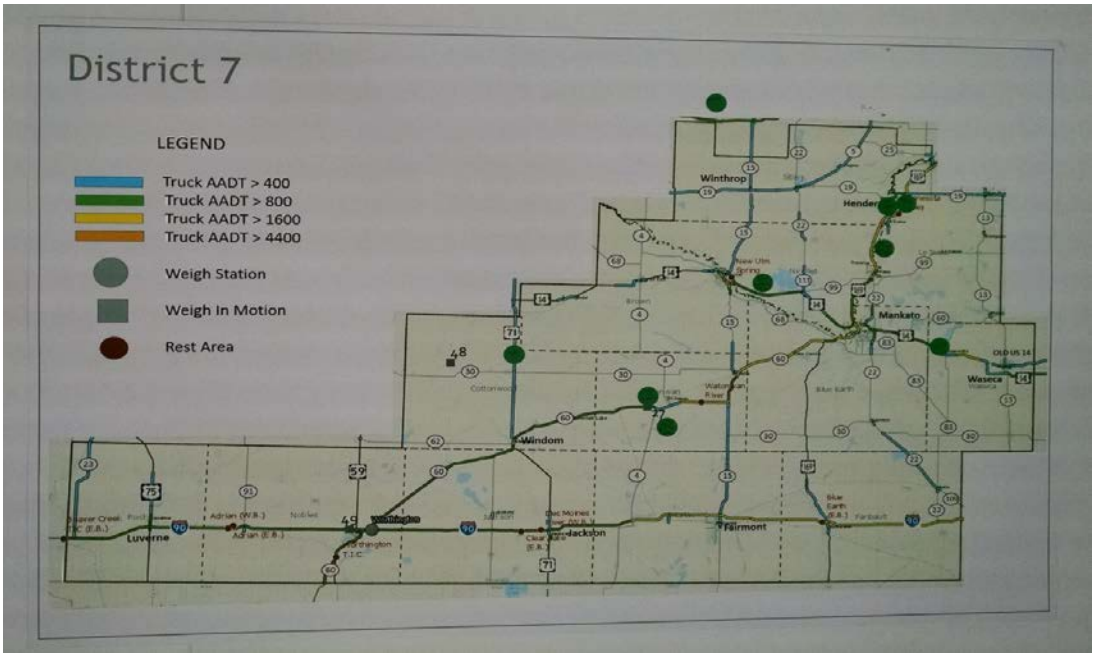
There are a few railroad overpass bridges in the District that are struck because of low clearance:

-MN 4 (clearance is 14' 6")
-US 71 near Sanborn
-US 71 near Windom

5. Needs Assessment Exercise – Future Investments

Meeting attendees were asked to place green dots on a map indicating specific high priority needs for the District 7 pertaining to weigh stations. The results of the exercise are documented in the table and picture below.

Number	District	Location	Purpose
1	7	District-wide	Additional MSP staffing
2	7	US 71 between MN 30 and US 14	Route monitoring with WIM
3	7	WIM #27 (MN 60)	Pull off location needed
4	7	WIM #27 (MN 60)	Needs WIM Camera
5	7	US 14 between New Ulm and Nicollet	Route monitoring with WIM, Pull off site
6	7	US 14 between Mankato and Waseca	Route monitoring with WIM
7	7	US 169 north of St. Peter	Pull off locations needed
8	7	Le Sueur Rest Area (US 169)	Inspection site
9	7	US 169 north of Le Sueur Rest Area	Route monitoring with WIM



Date/Time:	March 28, 2018 11:15 am – 12:45 pm	**Location:**	MnDOT District 7 Headquarters 2151 Bassett Drive, Mankato MN 56001

6. Coordination Opportunities

Future constructions projects were discussed during the meeting that had the potential to add pull off sites or widen ramps/shoulders for use by MSP staff for safe truck inspections. The construction project planning lists maintained by MnDOT and counties and the pull off site locations desired by MSP should be compared to each other to identify partnering opportunities in the next 10 years. The MSP CVO unit should be included in project scoping documents in the future. Projects discussed at the meeting include:

-US 14 from New Ulm to Nicollet
-Wider shoulders on new pavement projects
-Have yearly meeting to coordinate on projects (MSP, OFCVO, District 7)

One suggestion brought up as this meeting was to use RWIS sites for new WIM enforcement locations. The District can provide existing and planned RWIS locations to the OFCVO.

Commercial Vehicle Weight Enforcement Investment Plan
District 8 Freight Stakeholder Outreach Meeting

Date/Time: May 7, 2018
10:00 am – 11:00 am

Location: MnDOT District 8 Headquarters
2505 Transportation Rd, Willmar, MN 56201

Meeting Minutes

1. Attendees

Name	Organization	Name	Organization
Andrew Andrusko	MnDOT OFCVO	Bill Knofczynski	MnDOT District 8
Julie Whitcher	MnDOT OFCVO	Lindsey Bruer	MnDOT District 8
Pat Osborn	MnDOT OFCVO	Steve Kubista	Chippewa County
Jon Olsen	Minnesota State Patrol	Keith Berndt	Redwood County
Tony Mazzone	Minnesota State Patrol	Mel Odens	Kandiyohi County
Tom Schmitz	Minnesota State Patrol	Isaac Jensen	Upper Minnesota Valley Regional Development Commission
Jason Danielson	Meeker County Sheriff	Netty Fiedler	Southwest Regional Development Commission
Brian Rahn	Lakeside Engineers	Amy Worzella	Lakeside Engineers

2. State Patrol

MSP has two tech sergeants assigned for truck enforcement for all 12 counties in the District that are based in the Marshall and Montevideo/Canby areas. Additional MSP staff from District 7 cover northern parts of District 8, due to the state patrol boundaries differing from the district boundaries. There is a need to increase staff in the District and throughout the state.

There are no fixed weigh station facilities in the District. There is one permanent WIM with a camera (located on US 212) that is used to aid in truck enforcement. This WIM data can be looked at to determine past overweight vehicle counts. There is no portable WIM assigned to this District, but the portable WIM at Red River could be borrowed for use in District 8.

Additional safe and legal areas for MSP to stage and pull over trucks would aid in enforcing local roads. There should be coordination between MSP and counties to identify potential locations for enforcement pull off sites. Alerting MSP about seasonal load restrictions or areas where trucks are running heavy will also help to plan for enforcement strategies in the counties.

Date/Time:	May 7, 2018 10:00 am – 11:00 am	**Location:**	MnDOT District 8 Headquarters 2505 Transportation Rd, Willmar, MN 56201

3. County Input

District 8 has many businesses tied to the agriculture industry. This district produces sugar beets, grains, corn, beans, and milk that are hauled to processing facilities in and out of the District. There are several beet pile locations (where farmers bring their beets year-round) located in the District, and beets are produced heavily in Swift, Redwood, and Renville counties. Many of these loads are carried by truck due to rail not being available. There are milk processing facilities in South Dakota and Litchfield with the potential for heavy milk loads coming to them.

Other businesses of concern in the District that have the potential for overweight trucks are hog farms, turkey farms, manufactured homes (2 businesses producing them), wind farms and ethanol plants (bringing corn to the facility). The major wind farms in the District are located in Yellow Medicine County, with more wind farms being planned in the District in the next year with larger sized wind mills.

Low posted bridges and poor pavement needs protection from trucks hauling agricultural loads year-round. Two areas of poor pavement identified at the meeting were MN 4 and MN 40. There are several at risk bridges in the District that are posted year-round and seasonally. There have been issues with people taking down the posted warning signs. Many businesses, such as milk, timber, aggregate, and septic tanks can by law obtain permits to have larger loads and this is of concern to the counties for the restricted bridges.

There are a few railroad bridges that are low clearance (on US 71 near Sanborn and US 212 near granite falls) of concern, but these bridges are owned by the railroad and the District cannot improve them. One other area of concern is MN 30 in Pipestone County (narrow area) near the river for oversized vehicles.

Kandiyohi County does enforcement of trucks with a crew from the Sheriff's office. They have two sets of portable scales they use for enforcement. Additional WIM in this county would help them know when/where the trucks are traveling with overweight loads. Specific enforcement has been done in winter for beet hauling.

From looking at the current OSOW map, there is no good east-west route in the northern part of the District for oversize loads. There is a wind farm depot on MN 23 between Willmar and St. Cloud (near the rail yard) where wind farm manufacturers store parts.

Truck parking is primarily at private truck stops. There are no full-scale rest areas in the District. Truck parking on shoulders and ramps for rest does not appear to be an issue in the District.

MN 269 near Jasper is being used as a bypass route for the South Dakota weigh station on I-29. There is interest in increasing enforcement in this area.

Date/Time: May 7, 2018
11:15 am – 12:45 pm

Location: MnDOT District 8 Headquarters
2505 Transportation Rd, Willmar MN 56201

Meeting Minutes

1. Attendees

Name	Organization	Name	Organization
Andrew Andrusko	MnDOT OFCVO	Bill Knofczynski	MnDOT District 8
Julie Whitcher	MnDOT OFCVO	Lindsey Bruer	MnDOT District 8
Pat Osborn	MnDOT OFCVO	Megan DeSchepper	MnDOT District 8
Jon Olsen	Minnesota State Patrol	Lowell Flaten	MnDOT District 8
Jean Cemensky	Minnesota State Patrol	Jon Kronke	MnDOT District 8
Tony Mazzone	Minnesota State Patrol	Jerry Eggert	MnDOT District 8
Tom Schmitz	Minnesota State Patrol	John Hager	MnDOT District 8
Brian Rahn	Lakeside Engineers	Shannon Wait	MnDOT District 8
Amy Worzella	Lakeside Engineers		

2. Existing Facilities

WIM #33
This WIM site on US 212 east of Olivia is used frequently for truck enforcement by the two tech sergeants in the District. It has a camera and remote access to WIM information. It occasionally needs calibration and this service is performed by MnDOT.

WIM #34
This WIM site located on MN 23 south of MN 7 is not currently used for truck enforcement. This site does not have a camera. There is an ethanol plant on MN 23 near this WIM that is of interest for enforcing overweight trucks. Adding a camera may be beneficial for future truck enforcement in this area.

Mobile Operations in the District
There are two tech sergeants equipped with portable scales (6 per vehicle) in the District that are based in Marshall and Montevideo/Canby areas. The portable scales (analog) are 20+ years old and should be evaluated if they need replacement in the next ten years. The existing analog scales are repaired and certified in house by MSP. There is also coverage by MSP in the northern part of the District by staff that also patrol District 7. The MSP boundaries overlap MnDOT District 7 and 8 in this area.

Date/Time:	May 7, 2018 11:15 am – 12:45 pm	**Location:**	MnDOT District 8 Headquarters 2505 Transportation Rd, Willmar MN 56201

3. Existing Highway Operations

Enforcement

MSP is called on to enforce trucks on local roads. There will be additional OSOW loads due to new wind farms planned in the next two years. Enforcement saturations occur for specific needs, as an example MSP performed a saturation near a meat packing plant in Long Prairie on US 71.

MN 269 near Jasper (3-4 mile segment) is being used as a bypass route for the South Dakota weigh station on I-29. There is interest in increasing enforcement in this area.

Infrastructure Protection

There are pavements in poor condition in the District. MN 4 and MN 40 are of concern. Shoulders near ethanol plants and on beet hauler routes are deteriorating because of the heavy loads.

There are two railroad overpass bridges in the District that are of concern because of low clearance:

-US 212 near Granite
-US 71 near Sanborn

MN 30 near Pipestone has some narrow lanes near the river that are difficult for OSOW to travel through.

MnDOT can make available the list of low posted bridges or bridges with restrictions in the District, along with segments of road that have pavement in poor condition.

4. Needs Assessment Exercise – Future Investments

Meeting attendees were asked to place green dots on a map indicating specific high priority needs for District 8 pertaining to weigh stations and enforcement. The results of the exercise are documented in the table and picture below.

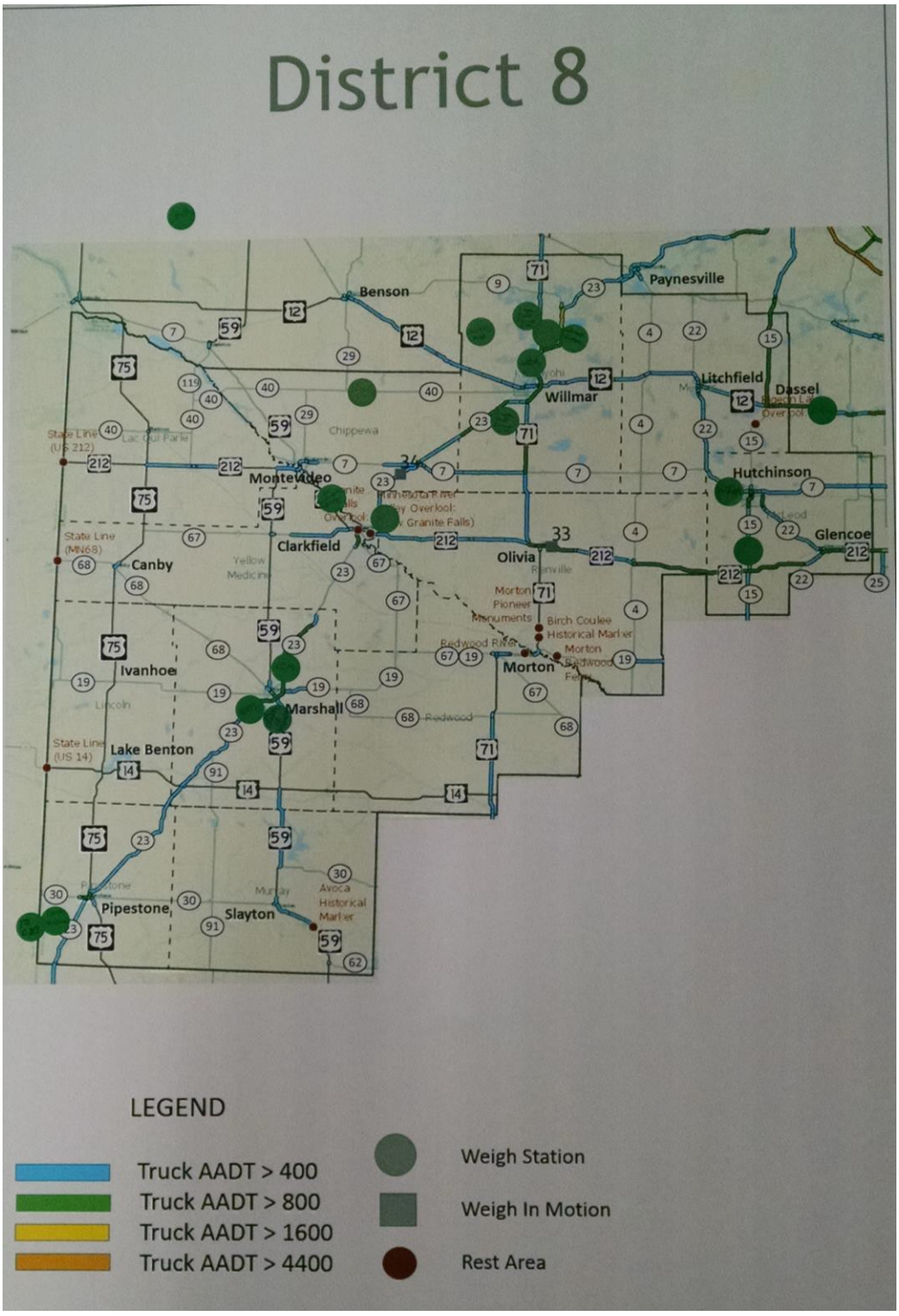
Date/Time: May 7, 2018
11:15 am – 12:45 pm

Location: MnDOT District 8 Headquarters
2505 Transportation Rd, Willmar MN 56201

Number	Highway	Location	Identified Needs
8.1	MN 269	Between SD border and MN 23 (near Jasper)	Data collection; Enforcment of trucks bypassing the South Dakota I-29 weigh scale
8.2	MN 23	South of MN 19	Route monitoring with WIM
8.3	MN 23	North of MN 19	Route monitoring with WIM
8.4	US 59	South of MN 19	Heavy truck traffic
8.5	US 212	Between Clarkfield and Montevideo	Low clearance bridge protection
8.6	MN 23	Between US 212 and MN 7	Ethanol plant
8.7	MN 23	WIM #34 (Between US 212 and MN 7)	Install camera at WIM; Ethanol plant enforcement
8.8	MN 23	West of Willmar	Sugar beet dump site; beet hauler route
8.9	MN 40	Willmar to US 75	Beet hauler route; poor pavement in this section need protection
8.10	US 71	North of Willmar, before US 71/MN 23 Split	Increase MSP staffing and enforcement; sugar beet dump site, route monitoring with WIM
8.11	US 12	East of Dassel	Route monitoring with WIM
8.12	MN 22	West of Hutchinson	Route monitoring with WIM
8.13	MN 15	Between US 212 and MN 7	Route monitoring with WIM
8.14	MN 4	Between MN 19 and MN 23	Poor pavement; additional enforcment to protect the pavement
8.15	MN 212	WIM #33 (East of Olivia)	Pull off areas for truck enforcement
		District-Wide	Increase staffing to enhance enforcement

Commercial Vehicle Weight Enforcement Investment Plan
District 8 State Strategic Collaboration Meeting

Date/Time:	May 7, 2018 11:15 am – 12:45 pm	**Location:**	MnDOT District 8 Headquarters 2505 Transportation Rd, Willmar MN 56201



Date/Time:	May 7, 2018 11:15 am – 12:45 pm	**Location:**	MnDOT District 8 Headquarters 2505 Transportation Rd, Willmar MN 56201

5. Coordination Opportunities

Future constructions projects were discussed during the meeting that had the potential to add pull off sites or widen ramps/shoulders for use by MSP staff for safe truck inspections. The construction project planning lists maintained by MnDOT and counties and the pull off site locations desired by MSP should be compared to each other to identify partnering opportunities in the next 10 years. District 8 will provide MSP their 10-year plan to review as soon as it is completed.

The MSP CVO unit should be included in project scoping documents or made aware of partnering opportunities in the future. Some roadways that have future projects in the District include US 12, MN 40, MN 4 and MN 55 near Paynesville.

District 8 offered to partner with MSP to use existing MnDOT truck stations as a place to inspect trucks. MSP has occasionally used these facilities in the past for saturations.

There is a freight planning document "Amber Roads of Grain" that utilized FAF4 data to determine agriculture routes throughout the state for specific commodities (grain, corn, pigs, etc.). This document may be of use for this study.

Commercial Vehicle Weight Enforcement Investment Plan
Central Office State Strategic Collaboration Meeting

Date/Time: February 16, 2018
3:00 pm – 4:30 pm

Location: MnDOT Central Office
395 John Ireland Blvd, St. Paul, MN 55155 G22

Meeting Minutes

1. Attendees

Name	Organization	Name	Organization
Andrew Andrusko	MnDOT OFCVO	Dan Rowe	MnDOT TPIMS
Julie Whitcher	MnDOT OFCVO	Ed Lutgen	MnDOT Bridge
Rob Holschbach	MnDOT OFCVO	Ted Coulianos	MnDOT OFCVO
Brian Rahn	Lakeside Engineers	Chris Moates	MnDOT Building Services
Amy Worzella	Lakeside Engineers	Linda Heath (Skype)	MnDOT ESS Electrical

2. Central Office Input

TPIMS – Truck parking should be looked at from a safety standpoint. Public places trucks can park are rest areas and weigh stations.

Buildings – The temporary inspection buildings planned for Forest Lake and Clarks Grove are considered MnDOT owned buildings. Budgets can be an issue with new permanent facilities. A 20-year plan for state buildings is being developed.

Bridges – Vertical clearance is an issue on some corridors. On I-35 there are 63 clearance issues between the Iowa border and Duluth. Bridge hits throughout the state average one hit per week and more occur during construction season. Bridge hit data is not stored in a GIS database since past records did not include lat/long information. Most bridge hits are the result of unpermitted trucks.

There is great concern with at-risk bridges being overloaded. Bridges are typically inspected every two years, but some bridges are inspected every year due to their poor condition. There are several commodity haulers, such as milk, logging, grain and aggregate that are of concern because they are permitted to have heavier loads.

There are 1300 posted bridges in the state. A few of them are on trunk highways and are scheduled to be fixed so they do not need to be posted in the future. The posted signs can be confusing to drivers. The intent is to keep heavy trucks off the posted bridges as much as possible.

It would be beneficial to share the at-risk and posted bridge list with MSP. Even though some bridge locations are well known to need protection, it is sometimes difficult for MSP to stage enforcement because of lack of shoulders/pull offs to inspect the trucks.

Permitting – The permit office works with all OSOW permits in the state. Rob has information on the permit routes used by trucks. It can be difficult for MSP to check on OSOW permitted loads because the permit

Date/Time:	February 16, 2018 3:00 pm – 4:30 pm	**Location:**	MnDOT Central Office 395 John Ireland Blvd, St. Paul, MN 55155 G22

holder has a five day window to travel. Wind farm equipment load frequencies are variable, but most travel during spring to fall. The last two years of shipments were less, but the state expects in 2018 to have more wind farm shipments.

Some areas of interest discussed during the meeting to protect in the state include:

- US 10 over Elk River (Bridge condition)
- MN 99 Bridge in St. Peter (Permitted loads)
- US 2 and US 70 (Permitted load routes)
- Bloomington Bridge (US 169 & Anderson Lakes Parkway)(Raise to accommodate OSOW)
- US 2 Bemidji (Bridge hits)

Appendix B: Constrained Evaluation Results

Constrained Analysis – Page 1

Weight Factors

Functional Class	10 **HCAADT**	15 **Truck VMT**	5 **Crash Rate**	10 **Inspections**	0 **OOS Vehicle**	10 **OOS Drive**	10 **Cost**	5 **Ex. Invest**	5 **Bypass**	5 **Infrastructure**	5 **Coverage**	10 **POE**	10
Interstate	10 >4400	15 >100M	5 Good	3 >800	0 >40.2%	10 >9.5%	10 $ (<500K)	5 Y	5 Y	5 Y	5 Not Covered	10 Inbound	10
PA Other	8 1600-4400	12 80M-100M	4 Fair	6 400-800	0 27.0%-40.2%	7.5 5.6%-9.5%	7.5 $$ (500K-3M)	3 Blank	0 Blank	0 Blank	0 Partially Covered	6 Mid State	6
Minor Arterial	6 800-1600	9 60M-80M	3 Poor	10 100-400	0 13.7%-27.0%	5 1.8%-5.6%	5 $$$ (>3M)	1			Covered	3 Outbound	3
Major Collector	4 400-800	6 20M-60M	2	<100	0 <13.7%	2.5 <1.8%	2.5						
Local	2 <400	3 <20M	1										

Number	Highway	Location	County	Functional Classification	Functional Classification Rating	HCAADT	HCAADT Rating	Truck VMT (County)	Truck VMT Rating	Crash Rate (County)	Crash Rate Rating	# Inspections (County)	#Inspections Rating	OOS Vehicles Rate (County)	OOS Vehicles Rating (County)	OOS Drivers Rate (County)	OOS Drivers Rating (County)	Cost ($)	Cost Rating	Existing Investment	Existing Investment Rating	Bypass Route	Bypass Route Rating	Infrastructure	Infrastructure Rating	Coverage	Coverage Rating	Point of Entry	Point of Entry Rating	Total Points
M.3	I-94	St. Croix Weigh Station (WB)	Washington	Interstate	10	9800	15	89,348,208	4	Fair	6	5532	0	29.89%	7.5	7.99%	7.5	$$	3	Y	5		0		0	COVERED	3	Inbound	10	**71.0**
6.3	US 52	WIM #32	Olmsted	PA Other	8	2800	12	77,269,510	3	Fair	6	942	0	38.87%	7.5	9.77%	10	$$$	1	Y	5		0		0	NOT COVERED	10	Mid State	6	**68.5**
M.1	I-494	Between US 12 and MN 55	Hennepin	Interstate	10	7700	15	331,652,040	5	Poor	10	1864	0	41.44%	10	7.30%	7.5	$$$	1		0		0		0	COVERED	3	Mid State	6	**67.5**
M.4	I-94	Between MN 610 and MN 101	Hennepin	Interstate	10	13,700	15	331,652,040	5	Poor	10	1864	0	41.44%	10	7.30%	7.5	$$$	1		0		0		0	COVERED	3	Mid State	6	**67.5**
8.10	US 71	North of Willmar, before US 71/MN 23 Split	Kandiyohi	PA Other	8	1700	12	31,378,209	2	Fair	6		0	44.74%	10	12.76%	10	$$	3		0		0		0	NOT COVERED	10	Mid State	6	**67.0**
4.1	I-94	Red River Weigh Station (EB)	Clay	Interstate	10	4450	15	65,132,485	3	Good	3	3907	0	26.24%	5	11.76%	10	$$	3	Y	5		0		0	COVERED	3	Inbound	10	**67.0**
6.2	I-90	Between Rochester and Fremont	**Olmsted**/Winona	Interstate	10	3800	12	77,269,510	3	Fair	6	942	0	38.87%	7.5	9.77%	10	$$$	1		0		0		0	NOT COVERED	10	Mid State	6	**65.5**
M.2	I-35W	Between I-494 and MN 13	**Dakota**/Hennepin	Interstate	10	10,100	15	123,671,689	5	Poor	10	1107	0	45.21%	10	4.97%	5	$$$	1		0		0		0	COVERED	3	Mid State	6	**65.0**
1.1	I-535	Blatnik Bridge / WIM #38	Saint Louis	Interstate	10	2050	12	74,731,746	3	Fair	6	544	0	44.44%	10	4.56%	5	$$$	1		0		0	Y	5	COVERED	3	Inbound	10	**65.0**
8.15	MN 212	WIM #33 (East of Olivia)	Renville	PA Other	8	880	9	22,629,286	2	Fair	6		0	30.63%	7.5	9.22%	7.5	$$	3	Y	5		0		0	NOT COVERED	10	Mid State	6	**64.0**
8.8	MN 23	West of Willmar	Kandiyohi	PA Other	8	910	9	31,378,209	2	Fair	6		0	44.74%	10	12.76%	10	$$	3		0		0		0	NOT COVERED	10	Mid State	6	**64.0**
M.11	US 52	Butler Ave Pull Off Site/#40 WIM (NB)	Dakota	PA Other	8	3500	12	123,671,689	5	Poor	10	1107	0	45.21%	10	4.97%	5	$	5		0		0		0	COVERED	3	Mid State	6	**64.0**
6.12	I-90	Nodine Pull Off Sites (EB&WB)	Winona	Interstate	10	2800	12	66,007,882	3	Good	3	85	0	37.14%	7.5	8.24%	7.5	$$	3	Y	5		0		0	COVERED	3	Inbound	10	**64.0**
M.5	US 12	Near Metro District west border	Hennepin	PA Other	8	930	9	331,652,040	5	Poor	10	1864	0	41.44%	10	7.30%	7.5	$$	3		0		0		0	COVERED	3	Mid State	6	**61.5**
6.7	I-35	Clarks Grove Pull Off Site (NB)	Freeborn	Interstate	10	3600	12	71,761,551	3	Good	3	397	0	26.38%	5	7.05%	7.5	$$	3	Y	5		0		0	COVERED	3	Inbound	10	**61.5**
1.5	MN 61	WIM #30	Saint Louis	PA Other	8	930	9	74,731,746	3	Fair	6	544	0	44.44%	10	4.56%	5	$$	3	Y	5		0		0	COVERED	6	Mid State	6	**61.0**
M.10	I-35	Forest Lake Pull Off Site (SB)	Anoka	Interstate	10	4350	12	69,564,486	3	Fair	6	469	0	36.01%	7.5	5.46%	5	$$	3	Y	5		0		0	COVERED	3	Mid State	6	**60.5**
3.3	MN 28	Between Sauk Center and Little Falls	**Morrison**/Todd	Minor Arterial	6	424	6	29,567,634	2	Good	3	219	0	43.11%	10	7.31%	7.5	$	5		0		0	Y	5	NOT COVERED	10	Mid State	6	**60.5**
4.7	US 12	At SD/MN border (Ortonville)	Big Stone	PA Other	8	520	6	6,367,227	1	Good	3	9	0	28.57%	7.5	11.11%	10	$	5		0		0		0	NOT COVERED	10	Inbound	10	**60.5**
4.3	US 10	WIM #43	Clay	PA Other	8	1550	9	65,132,485	3	Good	3	609	0	26.24%	5	11.76%	10	$$	3	Y	5	Y	5		0	COVERED	3	Mid State	6	**60.0**
4.5	I-94	Between Fergus Falls and Alexandria (near Hansel Lake Rest Area)	**OtterTail**/Grant/Douglas	Interstate	10	3000	12	73,773,150	3	Good	3	379	0	27.10%	7.5	5.80%	7.5	$$$	1		0		0		0	NOT COVERED	10	Mid State	6	**60.0**
7.1	US 169	North of St. Peter	Nicollet	PA Other	8	2750	12	29,723,772	2	Fair	6	182	0	28.28%	7.5	6.04%	7.5	$$$	1		0		0		0	NOT COVERED	10	Mid State	6	**60.0**
7.2	US 14	Between New Ulm and Nicollet	Nicollet	PA Other	8	1250	9	29,723,772	2	Fair	6	182	0	28.28%	7.5	6.04%	7.5	$$	3		0		0		0	NOT COVERED	10	Mid State	6	**59.0**
6.1	US 14	Near Winona	Winona	PA Other	8	890	9	66,007,882	3	Good	3	85	0	37.14%	7.5	8.24%	7.5	$$	3		0		0	Y	5	COVERED	3	Inbound	10	**59.0**
8.7	MN 23	WIM #34 (Between US 212 and MN 7)	Chippewa	PA Other	8	690	6	11,211,491	1	Good	3		0	34.13%	7.5	5.62%	7.5	$	5	Y	5		0		0	NOT COVERED	10	Mid State	6	**59.0**
7.7	I-90	Worthington Weigh Station (EB)	Nobles	Interstate	10	1200	9	23,710,405	2	Poor	10	2098	0	8.96%	2.5	1.39%	2.5	$	5	Y	5		0		0	COVERED	3	Inbound	10	**59.0**
6.8	US 52	Just North of IA/MN border	Fillmore	PA Other	8	540	6	14,332,492	1	Fair	6	120	0	26.58%	5	6.67%	7.5	$	5		0		0		0	NOT COVERED	10	Inbound	10	**58.5**
6.9	US 63	Just North of IA/MN border	Fillmore	PA Other	8	560	6	14,332,492	1	Fair	6	120	0	26.58%	5	6.67%	7.5	$	5		0		0		0	NOT COVERED	10	Inbound	10	**58.5**
1.2	US 2	Between MN 33 and I-35 (near Munger)	Saint Louis	PA Other	8	1150	9	74,731,746	3	Fair	6	544	0	44.44%	10	4.56%	5	$$	3		0	Y	5		0	COVERED	3	Mid State	6	**58.0**
1.3	US 53	Between MN 33 and I-35 (near Twig)	Saint Louis	PA Other	8	970	9	74,731,746	3	Fair	6	544	0	44.44%	10	4.56%	5	$$	3		0	Y	5		0	COVERED	3	Mid State	6	**58.0**
1.4	US 53	WIM #29	Saint Louis	PA Other	8	840	9	74,731,746	3	Fair	6	544	0	44.44%	10	4.56%	5	$$	3	Y	5		0		0	COVERED	3	Mid State	6	**58.0**
8.14	MN 4	Between MN 19 and MN 23	**Renville**/Meeker	Minor Arterial	6	320	3	22,629,286	2	Fair	6		0	30.63%	7.5	9.22%	7.5	$	5		0		0	Y	5	NOT COVERED	10	Mid State	6	**58.0**
3.2	I-94	Between MN 101 and MN 24	Wright	Interstate	10	8400	15	93,757,551	4	Fair	6	244	0	29.27%	7.5	4.51%	5	$$$	1		0		0		0	COVERED	3	Mid State	6	**57.5**
3.6	US 10	Between St. Cloud and Little Falls	**Benton**/Morrison	PA Other	8	2100	12	24,246,269	2	Fair	6	378	0	35.81%	7.5	4.23%	5	$$$	1		0		0		0	NOT COVERED	10	Mid State	6	**57.5**
3.7	US 71	Between Long Prairie and Wadena	Todd	PA Other	8	400	6	24,346,923	2	Good	3	103	0	35.62%	7.5	9.71%	10	$	5		0		0		0	NOT COVERED	10	Mid State	6	**57.5**
6.5	I-35	Just North of IA/MN border (NB)	Freeborn	Interstate	10	5800	15	71,761,551	3	Good	3	397	0	26.38%	5	7.05%	7.5	$$$	1		0		0		0	COVERED	3	Inbound	10	**57.5**
4.4	MN 210	Between ND/MN border and Fergus Falls (near Foxhome, MN)	**Wilkin**/Otter Tail	PA Other	8	640	6	22,392,262	2	Good	3	101	0	25.53%	5	5.94%	7.5	$	5		0	Y	5		0	PARTIALLY COVERED	6	Inbound	10	**57.5**
1.7	US 2 / MN 33	Saginaw Weigh Station	Saint Louis	PA Other	8	710	6	74,731,746	3	Fair	6	1011	0	44.44%	10	4.56%	5	$	5	Y	5		0		0	COVERED	3	Mid State	6	**57.0**
6.4	I-90	Just West of the WI/MN border	Winona	Interstate	10	2850	12	66,007,882	3	Good	3	85	0	37.14%	7.5	8.24%	7.5	$$$	1		0		0		0	COVERED	3	Inbound	10	**57.0**
7.8	I-90	West of Adrian Rest Areas (EB)	Nobles	Interstate	10	1250	9	23,710,405	2	Poor	10	118	0	8.96%	2.5	1.39%	2.5	$	5		0		0		0	COVERED	6	Inbound	10	**57.0**
M.7	US 10	Dayton Port Weigh Station (NB&SB)	Anoka	PA Other	8	1800	12	69,564,486	3	Fair	6	1050	0	36.01%	7.5	5.46%	5	$$$	1	Y	5		0		0	COVERED	3	Mid State	6	**56.5**

Constrained Analysis – Page 2

Weight Factors

Functional Class	10 **HCAADT**	15 **Truck VMT**	5 **Crash Rate**	10 **Inspections**	0 **OOS Vehicle**	10 **OOS Drive**	10 **Cost**	5 **Ex. Invest**	5 **Bypass**	5 **Infrastructure**	5 **Coverage**	10 **POE**	10
Interstate	10 >4400	15 >100M	5 Good	3 >800	0 >40.2%	10 >9.5%	10 $ (<500K)	5 Y	5 Y	5 Y	5 Not Covered	10 Inbound	10
PA Other	8 1600-4400	12 80M-100M	4 Fair	6 400-800	0 27.0%-40.2%	7.5 5.6%-9.5%	7.5 $$ (500K-3M)	3 Blank	0 Blank	0 Blank	0 Partially Covered	6 Mid State	6
Minor Arterial	6 800-1600	9 60M-80M	3 Poor	10 100-400	0 13.7%-27.0%	5 1.8%-5.6%	5 $$$ (>3M)	1			Covered	3 Outbound	3
Major Collector	4 400-800	6 20M-60M	2	<100	0 <13.7%	2.5 <1.8%	2.5						
Local	2 <400	3 <20M	1										

Number	Highway	Location	County	Functional Classification	Functional Classification Rating	HCAADT	HCAADT Rating	Truck VMT (County)	Truck VMT Rating	Crash Rate (County)	Crash Rate Rating	# Inspections (County)	#Inspections Rating	OOS Vehicles Rate (County)	OOS Vehicles Rating (County)	OOS Drivers Rate (County)	OOS Drivers Rating (County)	Cost ($)	Cost Rating	Existing Investment	Existing Investment Rating	Bypass Route	Bypass Route Rating	Infrastructure	Infrastructure Rating	Coverage	Coverage Rating	Point of Entry	Point of Entry Rating	Total Points
1.8	US 169	Between Grand Rapids and Hill City (near Bear Creek Rd)	Itasca	PA Other	8	860	9	27,192,004	2	Good	3	195	0	29.49%	7.5	6.15%	7.5	$$	3		0		0		0	NOTCOVERED	10	Mid State	6	**56.0**
6.6	US 52	Between St. Paul and Rochester (near Hader)	Olmsted/**Goodhue**/Dakota	PA Other	8	2800	12	43,547,137	2	Fair	6	165	0	38.89%	7.5	8.48%	7.5	$$$	1		0		0		0	PARTIALLY COVERED	6	Mid State	6	**56.0**
8.11	US 12	East of Dassel	Meeker	PA Other	8	1050	9	18,332,061	1	Good	3		0	35.29%	7.5	16.66%	10	$	5		0		0		0	COVERED	6	Mid State	6	**55.5**
8.13	MN 15	Between US 212 and MN 7	McLeod	PA Other	8	760	6	32,531,649	2	Good	3		0	25.00%	5	13.74%	10	$	5		0		0		0	NOTCOVERED	10	Mid State	6	**55.0**
6.11	US 61	Between Lake City and Wabasha	Wabasha	PA Other	8	590	6	13,366,380	1	Poor	10	98	0	33.85%	7.5	4.08%	5	$	5		0		0		0	COVERED	6	Mid State	6	**54.5**
4.2	US 10	Railroad Bridge over US 10 (Moorhead 16th St to 17 St)	Clay	PA Other	8	580	6	65,132,485	3	Good	3	609	0	26.24%	5	11.76%	10	$	5		0		0	Y	5	COVERED	3	Mid State	6	**54.0**
8.6	MN 23	Between US 212 and MN 7	Chippewa	PA Other	8	650	6	11,211,491	1	Good	3		0	34.13%	7.5	5.62%	7.5	$	5		0		0		0	NOTCOVERED	10	Mid State	6	**54.0**
8.9	MN 40	Willmar to US 75	**Chippewa**/Kandiyohi	Minor Arterial	6	155	3	11,211,491	1	Good	3		0	34.13%	7.5	5.62%	7.5	$	5		0		0	Y	5	NOTCOVERED	10	Mid State	6	**54.0**
7.3	US 169	North of Le Sueur Rest Area	La Sueur	PA Other	8	2100	12	15,599,780	1	Poor	10	341	0	15.55%	5	3.81%	5	$$$	1		0		0		0	COVERED	6	Mid State	6	**54.0**
4.6	US 59	Between Fergus Falls and Detroit Lakes (near Sauers Lake Rest Area)	**OtterTail**/Becker	PA Other	8	840	9	73,773,150	3	Good	3	379	0	27.10%	7.5	5.80%	7.5	$$	3		0		0		0	PARTIALLY COVERED	6	Mid State	6	**53.0**
8.12	MN 22	West of Hutchinson	McLeod	Minor Arterial	6	450	6	32,531,649	2	Good	3		0	25.00%	5	13.74%	10	$	5		0		0		0	NOTCOVERED	10	Mid State	6	**53.0**
3.1	US 12	Between MN 25 and Delano	Wright	PA Other	8	2600	12	93,757,551	4	Fair	6	244	0	29.27%	7.5	4.51%	5	$$$	1		0		0		0	COVERED	3	Mid State	6	**52.5**
M.6	MN 101	Between US 10 and I-94	**Wright**/Hennepin	PA Other	8	2750	12	93,757,551	4	Fair	6	244	0	29.27%	7.5	4.51%	5	$$$	1		0		0		0	COVERED	3	Mid State	6	**52.5**
8.2	MN 23	South of MN 19	Lyon	PA Other	8	860	9	16,701,005	1	Fair	6		0	6.61%	2.5	2.01%	5	$	5		0		0		0	NOTCOVERED	10	Mid State	6	**52.5**
8.3	MN 23	North of MN 19	Lyon	PA Other	8	840	9	16,701,005	1	Fair	6		0	6.61%	2.5	2.01%	5	$	5		0		0		0	NOTCOVERED	10	Mid State	6	**52.5**
2.6	US 2 / US 59	Erskine Weigh Station (NB&SB)	Polk	PA Other	8	685	6	21,065,221	2	Fair	6	1112	0	15.43%	5	1.64%	2.5	$	5	Y	5		0		0	COVERED	3	Inbound	10	**52.5**
2.1	MN 11	Between Warroad and Baudette	**Lake of the Woods**/Roseau	PA Other	8	240	3	4,168,018	1	Good	3	9	0	0.00%	2.5	11.11%	10	$	5		0		0		0	NOTCOVERED	10	Inbound	10	**52.5**
2.3	CSAH 87	Between US 71 and MN 64	Hubbard	Major Collector	4	55	3	12,876,161	1	Good	3	85	0	41.38%	10	3.53%	5	$	5		0		0	Y	5	NOTCOVERED	10	Mid State	6	**52.0**
4.10	US 12	Near Benson (near 40th Ave)	Swift	PA Other	8	460	6	10,764,065	1	Good	3	39	0	39.29%	7.5	2.56%	5	$	5		0		0		0	NOTCOVERED	10	Mid State	6	**51.5**
3.5	MN 23	Between I-94 and MN 15	Stearns	PA Other	8	1800	12	130,335,141	5	Good	3	879	0	23.58%	5	4.89%	5	$$$	1		0		0		0	COVERED	6	Mid State	6	**51.0**
1.6	I-35	Carlton Pull Off Sites	Carlton	Interstate	10	1100	9	21,503,252	2	Good	3	950	0	11.98%	2.5	6.53%	7.5	$$	3	Y	5		0		0	COVERED	3	Mid State	6	**51.0**
4.8	US 10	Between Detroit Lakes and Wadena (near Frazee Rest Area)	**Becker**/Otter Tail	PA Other	8	840	9	18,099,542	1	Good	3	224	0	40.00%	7.5	6.25%	7.5	$$	3		0		0		0	PARTIALLY COVERED	6	Mid State	6	**51.0**
6.10	US 14	Dodge County (near Claremont)	Dodge	PA Other	8	950	9	12,146,628	1	Good	3	133	0	41.57%	10	6.72%	7.5	$$	3		0		0		0	COVERED	3	Mid State	6	**50.5**
4.9	I-94	I-94 WB between Moorhead and Fergus Falls (Barnesville, near County 25)	**Clay**/Wilkin/Otter Tail	Interstate	10	1850	12	65,132,485	3	Good	3	609	0	26.24%	5	11.76%	10	$$$	1		0		0		0	COVERED	3	Outbound	3	**50.0**
8.4	US 59	South of MN 19	Lyon	PA Other	8	410	6	16,701,005	1	Fair	6		0	6.61%	2.5	2.01%	5	$	5		0		0		0	NOTCOVERED	10	Mid State	6	**49.5**
M.8	US 8	Between Chisago City and St. Croix Falls	Chisago	PA Other	8	900	9	28,726,542	2	Good	3	83	0	36.59%	7.5	6.02%	7.5	$$	3		0		0		0	COVERED	3	Mid State	6	**49.0**
8.5	US 212	Between Clarkfield and Montevideo	Yellow Medicine	PA Other	8	200	3	12,485,016	1	Good	3		0	8.77%	2.5	4.76%	5	$	5		0		0	Y	5	NOTCOVERED	10	Mid State	6	**48.5**
7.5	MN 60	WIM #27	Watowan	PA Other	8	1200	9	16,464,090	1	Good	3	62	0	10.20%	2.5	4.84%	5	$$	3	Y	5		0		0	COVERED	6	Mid State	6	**48.5**
3.4	US 169	Between US 10 and MN 95	Sherburne	PA Other	8	2250	12	32,418,189	2	Fair	6	525	0	25.66%	5	3.62%	5	$$$	1		0		0		0	COVERED	3	Mid State	6	**48.0**
7.4	US 14	Between Mankato and Waseca	Waseca	PA Other	8	2500	12	12,914,303	1	Good	3	67	0	15.56%	5	7.46%	7.5	$$$	1		0		0		0	COVERED	3	Mid State	6	**46.5**
8.1	MN 269	Between SD border and MN 23 (near Jasper)	Pipestone	Minor Arterial	6	195	3	10,672,000	1	Good	3			4.88%	2.5	3.85%	5	$	5		0	Y	5		0	COVERED	6	Inbound	10	**46.5**
2.4	US 59	Between Erskine and Thief River Falls	**Red Lake**/Pennington	PA Other	8	480	6	2,077,846	1	Good	3	9	0	50.00%	10	0.00%	2.5	$	5		0		0		0	COVERED	3	Mid State	6	**44.5**
M.9	CSAH 95	West of St. Croix Falls	Chisago	Minor Arterial	6	250	3	28,726,542	2	Good	3	83	0	36.59%	7.5	6.02%	7.5	$	5		0		0		0	COVERED	3	Mid State	6	**43.0**
7.6	US 71	Between MN 30 and US 14	Cottonwood	PA Other	8	650	6	13,738,042	1	Good	3	47	0	9.52%	2.5	4.26%	5	$	5		0		0		0	COVERED	6	Mid State	6	**42.5**
2.5	US 75	Between MN 11 and MN 175	Kittson	Minor Arterial	6	145	3	8,376,301	1	Good	3	188	0	9.03%	2.5	0.00%	2.5	$	5		0		0		0	NOTCOVERED	10	Mid State	6	**39.0**
2.2	MN 92	Between CSAH 2 and CSAH 8	Polk	Minor Arterial	6	15	3	21,065,221	2	Fair	6	290	0	15.43%	5	1.64%	2.5	$	5		0		0		0	COVERED	3	Mid State	6	**38.5**

Appendix C: Unconstrained Evaluation Results

Unconstrained Analysis – Page 1

Weight Factors																									
Functional Class	10	**HCAADT**	15	**Truck VMT**	5	**Crash Rate**	10	**OOS Vehicle**	10	**OOS Drive**	10	**Cost**	0	**Ex. Invest**	0	**Bypass**	0	**Infrastructure**	5	**Coverage**	0	**POE**	0	
Interstate	10	>4400	15	>100M	5	Good	3	>40.2%	10	>9.5%	10	$ (<500K)	0	Y	0	Y	0	Y	5	Not Covered	0	Inbound	0	
PA Other	8	1600-4400	12	80M-100M	4	Fair	6	27.0%-40.2%	7.5	5.6%-9.5%	7.5	$$ (500K-3M)	0	Blank	0	Blank	0	Blank	0	Partially Covered	0	Mid State	0	
Minor Arterial	6	800-1600	9	60M-80M	3	Poor	10	13.7%-27.0%	5	1.8%-5.6%	5	$$$ (>3M)	0							Covered	0	Outbound	0	
Major Collector	4	400-800	6	20M-60M	2		<13.7%		2.5	<1.8%	2.5													
Local	2	<400	3	<20M	1																			

Number	Highway	Location	County	Functional Classification	Functional Classification Rating	HCAADT	HCAADT Rating	Truck VMT (County)	Truck VMT Rating	Crash Rate (County)	Crash Rate Rating	OOS Vehicles Rate (County)	OOS Vehicles Rating (County)	OOS Drivers Rate (County)	OOS Drivers Rating (County)	Cost ($)	Cost Rating	Existing Investment	Existing Investment Rating	Bypass Route	Bypass Route Rating	Infrastructure	Infrastructure Rating	Coverage	Coverage Rating	Point of Entry	Point of Entry Rating	Total Points
M.1	I-494	Between US 12 and MN 55	Hennepin	Interstate	10	7700	15	331,652,040	5	Poor	10	41.44%	10	7.30%	7.5	$$$	0		0		0		0	COVERED	0	Mid State	0	**57.5**
M.4	I-94	Between MN 610 and MN 101	Hennepin	Interstate	10	13,700	15	331,652,040	5	Poor	10	41.44%	10	7.30%	7.5	$$$	0		0		0		0	COVERED	0	Mid State	0	**57.5**
M.2	I-35W	Between I-494 and MN 13	**Dakota**/Hennepin	Interstate	10	10,100	15	123,671,689	5	Poor	10	45.21%	10	4.97%	5	$$$	0		0		0		0	COVERED	0	Mid State	0	**55.0**
1.1	I-535	Blatnik Bridge / WIM #38	Saint Louis	Interstate	10	2050	12	74,731,746	3	Fair	6	44.44%	10	4.56%	5	$$$	0		0		0	Y	5	COVERED	0	Inbound	0	**51.0**
M.3	I-94	St. Croix Weigh Station (WB)	Washington	Interstate	10	9800	15	89,348,208	4	Fair	6	29.89%	7.5	7.99%	7.5	$$	0	Y	0		0		0	COVERED	0	Inbound	0	**50.0**
M.11	US 52	Butler Ave Pull Off Site/#40 WIM (NB)	Dakota	PA Other	8	3500	12	123,671,689	5	Poor	10	45.21%	10	4.97%	5	$	0		0		0		0	COVERED	0	Mid State	0	**50.0**
M.5	US 12	Near Metro District west border	Hennepin	PA Other	8	930	9	331,652,040	5	Poor	10	41.44%	10	7.30%	7.5	$$	0		0		0		0	COVERED	0	Mid State	0	**49.5**
6.2	I-90	Between Rochester and Fremont	**Olmsted**/Winona	Interstate	10	3800	12	77,269,510	3	Fair	6	38.87%	7.5	9.77%	10	$$$	0		0		0		0	NOT COVERED	0	Mid State	0	**48.5**
8.10	US 71	North of Willmar, before US 71/MN 23 Split	Kandiyohi	PA Other	8	1700	12	31,378,209	2	Fair	6	44.74%	10	12.76%	10	$$	0		0		0		0	NOT COVERED	0	Mid State	0	**48.0**
3.2	I-94	Between MN 101 and MN 24	Wright	Interstate	10	8400	15	93,757,551	4	Fair	6	29.27%	7.5	4.51%	5	$$$	0		0		0		0	COVERED	0	Mid State	0	**47.5**
6.3	US 52	WIM #32	Olmsted	PA Other	8	2800	12	77,269,510	3	Fair	6	38.87%	7.5	9.77%	10	$$$	0	Y	0		0		0	NOT COVERED	0	Mid State	0	**46.5**
4.1	I-94	Red River Weigh Station (EB)	Clay	Interstate	10	4450	15	65,132,485	3	Good	3	26.24%	5	11.76%	10	$$	0	Y	0		0		0	COVERED	0	Inbound	0	**46.0**
8.8	MN 23	West of Willmar	Kandiyohi	PA Other	8	910	9	31,378,209	2	Fair	6	44.74%	10	12.76%	10	$$	0		0		0		0	NOT COVERED	0	Mid State	0	**45.0**
M.10	I-35	Forest Lake Pull Off Site (SB)	Anoka	Interstate	10	4350	12	69,564,486	3	Fair	6	36.01%	7.5	5.46%	5	$$	0	Y	0		0		0	COVERED	0	Mid State	0	**43.5**
6.5	I-35	Just North of IA/MN border (NB)	Freeborn	Interstate	10	5800	15	71,761,551	3	Good	3	26.38%	5	7.05%	7.5	$$$	0		0		0		0	COVERED	0	Inbound	0	**43.5**
4.5	I-94	Between Fergus Falls and Alexandria (near Hansel Lake Rest Area)	**OtterTail**/Grant/Douglas	Interstate	10	3000	12	73,773,150	3	Good	3	27.10%	7.5	5.80%	7.5	$$$	0		0		0		0	NOT COVERED	0	Mid State	0	**43.0**
7.1	US 169	North of St. Peter	Nicollet	PA Other	8	2750	12	29,723,772	2	Fair	6	28.28%	7.5	6.04%	7.5	$$$	0		0		0		0	NOT COVERED	0	Mid State	0	**43.0**
6.6	US 52	Between St. Paul and Rochester (near Hader)	Olmsted/**Goodhue**/Dakota	PA Other	8	2800	12	43,547,137	2	Fair	6	38.89%	7.5	8.48%	7.5	$$$	0		0		0		0	PARTIALLY COVERED	0	Mid State	0	**43.0**
6.12	I-90	Nodine Pull Off Sites (EB&WB)	Winona	Interstate	10	2800	12	66,007,882	3	Good	3	37.14%	7.5	8.24%	7.5	$$	0	Y	0		0		0	COVERED	0	Inbound	0	**43.0**
6.1	US 14	Near Winona	Winona	PA Other	8	890	9	66,007,882	3	Good	3	37.14%	7.5	8.24%	7.5	$$	0		0		0	Y	5	COVERED	0	Inbound	0	**43.0**
6.4	I-90	Just West of the WI/MN border	Winona	Interstate	10	2850	12	66,007,882	3	Good	3	37.14%	7.5	8.24%	7.5	$$$	0		0		0		0	COVERED	0	Inbound	0	**43.0**
4.9	I-94	I-94 WB between Moorhead and Fergus Falls (Barnesville, near County 25)	**Clay**/Wilkin/Otter Tail	Interstate	10	1850	12	65,132,485	3	Good	3	26.24%	5	11.76%	10	$$$	0		0		0		0	COVERED	0	Outbound	0	**43.0**
3.1	US 12	Between MN 25 and Delano	Wright	PA Other	8	2600	12	93,757,551	4	Fair	6	29.27%	7.5	4.51%	5	$$$	0		0		0		0	COVERED	0	Mid State	0	**42.5**
M.6	MN 101	Between US 10 and I-94	**Wright**/Hennepin	PA Other	8	2750	12	93,757,551	4	Fair	6	29.27%	7.5	4.51%	5	$$$	0		0		0		0	COVERED	0	Mid State	0	**42.5**
M.7	US 10	Dayton Port Weigh Station (NB&SB)	Anoka	PA Other	8	1800	12	69,564,486	3	Fair	6	36.01%	7.5	5.46%	5	$$$	0	Y	0		0		0	COVERED	0	Mid State	0	**41.5**
1.5	MN 61	WIM #30	Saint Louis	PA Other	8	930	9	74,731,746	3	Fair	6	44.44%	10	4.56%	5	$$	0	Y	0		0		0	COVERED	0	Mid State	0	**41.0**
7.3	US 169	North of Le Sueur Rest Area	La Sueur	PA Other	8	2100	12	15,599,780	1	Poor	10	15.55%	5	3.81%	5	$$$	0		0		0		0	COVERED	0	Mid State	0	**41.0**
1.2	US 2	Between MN 33 and I-35 (near Munger)	Saint Louis	PA Other	8	1150	9	74,731,746	3	Fair	6	44.44%	10	4.56%	5	$$	0		0	Y	0		0	COVERED	0	Mid State	0	**41.0**
1.3	US 53	Between MN 33 and I-35 (near Twig)	Saint Louis	PA Other	8	970	9	74,731,746	3	Fair	6	44.44%	10	4.56%	5	$$	0		0	Y	0		0	COVERED	0	Mid State	0	**41.0**
1.4	US 53	WIM #29	Saint Louis	PA Other	8	840	9	74,731,746	3	Fair	6	44.44%	10	4.56%	5	$$	0	Y	0		0		0	COVERED	0	Mid State	0	**41.0**
3.6	US 10	Between St. Cloud and Little Falls	**Benton**/Morrison	PA Other	8	2100	12	24,246,269	2	Fair	6	35.81%	7.5	4.23%	5	$$$	0		0		0		0	NOT COVERED	0	Mid State	0	**40.5**
6.7	I-35	Clarks Grove Pull Off Site (NB)	Freeborn	Interstate	10	3600	12	71,761,551	3	Good	3	26.38%	5	7.05%	7.5	$$	0	Y	0		0		0	COVERED	0	Inbound	0	**40.5**
8.15	MN 212	WIM #33 (East of Olivia)	Renville	PA Other	8	880	9	22,629,286	2	Fair	6	30.63%	7.5	9.22%	7.5	$$	0	Y	0		0		0	NOT COVERED	0	Mid State	0	**40.0**
7.2	US 14	Between New Ulm and Nicollet	Nicollet	PA Other	8	1250	9	29,723,772	2	Fair	6	28.28%	7.5	6.04%	7.5	$$	0		0		0		0	NOT COVERED	0	Mid State	0	**40.0**
4.2	US 10	Railroad Bridge over US 10 (Moorhead 16th St to 17 St)	Clay	PA Other	8	580	6	65,132,485	3	Good	3	26.24%	5	11.76%	10	$	0		0		0	Y	5	COVERED	0	Mid State	0	**40.0**
3.3	MN 28	Between Sauk Center and Little Falls	**Morrison**/Todd	Minor Arterial	6	424	6	29,567,634	2	Good	3	43.11%	10	7.31%	7.5	$	0		0		0	Y	5	NOT COVERED	0	Mid State	0	**39.5**
8.11	US 12	East of Dassel	Meeker	PA Other	8	1050	9	18,332,061	1	Good	3	35.29%	7.5	16.66%	10	$	0		0		0		0	COVERED	0	Mid State	0	**38.5**
6.10	US 14	Dodge County (near Claremont)	Dodge	PA Other	8	950	9	12,146,628	1	Good	3	41.57%	10	6.72%	7.5	$$	0		0		0		0	COVERED	0	Mid State	0	**38.5**

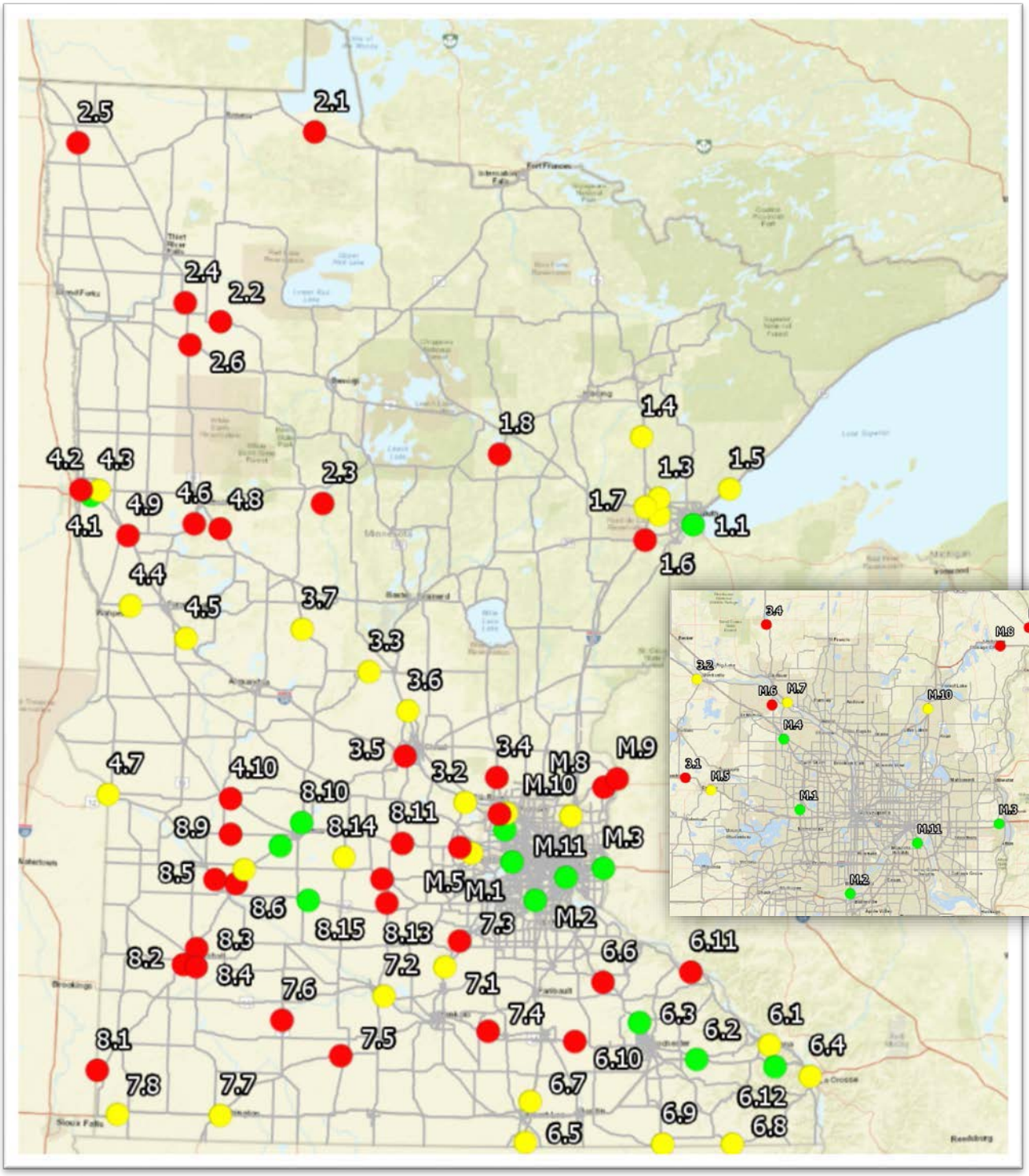
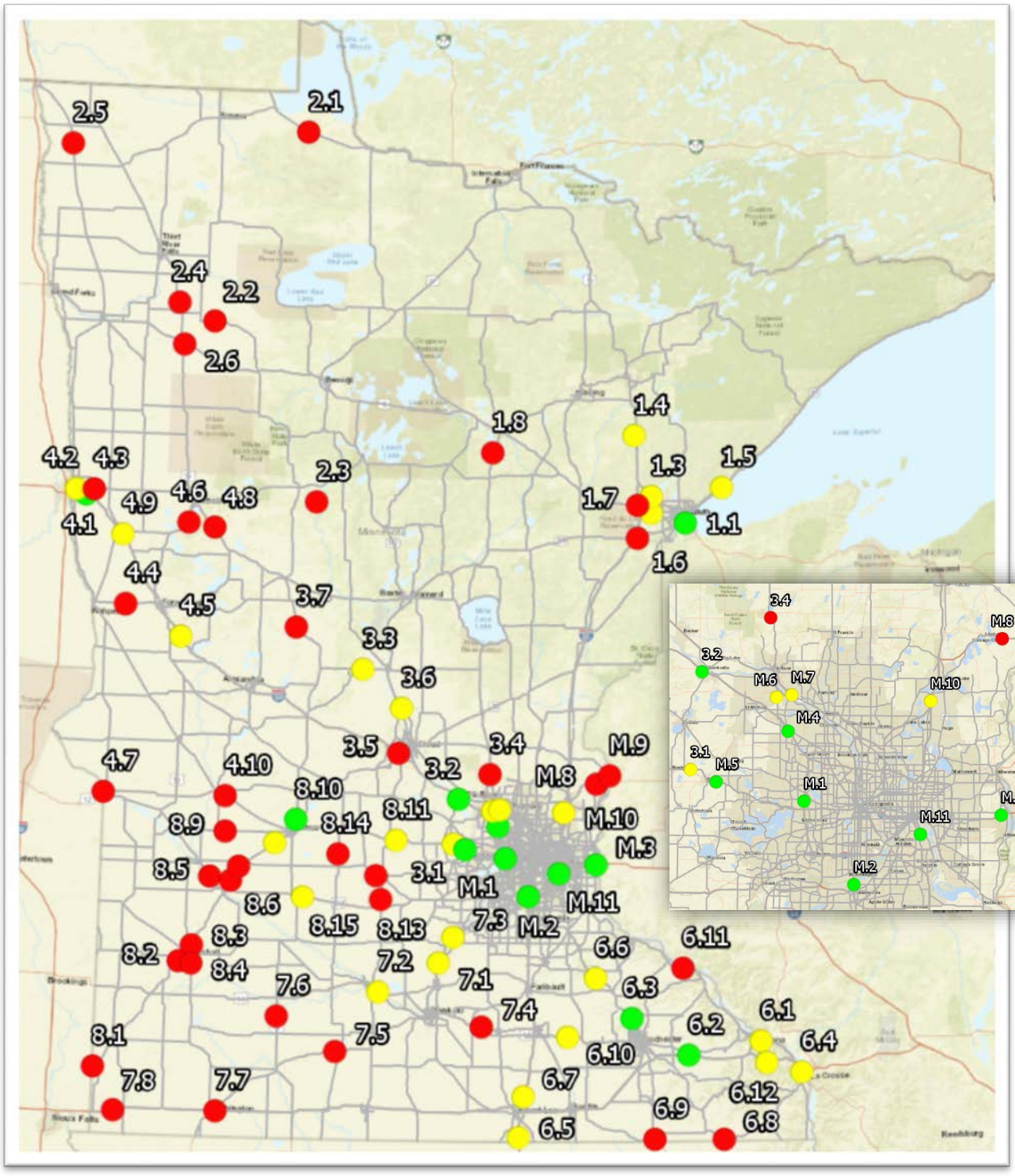
Unconstrained Analysis – Page 2

Weight Factors																															
Functional Class	10	**HCAADT**	15	**Truck VMT**	5	**Crash Rate**	10	**OOS Vehicle**	10	**OOS Drive**	10	**Cost**	0	**Ex. Invest**	0	**Bypass**	0	**Infrastructure**	5	**Coverage**	0	**POE**	0								
Interstate	10	>4400	15	>100M	5	Good	3	>40.2%	10	>9.5%	10	$ (<500K)	0	Y	0	Y	0	Y	5	Not Covered	0	Inbound	0								
PA Other	8	1600-4400	12	80M-100M	4	Fair	6	27.0%-40.2%	7.5	5.6%-9.5%	7.5	$$ (500K-3M)	0	Blank	0	Blank	0	Blank	0	Partially Covered	0	Mid State	0								
Minor Arterial	6	800-1600	9	60M-80M	3	Poor	10	13.7%-27.0%	5	1.8%-5.6%	5	$$$ (>3M)	0							Covered	0	Outbound	0								
Major Collector	4	400-800	6	20M-60M	2			<13.7%	2.5	<1.8%	2.5																				
Local	2	<400	3	<20M	1																										

Number	Highway	Location	County	Functional Classification	Functional Classification Rating	HCAADT	HCAADT Rating	Truck VMT (County)	Truck VMT Rating	Crash Rate (County)	Crash Rate Rating	OOS Vehicles Rate (County)	OOS Vehicles Rating (County)	OOS Drivers Rate (County)	OOS Drivers Rating (County)	Cost ($)	Cost Rating	Existing Investment	Existing Investment Rating	Bypass Route	Bypass Route Rating	Infrastructure	Infrastructure Rating	Coverage	Coverage Rating	Point of Entry	Point of Entry Rating	Total Points
4.6	US 59	Between Fergus Falls and Detroit Lakes (near Sauers Lake Rest Area)	**OtterTail**/Becker	PA Other	8	840	9	73,773,150	3	Good	3	27.10%	7.5	5.80%	7.5	$$	0		0		0		0	PARTIALLY COVERED	0	Mid State	0	**38.0**
3.5	MN 23	Between I-94 and MN 15	Stearns	PA Other	8	1800	12	130,335,141	5	Good	3	23.58%	5	4.89%	5	$$$	0		0		0		0	COVERED	0	Mid State	0	**38.0**
4.3	US 10	WIM #43	Clay	PA Other	8	1550	9	65,132,485	3	Good	3	26.24%	5	11.76%	10	$$	0	Y	0	Y	0		0	COVERED	0	Mid State	0	**38.0**
1.7	US 2 / MN 33	Saginaw Weigh Station	Saint Louis	PA Other	8	710	6	74,731,746	3	Fair	6	44.44%	10	4.56%	5	$	0	Y	0		0		0	COVERED	0	Mid State	0	**38.0**
3.4	US 169	Between US 10 and MN 95	Sherburne	PA Other	8	2250	12	32,418,189	2	Fair	6	25.66%	5	3.62%	5	$$$	0		0		0		0	COVERED	0	Mid State	0	**38.0**
6.11	US 61	Between Lake City and Wabasha	Wabasha	PA Other	8	590	6	13,366,380	1	Poor	10	33.85%	7.5	4.08%	5	$	0		0		0		0	COVERED	0	Mid State	0	**37.5**
8.14	MN 4	Between MN 19 and MN 23	**Renville**/Meeker	Minor Arterial	6	320	3	22,629,286	2	Fair	6	30.63%	7.5	9.22%	7.5	$	0		0		0	Y	5	NOT COVERED	0	Mid State	0	**37.0**
1.8	US 169	Between Grand Rapids and Hill City (near Bear Creek Rd)	Itasca	PA Other	8	860	9	27,192,004	2	Good	3	29.49%	7.5	6.15%	7.5	$$	0		0		0		0	NOT COVERED	0	Mid State	0	**37.0**
M.8	US 8	Between Chisago City and St. Croix Falls	Chisago	PA Other	8	900	9	28,726,542	2	Good	3	36.59%	7.5	6.02%	7.5	$$	0		0		0		0	COVERED	0	Mid State	0	**37.0**
3.7	US 71	Between Long Prairie and Wadena	Todd	PA Other	8	400	6	24,346,923	2	Good	3	35.62%	7.5	9.71%	10	$	0		0		0		0	NOT COVERED	0	Mid State	0	**36.5**
7.4	US 14	Between Mankato and Waseca	Waseca	PA Other	8	2500	12	12,914,303	1	Good	3	15.56%	5	7.46%	7.5	$$$	0		0		0		0	COVERED	0	Mid State	0	**36.5**
7.8	I-90	West of Adrian Rest Areas (EB)	Nobles	Interstate	10	1250	9	23,710,405	2	Poor	10	8.96%	2.5	1.39%	2.5	$	0		0		0		0	COVERED	0	Inbound	0	**36.0**
4.8	US 10	Between Detroit Lakes and Wadena (near Frazee Rest Area)	**Becker**/Otter Tail	PA Other	8	840	9	18,099,542	1	Good	3	40.00%	7.5	6.25%	7.5	$$	0		0		0		0	PARTIALLY COVERED	0	Mid State	0	**36.0**
7.7	I-90	Worthington Weigh Station (EB)	Nobles	Interstate	10	1200	9	23,710,405	2	Poor	10	8.96%	2.5	1.39%	2.5	$	0	Y	0		0		0	COVERED	0	Inbound	0	**36.0**
4.7	US 12	At SD/MN border (Ortonville)	Big Stone	PA Other	8	520	6	6,367,227	1	Good	3	28.57%	7.5	11.11%	10	$	0		0		0		0	NOT COVERED	0	Inbound	0	**35.5**
8.13	MN 15	Between US 212 and MN 7	McLeod	PA Other	8	760	6	32,531,649	2	Good	3	25.00%	5	13.74%	10	$	0		0		0		0	NOT COVERED	0	Mid State	0	**34.0**
1.6	I-35	Carlton Pull Off Sites	Carlton	Interstate	10	1100	9	21,503,252	2	Good	3	11.98%	2.5	6.53%	7.5	$$	0	Y	0		0		0	COVERED	0	Mid State	0	**34.0**
6.8	US 52	Just North of IA/MN border	Fillmore	PA Other	8	540	6	14,332,492	1	Fair	6	26.58%	5	6.67%	7.5	$	0		0		0		0	NOT COVERED	0	Inbound	0	**33.5**
6.9	US 63	Just North of IA/MN border	Fillmore	PA Other	8	560	6	14,332,492	1	Fair	6	26.58%	5	6.67%	7.5	$	0		0		0		0	NOT COVERED	0	Inbound	0	**33.5**
8.7	MN 23	WIM #34 (Between US 212 and MN 7)	Chippewa	PA Other	8	690	6	11,211,491	1	Good	3	34.13%	7.5	5.62%	7.5	$	0	Y	0		0		0	NOT COVERED	0	Mid State	0	**33.0**
8.6	MN 23	Between US 212 and MN 7	Chippewa	PA Other	8	650	6	11,211,491	1	Good	3	34.13%	7.5	5.62%	7.5	$	0		0		0		0	NOT COVERED	0	Mid State	0	**33.0**
8.9	MN 40	Willmar to US 75	**Chippewa**/Kandiyohi	Minor Arterial	6	155	3	11,211,491	1	Good	3	34.13%	7.5	5.62%	7.5	$	0		0		0	Y	5	NOT COVERED	0	Mid State	0	**33.0**
8.12	MN 22	West of Hutchinson	McLeod	Minor Arterial	6	450	6	32,531,649	2	Good	3	25.00%	5	13.74%	10	$	0		0		0		0	NOT COVERED	0	Mid State	0	**32.0**
8.2	MN 23	South of MN 19	Lyon	PA Other	8	860	9	16,701,005	1	Fair	6	6.61%	2.5	2.01%	5	$	0		0		0		0	NOT COVERED	0	Mid State	0	**31.5**
8.3	MN 23	North of MN 19	Lyon	PA Other	8	840	9	16,701,005	1	Fair	6	6.61%	2.5	2.01%	5	$	0		0		0		0	NOT COVERED	0	Mid State	0	**31.5**
4.4	MN 210	Between ND/MN border and Fergus Falls (near Foxhome, MN)	**Wilkin**/Otter Tail	PA Other	8	640	6	22,392,262	2	Good	3	25.53%	5	5.94%	7.5	$	0		0	Y	0		0	PARTIALLY COVERED	0	Inbound	0	**31.5**
2.3	CSAH 87	Between US 71 and MN 64	Hubbard	Major Collector	4	55	3	12,876,161	1	Good	3	41.38%	10	3.53%	5	$	0		0		0	Y	5	NOT COVERED	0	Mid State	0	**31.0**
4.10	US 12	Near Benson (near 40th Ave)	Swift	PA Other	8	460	6	10,764,065	1	Good	3	39.29%	7.5	2.56%	5	$	0		0		0		0	NOT COVERED	0	Mid State	0	**30.5**
2.4	US 59	Between Erskine and Thief River Falls	**Red Lake**/Pennington	PA Other	8	480	6	2,077,846	1	Good	3	50.00%	10	0.00%	2.5	$	0		0		0		0	COVERED	0	Mid State	0	**30.5**
2.6	US 2 / US 59	Erskine Weigh Station (NB&SB)	Polk	PA Other	8	685	6	21,065,221	2	Fair	6	15.43%	5	1.64%	2.5	$	0	Y	0		0		0	COVERED	0	Inbound	0	**29.5**
M.9	CSAH 95	West of St. Croix Falls	Chisago	Minor Arterial	6	250	3	28,726,542	2	Good	3	36.59%	7.5	6.02%	7.5	$	0		0		0		0	COVERED	0	Mid State	0	**29.0**
8.4	US 59	South of MN 19	Lyon	PA Other	8	410	6	16,701,005	1	Fair	6	6.61%	2.5	2.01%	5	$	0		0		0		0	NOT COVERED	0	Mid State	0	**28.5**
7.5	MN 60	WIM #27	Watowan	PA Other	8	1200	9	16,464,090	1	Good	3	10.20%	2.5	4.84%	5	$$	0	Y	0		0		0	COVERED	0	Mid State	0	**28.5**
2.1	MN 11	Between Warroad and Baudette	**Lake of the Woods**/Roseau	PA Other	8	240	3	4,168,018	1	Good	3	0.00%	2.5	11.11%	10	$	0		0		0		0	NOT COVERED	0	Inbound	0	**27.5**
8.5	US 212	Between Clarkfield and Montevideo	Yellow Medicine	PA Other	8	200	3	12,485,016	1	Good	3	8.77%	2.5	4.76%	5	$	0		0		0	Y	5	NOT COVERED	0	Mid State	0	**27.5**
7.6	US 71	Between MN 30 and US 14	Cottonwood	PA Other	8	650	6	13,738,042	1	Good	3	9.52%	2.5	4.26%	5	$	0		0		0		0	COVERED	0	Mid State	0	**25.5**
2.2	MN 92	Between CSAH 2 and CSAH 8	Polk	Minor Arterial	6	15	3	21,065,221	2	Fair	6	15.43%	5	1.64%	2.5	$	0		0		0		0	COVERED	0	Mid State	0	**24.5**
8.1	MN 269	Between SD border and MN 23 (near Jasper)	Pipestone	Minor Arterial	6	195	3	10,672,000	1	Good	3	4.88%	2.5	3.85%	5	$	0		0	Y	0		0	COVERED	0	Inbound	0	**20.5**
2.5	US 75	Between MN 11 and MN 175	Kittson	Minor Arterial	6	145	3	8,376,301	1	Good	3	9.03%	2.5	0.00%	2.5	$	0		0		0		0	NOT COVERED	0	Mid State	0	**18.0**

Appendix D: Maps

Constrained Evaluation Results



Unconstrained Evaluation Results