


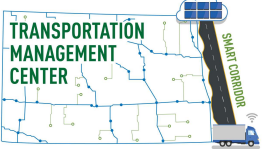


From Variable Speeds to Dashboard Feeds

Midwest SMART Corridors




NDDOT TMC & I-29 SMART Corridor Plan



TRANSPORTATION MANAGEMENT CENTER


SMART CORRIDOR

SDDOT I-29 VSL Corridor



Variable SPEED LIMIT 29




MnDOT I-35 Duluth ITS Feasibility Study



INTELLIGENT 35

Three Projects

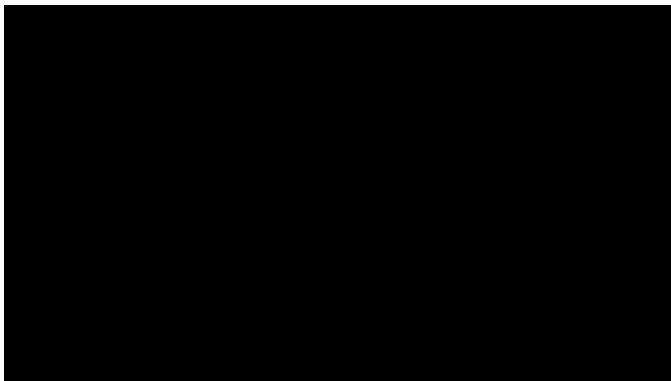
Three States

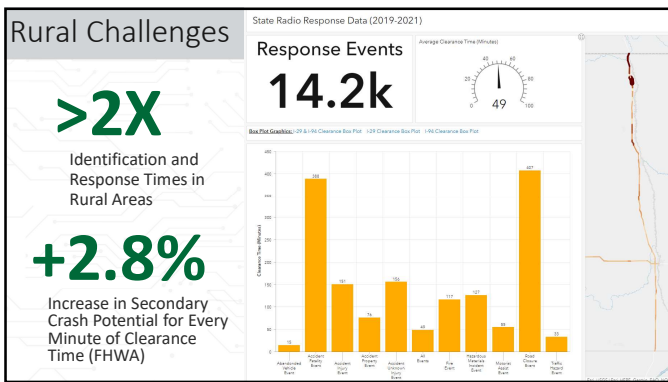


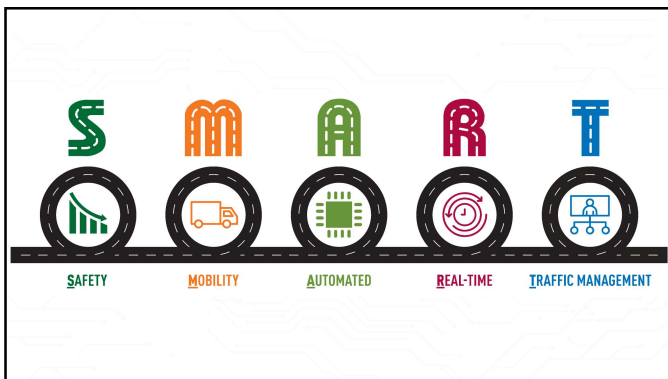
TRANSPORTATION MANAGEMENT CENTER

SMART CORRIDOR

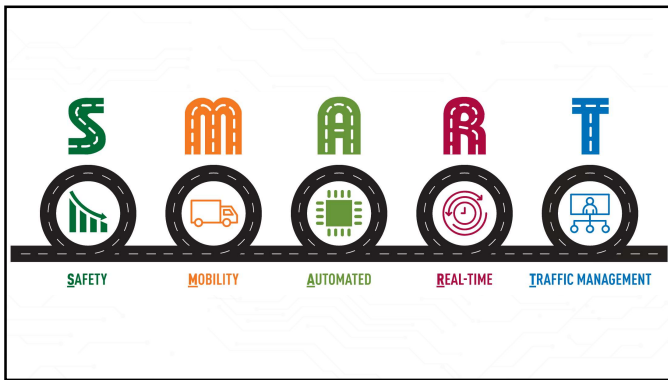
North Dakota TMC & I-29 SMART Corridor

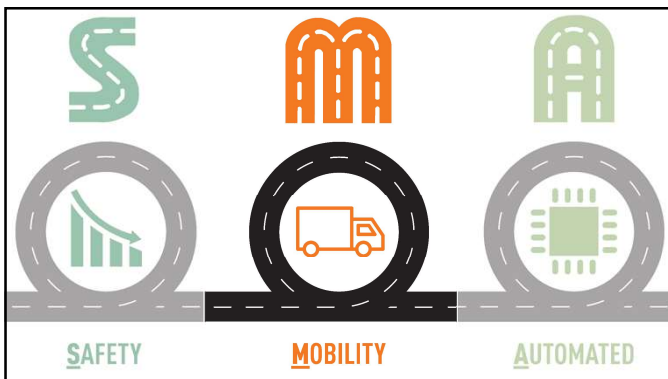












Ramp Metering

- Next Steps and Keys to Success
 - Detailed Traffic Modeling
 - Ramp Metering Timing Plans
 - Queue Analysis and Design
 - System Activation Algorithms
 - Local Traffic Redistribution Analysis
 - Collaboration with MnDOT for Moorhead Interchanges
 - TMC Integration and Operations

S **M** **A** **R** **T**

SAFETY **MOBILITY** **AUTOMATED** **REAL-TIME** **TRAFFIC MANAGEMENT**

M **A** **R**

MOBILITY **AUTOMATED** **REAL-TIME**



Background Information

The Challenge

- I-29 often experiences severe winter weather resulting in injuries, deaths, secondary collisions, delays, closures, and travel time unreliability.

2022 Statistics

2	Fatalities
32	Crashes During Winter Weather
3	Winter Weather Full Roadway Closures (22 - 23 Winter Season)
9	SDSU Home Football Games Leading To Traffic Congestion

SD DOT

Safety Challenges

Crash Contributing Factors (2018-2022)

Winter Weather	117
Secondary Crash	13
Speeding	76
Weather	5

SD DOT

Proposed Improvements

CORE VSL SYSTEM COMPONENTS

- VSL Signs
- Environmental Sensors
- Traffic Detection
- Traffic Cameras

SUPPORTING DEVICES

- Dynamic Message Signs
- Ramp Queue Detection
- Road Closure Gates
- Road Closure Gate Signs

SD DOT

Variable Speed Limits

DATA INPUTS

- Camera Mobility and Incidents
- ESS (Pneigation and Surface Friction)
- Vehicle Detectors (Speed and Volume)

DATA PROCESSING

- Algorithmic Recommendations
- ATIS and ITC Oversight

ROADWAY OUTPUTS

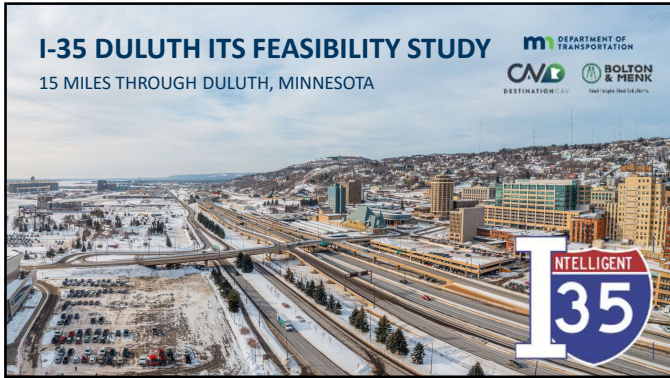
- Incremental Speed Limit Changes
- Flashing Beacons

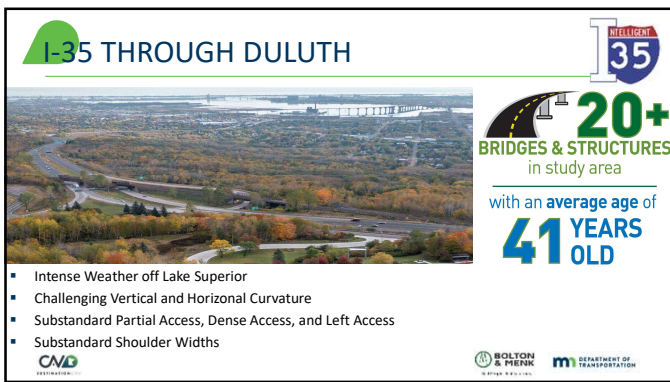
SD DOT

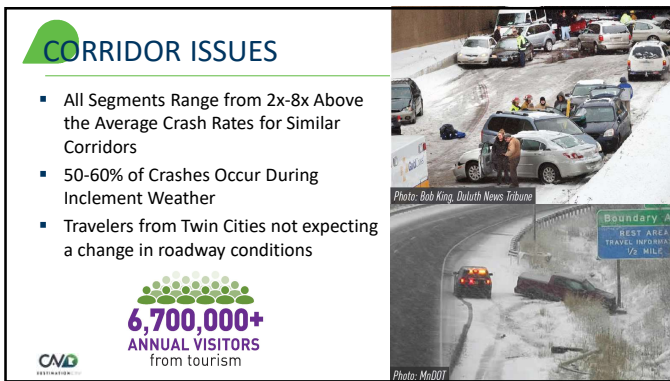
What the System is Not

- It is NOT a winter speed trap.
- It is NOT a way to reduce speeds during normal driving conditions.
- It is NOT a way to capture your photo or personal information.


SD DOT








BRICK AND MORTAR SOLUTIONS



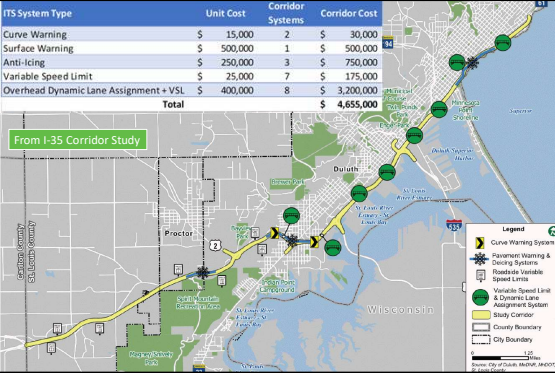
- Several Hundred Million Dollars Worth of Needs, Twice as Many Wants
- TPI Project: \$343M Original Budget, \$510M Final Cost






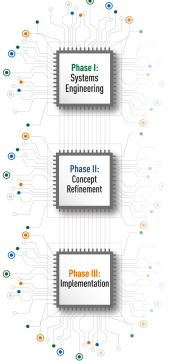
ITS PROPOSAL



ITS System Type	Unit Cost	Corridor Systems	Corridor Cost
Curve Warning	\$ 15,000	2	\$ 30,000
Surface Warning	\$ 500,000	1	\$ 500,000
Anti-Icing	\$ 250,000	3	\$ 750,000
Variable Speed Limit	\$ 25,000	7	\$ 175,000
Overhead Dynamic Lane Assignment + VSL	\$ 400,000	8	\$ 3,200,000
Total			\$ 4,655,000






PROJECT APPROACH



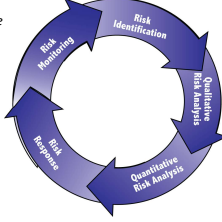
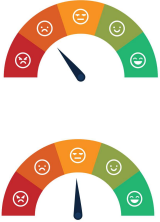




Deliverables




- ConOps and Requirements (March 2025)
- Conceptual Design and Cost Estimate (July 2025)
- Feasibility Plan (October 2025)
- Implementation Plan (December 2025)


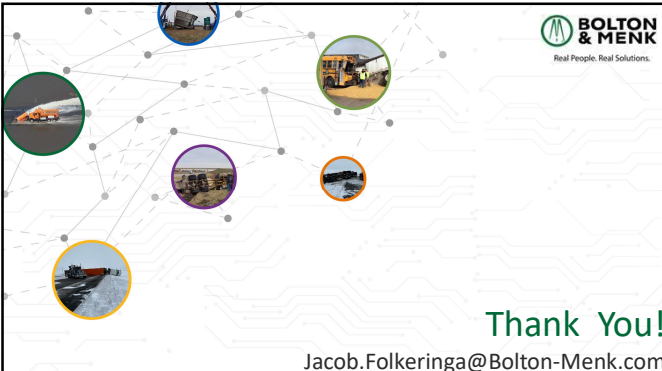


RISK ASSESSMENT



- Threat:** Limited local understanding of ITS
Resolution: Utilize MnDOT Innovative Ideas program to explore issues, need, and potential solutions
- Threat:** Legislation only allows for advisory speeds
Resolution: Review other states recent changes and consider legislative pamphlet
- Threat:** Unknown operations and maintenance requirements
Resolution: Engage stakeholders and develop operational scenarios





Thank You!
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