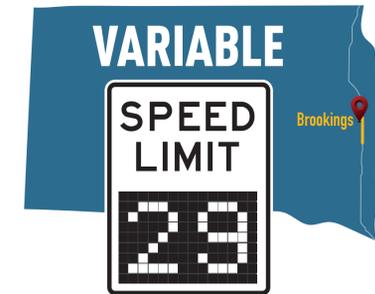


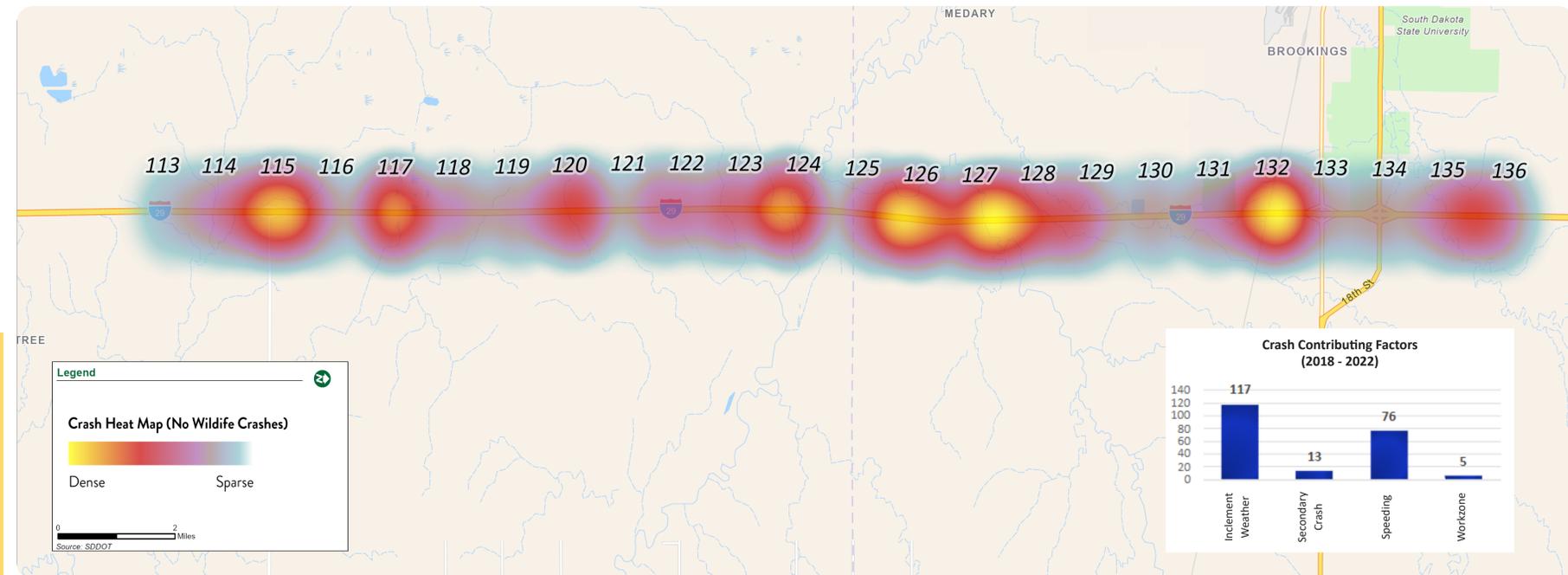
# Project Overview



## Background

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

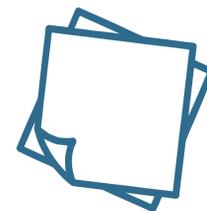
## Safety Challenges



## Potential Countermeasures

Variable speed limit (VSL) system to lower the regulatory speed limit when appropriate, based on real-time roadway and travel conditions.

Supporting intelligent transportation system (ITS) deployments possibly including queue warning systems, road closure gates, and signing enhancements.



Planning and Preliminary Design  
**Winter 2023 - 2024**



Final Design  
**Spring 2024**

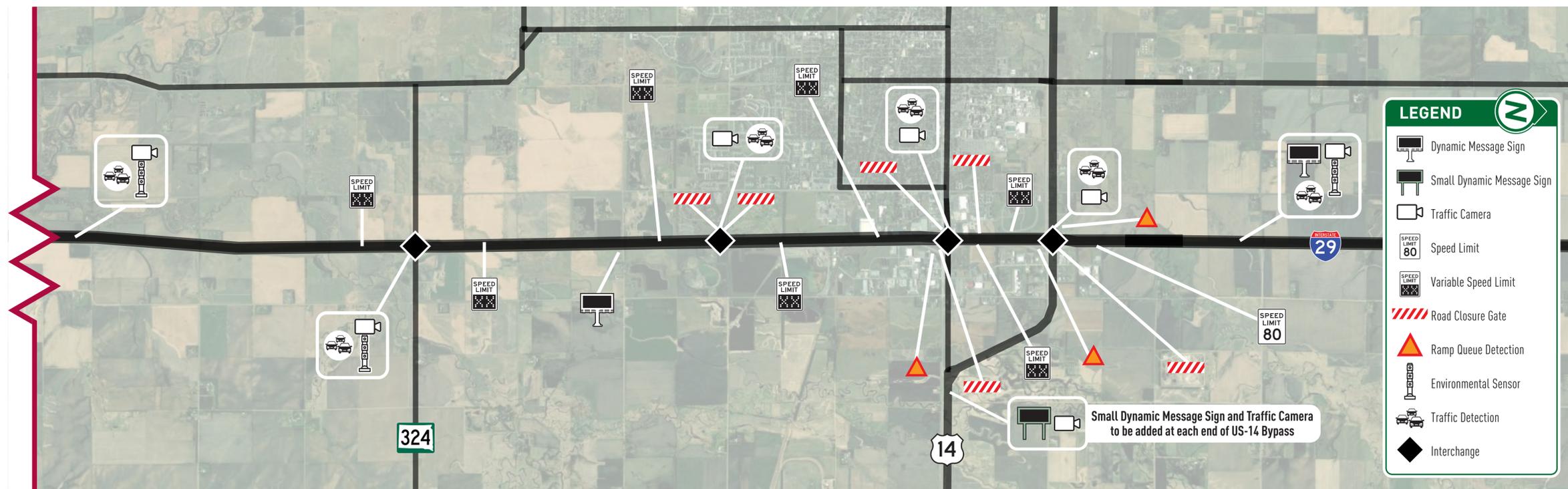
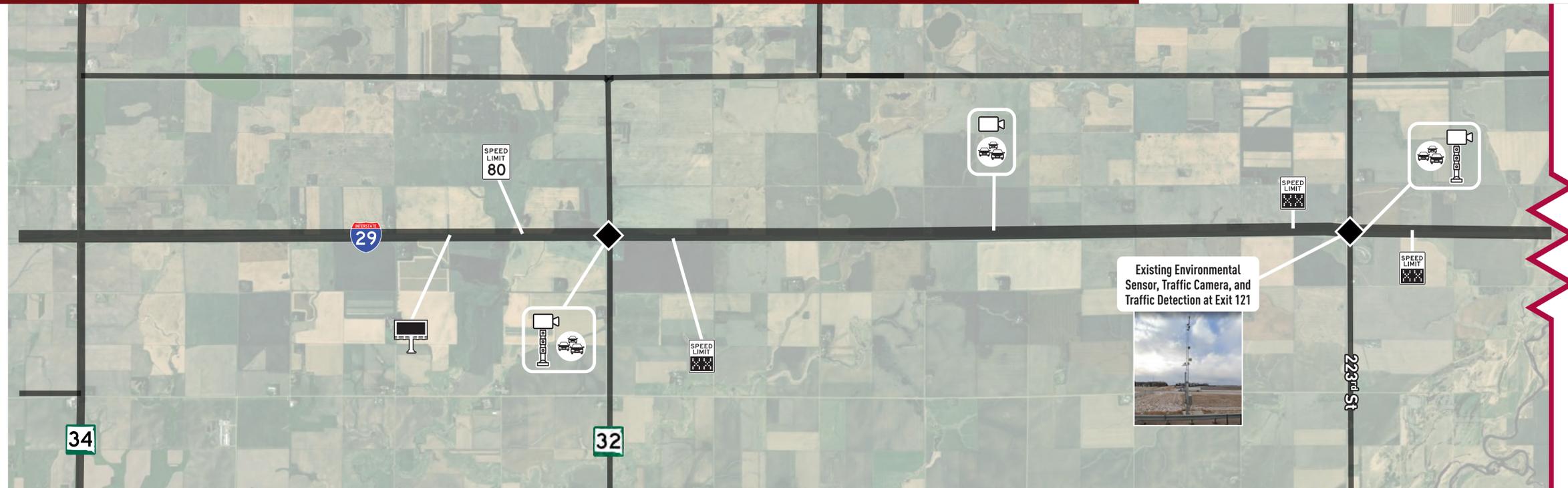
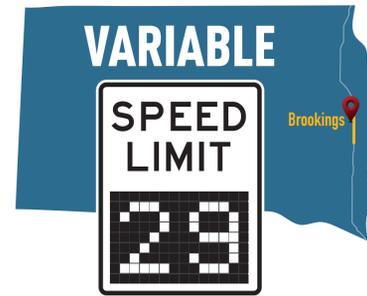


Construction  
**Summer 2025**

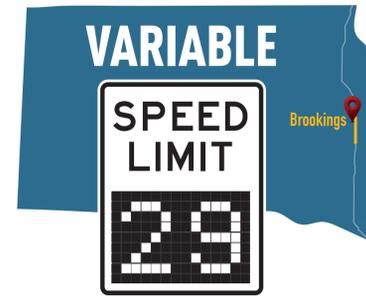


Begin VSL Operations  
**Winter 2025 - 2026**

# Proposed Improvements



# How It Works



## Field Devices Monitor Traffic, Weather, and Road Conditions



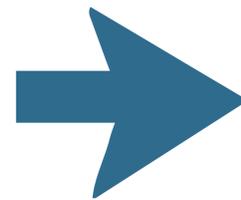
Traffic cameras



Environmental sensors (precipitation, visibility, and surface friction)

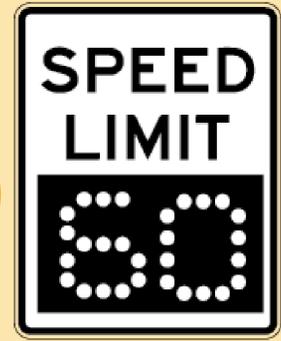
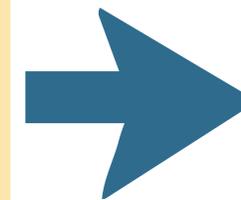


Traffic detection (speed)



## Data Review

SDDOT reviews sensor data and confers with field staff and law enforcement



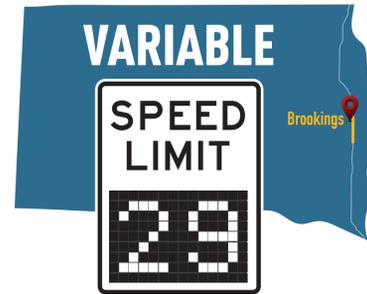
## New Speed Limit

SDDOT sets new speed limit based on data and discussions



*SDDOT continues to monitor conditions*

# System Overview



## System Tools

### Core System Components



VSL Signs



Environmental Sensors



Traffic Detection



Traffic Cameras

### Supporting Devices



Dynamic Message Sign



Ramp Queue Detection



Road Closure Gates



Road Closure Gate Signs

## When is VSL used?

### Primary Uses

Normal Operations  
Severe Weather

### Secondary Uses

Traffic Incidents  
Construction  
Special Events

## Did you know?

*VSL can reduce crashes on Interstates up to...*

34% for total crashes

51% for fatal and injury crashes

64% for rear-end crashes