



CAR POOLS, BUSES  
MOTORCYCLES &   
6AM-10AM  MON-FRI

EXIT 8

82nd St  
1 MILE

90th St



50  
MPH

50  
MPH

# ATM in Minnesota During Weather Events

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Freeway Operations Engineer





# Active Traffic Management



# Intelligent Lane Control Signals

- ILCS located every  $\frac{1}{2}$  mile over every lane.
- ILCS are a 4ft x 5ft full color matrix signs.
- Use of the ILCS is for incident management, speed harmonization and priced dynamic shoulder lane.
- I-35W – about 190 ILCS
- I-94 – about 110 ILCS





# ILCS Sign Options



Blank – default



Green – Lane Open



Flashing Yellow – Caution



Red X – Closed



Yellow X – Closed Ahead



Merge



Speed Limit



White Diamond



# Variable Speed Limits

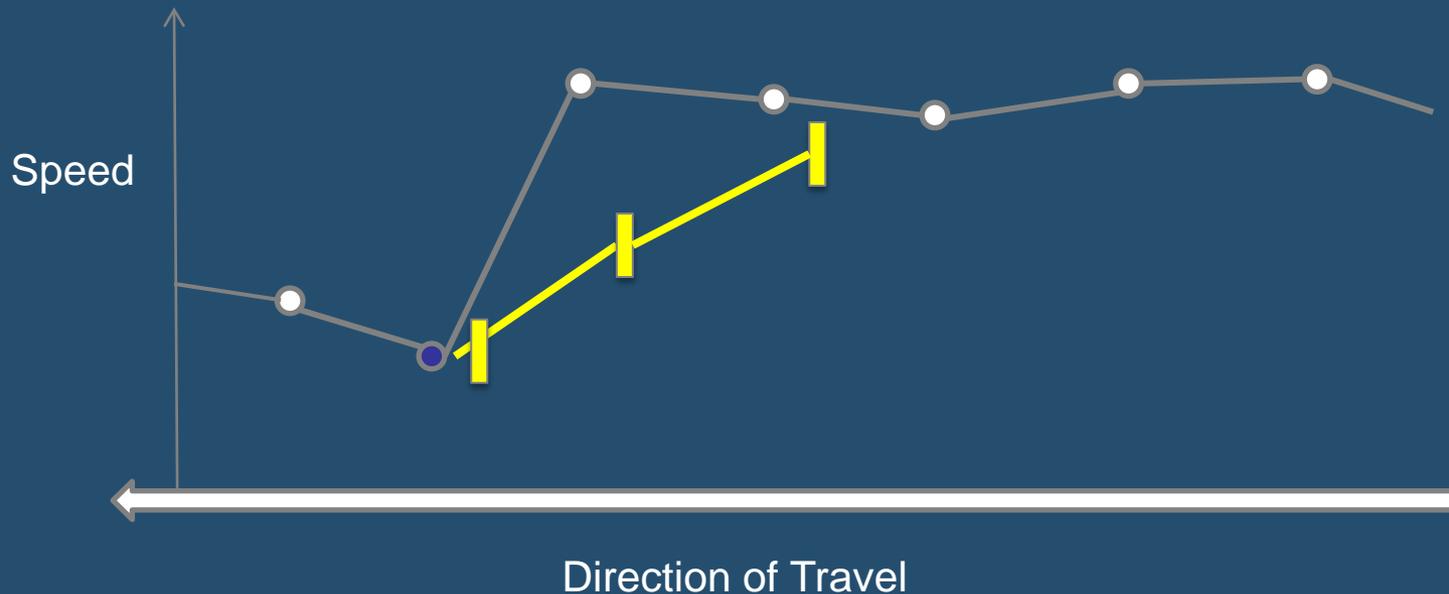


- Advisory Only
- Detection measures traffic speeds downstream
- Speeds are posted up to 1 ½ miles upstream

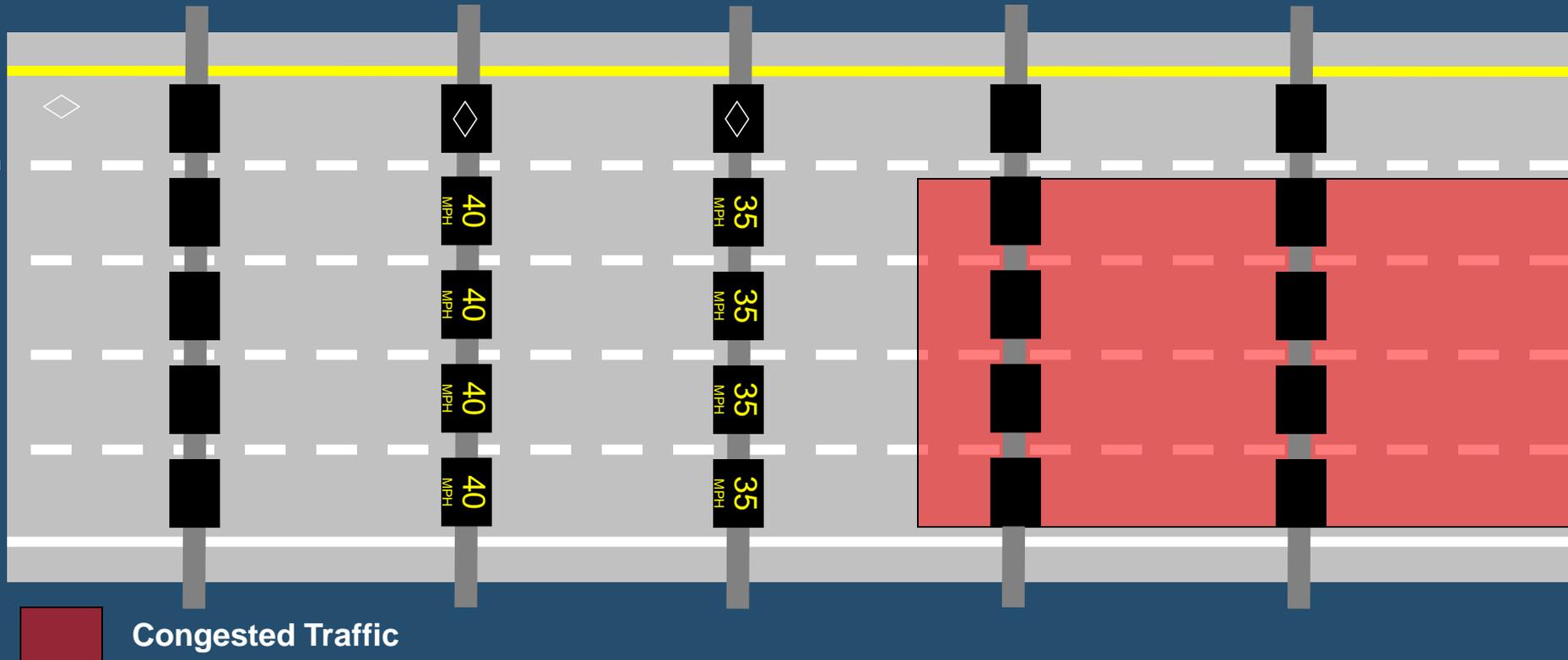


# Overview of VSL Control

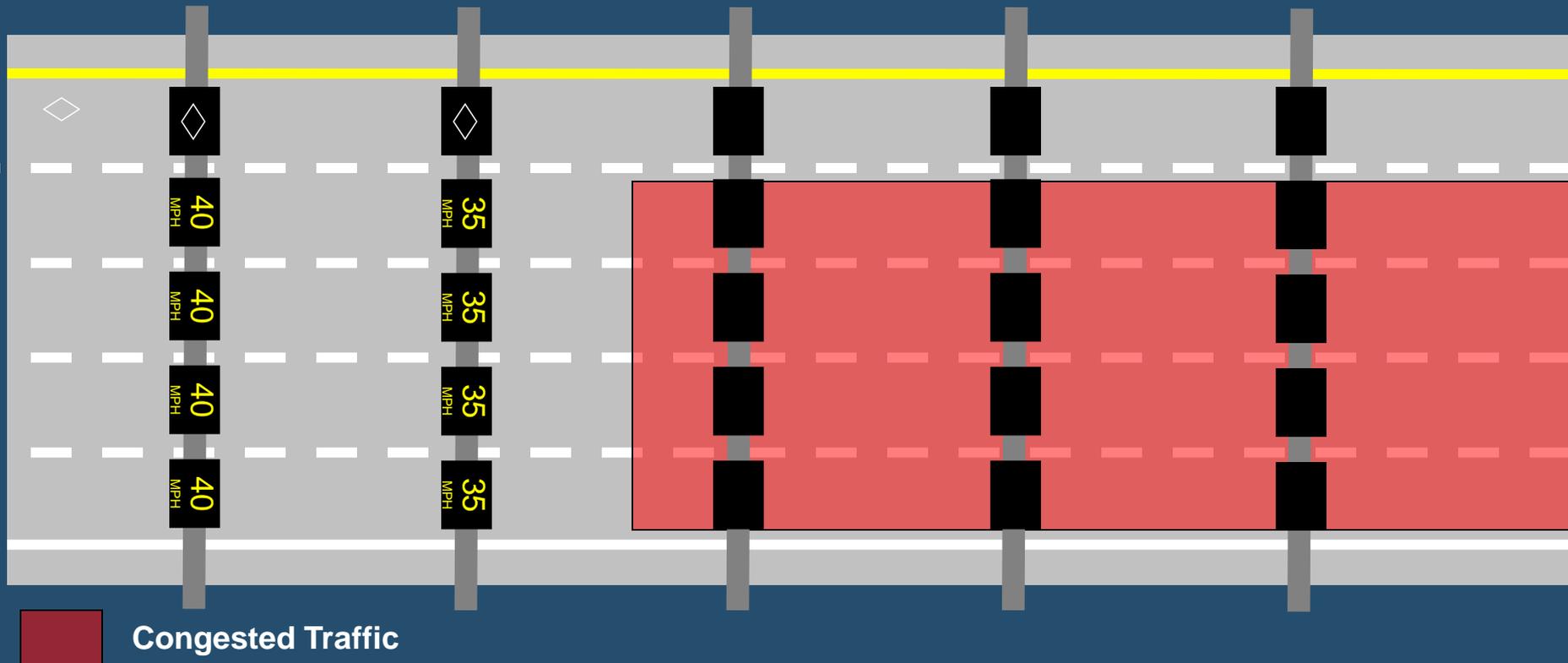
- Goal is to mitigate shock wave propagation from downstream bottleneck by gradually reducing speed levels of incoming traffic flow.



# Advisory Variable Speed Limits



# Advisory Variable Speed Limits





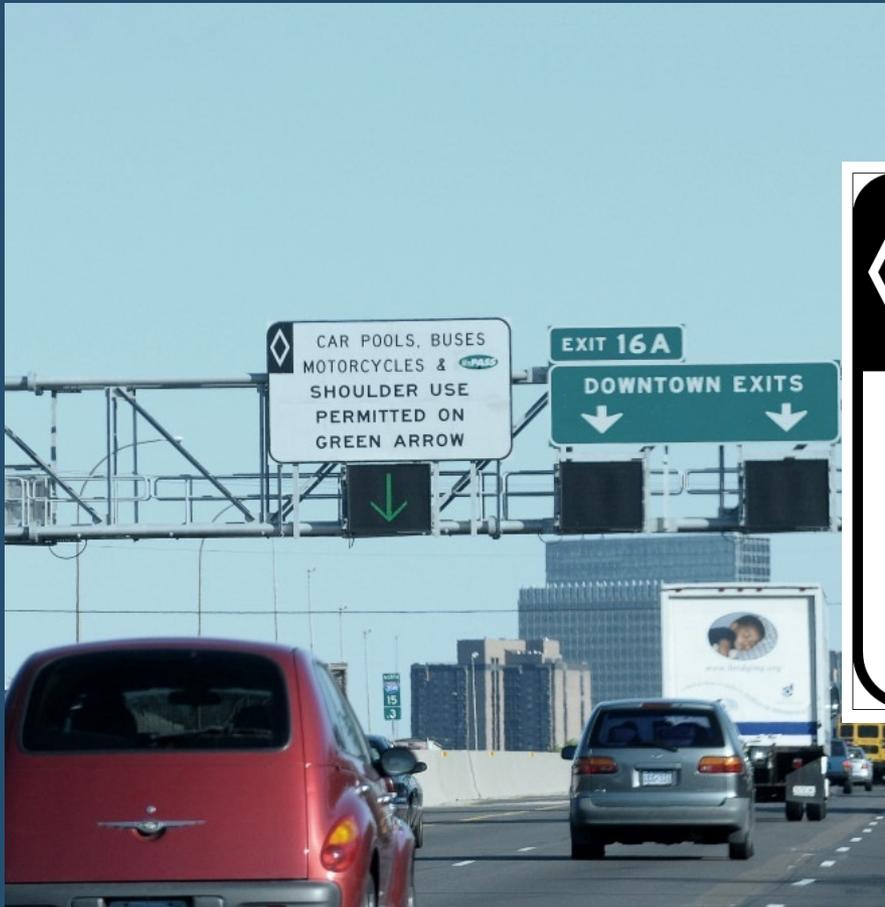
# VSL Control During Weather

- VSL system uses a constant deceleration rate to determine advisory speed limit values.
  - Preferred deceleration rates are different during weather.
- Upper speed limit cap is 5 MPH less than posted speed limit.
  - System posting 60 MPH during snow events.
  - Have since changed upper speed limit cap to 50 MPH
- Developing new techniques for VSL operations during weather events.





# I-35W MnPASS: Active Traffic Management PDSL Open



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MOTORCYCLES &   
SHOULDER USE  
PERMITTED ON  
GREEN ARROW





# Priced Dynamic Shoulder Lane (PDSL): Segment 3: 3 miles

- Priced Dynamic Shoulder Lane North of 42<sup>nd</sup> St on NB 35W
- Maintains existing 4 lanes with an added PDSL Lane
- Effectively extends the MnPASS lane to downtown Minneapolis using existing road space



# Innovative Use of Technology and Infrastructure





# I-35W MnPASS: Active Traffic Management PDSL Closed





# I-35W MnPASS: In Pavement Lighting PDSL Closed

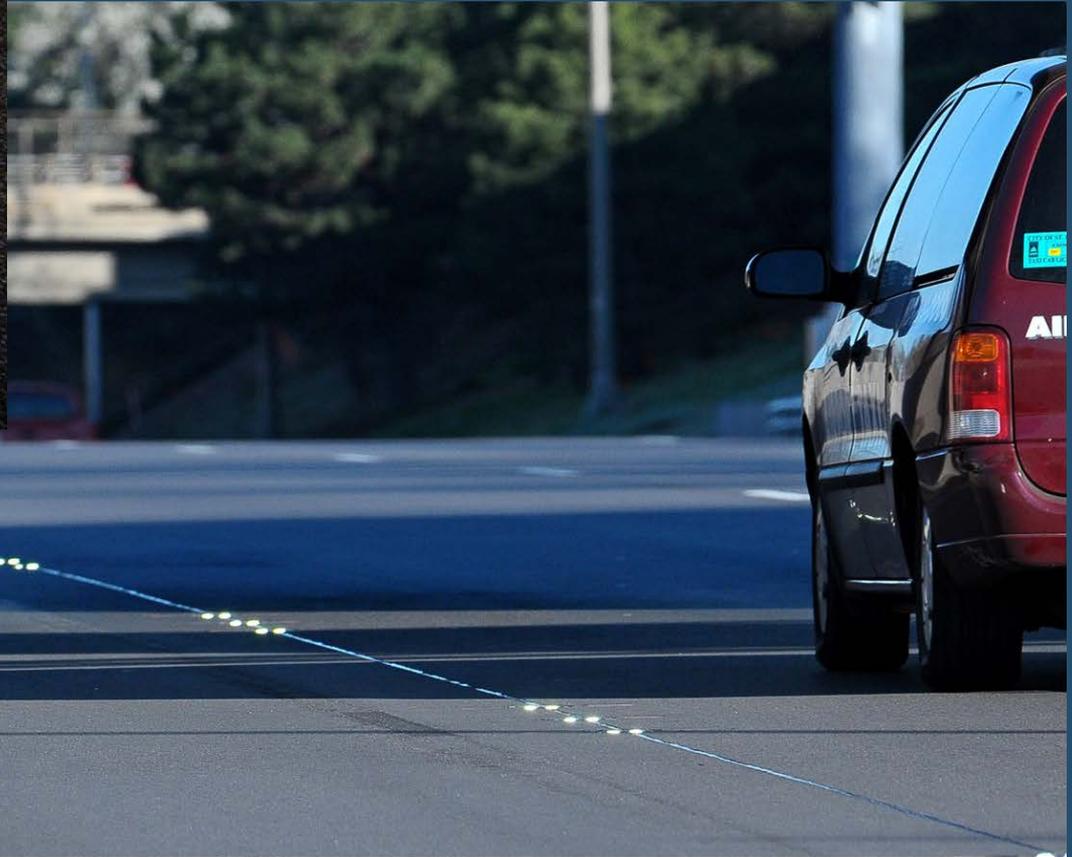




# I-35W MnPASS: In Pavement Lighting PDSL Open



# I-35W MnPASS: In Pavement Lighting



# I-35W MnPASS: In Pavement Lighting Corrosion and Failure



# PDSL During Snow & Ice

- PDSL is left open during snow & ice events
- Traffic helps to spread de-icing material



# ATM During Rainfall Event

- Shoulder designed to allow some ponding during heavy rainfall.
- Section of I-35W where MnPASS lane is on the old inside shoulder.
- Investigating the use of rainfall sensor to deploy warning message or advisory speed limit.



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# Questions?

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