



# I229 / Exit 4 (Cliff Ave) IMJR

## Interchange Modification Justification Report (IMJR)

- Federal Highway Administration (FHWA) required document that concludes the proposed changes do not have a significant adverse impact on the safety and operations of the interstate facility.
- The IMJR document was developed with oversight from FHWA, SDDOT, City of Sioux Falls, and members of the SAT.
- The main steps in the process include:
  - Identify the study area
  - Gather data (ie. traffic, survey, land use, environmental, etc.)
  - Review prior studies
  - Coordinate with the preparation of the environmental studies and NEPA process
  - Determine operational & safety characteristics to address the FHWA requirements
  - Prepare and submit the IMJR document for review/approval



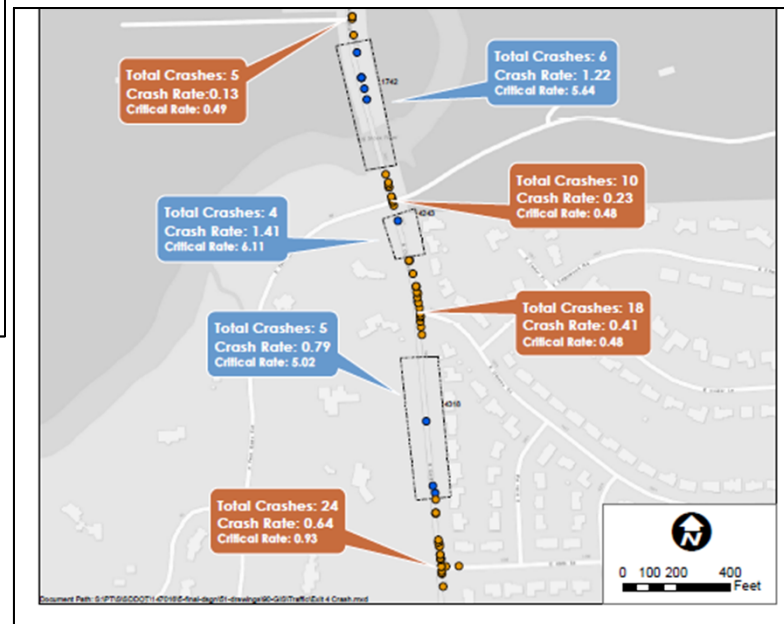
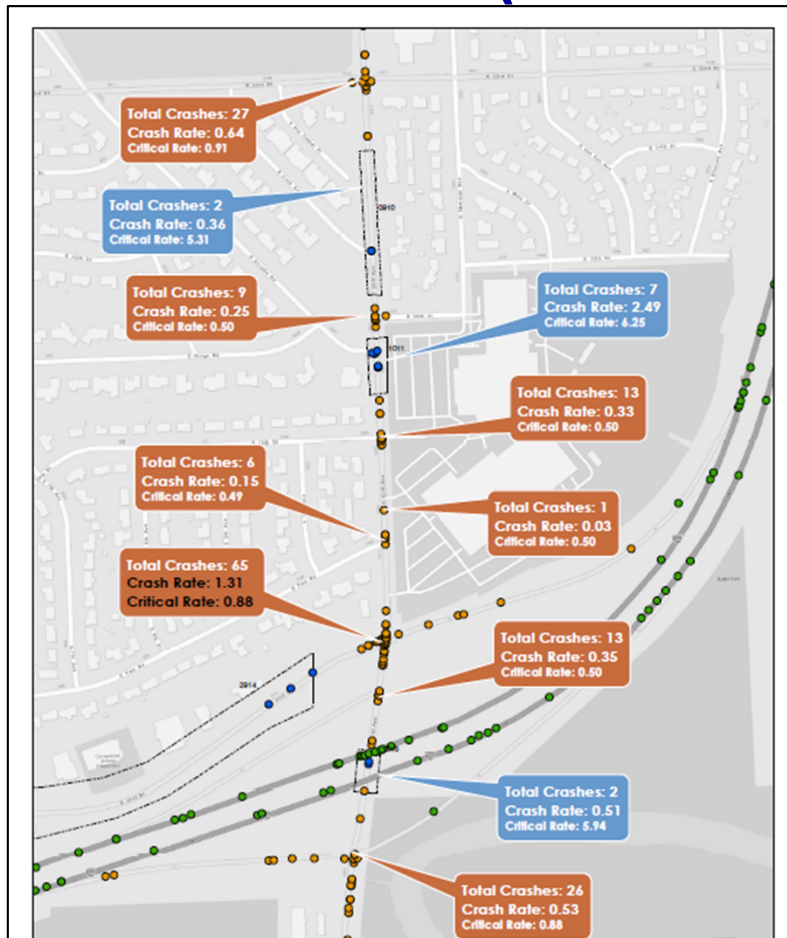
Alan Murra



# Exit 4 (Cliff Ave) – Crash Summary

## Summary of Reported Crashes:

- 246 Crashes along Cliff Avenue
  - 217 at Intersections
  - 29 along Segments
- 96 Crashes on I-229 and Ramps
- 1 Intersection above Critical Rate:
  - Cliff at 41<sup>st</sup> St / I-229 SB Ramp Intersection



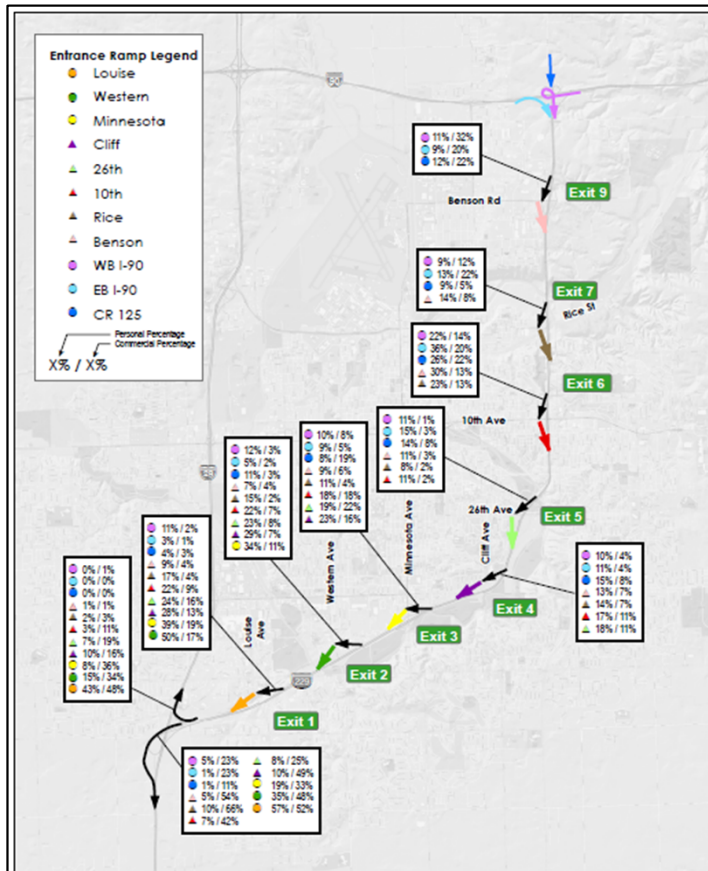
Interchange and Environmental Study for I-229  
Exits 3 (Minnesota Ave) and 4 (Cliff Ave)



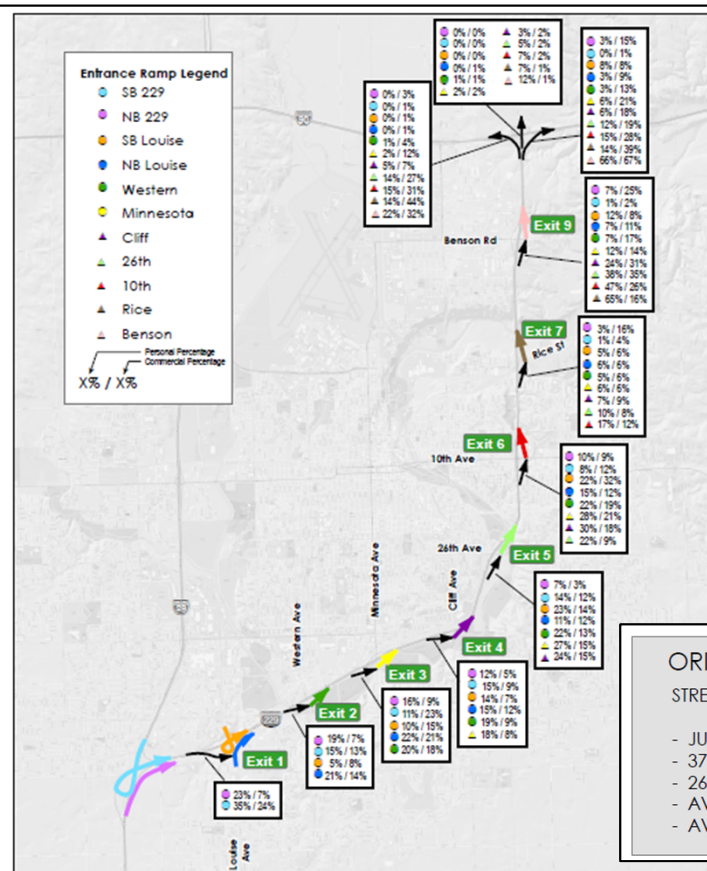
Alan Murra



# Origin – Destination Study



SB OD Summary Weekday Avg



NB OD Summary Weekday Avg

## ORIGIN - DESTINATION STUDY STREETLIGHT DATE - CELLPHONE / GPS

- JULY 2017 - JUNE 2018
- 375,000 PERSONAL TRIPS
- 265,000 COMMERCIAL TRIPS
- AVERAGE PERSONAL TRIP < 4 MILES
- AVERAGE COMMERCIAL TRIP < 5 MILES



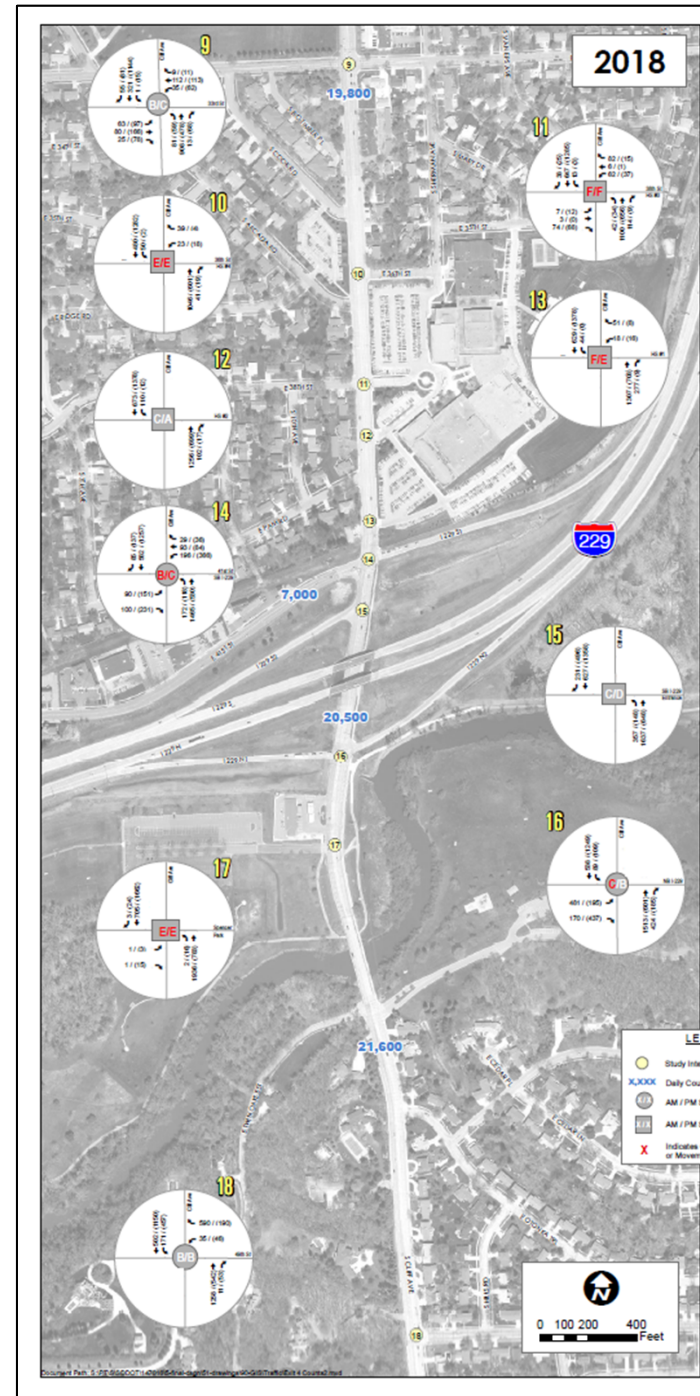
Interchange and Environmental Study for I-229  
Exits 3 (Minnesota Ave) and 4 (Cliff Ave)



Alan Murra

# Exit 4 (Cliff Ave) – Existing Traffic Volumes

- 2018 Freeway and Ramp Data provided by SDDOT.
- 2016-2018 Intersection data provided by City of Sioux Falls.
- Included 29 study intersections and 16 ramp junctions.



Alan Murra





# Exit 4 (Cliff Ave) – Future Growth

- Sioux Falls Area MPO's Regional Travel Demand Model used to develop forecasts for 2035 and 2050



- I-229 to grow up to 60% by 2050.
- Cliff Ave to grow between 30% and up to 100%.



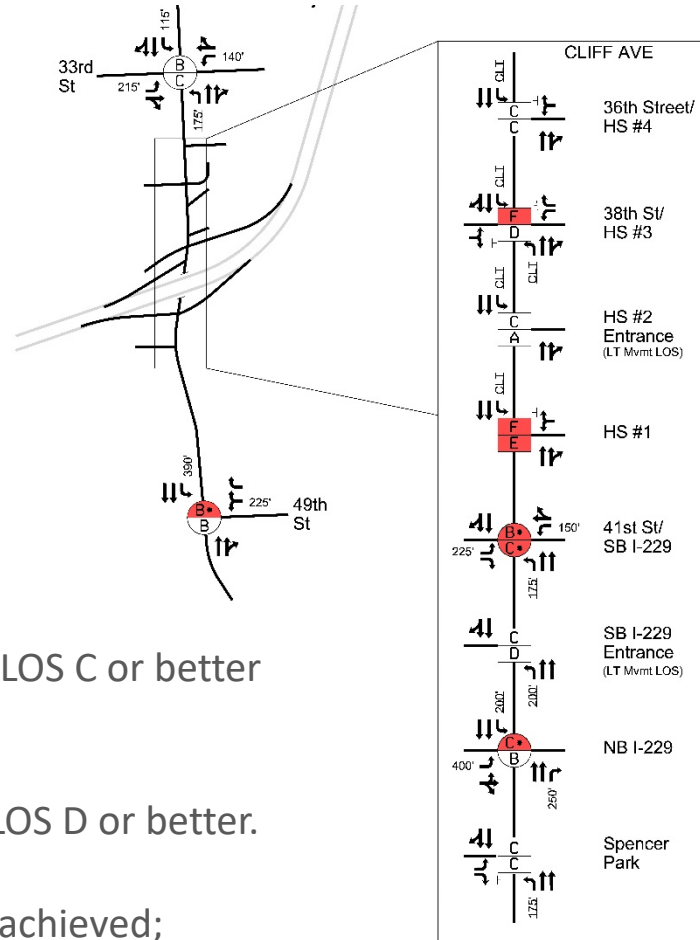
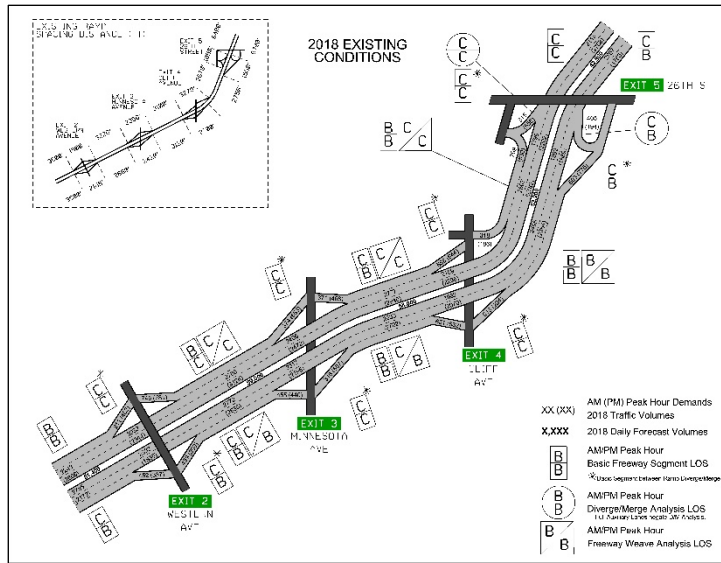
Interchange and Environmental Study for I-229  
Exits 3 (Minnesota Ave) and 4 (Cliff Ave)



Alan Murra



# 2018 Traffic Operations



## How do we measure "Level of Service" (LOS)?

- A FREE FLOW**  
Low volumes and free flow speeds.
- B STABLE FLOW**  
Reasonable free flow speeds, minimal restrictions on lane maneuvers.
- C STABLE FLOW**  
Near free flow speeds, noticeable restrictions on lane maneuvers.
- D STABLE FLOW**  
Speed decline with increased volume, significant restriction on lane maneuvers.
- E UNSTABLE FLOW**  
At or near capacity, with few gaps for lane maneuvers and frequent disruptions and queues.
- F FORCED FLOW**  
Operational breakdown.

The Level of Service (LOS) goal is to achieve a LOS C or better for all freeway and ramp intersections.

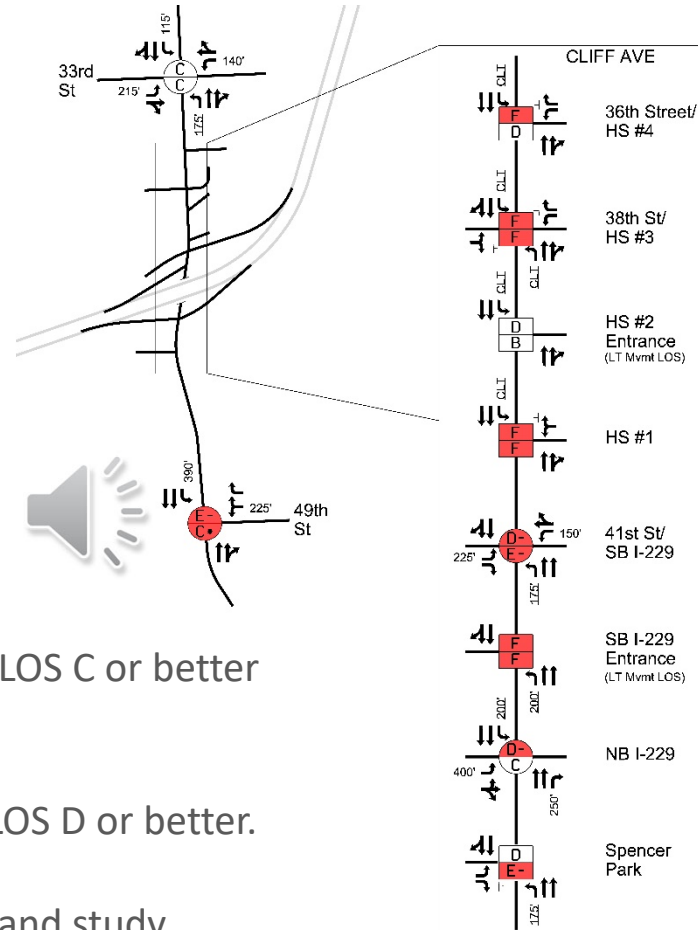
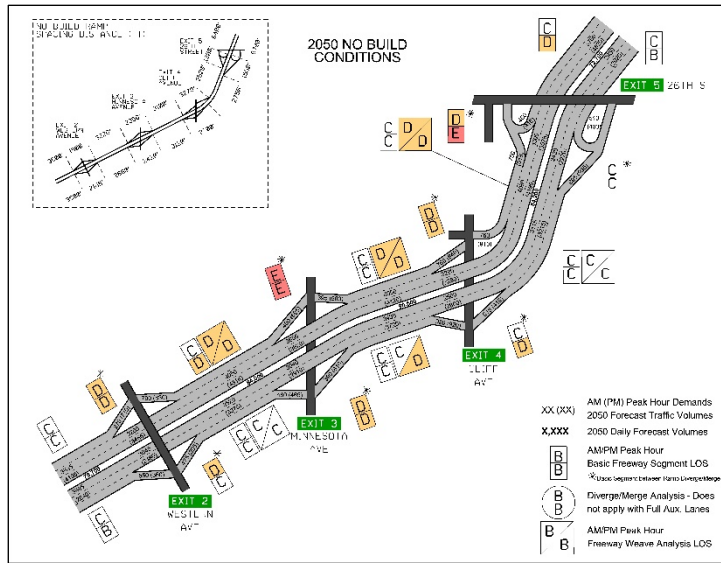
The LOS goal for intersections is to achieve a LOS D or better.

Under existing conditions, the freeway LOS is achieved; however, 5 study intersections have poor LOS.



Alan Murra

# 2050 Traffic Operations – No Build

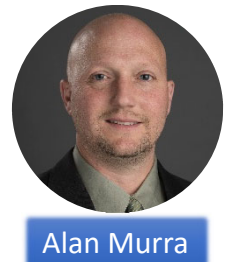


| How do we measure "Level of Service" (LOS)? |  |
|---|--|
| <b>A</b>                                    | <b>FREE FLOW</b><br>Low volumes and free flow speeds.  |
| <b>B</b>                                    | <b>STABLE FLOW</b><br>Reasonable free flow speeds, minimal restrictions on lane maneuvers.                         |
| <b>C</b>                                    | <b>STABLE FLOW</b><br>Near free flow speeds, noticeable restrictions on lane maneuvers.                            |
| <b>D</b>                                    | <b>STABLE FLOW</b><br>Speed decline with increased volume, significant restriction on lane maneuvers.              |
| <b>E</b>                                    | <b>UNSTABLE FLOW</b><br>At or near capacity, with few gaps for lane maneuvers and frequent disruptions and queues. |
| <b>F</b>                                    | <b>FORCED FLOW</b><br>Operational breakdown.   |

The Level of Service (LOS) goal is to achieve a LOS C or better for all freeway and ramp intersections.

The LOS goal for intersections is to achieve a LOS D or better.

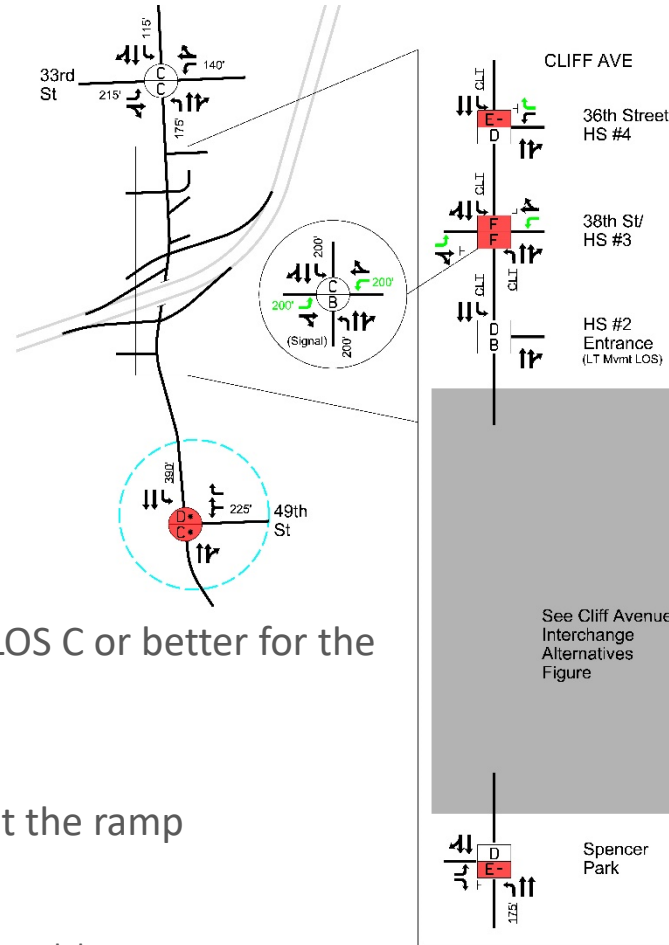
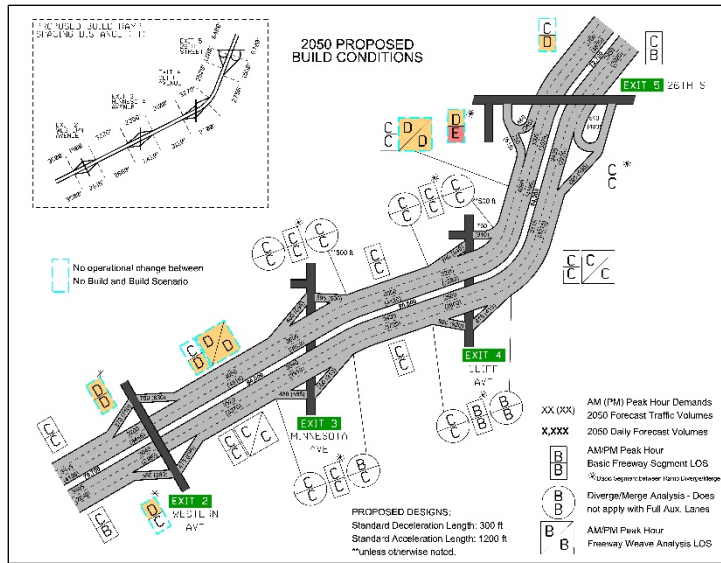
Under 2050 No Build conditions, the freeway and study intersections have poor LOS.







# 2050 Traffic Operations – Build



The Level of Service (LOS) goal is to achieve a LOS C or better for the freeway within the project area.

- Near Western Avenue and 26<sup>th</sup> Street poor LOS remains.

All three alternatives provide acceptable LOS at the ramp intersections.

- 38<sup>th</sup> Street will be signalized.
- 36<sup>th</sup> Street and Spencer Park un-signalized with minor street delay.
- 49<sup>th</sup> Street intersection is outside the immediate project area.



| How do we measure "Level of Service" (LOS)? |  |
|---|--|
| <b>A</b>                                    | <b>FREE FLOW</b><br>Low volumes and free flow speeds.  |
| <b>B</b>                                    | <b>STABLE FLOW</b><br>Reasonable free flow speeds, minimal restrictions on lane maneuvers.                         |
| <b>C</b>                                    | <b>STABLE FLOW</b><br>Near free flow speeds, noticeable restrictions on lane maneuvers.                            |
| <b>D</b>                                    | <b>STABLE FLOW</b><br>Speed decline with increased volume, significant restriction on lane maneuvers.              |
| <b>E</b>                                    | <b>UNSTABLE FLOW</b><br>At or near capacity, with few gaps for lane maneuvers and frequent disruptions and queues. |
| <b>F</b>                                    | <b>FORCED FLOW</b><br>Operational breakdown.   |



Alan Murra





# Thanks for Watching!!!

- Reminder to Provide Feedback/Comments (online at the project website)
- Project Website: [www.i229exits3and4.com](http://www.i229exits3and4.com)
- Project Contacts:

**Steve Gramm** – SDDOT Project Development  
605.773.6641 or [steve.gramm@state.sd.us](mailto:steve.gramm@state.sd.us)

**Shannon Ausen** – City of Sioux Falls  
605.367.8607 or [sausen@siouxfalls.org](mailto:sausen@siouxfalls.org)

**Alan Murra** – Short Elliott Hendrickson Inc.  
605.330.7015 or [amurra@sehinc.com](mailto:amurra@sehinc.com)



Alan Murra