I-229 EXIT 9 (BENSON ROAD) INTERCHANGE STUDY & ENVIRONMENTAL DOCUMENT

PL0100(82) P3616, PCN 06MF

Public Informational Meeting

October 25th, 2018
5:30 pm to 6:30 pm
Water Reclamation Facility

PRESENTATION AGENDA

- Project History
- Environmental Process
- Purpose and Need / Discussion
- Current Study Evaluation Concepts and Process
- Next Steps

Corridor Study Area Map

I-229 Major Investment Corridor Study:

Solberg Avenue Overpass to 60th Street N Overpass

Duration from 2013 – 2017

5 Interchange Studies

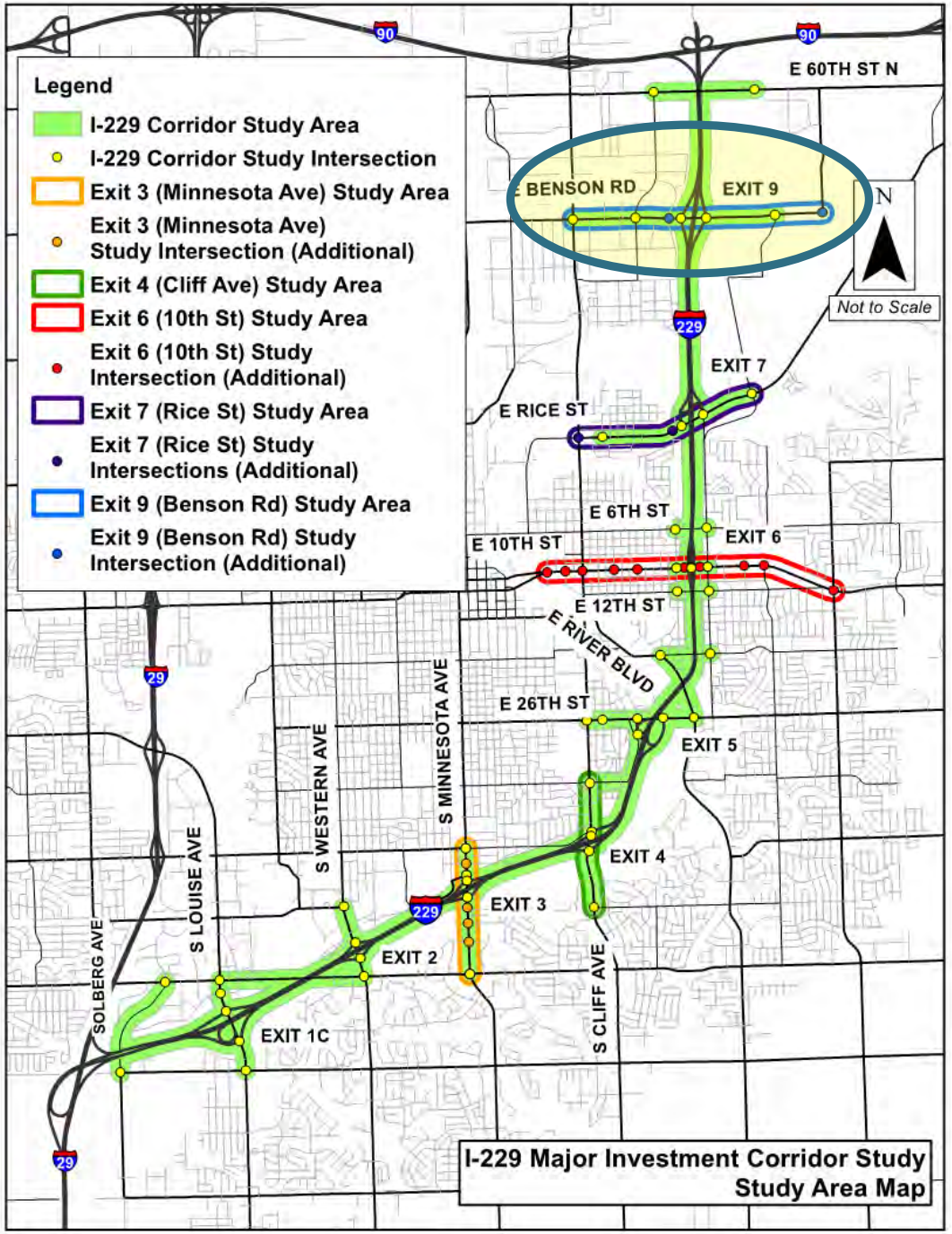
Overall I-229 Study

http://www.i229study.com

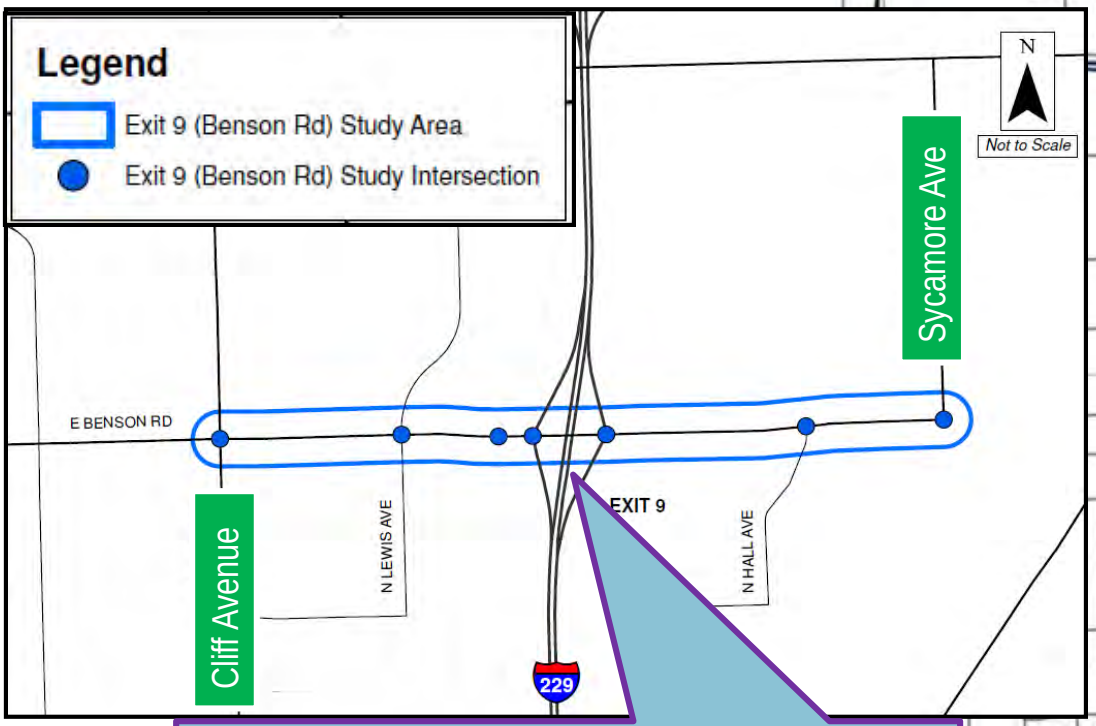
Project Purpose:

Define and Prioritize Improvements required for the corridor over the next 30-40 years

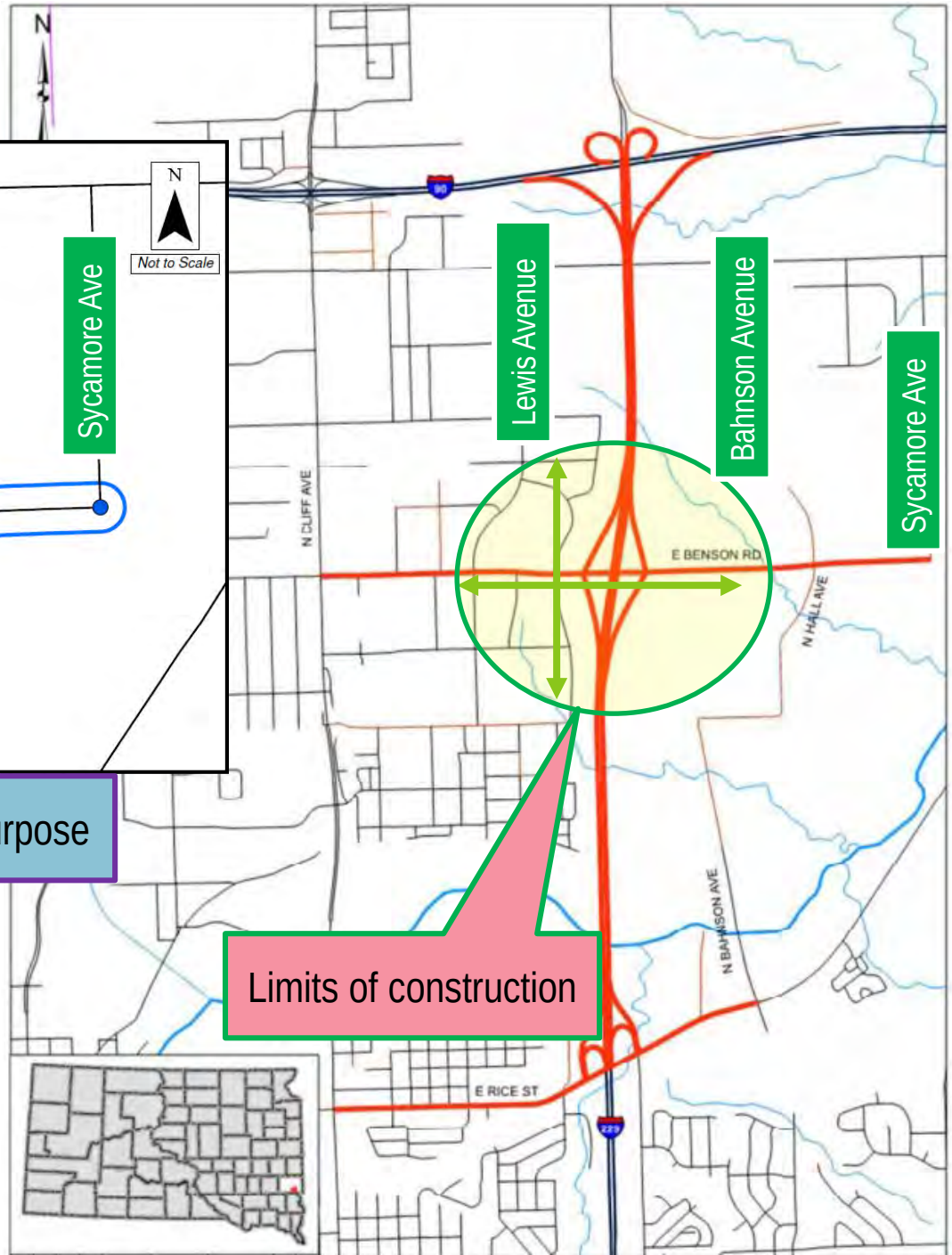
PROJECT HISTORY



Study Area Map



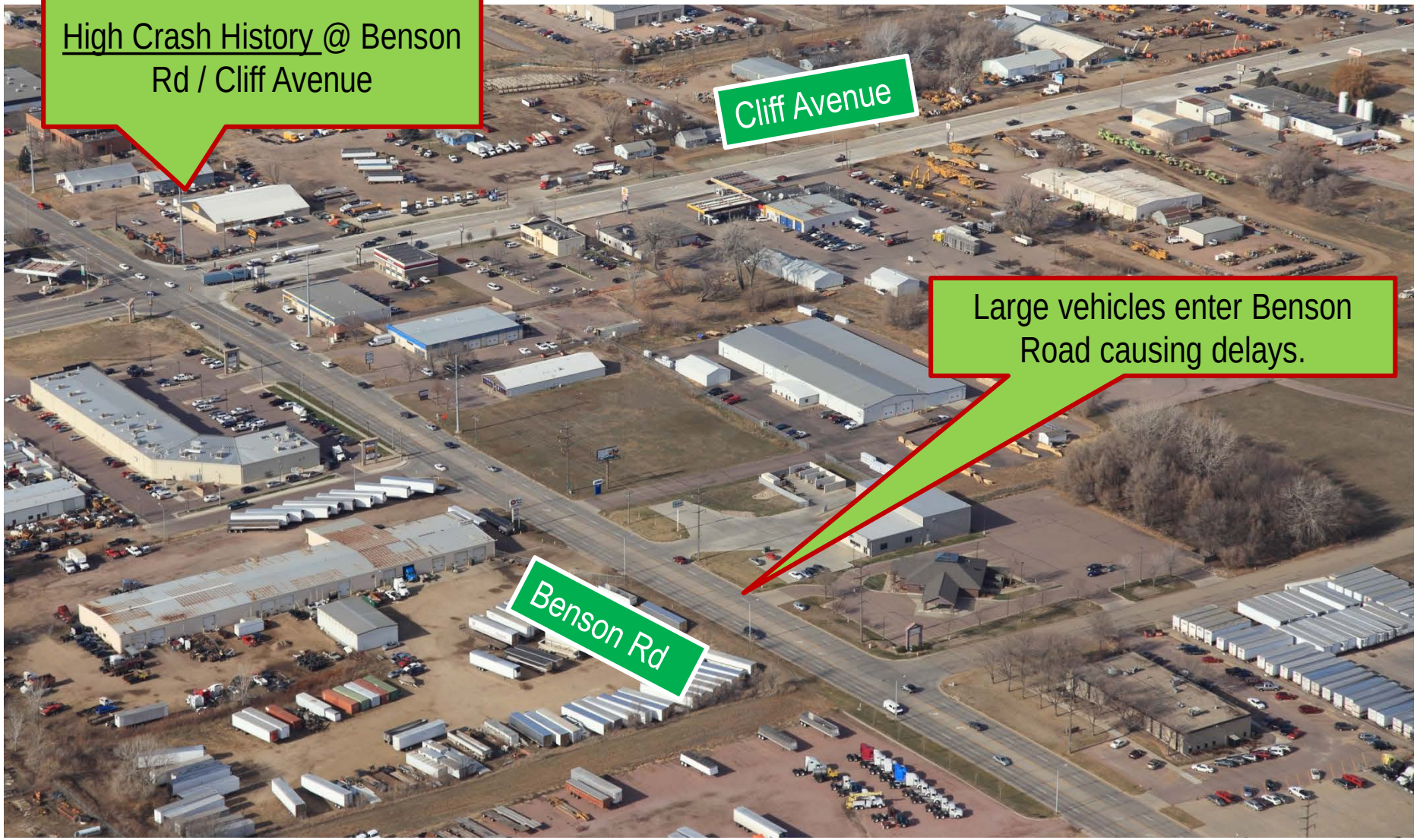
Limits of study for traffic planning purpose



Limits of construction

PROJECT HISTORY

BENSON ROAD CORRIDOR OVERVIEW



PROJECT HISTORY

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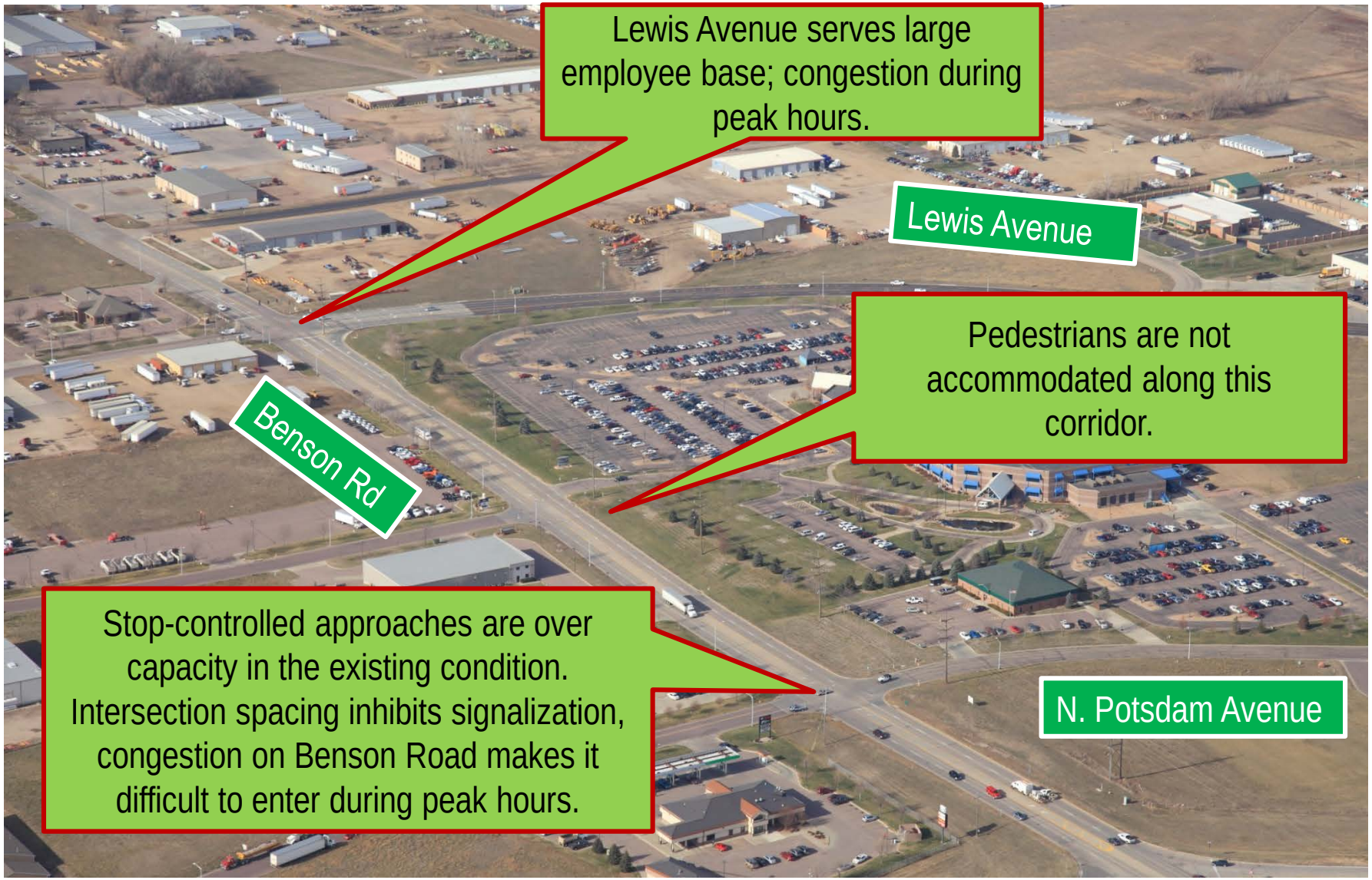

PROJECT HISTORY

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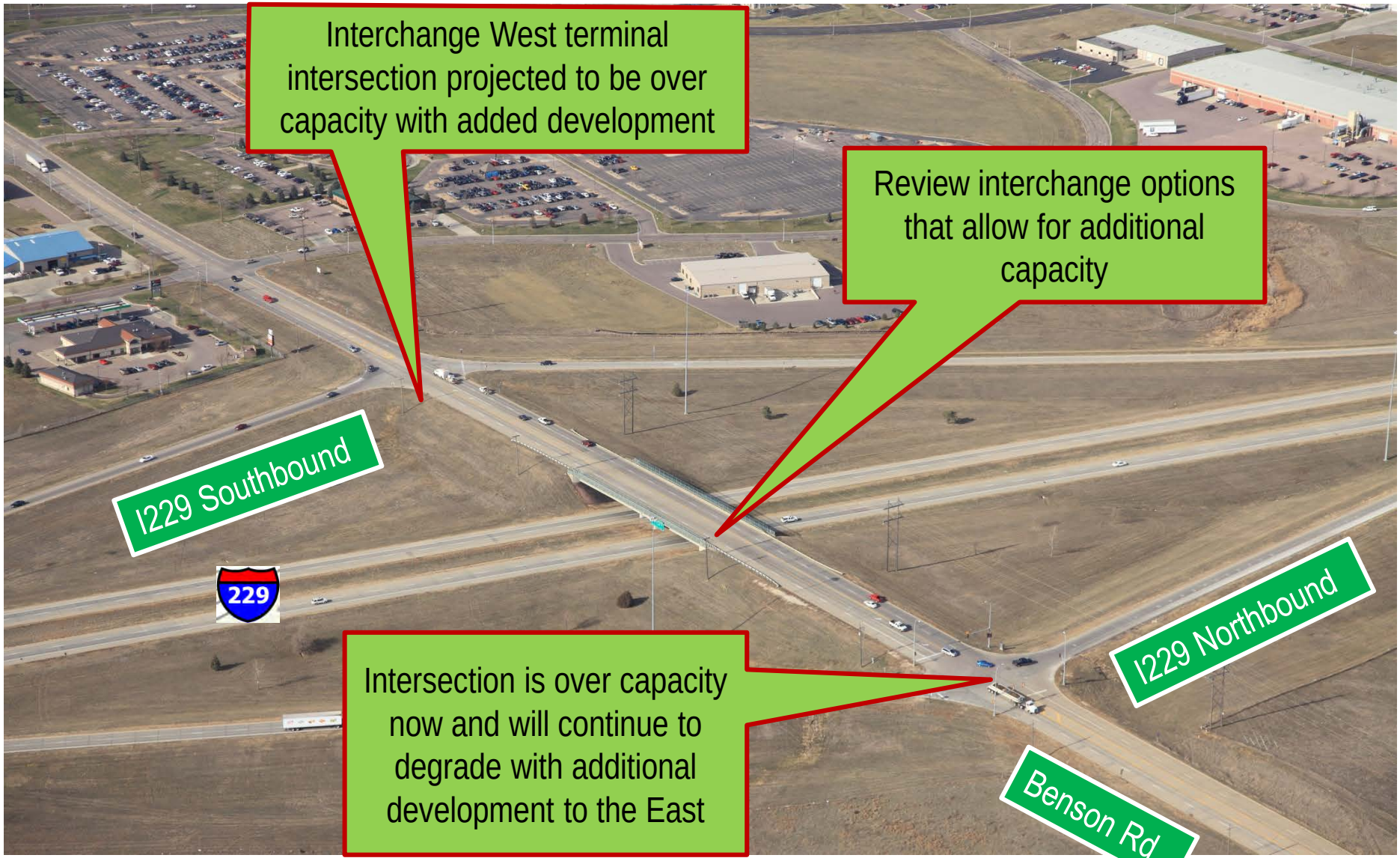
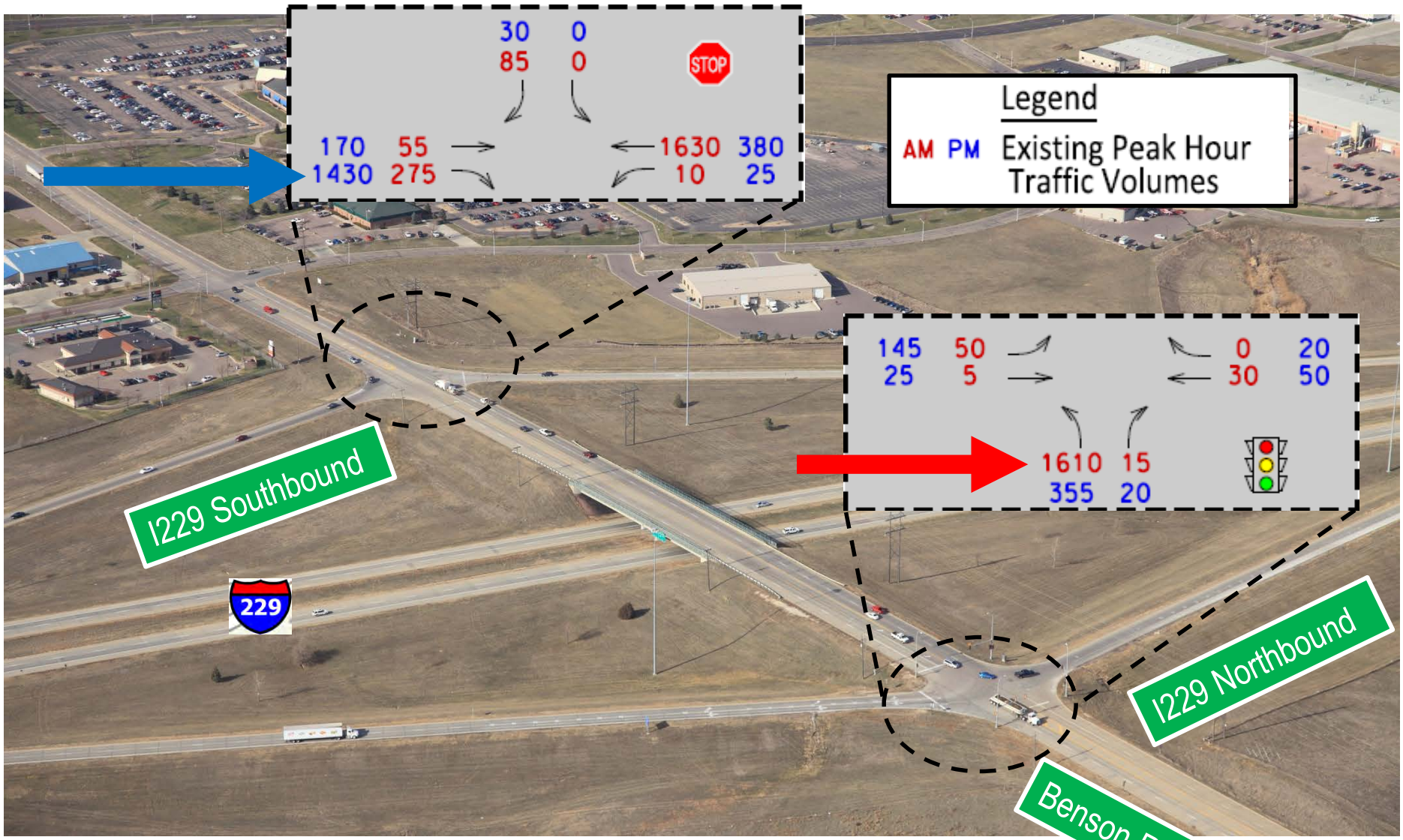


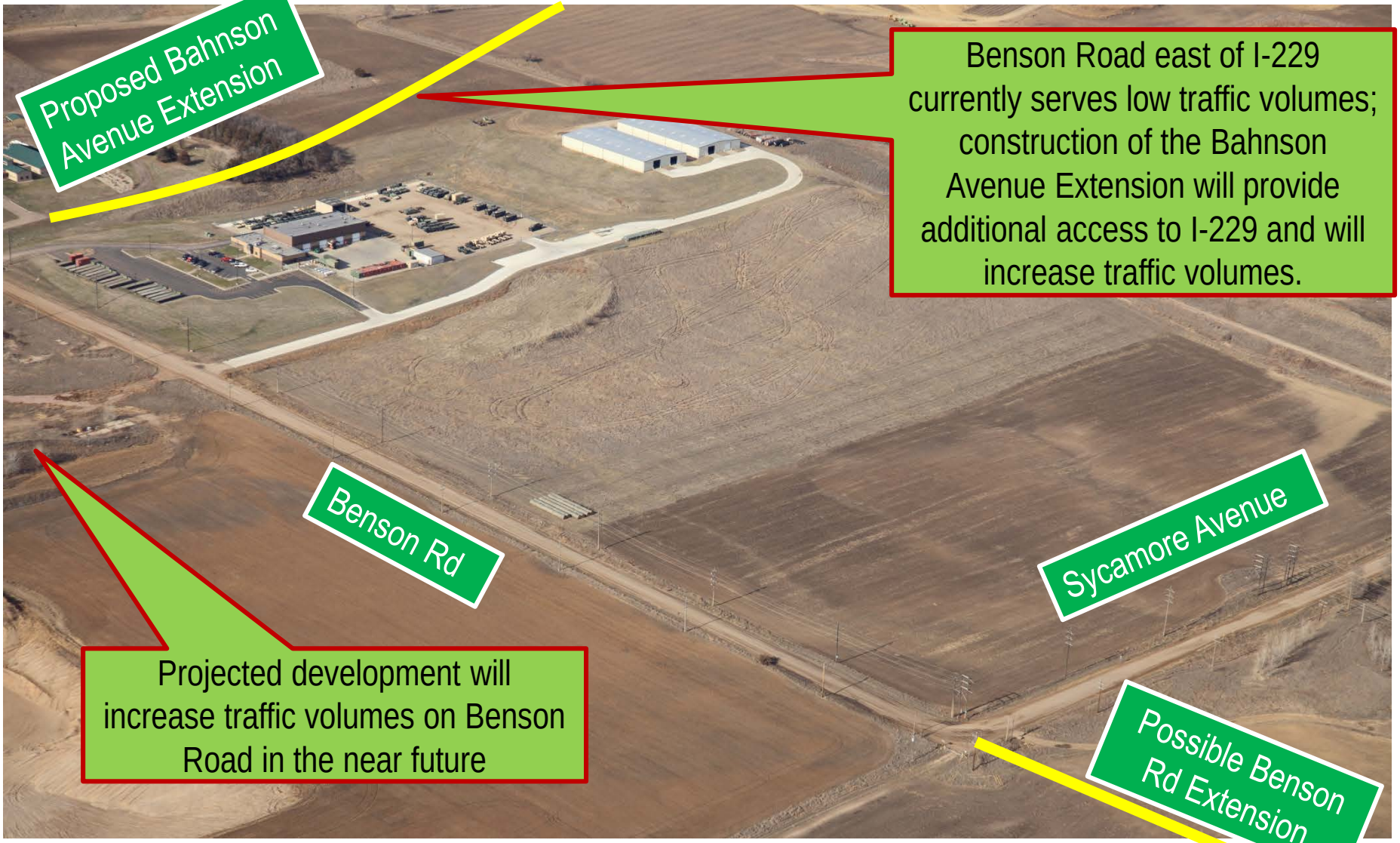
PROJECT HISTORY

EXISTING TRAFFIC VOLUMES



PROJECT HISTORY

BENSON ROAD CORRIDOR OVERVIEW



PROJECT HISTORY

CONCEPT EVALUATION PROCESS

- Evaluation Factors:

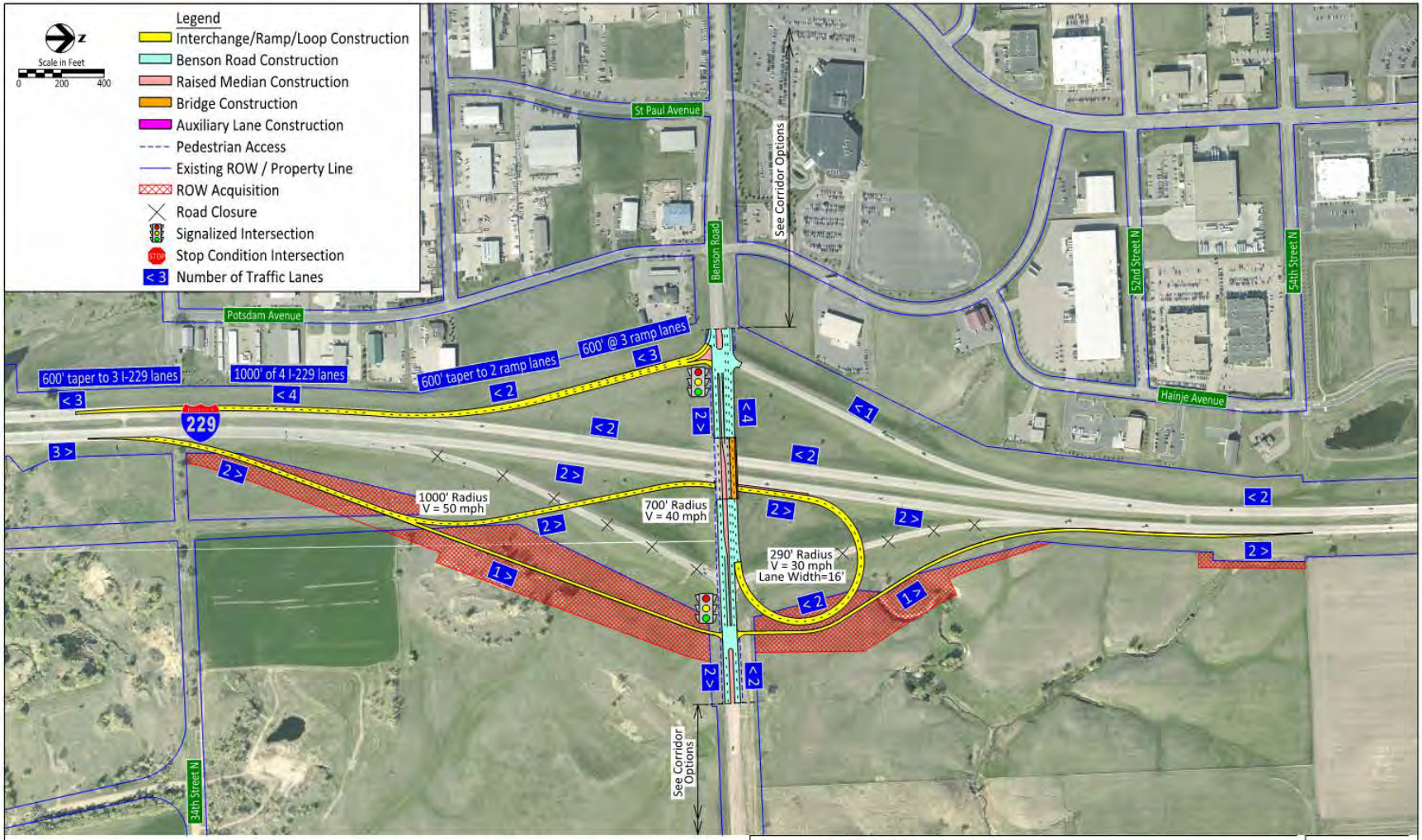
Option	Description	Traffic Operations	Safety	Environmental	Property Impacts	Construction & ROW Cost	DRAFT Recommendation
Concept ID	Interchange and Corridor Type	•Traffic Delay •Level of Service •Interchange Year of Failure	Predicted Crash Reduction during 2012-2035	Potential impact to wetlands, historical resources, threatened and endangered species, public lands, and floodplains	Total Right of Way (ROW) Required and Acquisitions	Total Constuction Cost (including ROW)	**Advance** **or** **Eliminate**

- Evaluation Matrix to Compare Concepts
- Recommended Action

PROJECT HISTORY

CONCEPTS FOR FURTHER CONSIDERATION

BENSON-1A



Benson Road Corridor
2-Lane Northeast Quadrant Loop with 3-Lane SB On-Ramp

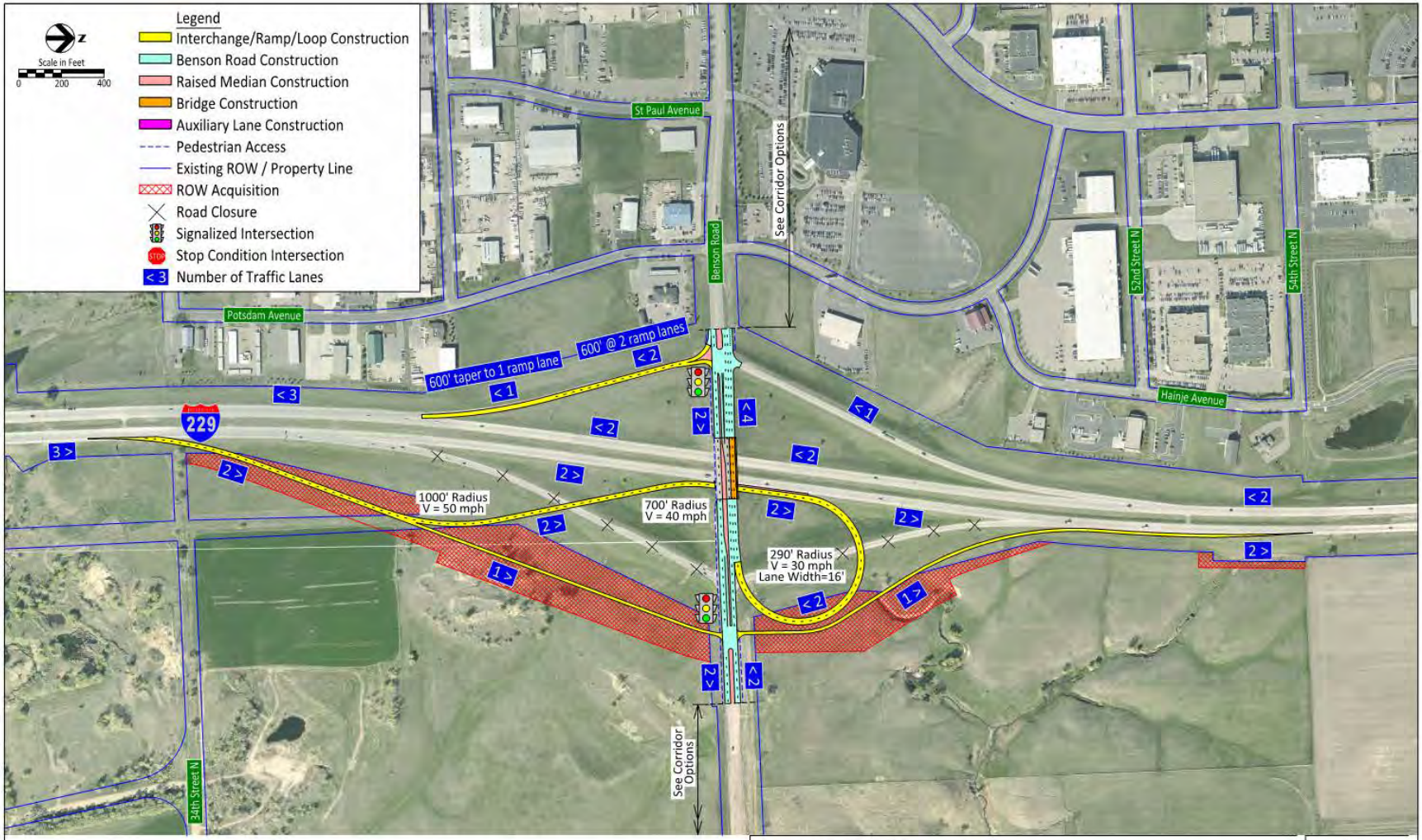
I-229 Major Investment Corridor Study — Sioux Falls, South Dakota

Figure
Benson-1a
12/6/2016

PROJECT HISTORY

CONCEPTS FOR FURTHER CONSIDERATION

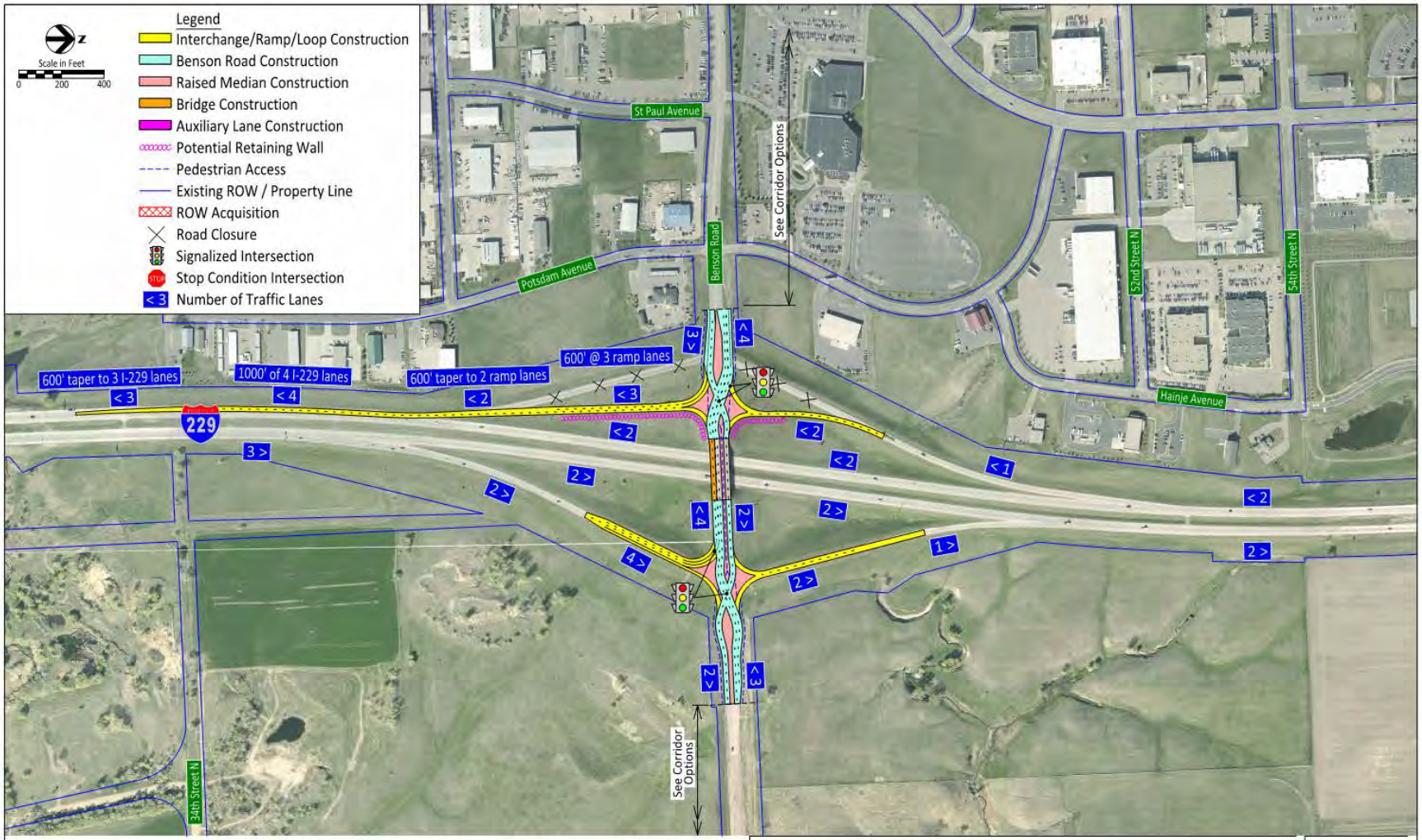
BENSON-1B



PROJECT HISTORY

CONCEPTS FOR FURTHER CONSIDERATION

BENSON-4



Benson Road Corridor
Diverging Diamond Interchange

I-229 Major Investment Corridor Study

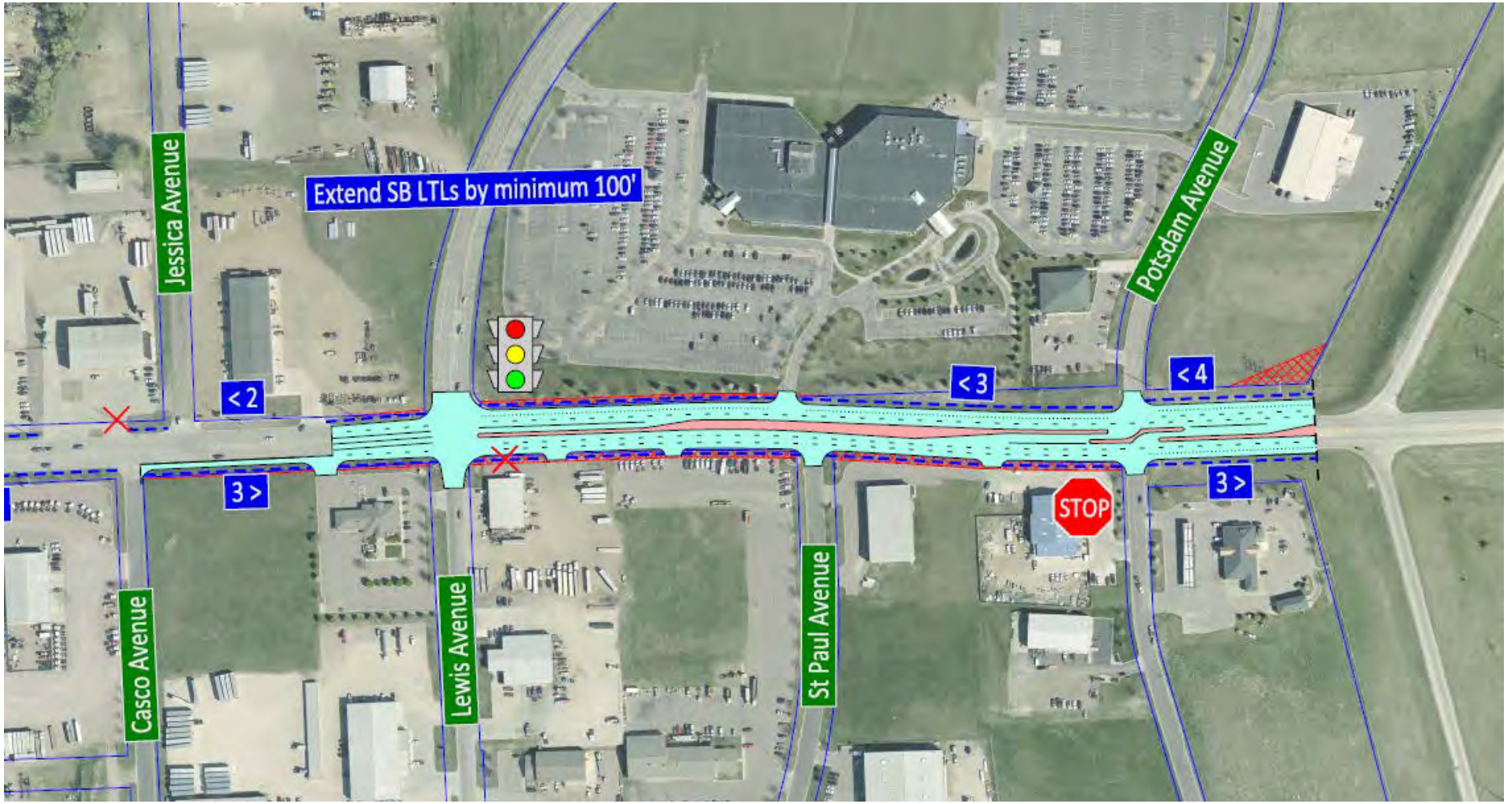
Sioux Falls, South Dakota

Figure
Benson-4
12/6/2016

PROJECT HISTORY

CONCEPTS FOR FURTHER CONSIDERATION

BENSON IMPROVEMENTS

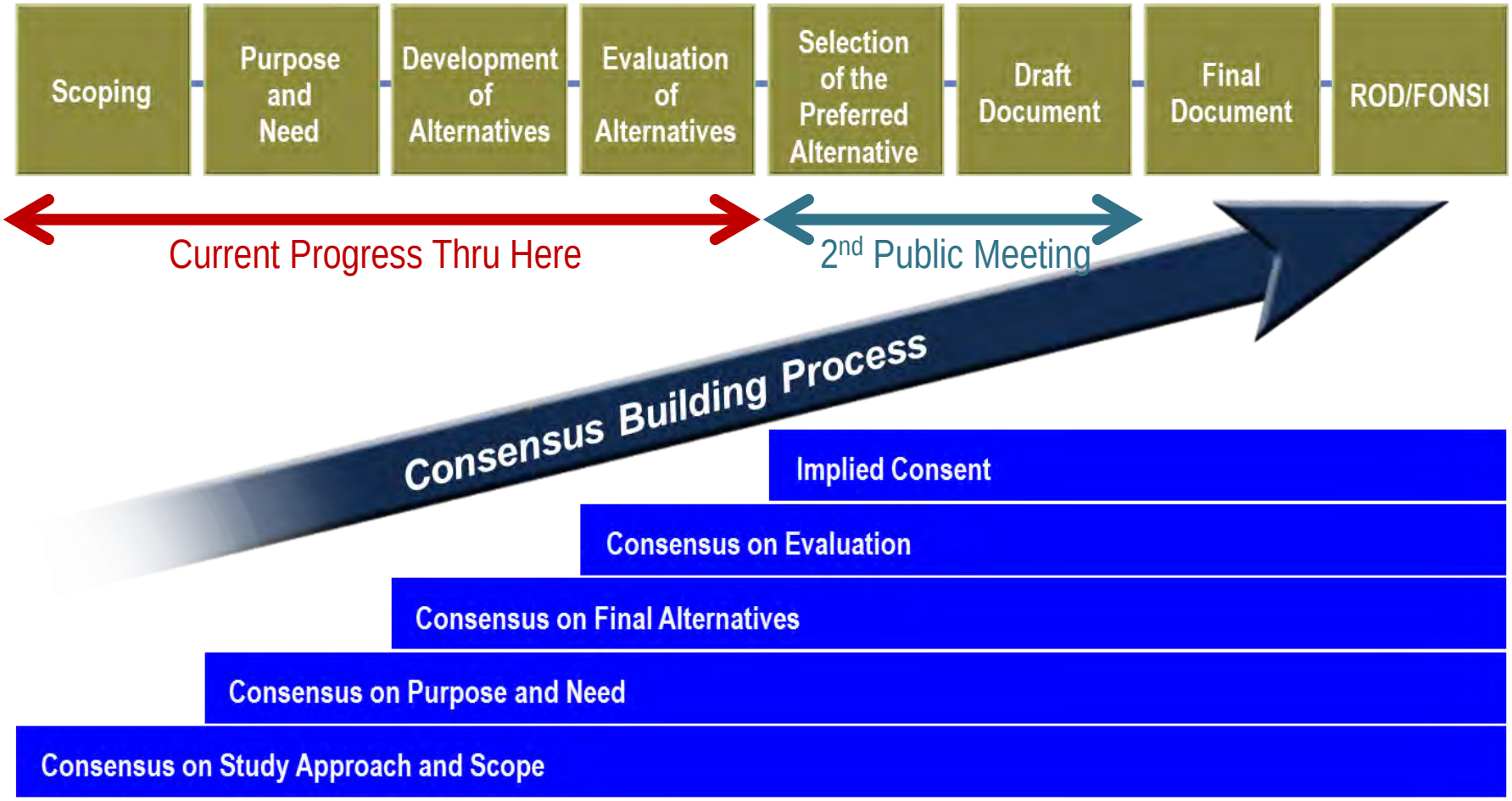


PROJECT HISTORY

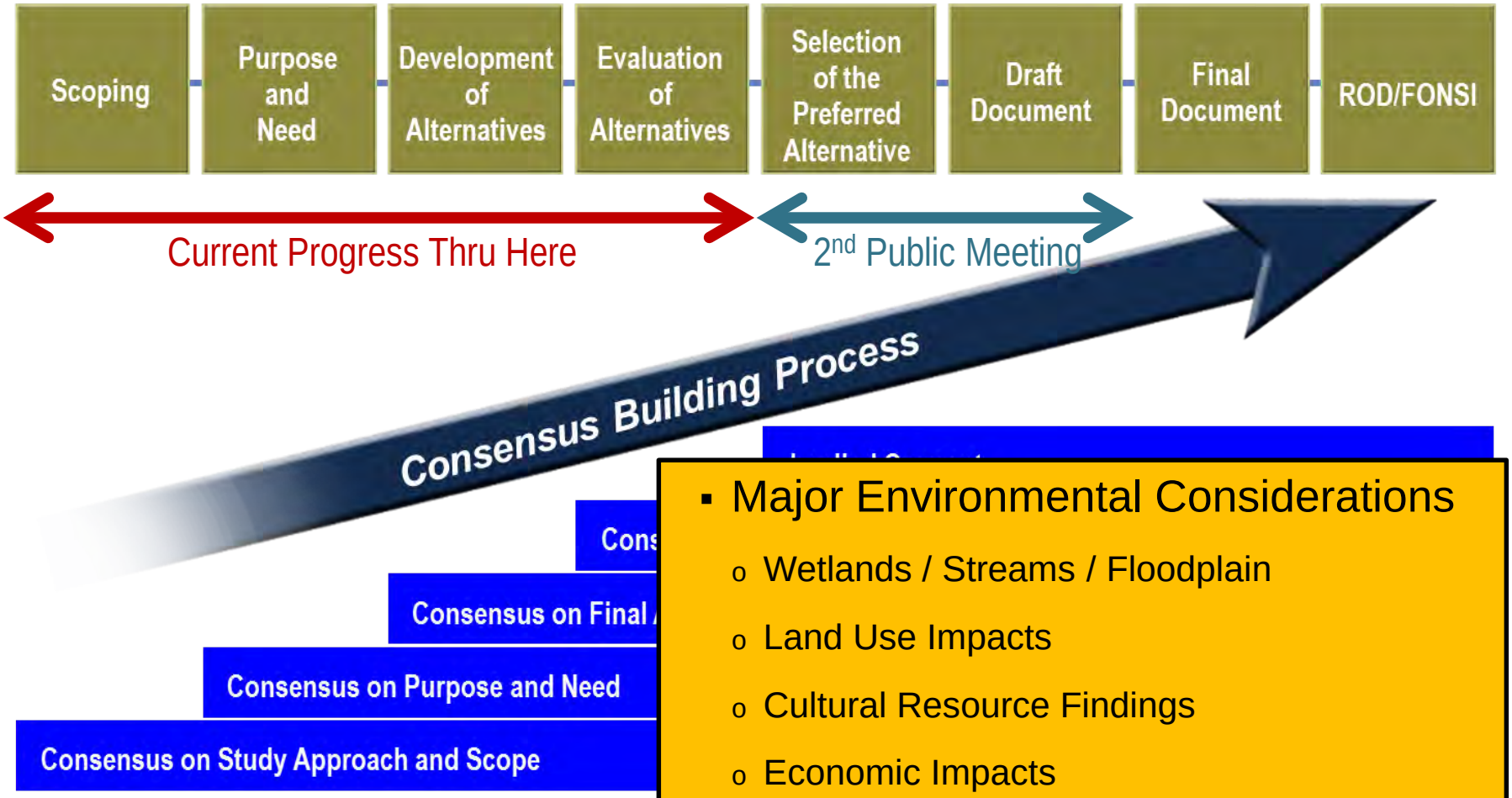
BENSON ROAD
PRELIMINARY PROJECT PRIORITY

- Benson Road Interchange and Corridor improvements = High Priority
  - Project Development Process = 5 year timeline when initiated by SDDOT & City
    - Prepare Interchange Modification Justification Report and Environmental Document
    - Develop Project Design
    - Acquire Right of Way
    - Construction

ENVIRONMENTAL PROCESS



ENVIRONMENTAL PROCESS



- Major Environmental Considerations
  - Wetlands / Streams / Floodplain
  - Land Use Impacts
  - Cultural Resource Findings
  - Economic Impacts
  - Environmental Conditions Noted
  - Input from the Public / Stakeholders

PURPOSE AND NEED

PROJECT PURPOSE: **To improve traffic operations and enhance mobility for other modes of transportation (i.e. Transit, Bikes, Pedestrians)**

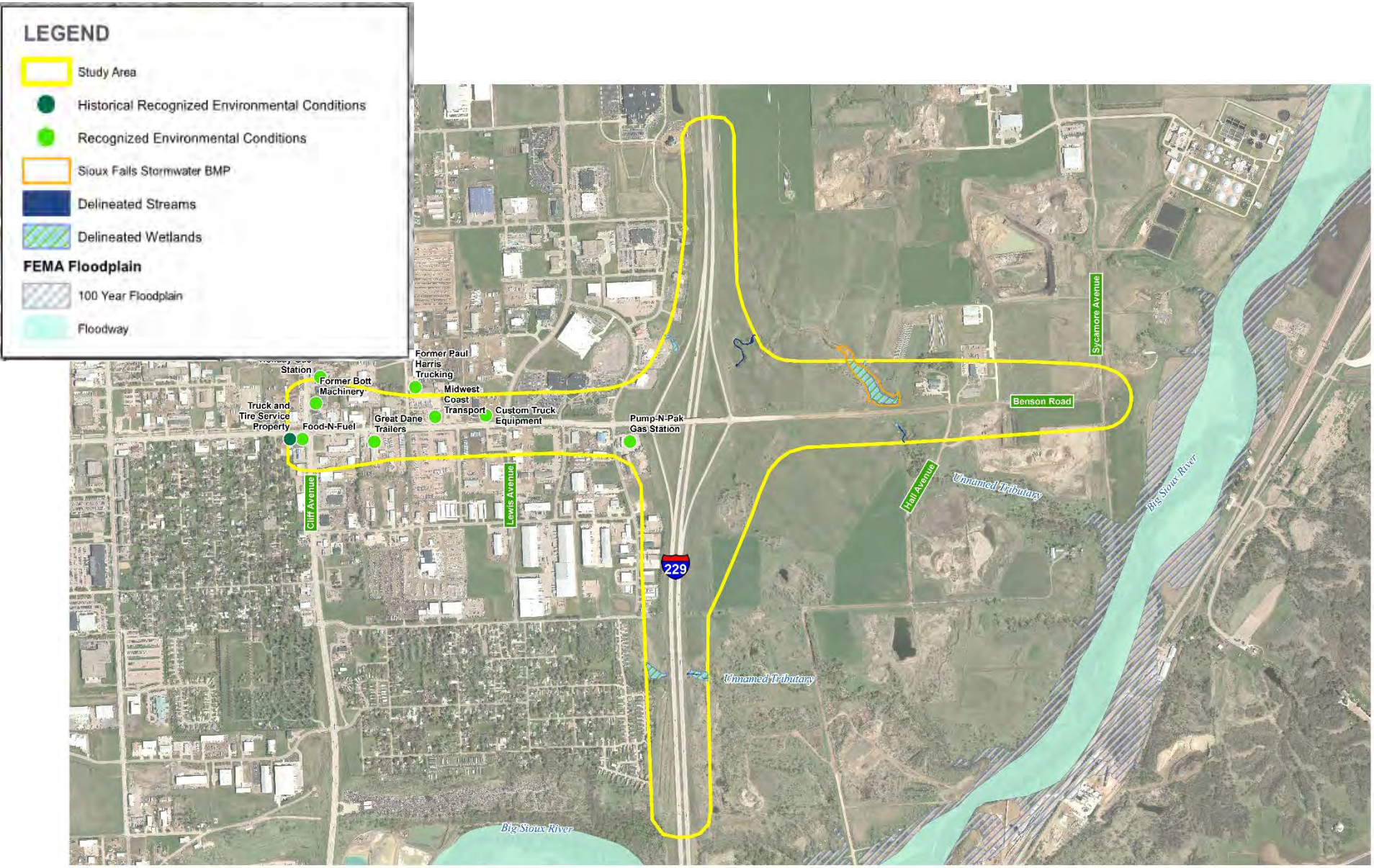
PROJECT NEED:

1.) Capacity for existing and future traffic volumes

2.) lack of accessibility for non-automobile transportation

Location	Existing		2045 No-Build	
	AM	PM	AM	PM
Benson Road and Cliff Avenue	LOS B	LOS B	LOS B	LOS C
Benson Road and Lewis Avenue	LOS B	LOS C	LOS B	LOS C
Benson Road and Potsdam Avenue	**LOS F**	**LOS F**	**LOS F**	**LOS F**
Benson Road and I-229 SB Ramp Terminal	**LOS D**	LOS A	**LOS F**	**LOS F**
Benson Road and I-229 NB Ramp Terminal	**LOS F**	LOS B	**LOS F**	LOS B
Benson Road and Hall Avenue	LOS A	LOS B	**LOS F**	**LOS F**

ENVIRONMENTAL CONSIDERATIONS



EVALUATION CONCEPTS FOR CONSIDERATION

The Final Three (3) Options from I-229 Major Investment Corridor Study at Exit 9 were further screened, refined, and compared as part of this advanced document process. The final three (3) options after additional considerations turned into 7 total options….

- Figure I-1 – Alternative Scenario 1a
- Figure I-2 – Alternative Scenario 1b
- Figure I-3 – Alternative Scenario 1c
- Figure I-4 – Alternative Scenario 1d
- Figure I-5 – Alternative Scenario 1e
- Figure I-6 – Alternative Scenario 4a
- Figure I-7 – Alternative Scenario 4b

OPTIONS FOR CONSIDERATION – Scenario 1a

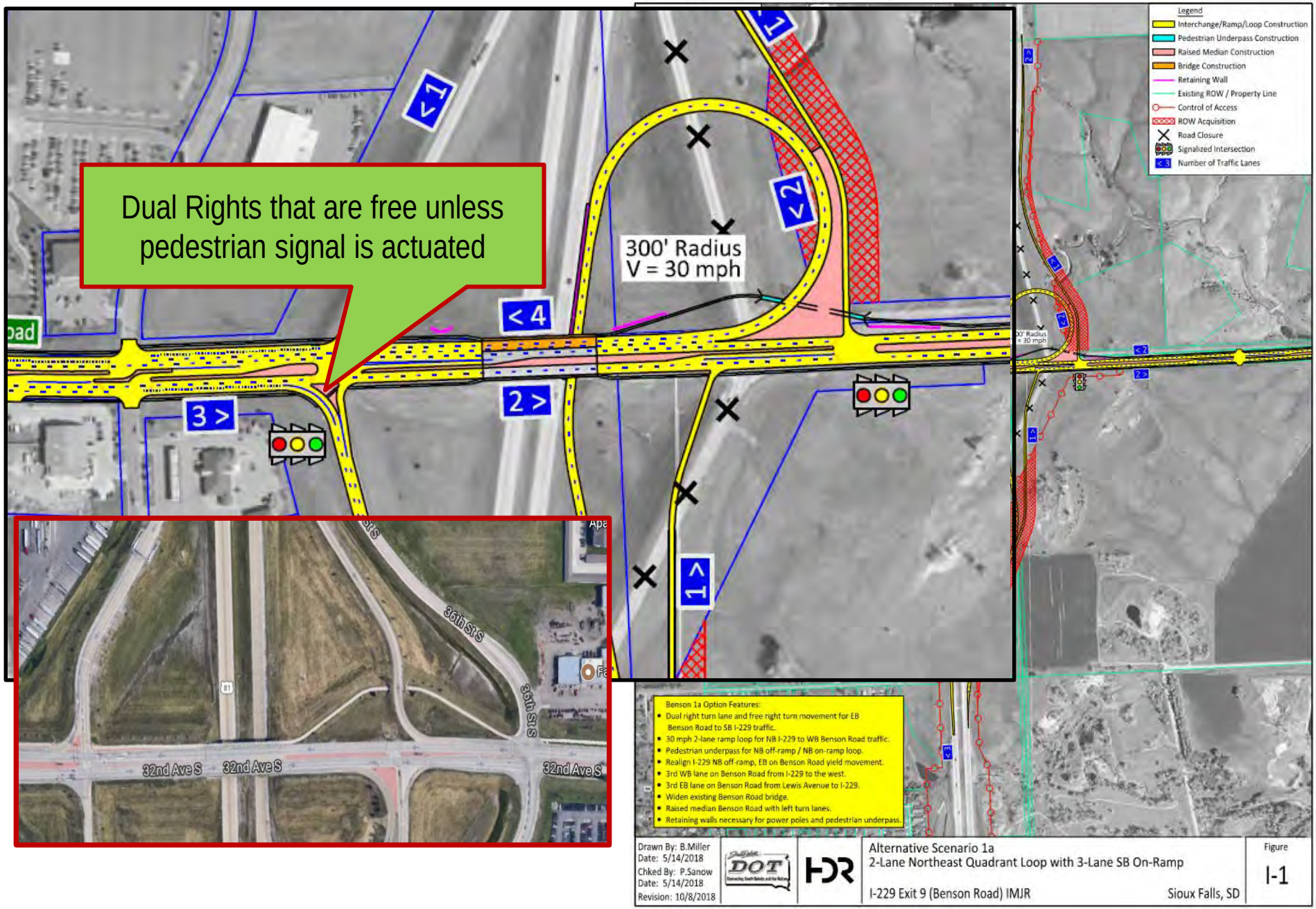
Benefits of Option 1a:

- Free flow northbound I-229 to westbound Benson Road due to loop and no signal.
- Traffic Level of Service (LOS) B is forecast at the interchange for year 2045 conditions.
- Pedestrian underpass reduces conflict with vehicles using the northbound on ramp and the larger volume of traffic on the loop ramp for the westbound Benson Road traffic.
- Free-flow dual rights on Benson Road eastbound to I-229 southbound reduces congestion/queuing on Benson Road between Lewis Avenue and I-229. Free-flow is only interrupted for pedestrian movement.
- Access management treatments considered with installation of raised median.

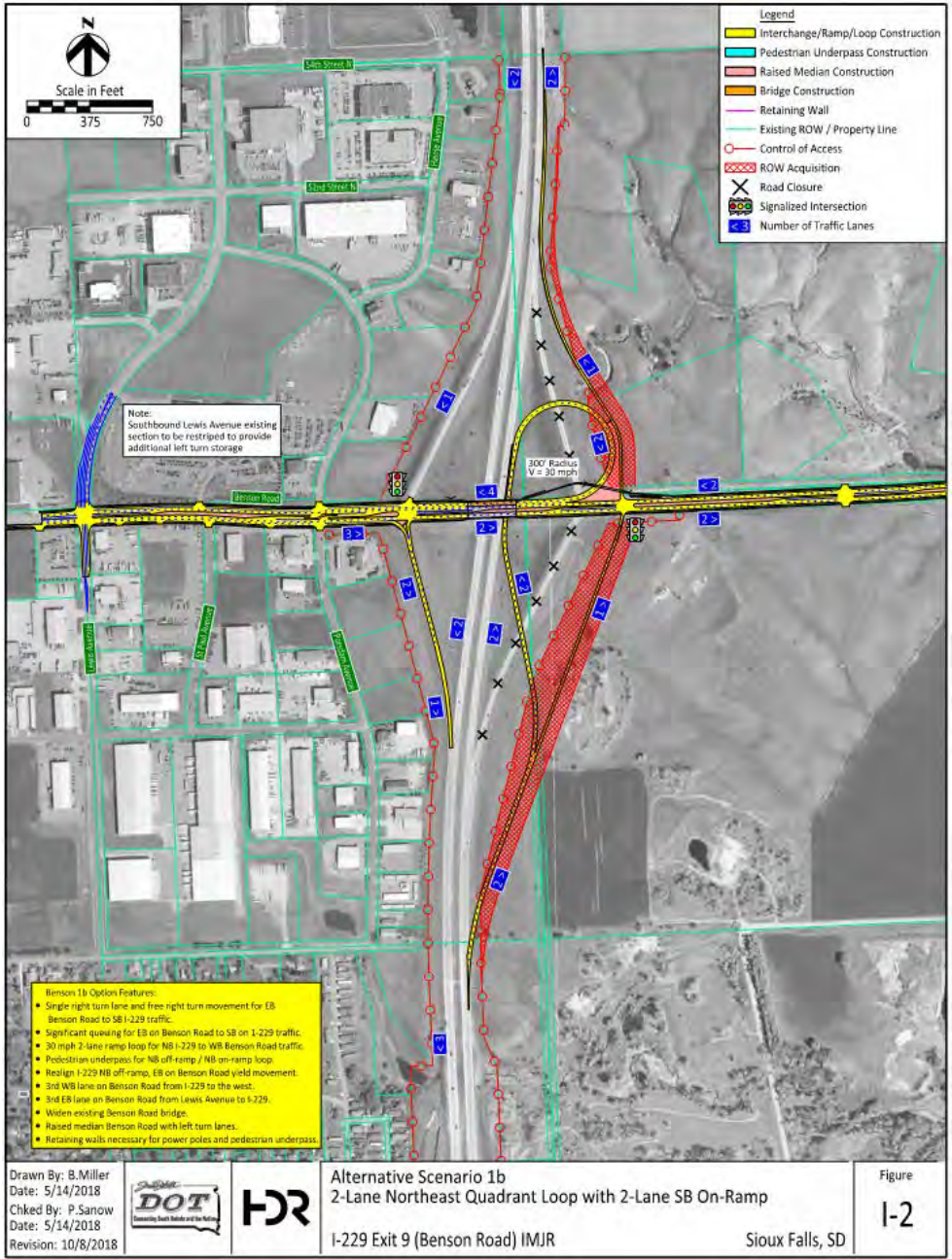
Drawbacks of Option 1a:

- The construction of the ramps requires substantial right of way acquisition and grading costs associated with constructing a new loop ramp and removal of the existing ramps.
- Option 1a could result in additional crashes compared to the no-build due to added lanes and additional length on some of the ramps.
- Although the pedestrian underpass in this option reduces conflict, the additional cost per pedestrian and bicycle user is high.
- Due to the increased right of way and grading impacts to environmental resources are higher with this option compared to non-loop ramp options.

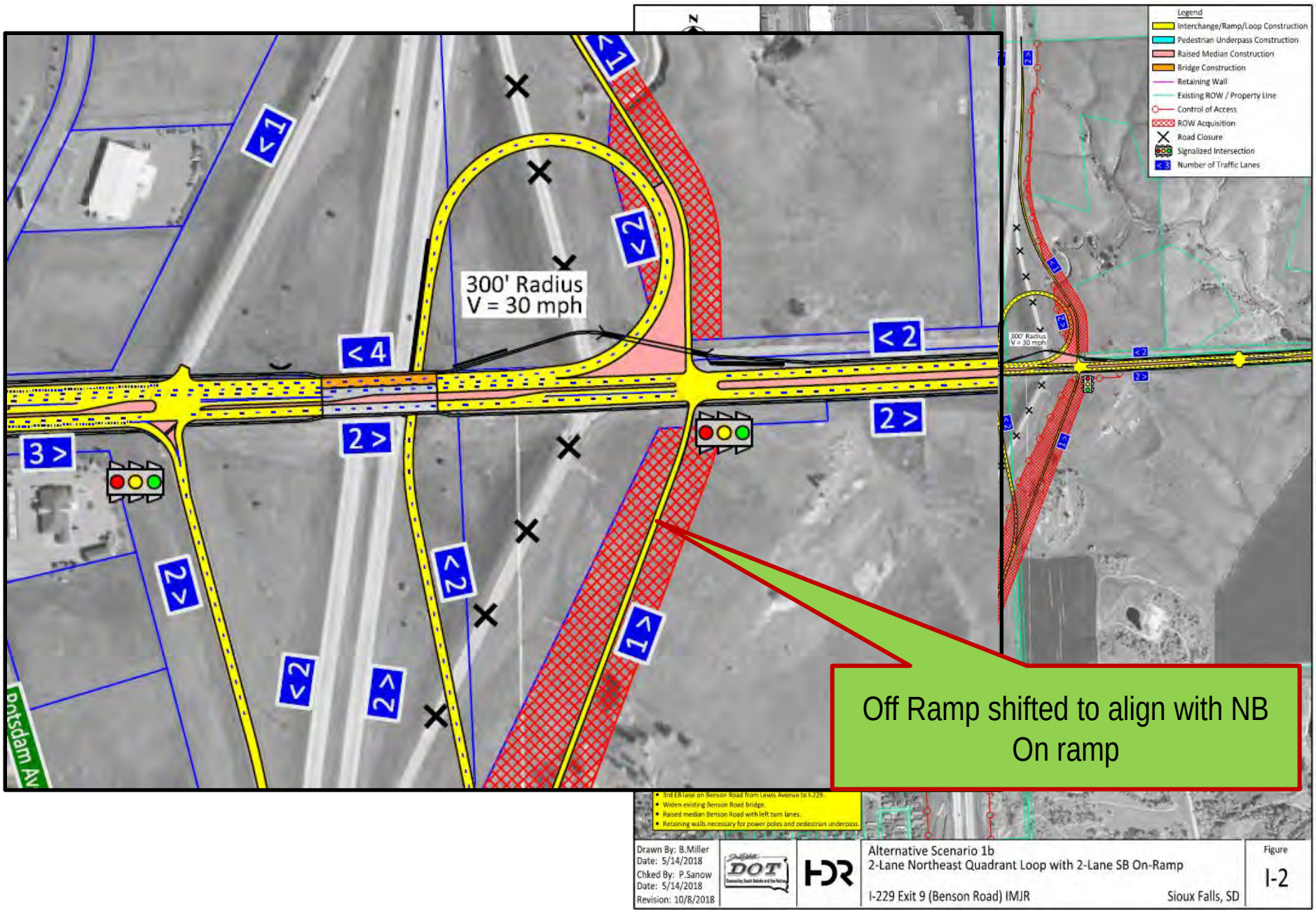
OPTIONS FOR CONSIDERATION – Scenario 1a



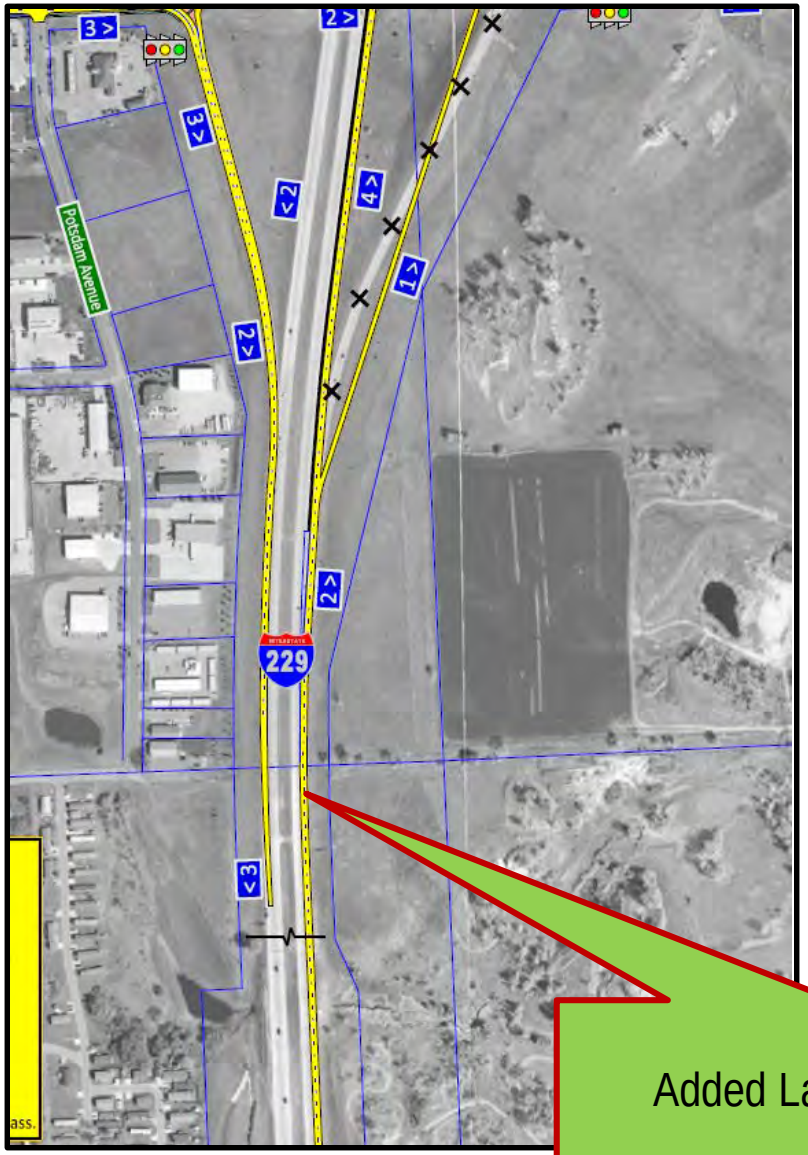
OPTIONS FOR CONSIDERATION – Scenario 1b

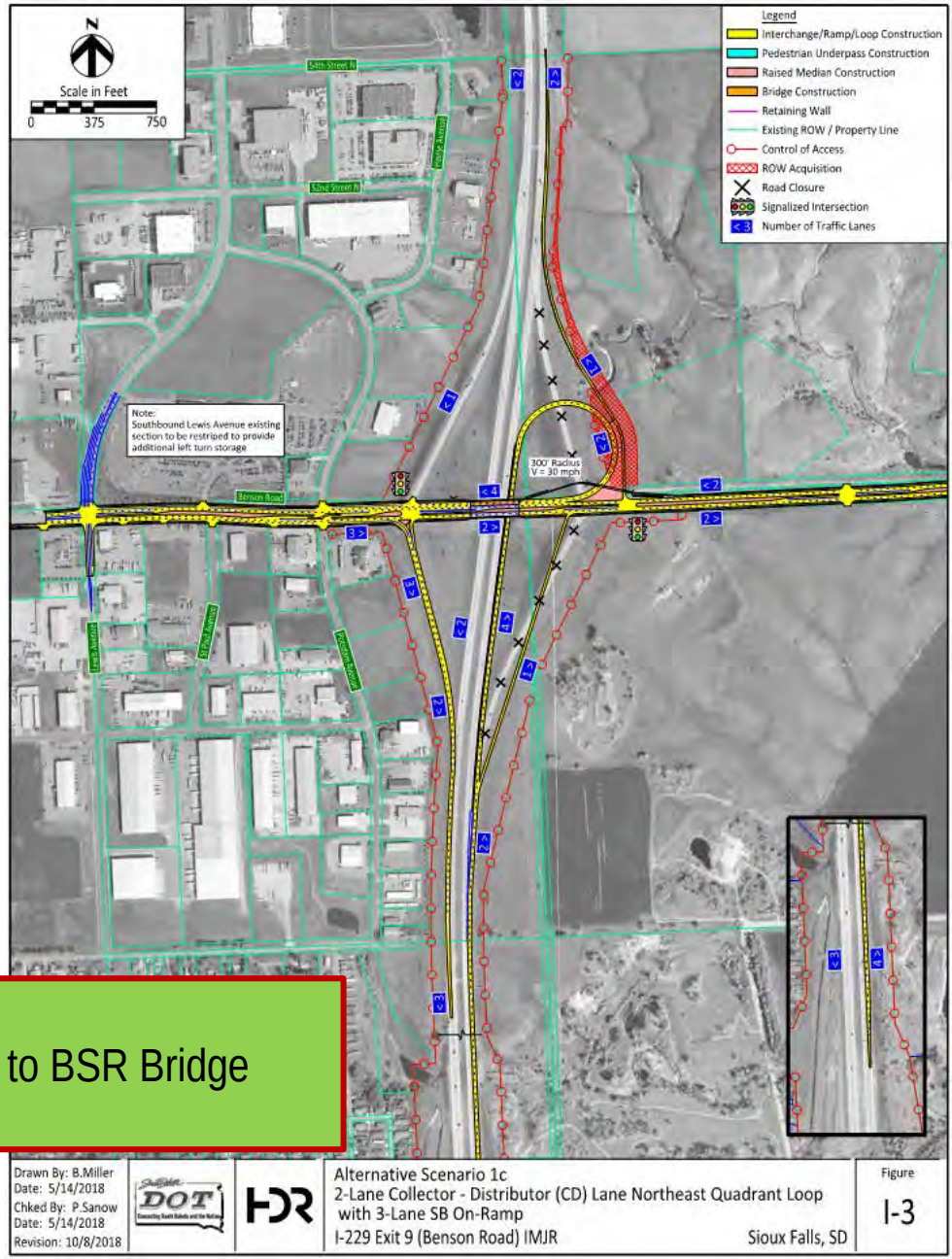


OPTIONS FOR CONSIDERATION – Scenario 1b



OPTIONS FOR CONSIDERATION – Scenario 1c

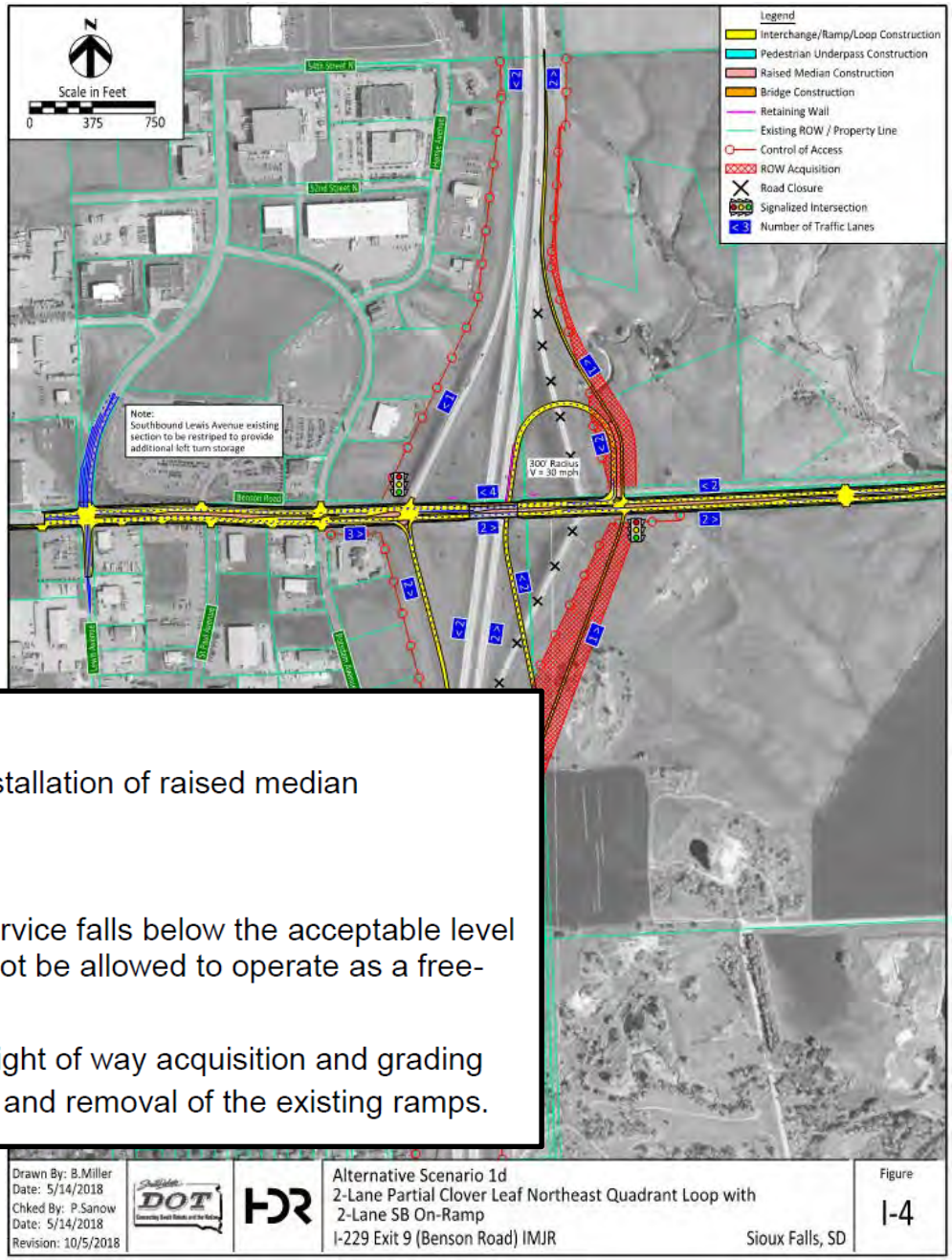




Added Lane to BSR Bridge

Rendered Loop Ramp Option

OPTIONS FOR CONSIDERATION – Scenario 1d



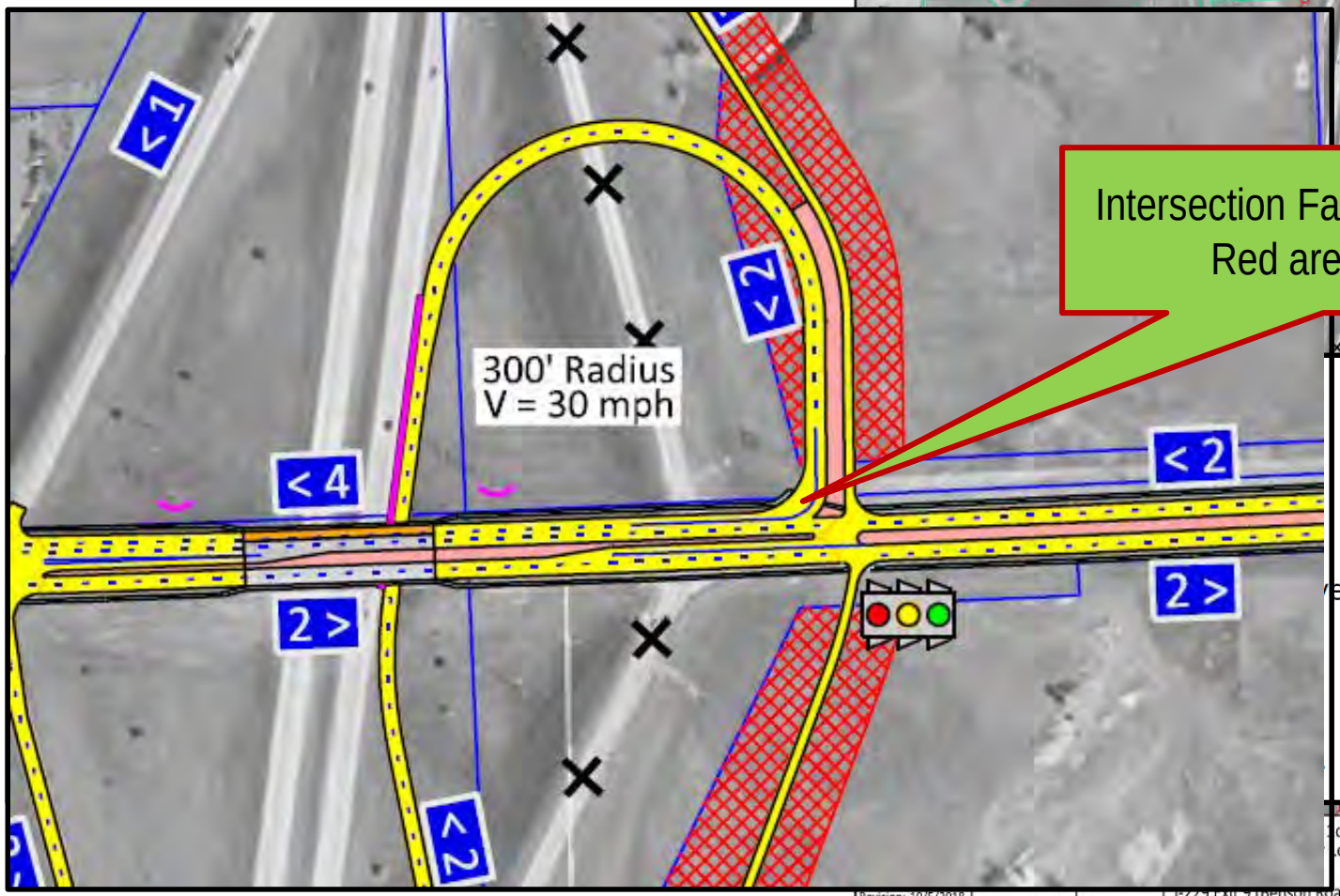
Benefits of Option 1d:

- Access Management treatments considered with installation of raised median

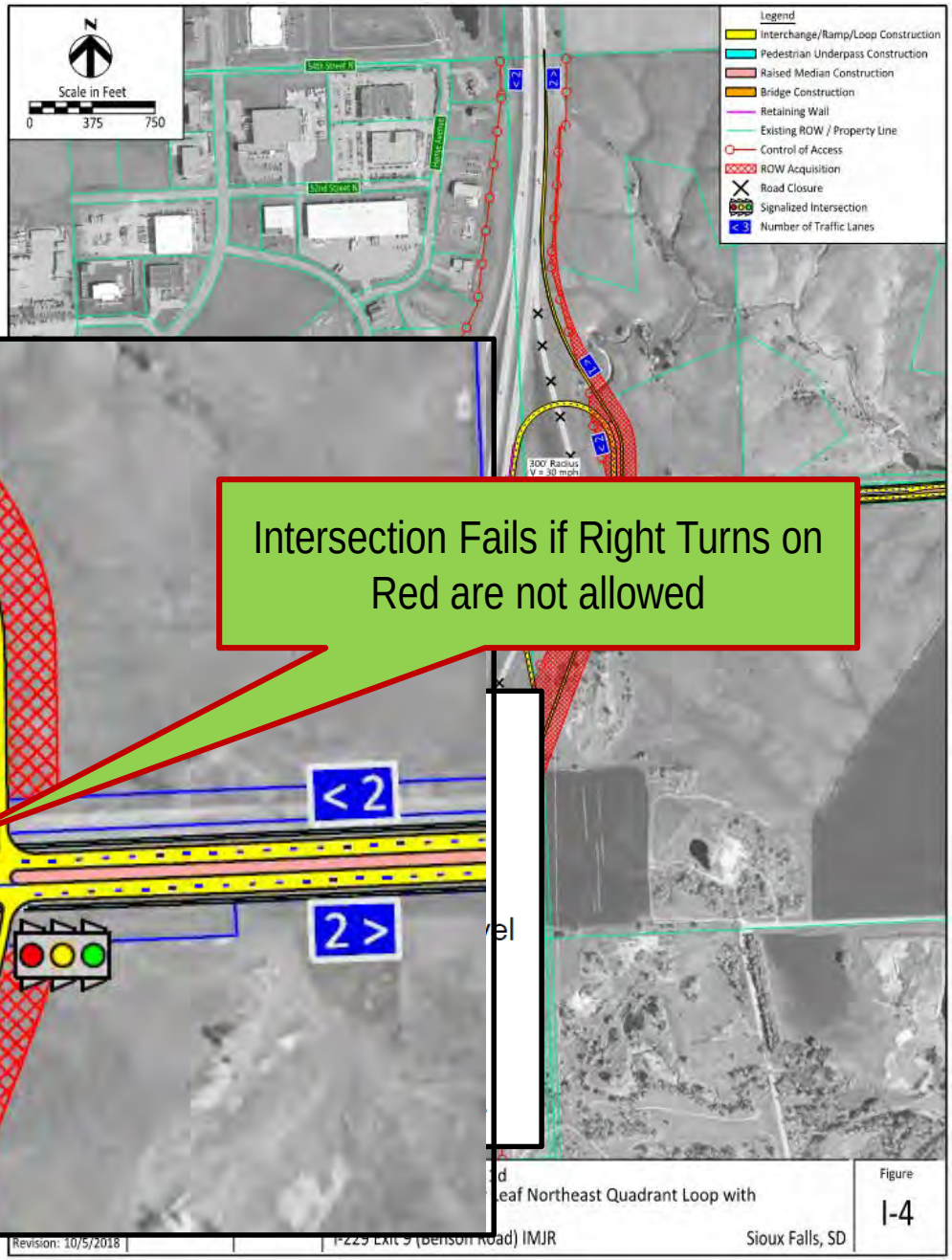
Drawbacks of Option 1d:

- Does not meet Purpose and Need. The Level of Service falls below the acceptable level C because the right turn on red movements would not be allowed to operate as a free-flow movement.
- The construction of the ramps requires substantial right of way acquisition and grading costs associated with constructing a new loop ramp and removal of the existing ramps.

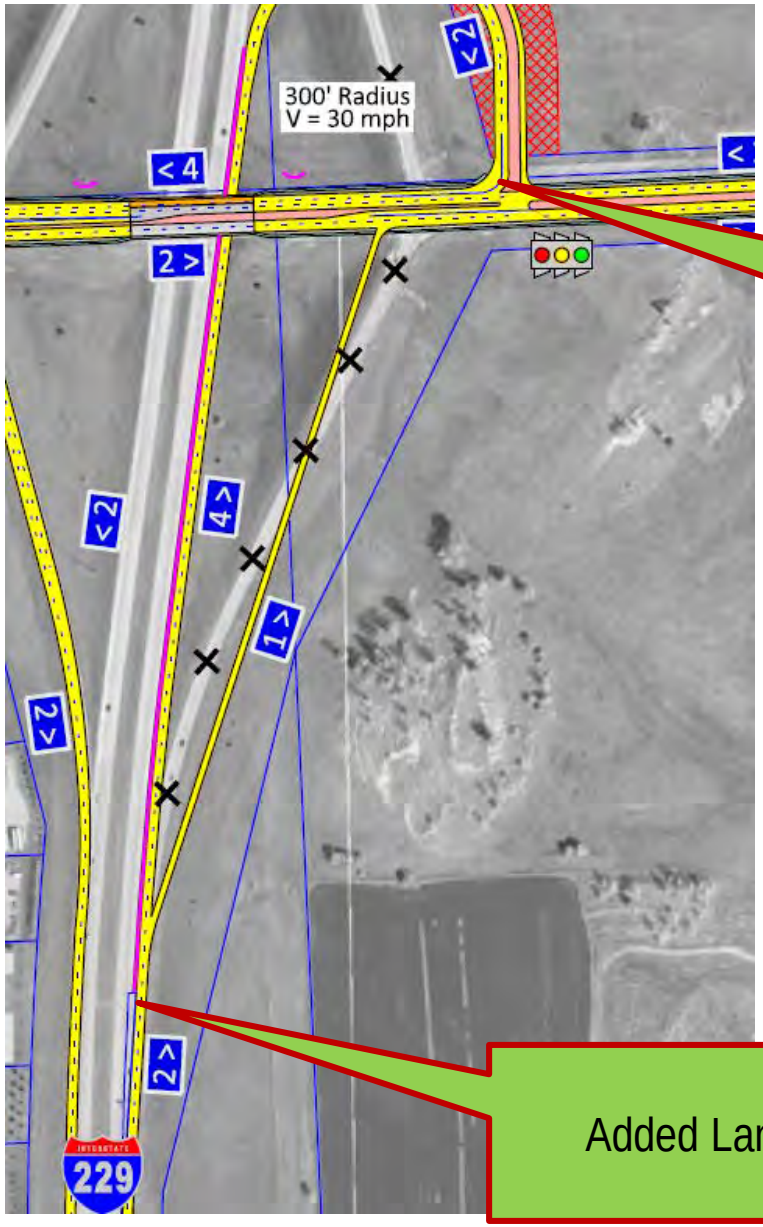
OPTIONS FOR CONSIDERATION – Scenario 1d



Intersection Fails if Right Turns on Red are not allowed



OPTIONS FOR CONSIDERATION – Scenario 1e



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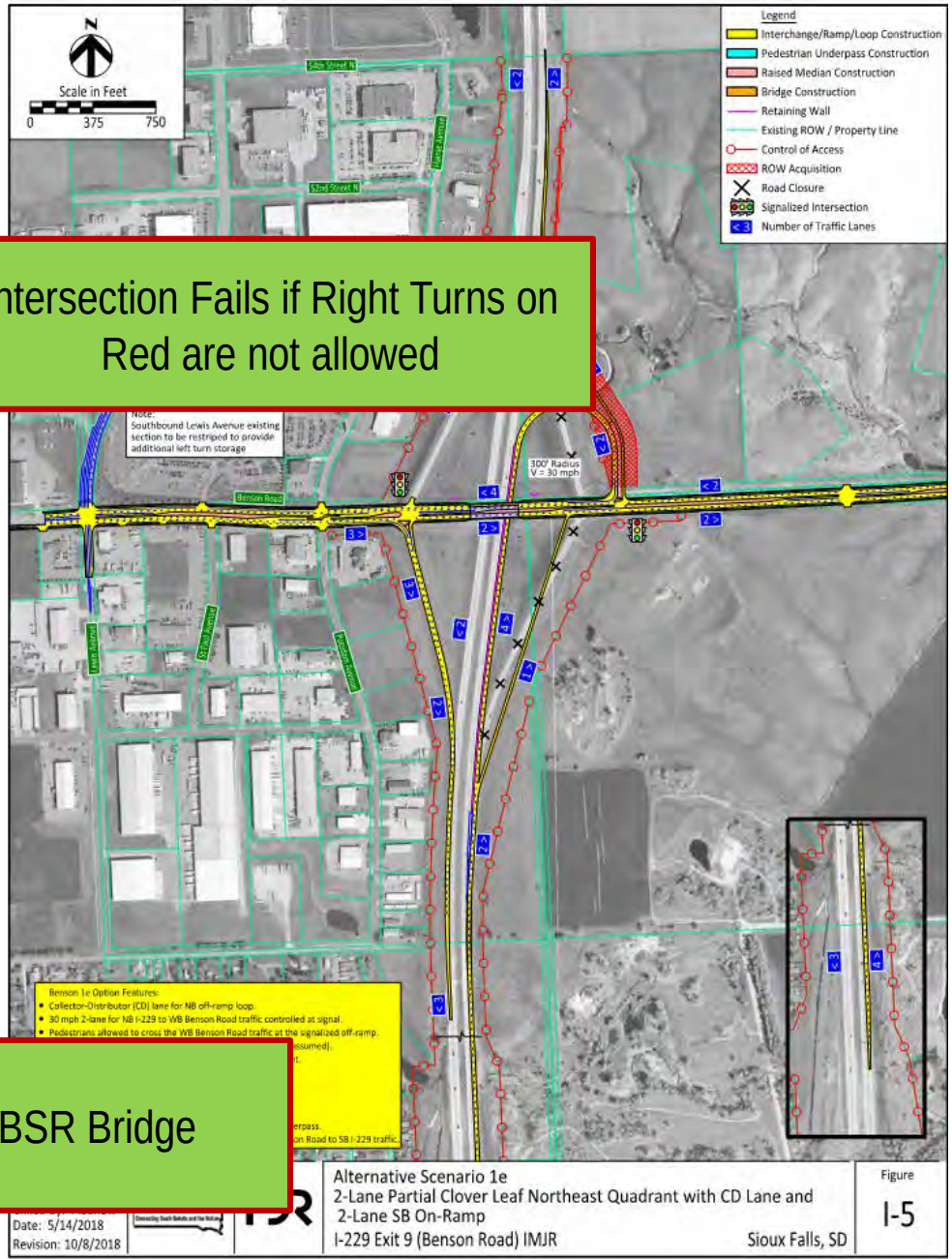
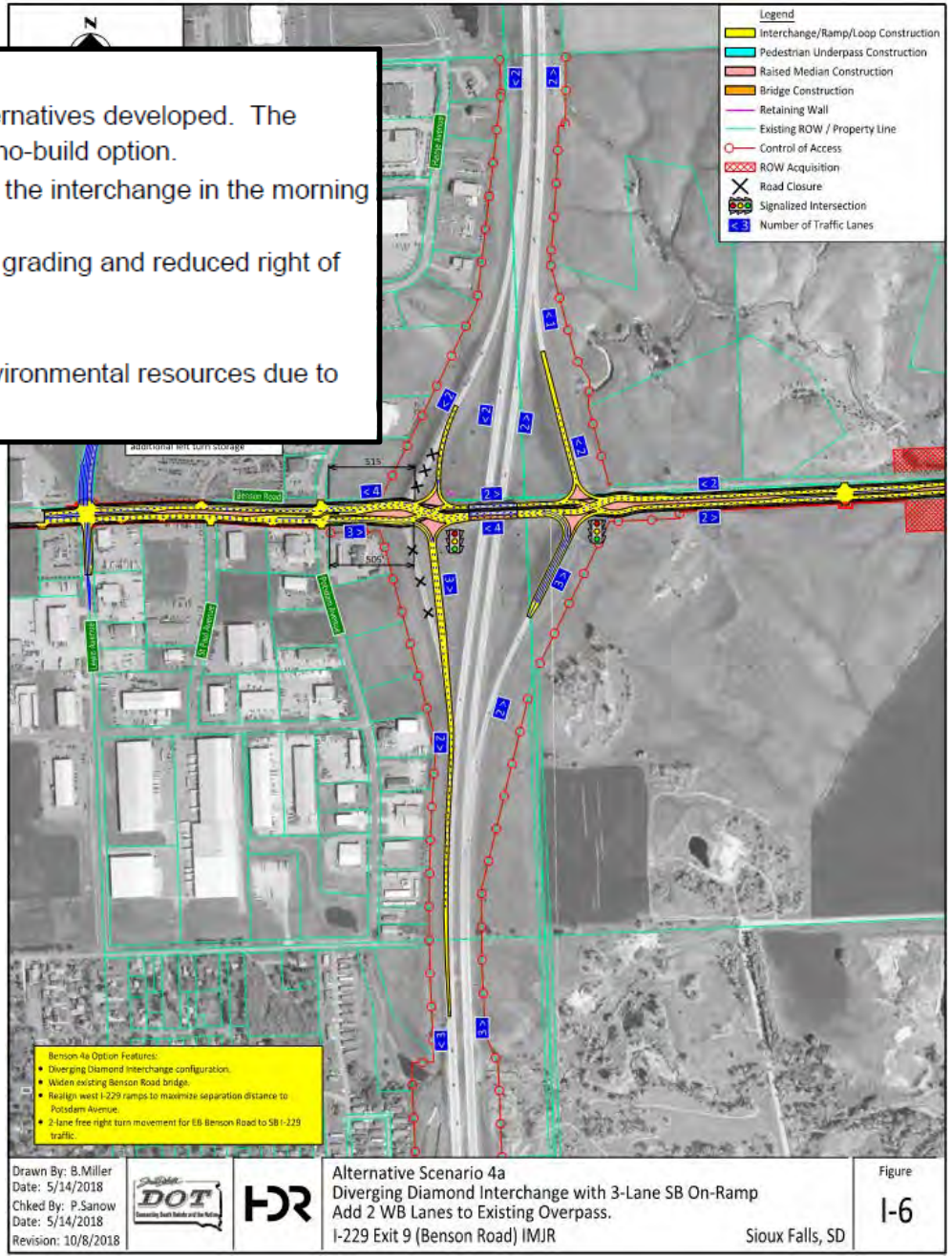


OPTIONS FOR CONSIDERATION – Scenario 4a

Benefits of Option 4a:

- Fewer crashes expected compared to the other build alternatives developed. The predicted annual traffic accidents reduces 25% from the no-build option.
- Traffic Level of Service (LOS) C is worst case forecast at the interchange in the morning for the northbound ramp for year 2045 conditions.
- Cost of construction reasonable due to limited amount of grading and reduced right of way acquisition.
- Requires no additional right of way on I-229.
- Fewer impacts to wildlife habitat, wetlands, and other environmental resources due to less grading and right of way.



OPTIONS FOR CONSIDERATION – Scenario 4a

Benefits of Op

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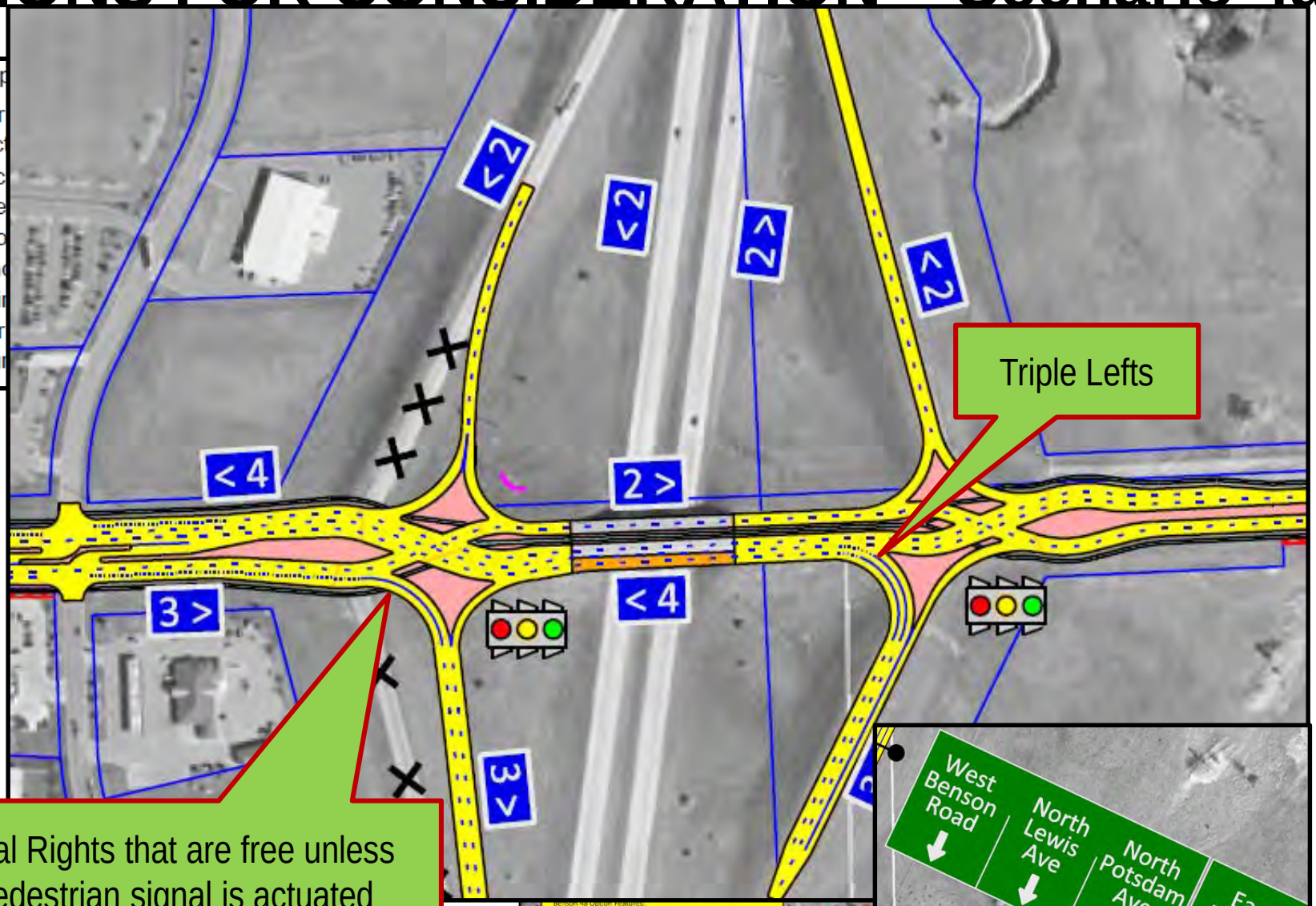

OPTIONS FOR CONSIDERATION – Scenario 4a

- Diverging Diamond interchange configuration.
- Widen existing Benson Road bridge.
- Realign west I-229 ramps to maximize separation distance to Potsdam Avenue.
- 2-lane free right turn movement for EB Benson Road to SB I-229 traffic.

Drawn By: B.Miller
Date: 5/14/2018
Chked By: P.Sanow
Date: 5/14/2018
Revision: 10/8/2018

DOT

HDR

Alternative S
Diverging Dia
Add 2 WB Lanes to Existing Overpass.
I-229 Exit 9 (Benson Road) IMJR

Sioux Falls, SD

I-6

Benson Road

OPTIONS FOR CONSIDERATION – Scenario 4a

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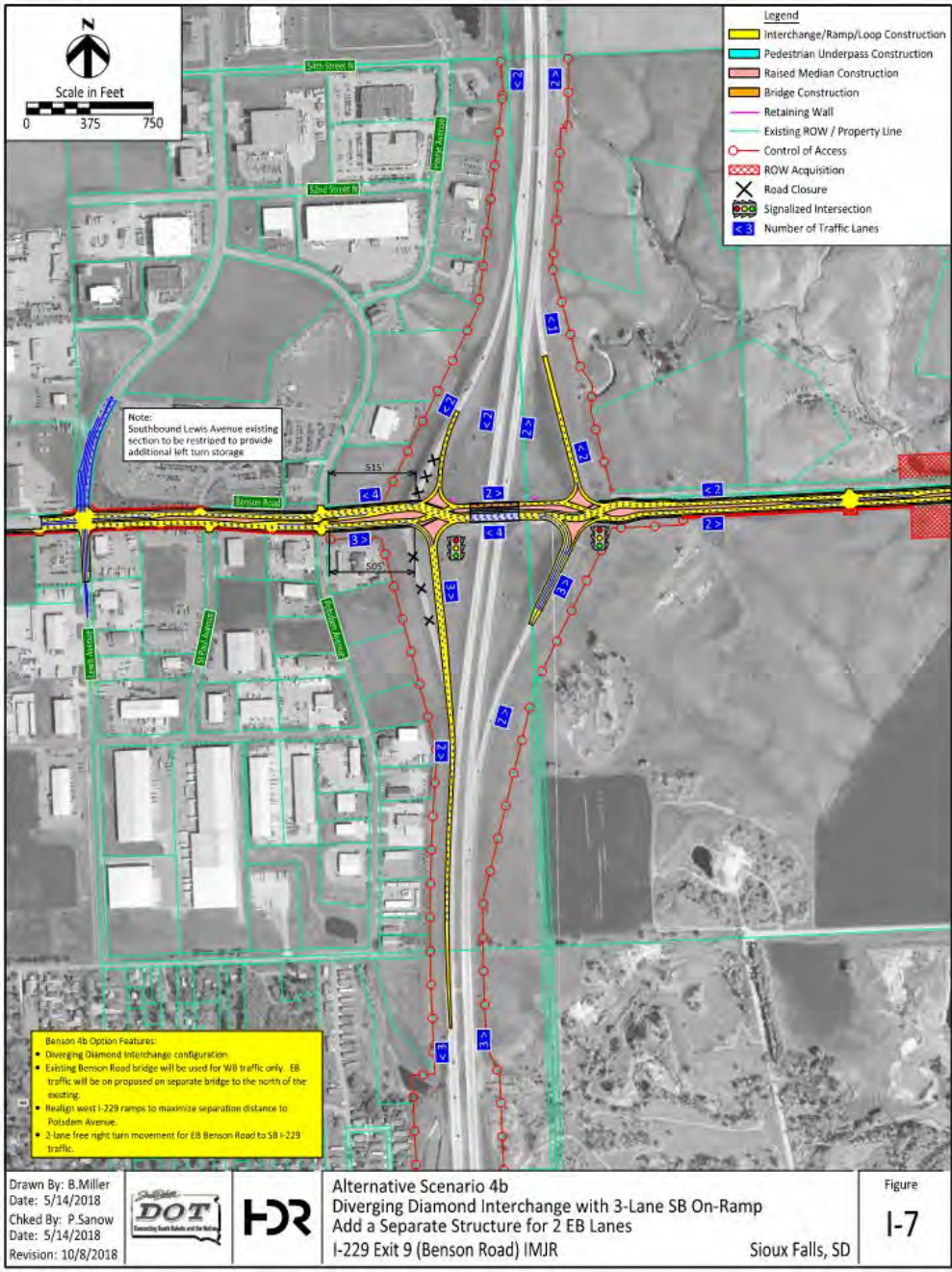
Add 2 WB Lanes to Existing Overpass.
I-229 Exit 9 (Benson Road) IMJR

Sioux Falls, SD

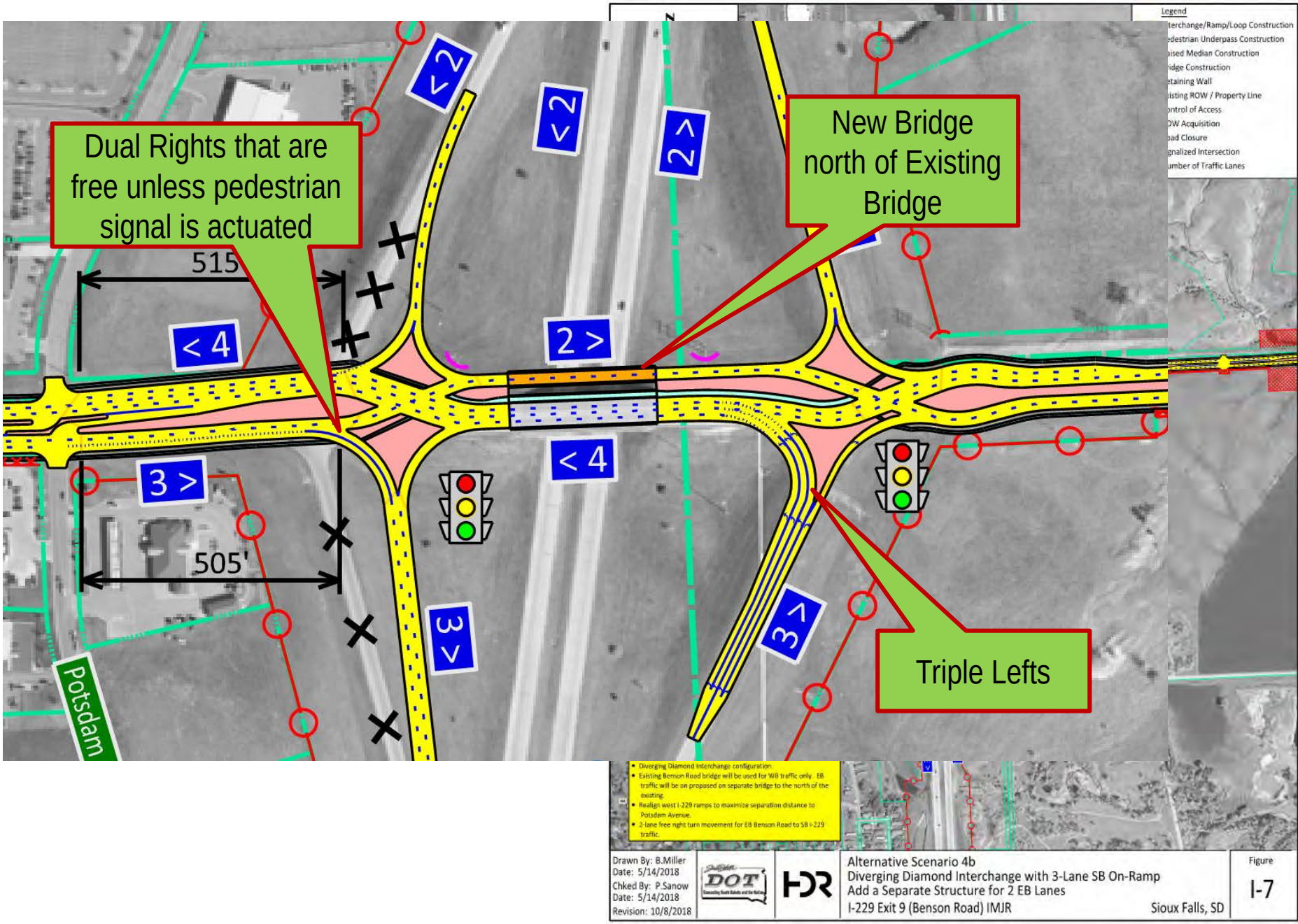
I-6

Benson Road

OPTIONS FOR CONSIDERATION – Scenario 4b



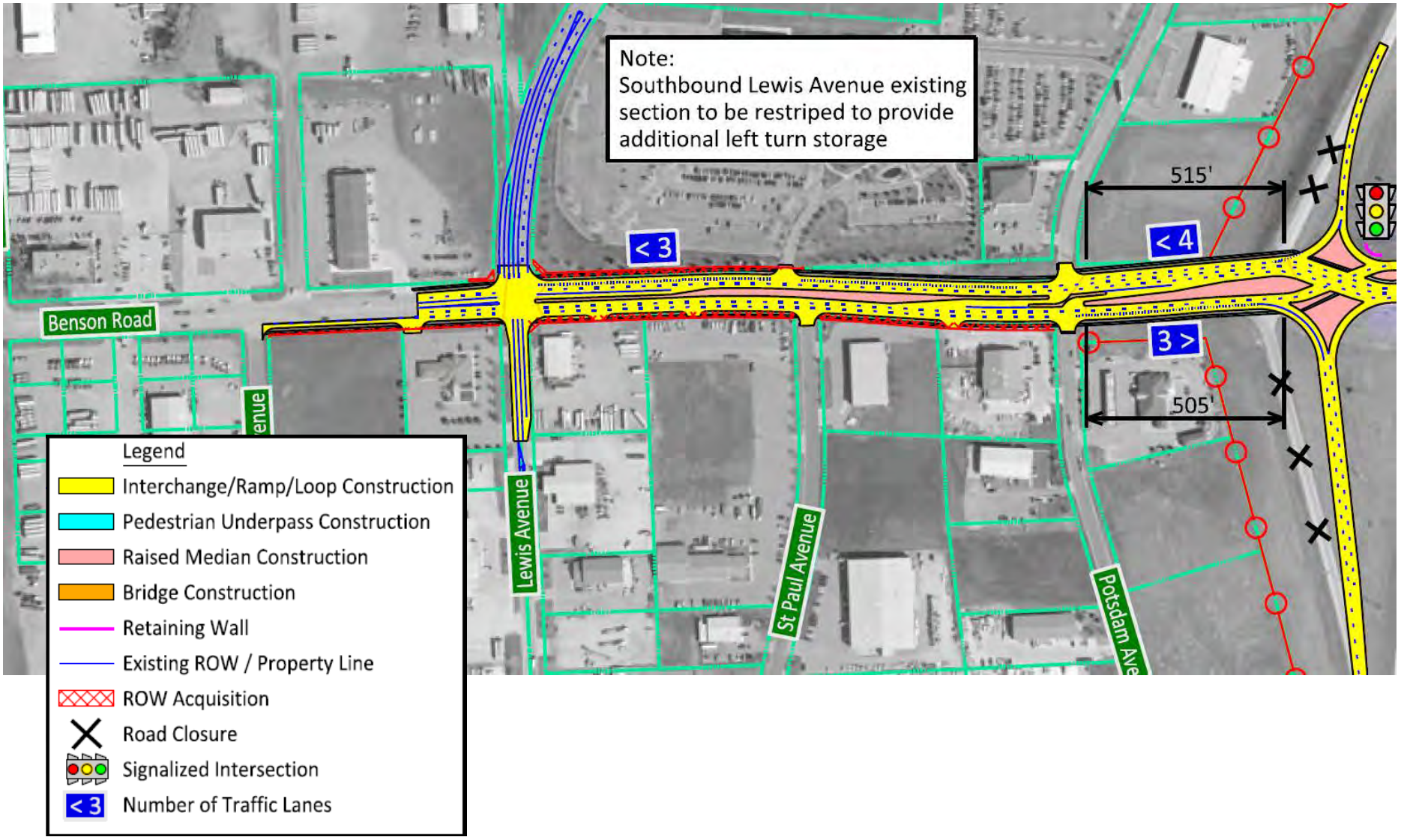
OPTIONS FOR CONSIDERATION – Scenario 4b



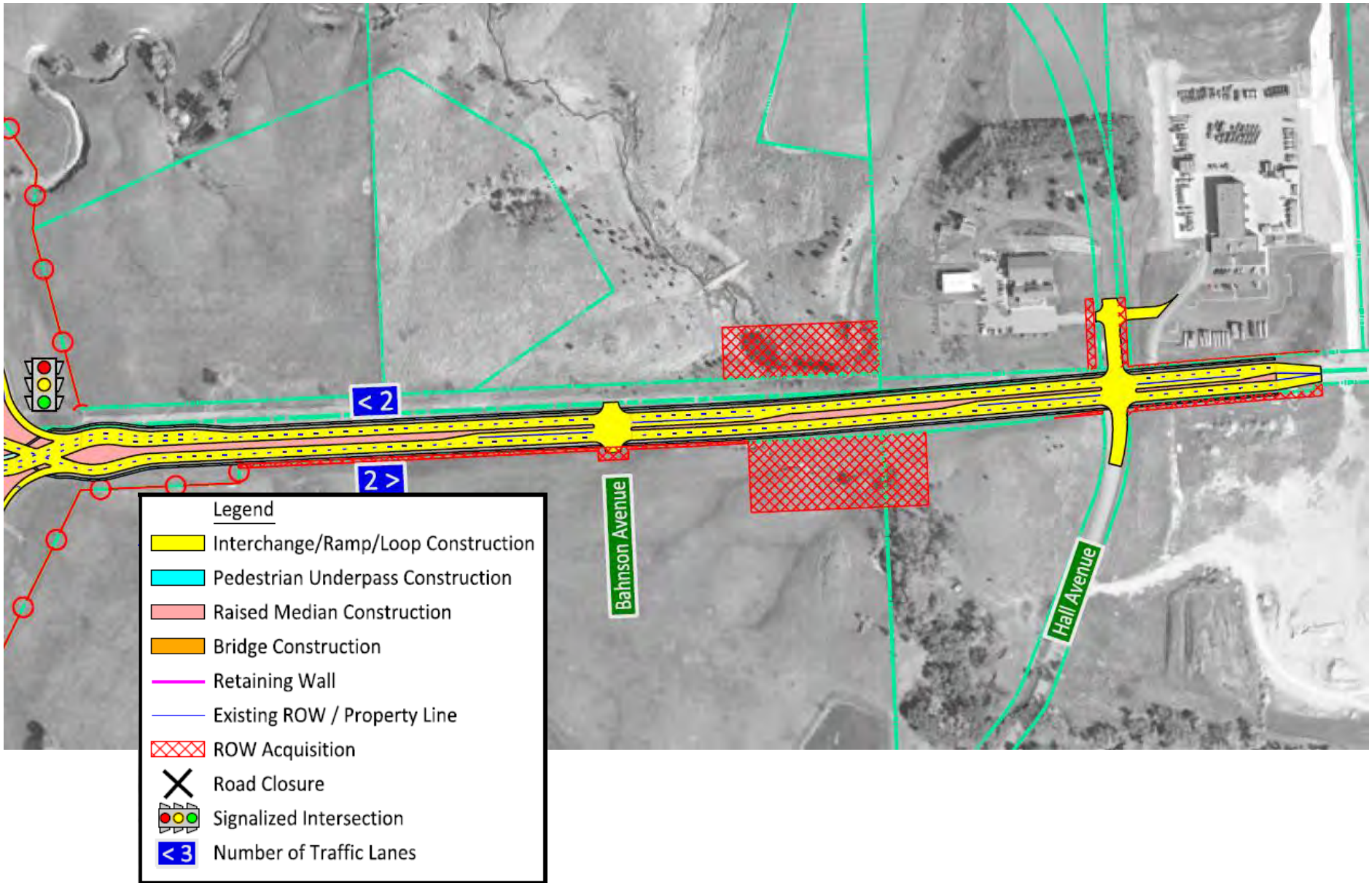
OPTIONS FOR CONSIDERATION – Scenario 4b

Rendered DDI Option

OPTIONS FOR CONSIDERATION
Benson Road West of I-229



OPTIONS FOR CONSIDERATION
Benson Road East of I-229



PROJECT EVALUATION CATEGORIES

Meets Purpose and Need Criteria			Year 2045 Traffic Operations								Safety		Driver/ Public Perception	Construction Impacts		Comparative Costs (5)								Applicable Env. Impacts		
Improve Traffic Operations	Improves Multimodal Mobility	Provides Adequate Separation to Nearest Access (1)	Northbound Ramp Intersection		Southbound Ramp Intersection		Southbound Off Ramp	Northbound On Ramp	Southbound Weaving	Northbound Weaving	Predicted Annual Total Crashes Year of opening to 2045	Predicted Annual Fatality and Injury Crashes Year of opening to 2045	Driver Familiarity	Maintenance of Traffic during Construction	Allows for Phased Construction	Bridge (6)	Retaining Wall	Pedestrian Underpass	Benson Road	I-229 Ramps	20% Contengencies (not included on bridge)	ROW Acquisition	Total	Wetlands (4)	Potential Traditional Clutural Property	Habitat
			Worst LOS AM/PM	Worst Delay AM/PM	Worst LOS AM/PM	Worst Delay AM/PM	Worst LOS AM/PM	Worst LOS AM/PM	Worst LOS AM/PM	Worst LOS AM/PM	#	#				M $	M $	M $	M $	M $	M $	M $	M $	acres		

NEXT STEPS

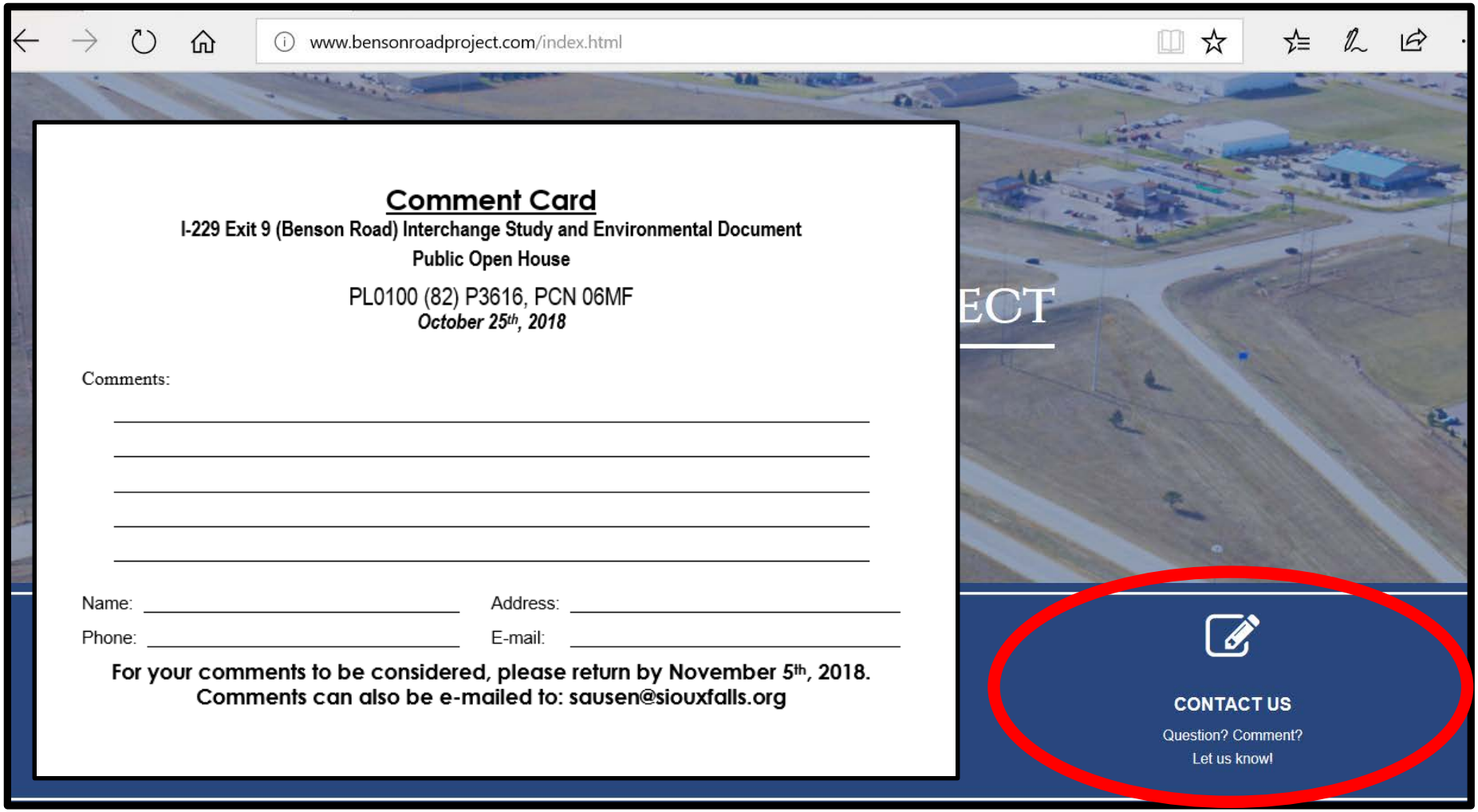
- **Hold Initial Public Meeting – TODAY!!!!!**
- Submit Draft Interchange Justification Modification Report – October 2018
- Hold 2nd Public Meeting (Present Preferred Option) – February/March 2019
- Submit Final Environmental Documentation – April 2019
- Prelim and Final Design – Nov 2018 thru May 2020
- Permitting and ROW – May 2020 thru Dec 2021
- Project Bid 2022 with Construction in 2023

PROJECT WEBSITE

- Website: http://www.bensonroadproject.com

Comments

- Email me: Jason.Kjenstad@hdrinc.com
- Leave comment on Website: http://www.bensonroadproject.com



PROJECT CONTACTS:

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Stacy Duchene – SDDOT Project Coordinator
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Thanks for attending!