

Public Meeting

I-229 Exit 6 (10th Street) Interchange and Mainline I-229

PL0194(98)P; PCN 07P7

Interchange Study, Environmental Study, and Design

Chad Hanisch, PE

Public Involvement Coordinator

January 26, 2022



Chad Hanisch



Purpose of the Meeting

Team

- Introductions and Contact Info

Project Limits / Schedule

- Study Area

Background

- Previous MIS
- Current Traffic / Crash Data

Purpose and Need

- Guidance on alternatives review

Current Study Alternatives

- I-229
- 10th St. / Cleveland Ave.

Gather Input and Comments

- www.i229Exit6.com



Chad Hanisch

Project Team



CONFLUENCE



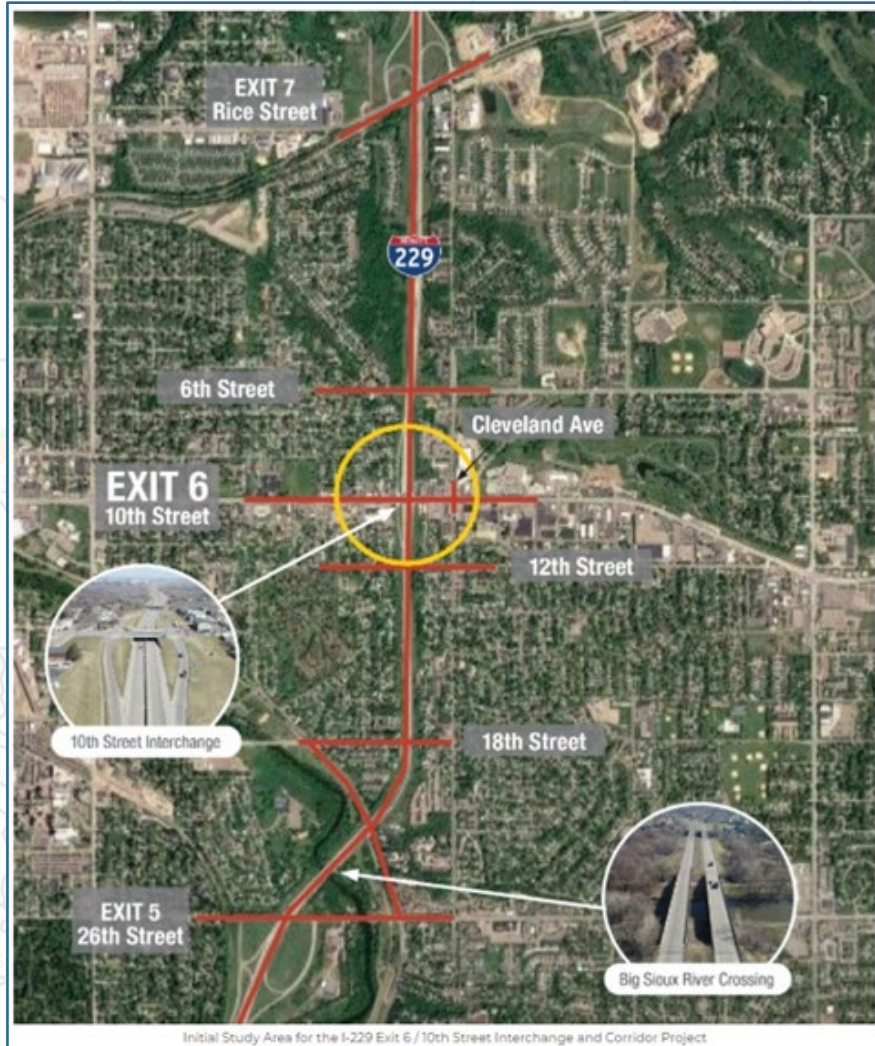
infr▲structure
design group inc.



Chad Hanisch



Project Limits




I-229 Exit 6 (10th Street) Interchange and Mainline I-229



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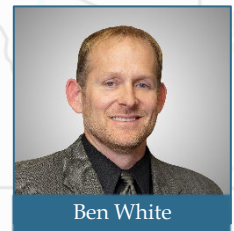
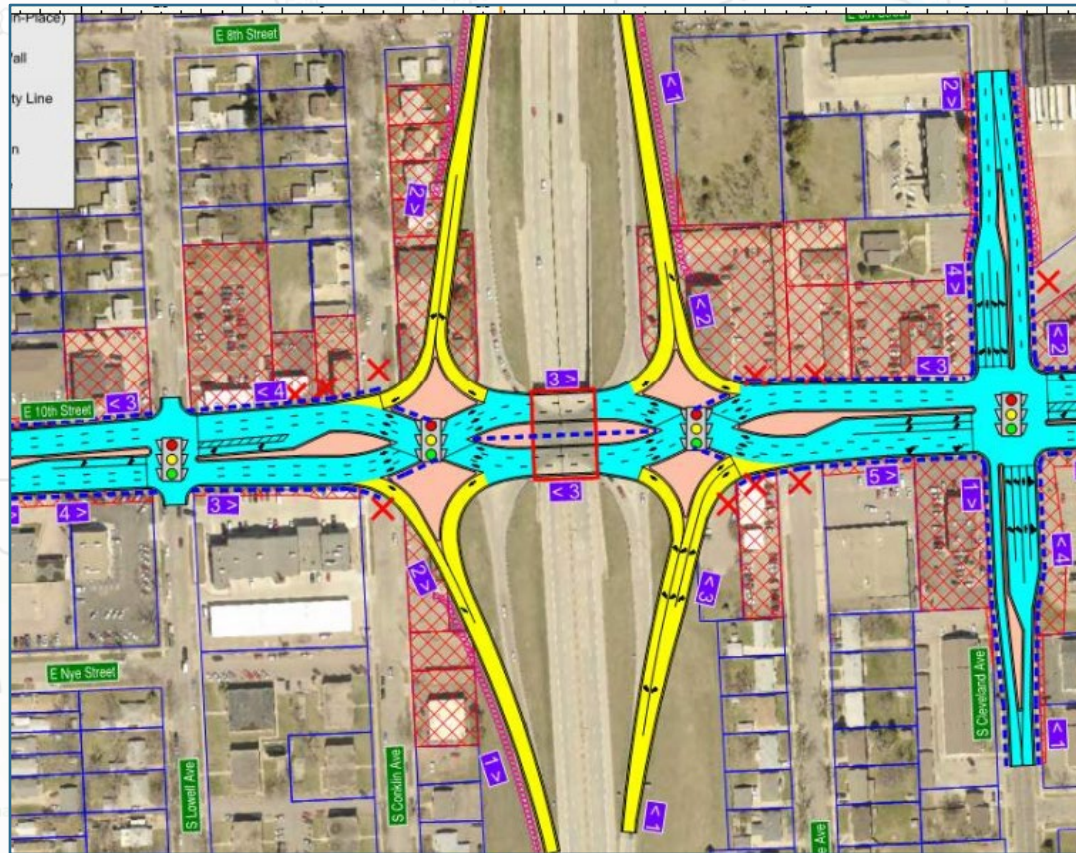


Tentative Project Schedule

STUDY TASKS		2020			2021				2022				2023			
		JUNE	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
TASK 1: PLANNING STUDY																
KEY MILESTONES & PRIORITIES	Kick-off, M&A Documents (IMJR and NEPA)															
	Traffic Forecasts, Analysis, Crash History															
	Environmental Field Studies, Agency Outreach, Propose & Need															
	Build Option Refinement and Screening															
	Draft IMJR Submittal to SDDOT															
	Environmental Impacts and Special Studies															
	Final IMJR Submittal to FHWA and Finalization															
	Environmental Scan Report and NEPA Class Determination															
TASK 2: ENVIRONMENTAL STUDY																
KEY MILESTONES & PRIORITIES	Draft NEPA Document															
	Environmental Commitments, Section 4(f) Reviews															
	NEPA Document Approvals															
TASK 3: TOPOGRAPHIC SURVEY																
KEY MILESTONES & PRIORITIES	Permission Coordination															
	Survey															
	Right-of-Way															
TASK 4: UTILITY COORDINATION AND LOCATING																✓
PUBLIC INVOLVEMENT																
KEY MILESTONES & PRIORITIES	Public Meetings															
Project Schedule Key																
 Public & Stakeholder Meetings		Phase 2 Subsurface Utility Exploration: Utility Conflict Identification, Analysis and Coordination will occur in Q3 of 2023.														
<h1>Dependent on Phasing and Funding</h1>																

Background - Review MIS Study Alternatives

Diverging Diamond Interchange (DDI)

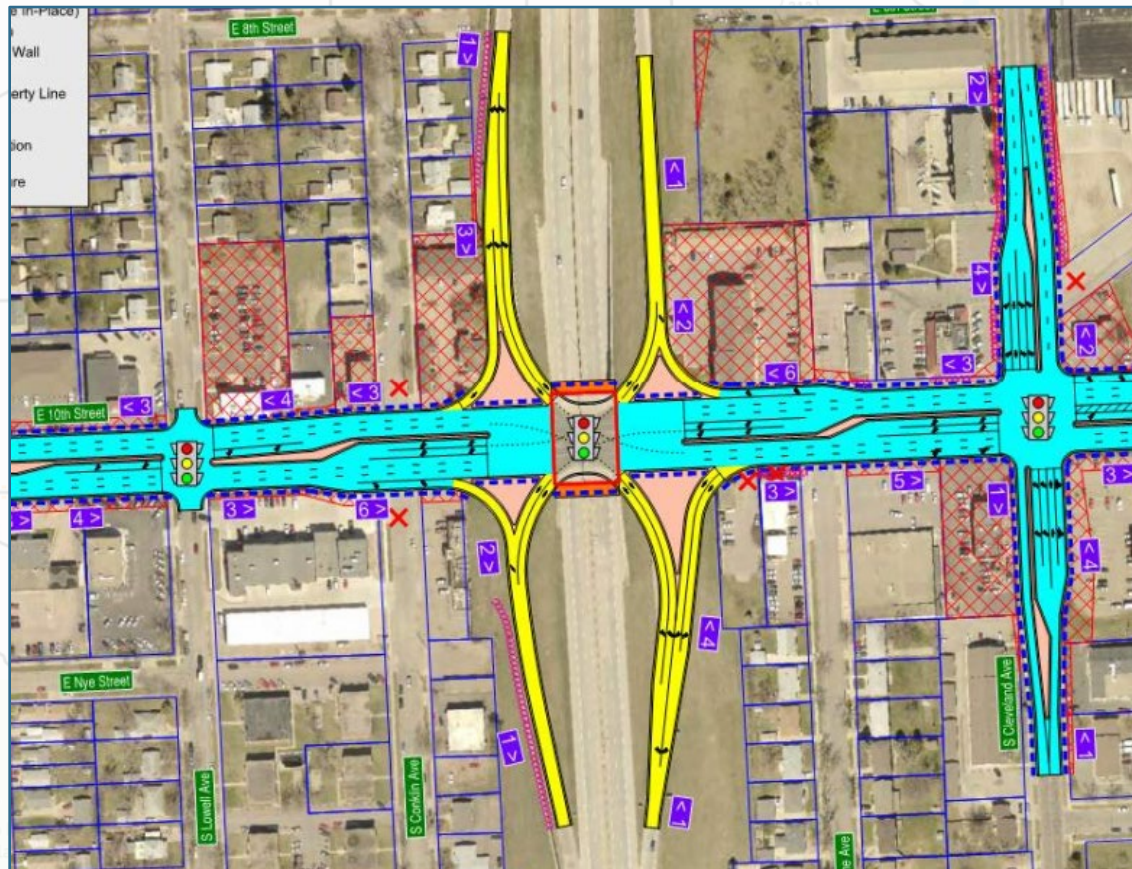


Ben White



Background - Review MIS Study Alternatives

Single Point Urban Interchange (SPUI)



Ben White



Background – Traffic Data



2018 Average Annual Daily Traffic

- I-229 Mainline = 29,800 to 37,700
- E 10th St = 21,200 to 31,400
- Cleveland Ave = 5,400 to 10,200



Chase Cutler



Background – Crash Data

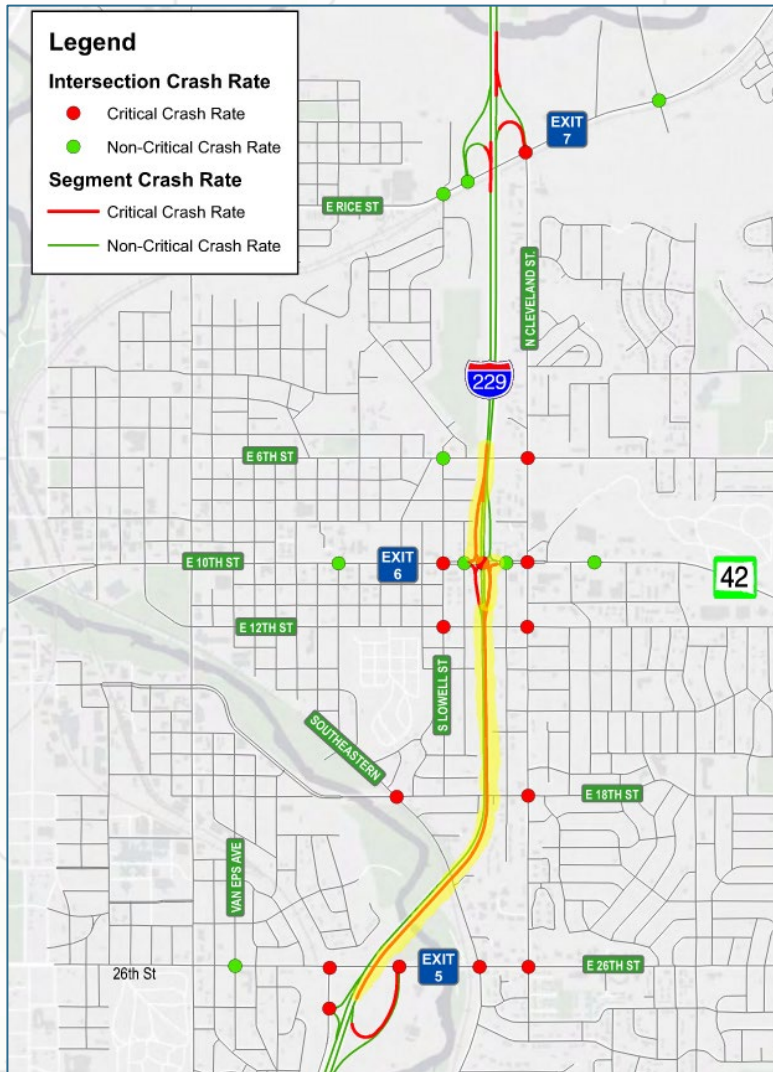


Table 1 Mainline I-229 Crashes

		Crash Severity							Crash Rate Information		
	Segment	Fatal	A	B	C	PD	Wild Animal	Total	Crash Rate	Critical Rate	Critical Index
Northbound I-229	Between Exits 4 & 5*	0	0	1	0	3	0	4	0.42	1.93	0.22
	Exit 5 Diverge	0	0	0	1	9	1	11	1.91	2.21	0.87
	Exit 5 between Ramps	0	0	0	0	5	3	8	0.90	1.97	0.46
	Exit 5 Merge	0	0	0	0	5	2	7	1.17	2.18	0.54
	Between Exits 5 & 6	1	2	3	2	33	4	45	1.58	1.54	1.03
	Exit 6 Diverge	0	1	1	3	18	1	24	2.63	1.95	1.35
	Exit 6 between Ramps	0	0	0	0	8	0	8	0.83	1.92	0.43
	Exit 6 Merge	0	0	1	1	4	0	6	1.42	2.42	0.59
	Between Exits 6 & 7	0	0	1	3	9	9	22	1.08	1.63	0.66
	Exit 7 Diverge	0	1	0	0	3	6	10	2.36	2.42	0.98
	Exit 7 between Ramps	0	0	0	0	3	4	7	1.10	2.15	0.51
	Exit 7 Merge	0	0	1	0	19	6	26	6.73	2.49	2.70
Southbound I-229	Exit 7 Diverge	0	0	0	1	5	2	8	2.07	2.49	0.83
	Exit 7 between Ramps	0	0	0	0	4	3	7	1.22	2.21	0.55
	Exit 7 Merge	0	0	2	1	18	1	22	5.19	2.42	2.15
	Between Exits 7 & 6	0	0	1	2	9	13	25	1.33	1.66	0.80
	Exit 6 Diverge	0	0	1	1	12	1	15	3.54	2.42	1.46
	Exit 6 between Ramps	0	0	2	2	10	1	15	1.77	1.99	0.89
	Exit 6 Merge	0	0	0	0	18	0	18	1.53	1.84	0.83
	Between Exits 6 & 5	1	0	2	4	30	0	37	1.36	1.55	0.88
	Exit 5 Diverge	0	0	0	0	3	1	4	1.48	2.80	0.53
	Exit 5 between Ramps	0	0	0	0	2	1	3	0.51	2.20	0.23
	Exit 5 Merge	0	0	0	0	7	3	10	1.73	2.21	0.78
	Between Exits 5 & 4*	0	0	1	0	6	4	11	1.21	1.95	0.62
TOTAL		2	4	17	21	243	66	353	n/a	n/a	n/a

- All mainline segments are Urban Interstate with a Statewide Average Crash Rate of 1.03.
 - **Bold/Shaded** indicates a calculated crash rate that is at or exceeding the critical rate.
 - * Does not include northbound Merge or southbound Diverge crashes at Exit 4.



Background – Crash Data

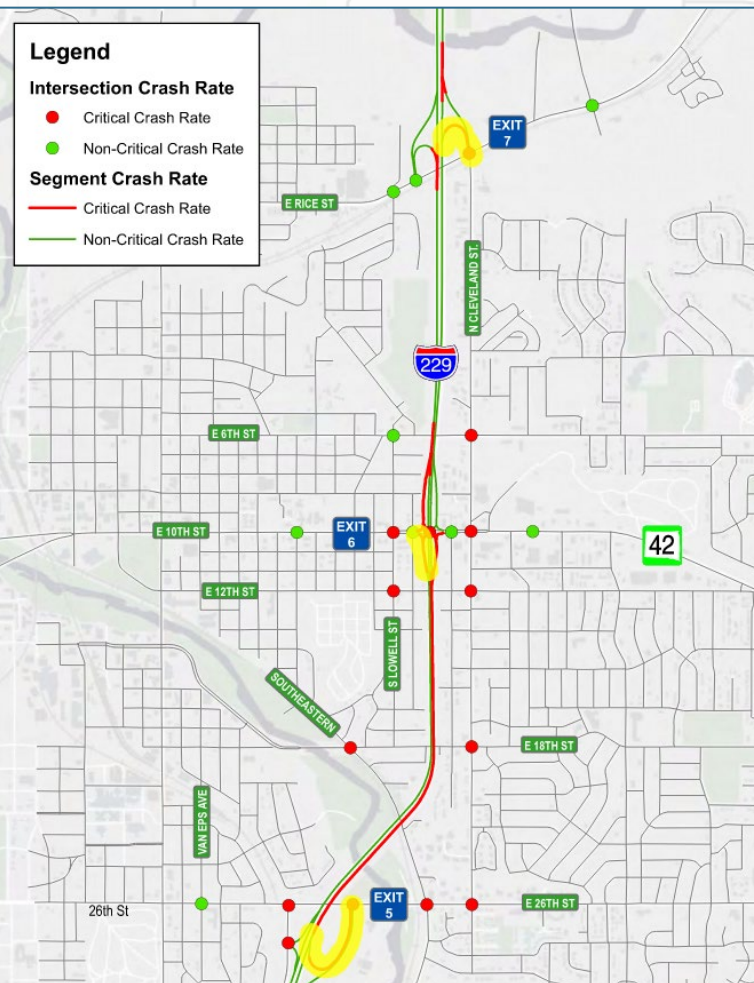


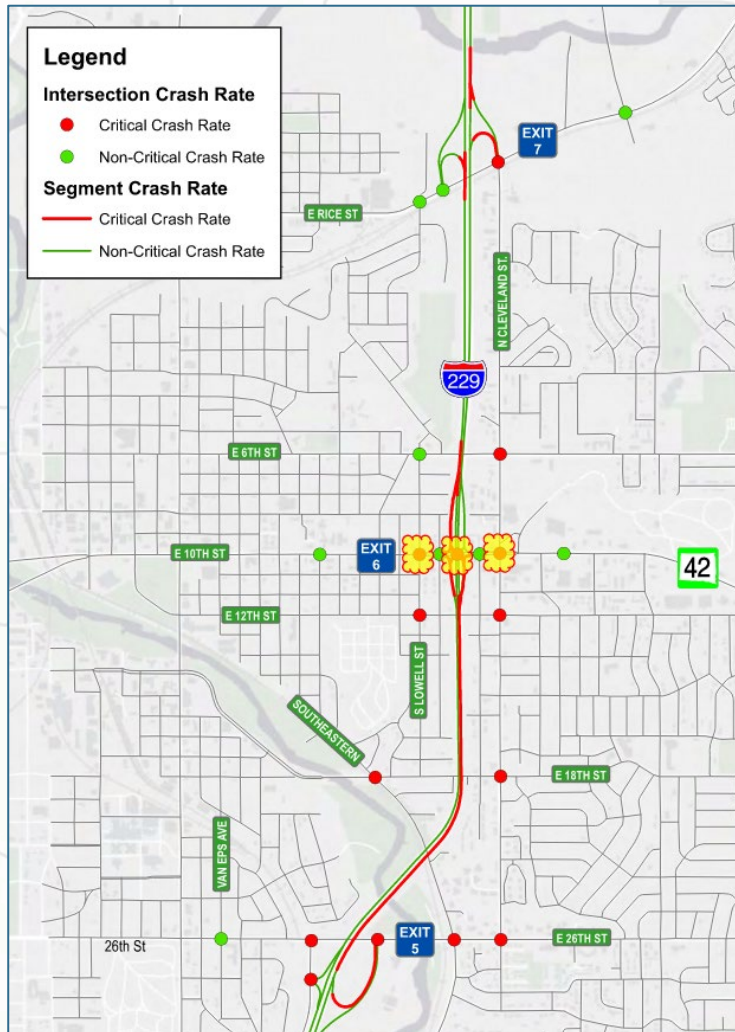
Table 2 I-229 Ramp Crashes

Description		Crash Severity							Rate Information		
Segment		Fatal	A	B	C	PD	Wild Animal	Total	Crash Rate	Critical Rate	Critical Index
NB I-229 Ramps	Exit 5 Off Ramp	0	0	0	0	4	0	4	0.83	2.33	0.36
	Exit 5 On Ramp	0	0	1	1	11	0	13	7.67	3.33	2.30
	Exit 6 Off Ramp	0	0	0	0	2	0	2	0.57	2.57	0.22
	Exit 6 On Ramp	0	0	0	1	2	0	3	1.15	2.84	0.40
	Exit 7 Off Ramp	0	0	0	1	7	0	8	8.09	4.17	1.94
	Exit 7 On Ramp	0	1	0	0	1	0	2	1.51	3.68	0.41
SB I-229 Ramps	Exit 7 Off Ramp	0	0	0	0	0	0	0	0.00	3.54	0.00
	Exit 7 On Ramp	0	0	1	0	2	0	3	3.08	4.20	0.73
	Exit 6 Off Ramp	0	0	0	0	0	0	0	0.00	2.80	0.00
	Exit 6 On Ramp	0	0	0	1	8	0	9	4.92	3.24	1.52
	Exit 5 Off Ramp	0	0	0	0	1	0	1	1.63	5.19	0.31
	Exit 5 On Ramp	0	0	0	1	1	0	2	2.10	4.23	0.50
TOTAL		0	1	2	5	39	0	47			
- All mainline segments are Urban Interstate with a Statewide Average Crash Rate of 1.03. - Bold/Shaded indicates a calculated crash rate that is at or exceeding the critical rate.											



Background – Crash Data

Table 3 Intersection Crashes



Intersection		Crash Severity							Rate Information		
		Fatal	A	B	C	PD	Wild Animal	Total	Crash Rate	Critical Rate	Critical Index
Rice St	Rice St at Lowell Ave	0	0	1	1	7	0	9	0.38	0.56	0.67
	Rice St at I-229 SB Ramp Terminal**	0	1	1	3	9	0	14	0.51	0.99	0.52
	Rice St at I-229 NB Ramp Terminal**	0	0	2	10	39	0	51	1.53	0.95	1.61
	Rice St at Bahnson Ave	0	0	0	1	1	0	2	0.10	0.60	0.17
6 th St	6th St at Lowell Ave	0	0	1	2	5	0	8	0.38	0.59	0.65
	6th St at Leadale Ave ⁽²⁾	0	0	0	0	8	0	8	0.41	0.60	0.69
	6th St at N Cleveland Ave**	0	0	8	14	66	0	88	2.26	1.35	1.67
10 th St	10th St at Jessica Ave**	0	0	0	3	9	0	12	0.28	0.90	0.31
	10th St at St. Paul Ave ⁽²⁾	0	0	4	1	9	0	14	0.32	0.48	0.66
	10th St at Lowell Ave**	0	1	5	12	34	0	52	1.11	0.89	1.25
	10th St at Conklin Ave	0	0	1	1	4	0	6	0.14	1.41	0.10
	10th St at Single Point Terminal**	0	3	3	24	120	0	150	2.47	0.85	2.90
	10th St at Blaine Ave	0	0	0	0	5	0	5	0.09	1.35	0.07
	10th St at Cleveland Ave**	0	1	14	25	124	0	164	2.56	1.26	2.03
	10th St at Chapel Hill Rd ⁽²⁾	0	0	2	0	7	0	9	0.22	0.49	0.45
	10th St at Hy-Vee Access**	0	0	0	6	19	0	25	0.61	0.91	0.67
	12 th St	12th St at Lowell Ave	0	0	1	2	4	0	7	1.10	0.88
	12th St at Cleveland Ave**	0	0	1	7	26	0	34	1.73	1.05	1.65
18 th St	18th St at Southeastern Ave**	0	0	2	2	28	0	32	1.80	1.07	1.68
	18th St at Blaine Ave ⁽²⁾	0	0	1	0	9	0	10	0.84	0.70	1.20
	18th St at Cleveland Ave**	0	0	1	4	24	0	29	1.51	1.05	1.43
26 th Str	26th St at Van Eps Ave**	0	0	2	2	12	0	16	0.67	1.02	0.66
	26th St at Yeager Rd**	0	0	4	12	33	0	49	1.16	0.91	1.28
	Yeager Rd at SB Ramp Terminal	0	1	0	3	12	0	16	1.01	0.65	1.54
	26th St at NB Ramp Terminal**	0	0	10	17	72	0	99	1.93	0.88	2.20
	26th St at Southeastern Ave**	0	0	4	13	90	0	107	1.58	1.25	1.26
	26th St at Cleveland Ave**	0	1	6	20	61	0	88	1.82	0.89	2.06
TOTAL		0	8	74	185	837	0	1104	n/a	n/a	n/a
- **Signalized Intersection											
- Bold/Red Shaded indicates a calculated crash rate that is at or exceeding the critical rate.											
- (2) Notes non-study intersections included.											



Environmental Study - Purpose and Need

This project is being developed in accordance with applicable State and Federal environmental regulations.

- NEPA (National Environmental Policy Act) provides guidance for the review**
- A "Purpose and Need" statement is the cornerstone of project studies and alternatives evaluation**



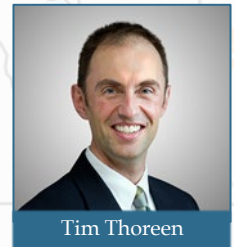
Tim Thoreen



DRAFT Project Purpose

At this stage of studies, we developed a DRAFT project purpose and supporting objectives based on identified needs in the study area.

- The DRAFT project Purpose statement is: "*to reconstruct the I-229 corridor and Exit 6 interchange according to current design standards*"



Tim Thoreen



Project Needs

Primary goals of the project are described through project "needs" as follow:

- **Safety** – maintain or improve crash rates to below the safety standards
- **Mobility** – provide reasonable "level of service" to manage congestion and flow of traffic
- *Additional goals are frequently identified through project studies and public outreach, they often relate to pedestrian accommodations, environmental or community objectives, and infrastructure condition targets.*



Tim Thoreen

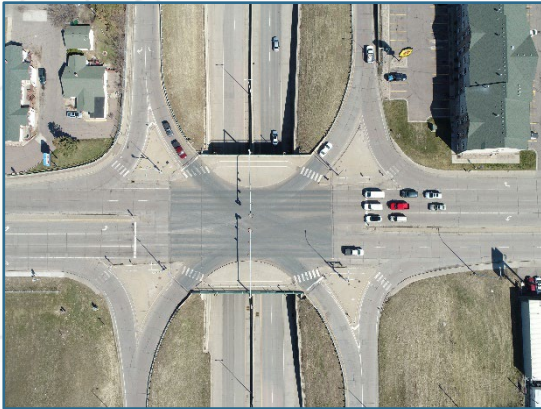


Study Alternatives – Interchange and Corridor



Previous Study

Last Surface Improvements in 2004



Ross Harris
Speaking

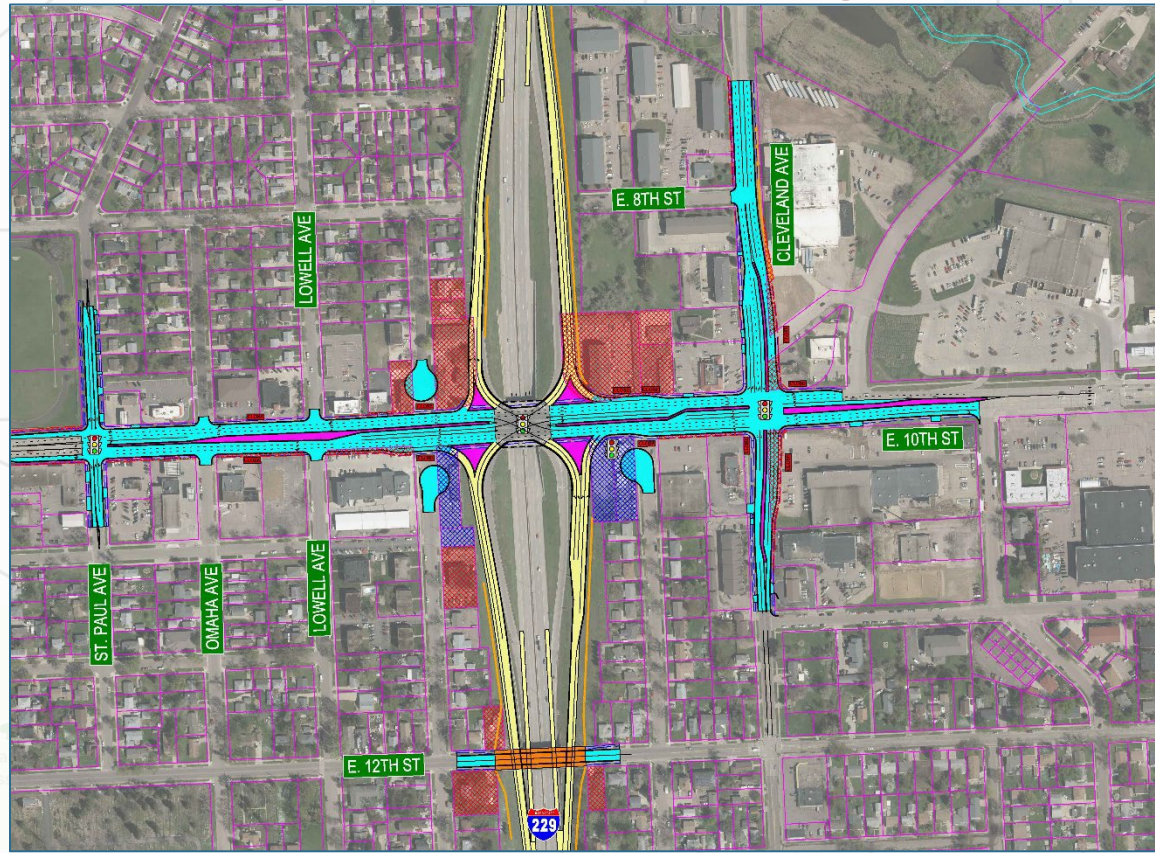


Scott Hotchkin
Lead Designer



Study Alternatives – 10th St. Interchange

Single Point Urban Interchange (SPUI)



Ross Harris
Speaking

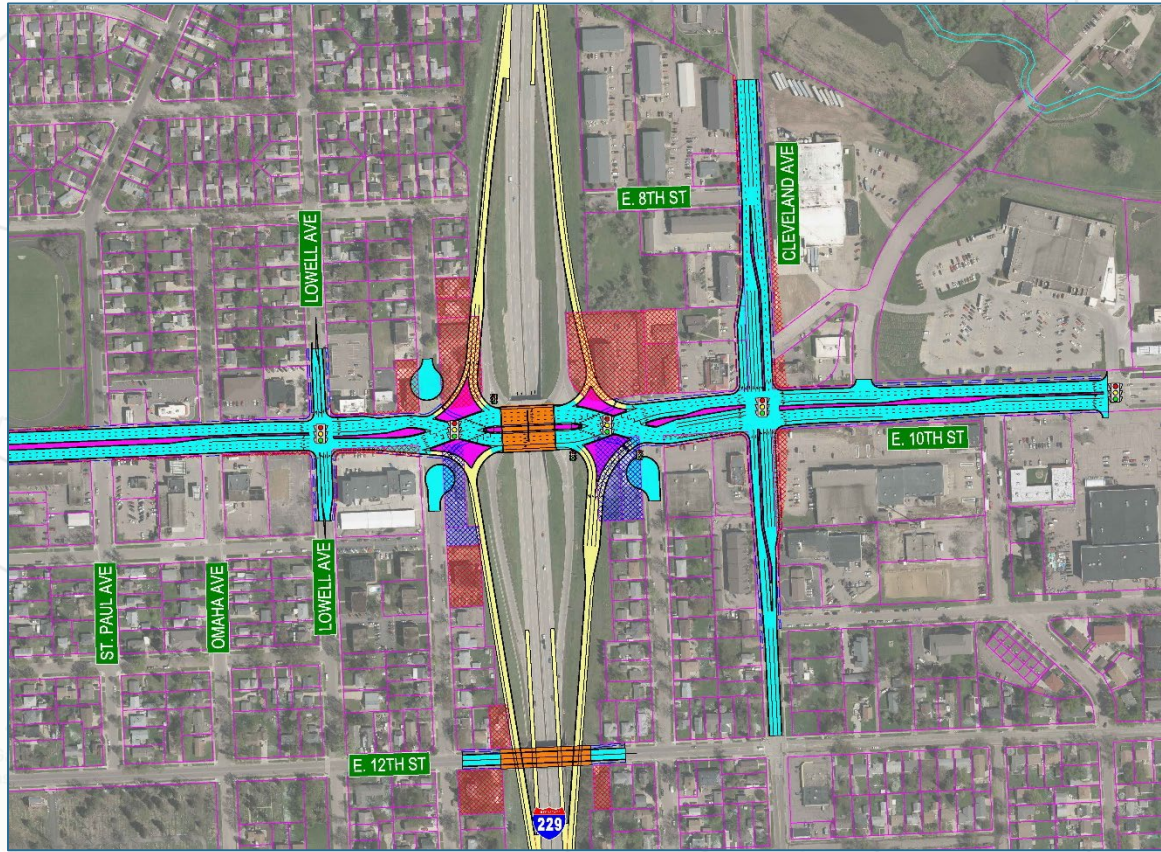


Scott Hotchkin
Lead Designer



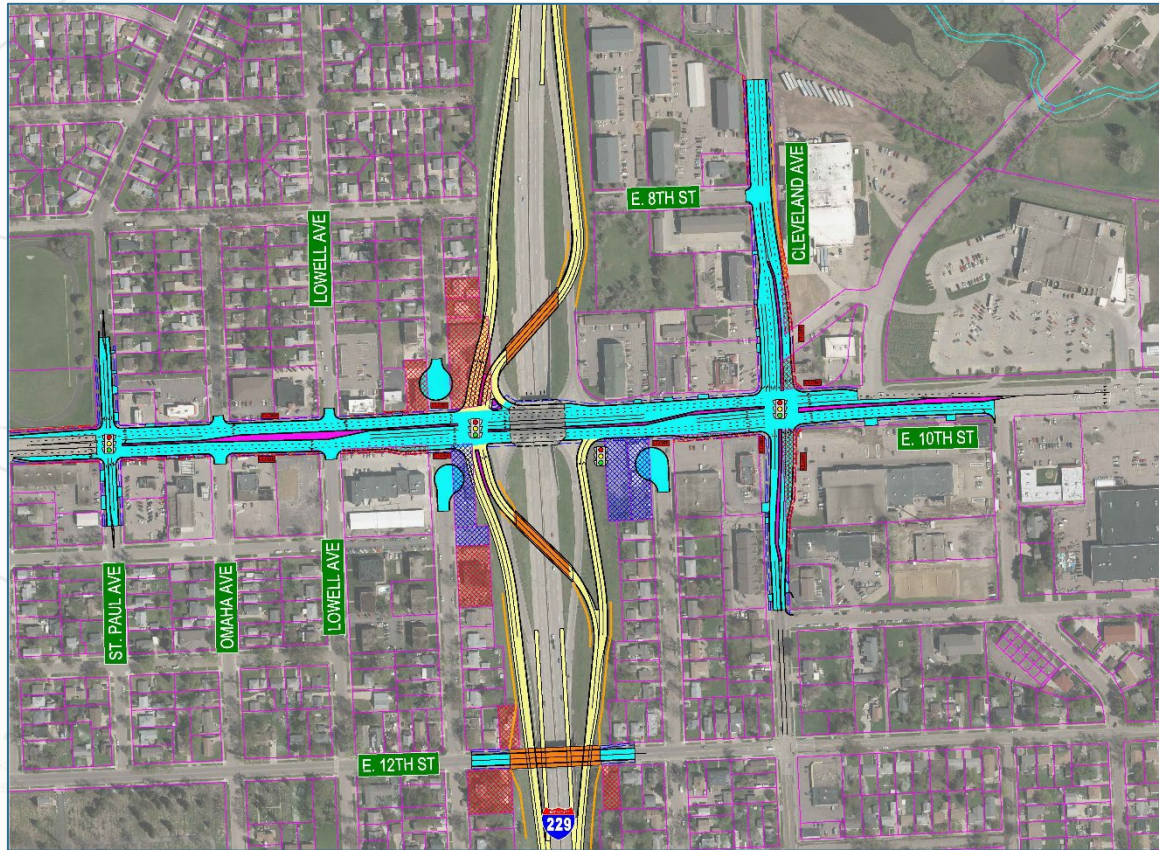
Study Alternatives – 10th St. Interchange

Diverging Diamond Interchange (DDI)

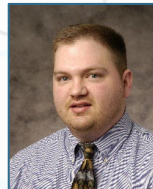


Study Alternatives – 10th St. Interchange

Offset Single Point Urban Interchange (Offset SPUI)



Ross Harris
Speaking



Scott Hotchkin
Lead Designer



Study Alternatives – 10th St. Interchange

Evaluation Matrix

Exit 6 - 10th Street Evaluation Matrix

Evaluation Criteria	Alternative 0	Build Alternatives	
	No Build	Standard SPUI	Offset SPUI
CONFORMANCE WITH PLANS	Meets SDDOT Design Criteria	YES	YES
	Meets SDDOT Access Spacing Criteria	YES	YES
	Meets City Access Spacing Criteria	NO	NO
	Access Closures	11	9
RIGHT OF WAY IMPACTS	Acquisitions - Residential	6	6
	Acquisitions - Business	5	3
	Total Acreage of ROW Required *	5.2	3.6
ENVIRONMENTAL IMPACTS	Pedestrians/Bicycle Mobility	Bus Route 4 (10th Street & Cleveland Ave), Bus Route 7 (6th Street, Rice Street), Bus Route 9 (18th Street)	temporary construction impacts; sidewalks generally consistent with no build
	Land Use/Socioeconomics	Commercial and residential impacts by take	Commercial and residential impacts by take
	Environmental Justice	Impact to two apartment zones. RA-1 Take likely, RA-2 Immediately adjacent	Impact to two apartment zones. RA-1 Take likely, RA-2 Immediately adjacent
	Section 4(f)/Section 6(f)	Not likely	Not likely
	Noise Impacts (Risk for)	Yes	Yes
	Floodplains	No	No
	Wetlands/River Impacts	No	No



Ross Harris
Speaking



Scott Hotchkin
Lead Designer



Study Alternatives – 10th St. Interchange

Evaluation Matrix

Exit 6 - 10th Street Evaluation Matrix

Evaluation Criteria	Alternative 0	Build Alternatives	
	No Build	Standard SPUI	Offset SPUI
TRAFFIC SAFETY AND OPERATIONS	Safety Improvement – % Reduction in Crashes (2027 through 2050 Crashes)	16.4%	18.4%
	Operational Performance	F (100.6) / F (68.2)	C (24.2) / C (28.5)
	Worst Ramp Terminal Performance 2050	Northbound Ramp AM LOS F (154.2)	Northbound Ramp PM LOS D (46.1)
	Non-Motorized Facilities	C (2.72) / C (2.67)	C (2.58) / C (2.58)
CONSTRUCTION	Maintenance of Traffic During Construction	YES	YES
	Allows for Phased Construction	YES	YES
	Interchange Structure Costs (\$M)	\$0.6	\$3.7
	Entrance / Entrance Ramp Costs (\$M)	\$10.2	\$9.3
	10th Street Roadway Costs (\$M)	\$5.5	\$5.3
	Cleveland Avenue Costs (\$M)	\$2.7	\$2.7
	Costs (Millions in 2021 dollars)	\$19.0	\$21.0
	Additional City of Sioux Falls Project Cost (\$M)		
	Total Project Costs (Millions in 2021 dollars)	\$19.0	\$21.0



Ross Harris
Speaking



Scott Hotchkin
Lead Designer



Study Alternatives – I229 Mainline



Implement curve improvements

No curve improvements

Widen inside shoulder

No widening to inside shoulder

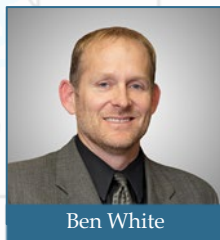
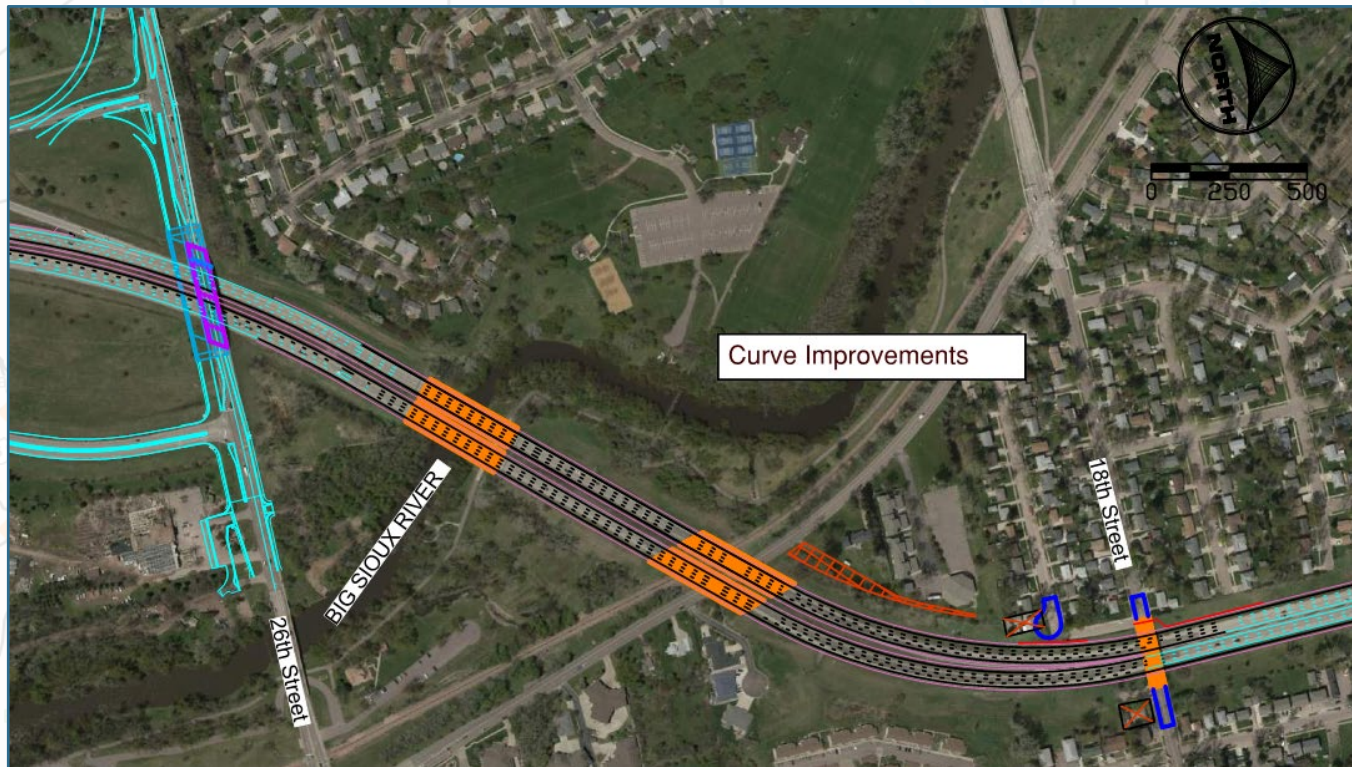


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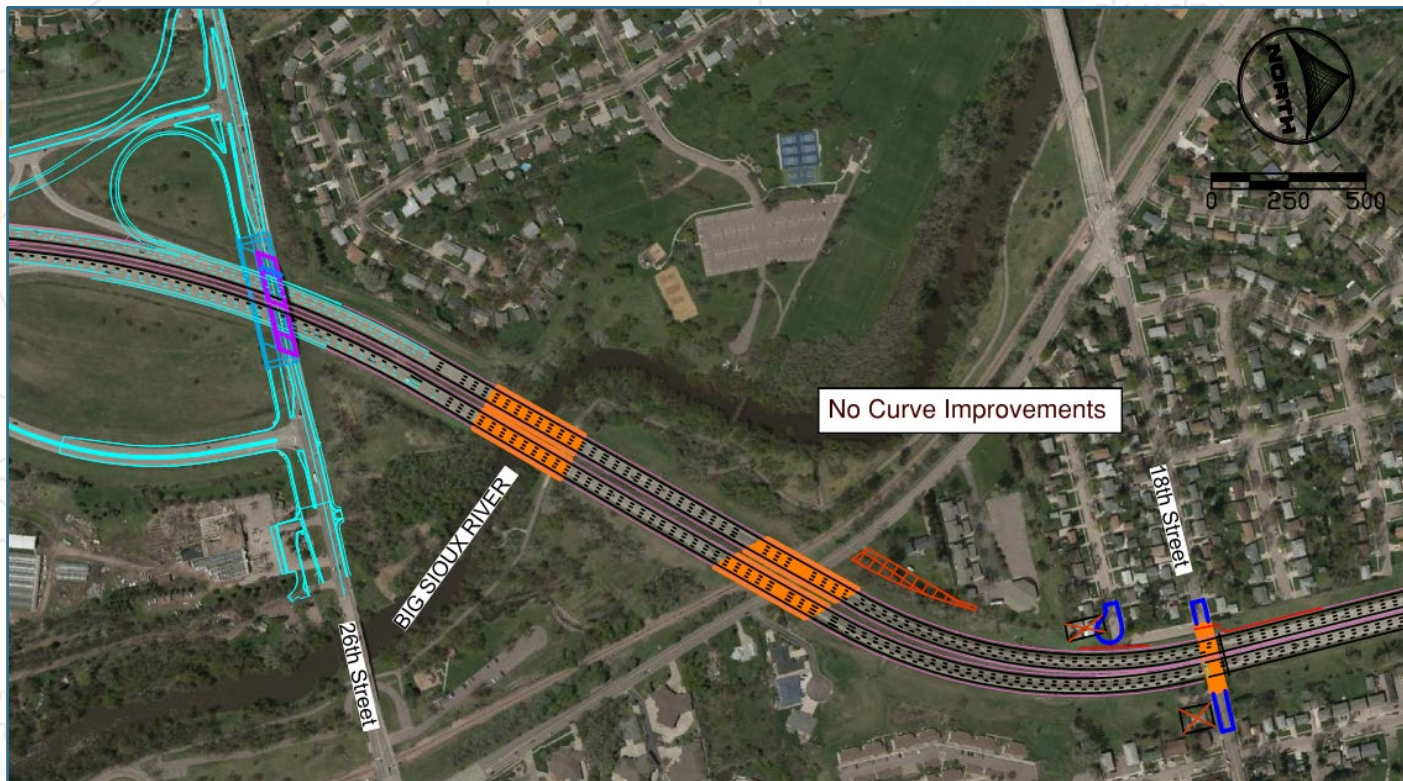
Study Alternatives – I229 Mainline

Additional Lanes Plus Implement Curve Improvements



Study Alternatives – I229 Mainline

Additional Lanes with No Curve Improvements

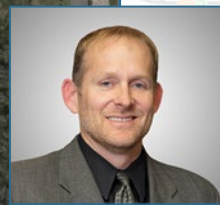


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Study Alternatives – I229 Mainline

Additional Lanes and Widen Inside Shoulder



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Study Alternatives – I229 Mainline

Additional Lanes with No Widening to Inside Shoulder

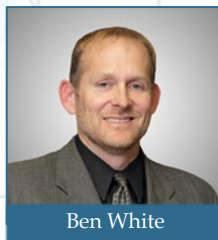
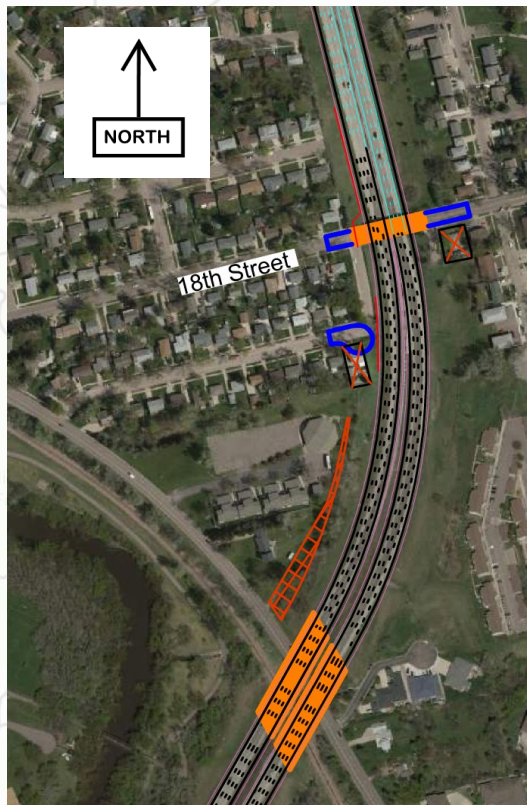


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Study Alternatives – I229 Mainline

12th and 18th St Bridge Reconstruction



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Study Alternatives – I229 Mainline

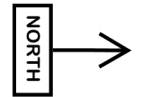
Southeastern Ave and Big Sioux River Bridge Reconstruction



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Study Alternatives – I229 Mainline South Mainline Improvements



Ben White



Study Alternatives – I229 Mainline

Evaluation Matrix

I-229 Mainline Evaluation Matrix

	Evaluation Criteria	Alternative 0	Build Alternatives - Construct All Necessary Lanes			
		No Build	Curve Improvements	No Curve Improvements	Widen Inside Shd	No Widen Inside Shd
CONFORMANCE WITH PLANS	Meets SDDOT Design Criteria	No	Yes	Yes - at reduced speed	Yes	No
RIGHT OF WAY IMPACTS	Acquisitions - Residential	0	5	5	5	5
	Acquisitions - Business	0	0	0	0	0
	Total Acreage of ROW Required*	0	0.50	0.41	0.66	0.66
ENVIRONMENTAL IMPACTS	Pedestrians/Bicycle Mobility		temporary impacts due to reconstruction of 18th Street Bridge and bridges over Big Sioux River Greenway	temporary impacts due to reconstruction of 18th Street Bridge and bridges over Big Sioux River Greenway	temporary impacts due to reconstruction of 18th Street Bridge and bridges over Big Sioux River Greenway	temporary impacts due to reconstruction of 18th Street Bridge and bridges over Big Sioux River Greenway
	Land Use/Socioeconomics		Residential impacts by take	Residential impacts by take	Residential impacts by take	Residential impacts by take
	Environmental Justice		No Disproportionate Impacts	No Disproportionate Impacts	No Disproportionate Impacts	No Disproportionate Impacts
	Section 4(f)/Section 6(f)		Signed bike route on 6th & 18th Streets. Rotary Park/Riverdale Park & trail at Big Sioux R.	Signed bike route on 6th & 18th Streets. Rotary Park/Riverdale Park & trail at Big Sioux R.	Signed bike route on 6th & 18th Streets. Rotary Park/Riverdale Park & trail at Big Sioux R.	Signed bike route on 6th & 18th Streets. Rotary Park/Riverdale Park & trail at Big Sioux R.
	Noise Impacts (Risk for)		Maybe	Maybe	Maybe	Maybe
	Floodplains		Yes	Yes	Yes	Yes
	Wetlands/River Impacts		Yes	Yes	Yes	Yes



Ben White



Study Alternatives – I229 Mainline

Evaluation Matrix

I-229 Mainline Evaluation Matrix

	Evaluation Criteria	Alternative 0	Build Alternatives - Construct All Necessary Lanes			
		No Build	Curve Improvements	No Curve Improvements	Widen Inside Shd	No Widen Inside Shd
TRAFFIC SAFETY AND OPERATIONS	Safety Improvement - % Reduction in Crashes (2027 through 2050 Crashes)		13.2% - 15.3%	12.9% - 15.0%	15.0% - 15.3%	12.9% - 13.2%
	Operational Performance	D / F	B / C	B / C	B / C	B / C
	Worst I229 Mainline Performance within Project Limits 2050	F (Multiple Locations)	C (Multiple Locations)	C (Multiple Locations)	C (Multiple Locations)	C (Multiple Locations)
CONSTRUCTION	Maintenance of Traffic During Construction		Yes	Yes	Yes	Yes
	Allows for Phased Construction		Yes	Yes	Yes	Yes
	Mainline Retaining Wall Costs (\$M)		\$0.5	\$0.4	\$2.9	\$2.9
	Mainline Center Barrier Costs (\$M)		\$0.1	\$0.1	\$1.0	\$1.0
	Big Sioux River Bridges Cost (\$M)		\$5.6	\$5.6	\$0.0	\$0.0
	Southeastern/RR Bridges Cost (\$M)		\$5.8	\$5.8	\$0.0	\$0.0
	12th Street Bridge and Roadway Costs (\$M)		\$0.0	\$0.0	\$1.8	\$1.8
	18th Street Bridge and Roadway Costs (\$M)		\$1.6	\$1.6	\$0.0	\$0.0
	6th Street Retaining Wall Costs (Under Existing Bridge) (\$M)		\$0.0	\$0.0	\$0.4	\$0.4
	Mainline Reconstruction Costs (\$M)		\$24.1	\$24.0	\$18.8	\$16.8
	Costs (Millions in 2021 dollars)		\$37.6	\$37.5	\$24.9	\$22.9
	Total Project Costs (Millions in 2021 dollars)		\$37.6	\$37.5	\$24.9	\$22.9



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Pedestrian Impacts

I-229 Pedestrian & Bicycle Crossings

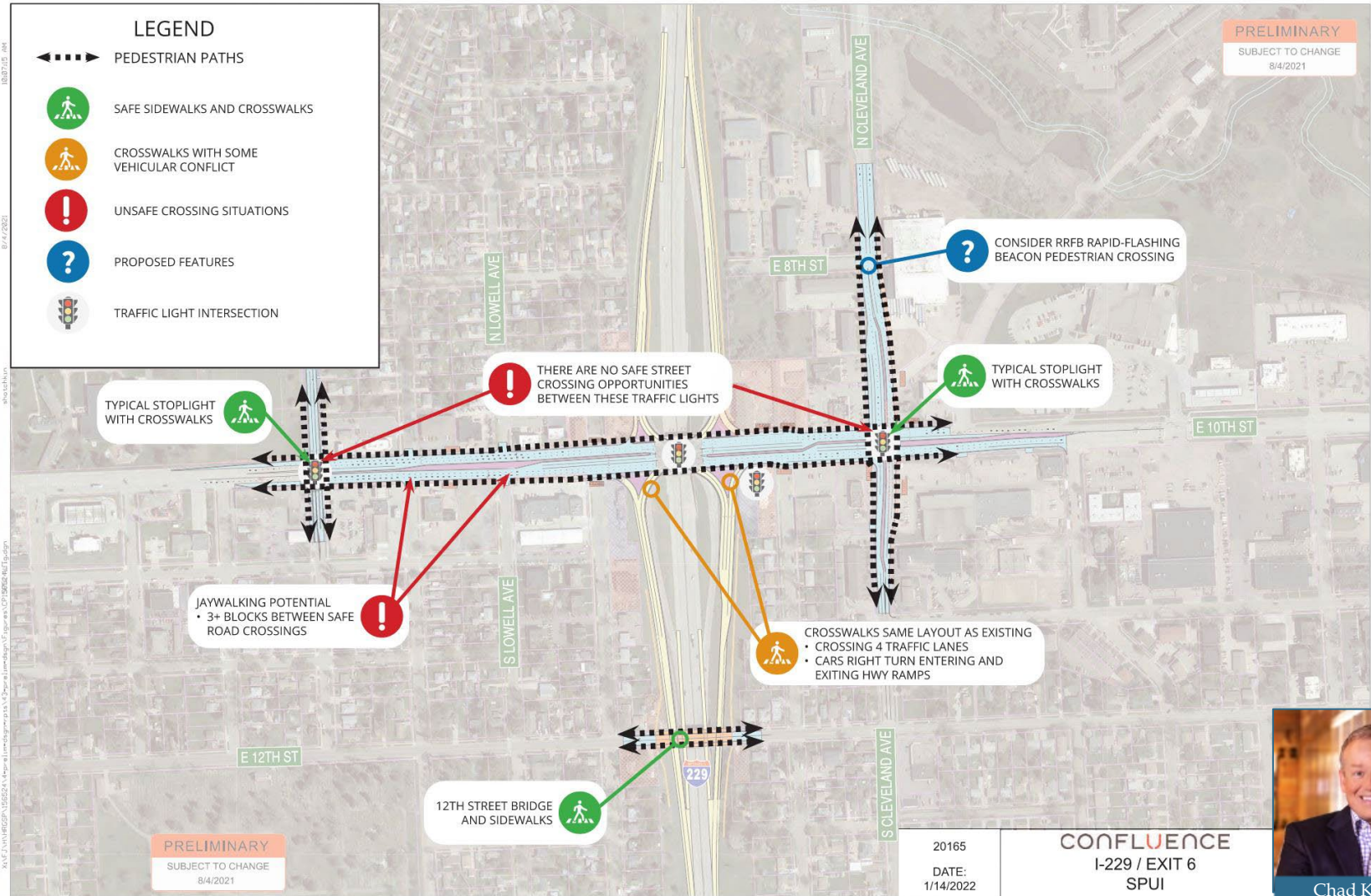
- E. 12th Street & E. 18th Street bridge crossings are planned to be reconstructed
- No changes to existing crossings at E. 6th Street or Southeastern Avenue
- No changes to existing trail system along the Big Sioux River



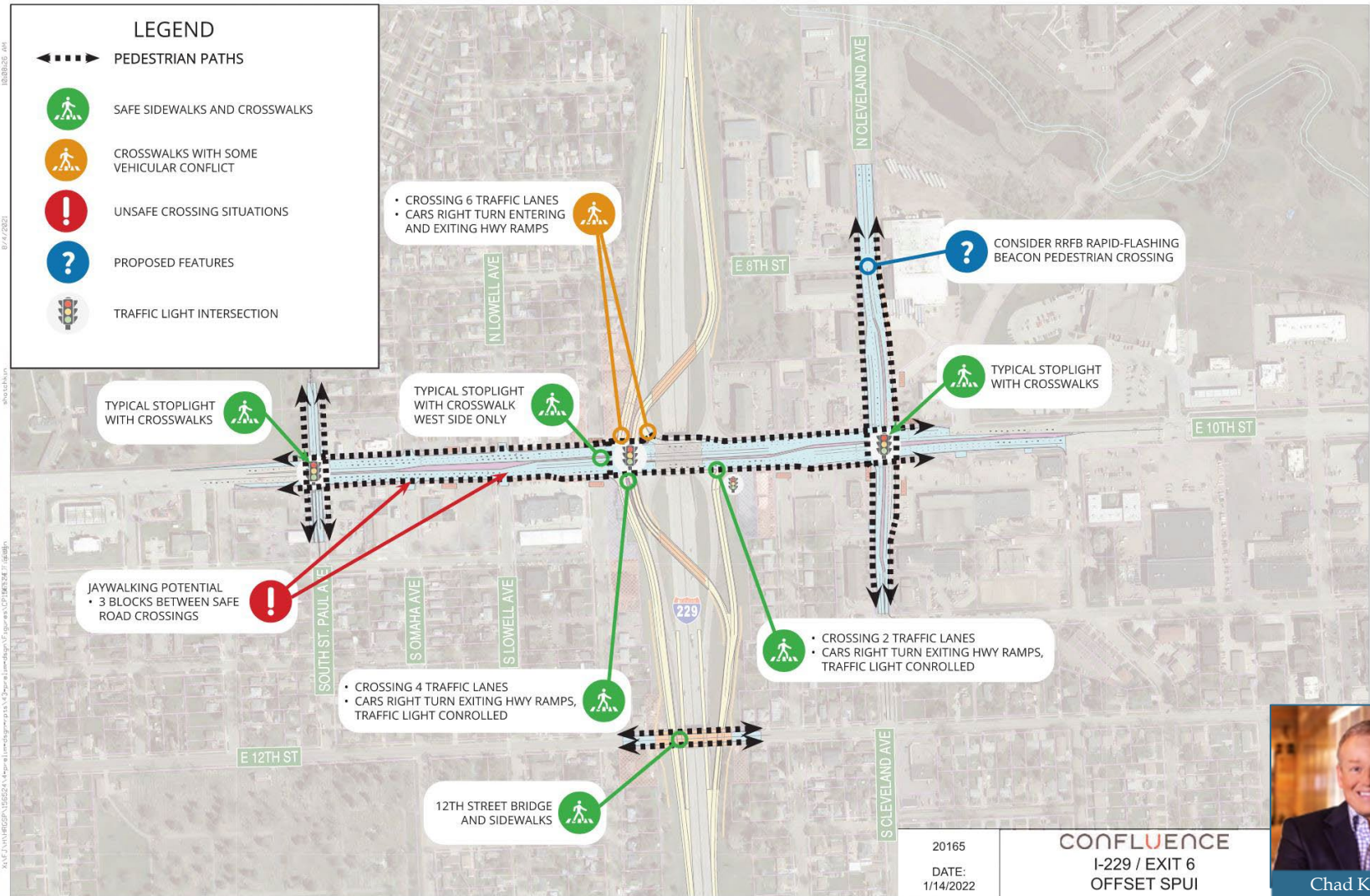
Chad Kucker



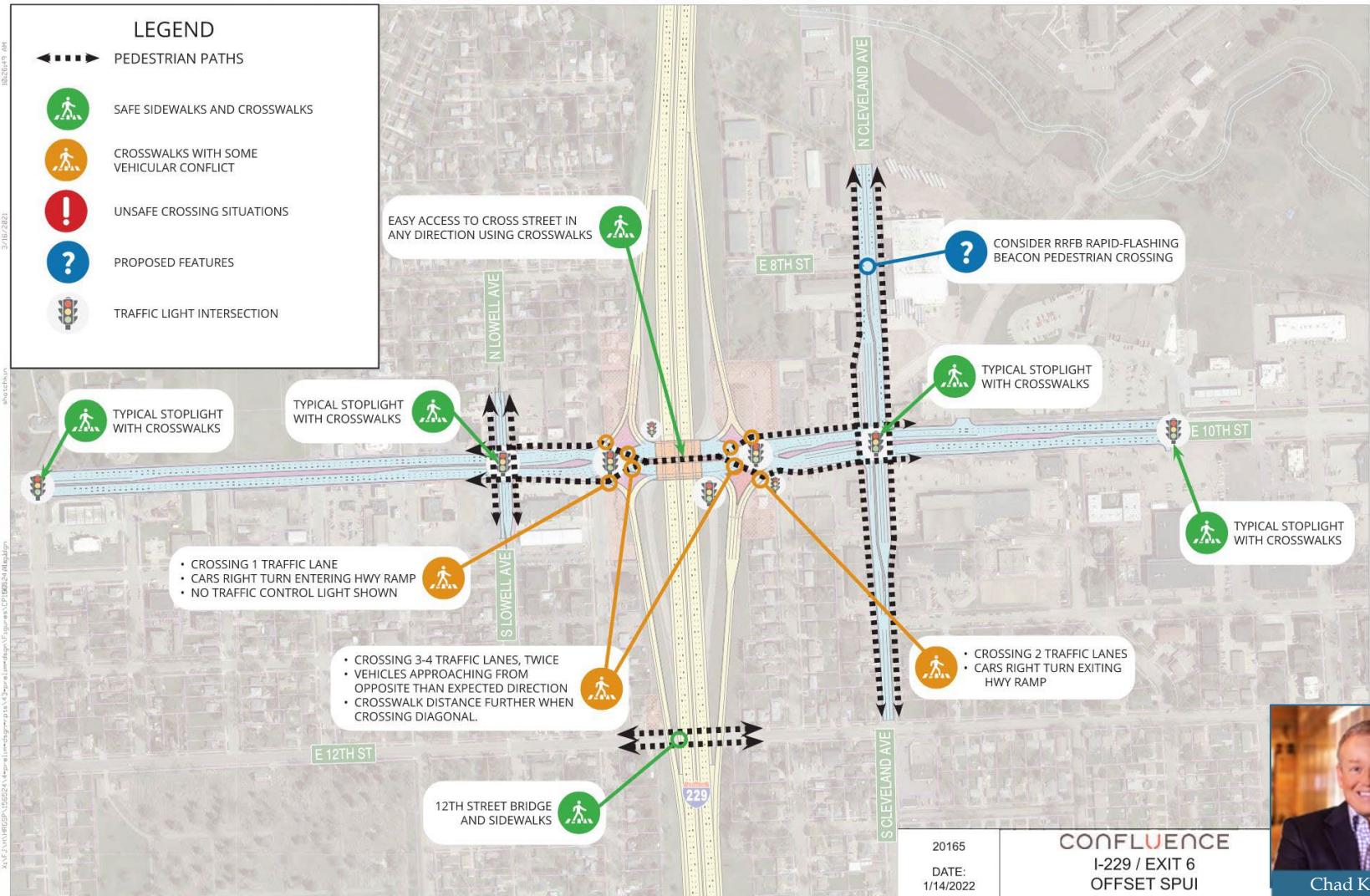
Proposed Pedestrian Facilities



Proposed Pedestrian Facilities



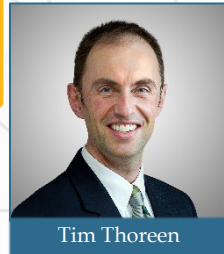
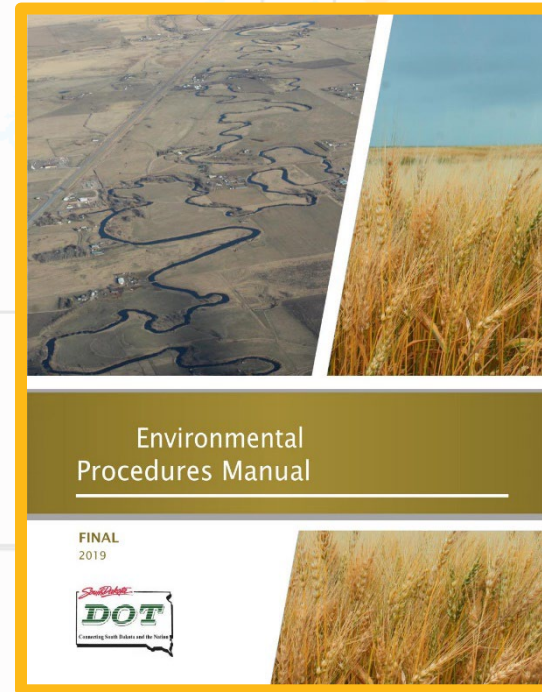
Proposed Pedestrian Facilities



Environmental, Social and Economic Concerns

NEPA reviews cover a wide range of resources and topic areas.

During this stage of work, we conduct a “scan” of the environment to evaluate the extent of impacts.



Tim Thoreen



Environmental, Social and Economic Concerns

Examples of analysis categories for urban settings like this include:

- Land Use
- Environmental Justice
- Contaminated Properties (Hazardous Materials)
- Noise – the project team has conducted noise monitoring as a first step in evaluating potential impacts



Tim Thoreen



Environmental, Social and Economic Concerns

Some studies are also required by other regulations:

- **Section 106 of the National Historic Preservation Act** (cultural/archaeological: historic buildings, railroads)
- **Section 404 of the Clean Water Act** (wetlands, public waters)



Tim Thoreen



Environmental, Social and Economic Concerns

Section 4(f) of the USDOT Transportation Act of 1966 (parks and recreational space)

- Known resources in the study area include:

- Riverdale Park
- Rotary Park
- Cherry Rock Park
- Leaders Park
- Sioux Falls Bike Trail



Tim Thoreen



Environmental, Social and Economic Concerns

Section 7 of the Endangered Species Act

The U.S. Fish and Wildlife Service will review the project to determine if it will impact the following species that are known to occur in this part of South Dakota:

- Birds: Rufa Red Knot
- Mammals: Northern Long-Eared Bat
- Fish: Topeka Shiner

No impacts to these species are anticipated



Tim Thoreen



Tentative Project Schedule

STUDY TASKS		2020			2021				2022				2023			
		JUNE	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
TASK 1: PLANNING STUDY																
KEY MILESTONES & PRIORITIES	Kick-off, M&A Documents (IMJR and NEPA)															
	Traffic Forecasts, Analysis, Crash History															
	Environmental Field Studies, Agency Outreach, Propose & Need															
	Build Option Refinement and Screening															
	Draft IMJR Submittal to SDDOT															
	Environmental Impacts and Special Studies															
	Final IMJR Submittal to FHWA and Finalization															
	Environmental Scan Report and NEPA Class Determination															
TASK 2: ENVIRONMENTAL STUDY																
KEY MILESTONES & PRIORITIES	Draft NEPA Document															
	Environmental Commitments, Section 4(f) Reviews															
	NEPA Document Approvals															
TASK 3: TOPOGRAPHIC SURVEY																
KEY MILESTONES & PRIORITIES	Permission Coordination															
	Survey															
	Right-of-Way															
TASK 4: UTILITY COORDINATION AND LOCATING																
KEY MILESTONES & PRIORITIES	Public Meetings															✓
PUBLIC INVOLVEMENT																
KEY MILESTONES & PRIORITIES	Public Meetings															

Dependent on Phasing and Funding

Project Schedule Key



Public & Stakeholder Meetings



Phase 2 Subsurface Utility Exploration: Utility Conflict Identification, Analysis and Coordination will occur in Q3 of 2023.



Chad Hanisch

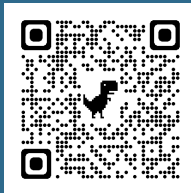


Public Input

Submit Questions and/or Comments:

by:

**February 28,
2022**



to:

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Public meeting and additional contact information can
be found at: <https://www.i229exit6.com/>



Chad Hanisch

