

Project No.

PCN

US 281 and 43rd St SE (Ypsilanti)

Safety Project



Prepared by

**NORTH DAKOTA DEPARTMENT OF TRANSPORTATION
BISMARCK, NORTH DAKOTA**

<http://www.dot.nd.gov/>

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March 2015

SCOPING REPORT

Report Completed By: Jared Loegering

A. GENERAL INFORMATION

Project Number:

District: Valley City

Location: US 281 and 43rd St. SE (Ypsilanti)

Reference Point: RP 60.89

Counties: Stutsman

Legal Description: T138N, R64W, Sec 11

Functional and Funding Roadway Classification: Interregional Corridor

National Highway System: Yes

Project Schedule: Proposed for construction in 2017.

B. PROPOSED IMPROVEMENT

Purpose and Need

From District submitted SFN 59959, "HSIP Project Application":

There are reports from concerned citizens that the intersection of US 281 and 43rd St. SE is not safe for the traveling public. There have been reports of improper overtaking of vehicles attempting left turns from US 281 onto 43rd St. SE and that is dangerous to turn onto US 281 from 43rd St. SE. It is proposed that these concerns warrant the installation of a SB to EB left turning lane and also to possibly install traffic control devices at the intersection.

Proposed Improvement

The turn lane criteria were evaluated based on the "Guidelines for the installation of Turn Lanes along State Highways" from July of 2014 in a memo dated 10/29/14 (HSIP #231404). From this memo it is recommended to install a SB to EB left turn lane.

A safety project is proposed to improve the safety of the roadway by adding a SB to EB left turn lane at the intersection US 281 and 43rd St. SE.

District Requests:

Destination Intersection Lighting:

The district proposed that destination intersection lighting be installed at the intersection of US 281 and 43rd St. SE to improve the safety of the intersection. The Traffic Operations Section of the NDDOT evaluated the intersection and concluded that one street light is warranted (memo dated 3/6/2014). The district would be responsible for the maintenance and operation of the light. A decision item and cost estimate is included to address the intersection light.

Approaches/Driveways:

The proposed work will extend through an entrance to a residential home. The home has another entrance off of 43rd St. SE and the district recommends inquiring with the homeowner about removing the entrance off of Hwy. 281. This will need to be investigated further during the design phase. The approaches adjacent to the project are shown below:



C. TRAFFIC AND CRASH ANALYSIS

Traffic:

Mainline US 281

	Year	AADT	Flexible ESALs
Current Traffic	2014	2,605	460
Forecast Traffic	2034	3,600	685

Speed Limit: 65mph

Turn Lane Analysis:

Turn lane criteria was evaluated based on the new “Guidelines for the installation of Turn Lanes along State Highways” from July 2014.

NB to WB Left Turn: No criteria are met.

NB to EB Right Turn Lane: No criterial are met

SB to EB Left Turn Lane: Criteria 1.A (Volume Criteria) is met.

SB to WB Right Turn Lane: No criteria are met.

Turning Lane Recommendations:

It is recommended to install a SB to EB left turning lane.

Crash Analysis:

- The five year crash study period found 2 reported crashes. One, a fatality, involved the SB to EB left turning vehicle hitting a NB vehicle. The other crash involved a vehicle

making a SB to WB right turn, and a trailing SB vehicle going into the west ditch to avoid a crash.

- Predicted crashes for the intersection of US 281 and 43rd St. SE are 0.10 crashes/yr.

Destination Intersection Lighting Analysis

The district wanted to analyze if lighting at the intersection of US 281 and 43rd St. SE was feasible and warranted. The traffic operations section of the NDDOT evaluated the need for an intersection street light to be included with the turning lane project and the following is from a memo (dated 3/6/2014) written on the intersection evaluation.

The NDDOT is currently looking at doing a risk-based assessment of rural intersections in the “Local Road Safety Program” (LSRP). Using the LSRP procedure of identifying countermeasures, a likely recommendation would be to install a street light based on the following risk factors that are present at this intersection:

- Previous stop sign is more than 5 miles from the intersection
- The intersection has had at least 1 crash
- ADT cross product is greater than 100,000

Lighting Recommendations

It is recommended to include one street light be installed as part of the turning lane installation project at the intersection of US 281 and 43rd St. SE. The district would be responsible for the maintenance and operation of the light.

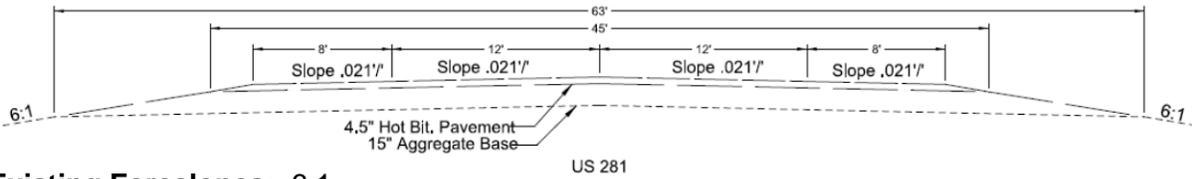
D. EXISTING ROADWAY CHARACTERISTICS

	International Roughness Index (IRI)	Distress Score	Rut
Excellent	< =60	≥ 98	< 0.25"
Good	61 – 99	88 – 97	0.25" to 0.375"
Fair	100 – 145	77 – 87	0.376" to 0.50"
Poor	> 145	≤ 76	> 0.50"

Actual Age	IRI	IRI Rating	SI or SCI	Faulting
10	63	Good	1	N/A
Effective Age	Distress	Distress Score	Rutting	Rutting Score
10	95	Good	0.16"	Excellent

CONSTRUCTION HISTORY				
Year	Construction	Depth (in)	Width (ft)	Oil
2003	GRADE		63.0	
2003	AGGREGATE BASE	4.0	6.0-0.0-6.0	
2003	AGGREGATE BASE	2.5	6.0-0.0-6.0	
2004	BLENDED BASE	15.0	45.0	
2004	HBP-SUPERPAVE-FAA 45	2.5	8.0-40.0-8.0	PG 58-28
2004	HBP-SUPERPAVE-FAA 45	2.0	8.0-40.0-8.0	PG 58-34
2007	FEDERAL AID CHIP SEAL		24.0	CRS2P

Existing Typical Section:



Existing Foreslopes: 6:1

E. Project Concerns/Issues

Communities:

The intersection of US 281 and 43rd St. SE is an access point to Ypsilanti; Population 168.

Adjacent Land Usage:

Agricultural and Residential

Right of Way:

Additional right of way may be needed to accommodate the construction of the turning lane and to shape the ditch bottom. The length from centerline to the proposed ditch bottom for the proposed left turning lane is approximately 60'. Current right of way is 100' from centerline on the west side of the roadway (where the SB LT lane will be constructed).

Centerline Pipes:

There are three centerline pipes in the vicinity of the project. Two of them will need to be extended to accommodate the widening on the project. The price for extending the pipes is included in the cost estimate.

F. Load Restrictions

Travel Information Map Proposed Load Restriction: Legal weight

HPCS Load Restriction: Legal weight

Projected load restrictions after project is completed: Legal weight

G. PERFORMANCE GUIDELINES

Design Speed: 65mph

Clear Zone (from edge of driving lane): 32'

Shoulder Surface: Paved

Ride/Distress Goal: Excellent

Operational Reliability: High

Foreslope: 6:1

H. PROPOSED IMPROVEMENTS

A safety project is proposed to improve the safety of the roadway by adding a SB to EB left turn lane at the intersection US 281 and 43rd St. SE.

District Requests:

Destination Intersection Lighting:

The district requested that destination intersection lighting be installed at the intersection of US 281 and 43rd St. SE to improve the safety of the intersection. A decision item and cost estimate is included to address the intersection light.

Approaches/Driveways:

The will extend through an entrance to a residential home. The home has another entrance off of 43rd St. SE and the district recommends inquiring with the homeowner about removing the entrance off of US 281.

I. ADDITIONAL COMMENTS

District Engineer: The report presents the items we discussed at the field review. The Local Road Safety Program has identified this intersection for a project. It is intersection 38.07. They recommend street lights – typically with signs and/or markings. We need to coordinate this project with that program.

This project was suggested by public comment. I recommend adding a decision item relative to a public information meeting.

Safety Division Director: None

J. COST ESTIMATE

(Inflation factor of 4% was used to estimate costs for bid year)

ITEM	ESTIMATED COST
Contract Bond	\$2,000
Mobilization	\$9,000
Hot Bit Pavement (4.5" HBP, Includes AC, Tack, Prime and cores)	\$62,000
Aggregate Base	\$47,000
Borrow and Water	\$40,000
Topsoil	\$13,000
Saw and Remove Pavement	\$9,000
Seeding, Mulching, and Erosion Control	\$13,000
Traffic Control	\$22,000
Pavement Markings (Short Term and Permanent)	\$1,000
Pipe Extension	\$7,000
Subtotal	\$225,000
20% Engineering	\$45,000
Construction and CE Total Cost	\$270,000
Decision Item:	
Proposed Intersection Lighting – Install (Includes 20% engineering cost)	\$7,000
Total Cost Including Decision Item	\$277,000

K. DECISIONS

1. Should this project advance as a Left Turn Lane installation as proposed for an **Estimated Cost of \$270,000?**

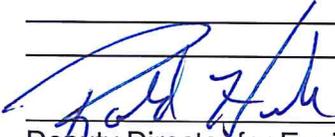
Yes No

The following items should be considered for advancement at additional cost

2. Which advancement item(s) should be chosen for this project?

- Item 1: Install destination intersection lighting. **Estimated Cost: \$7,000**
- Item 2: Coordinate public information meeting for the project.
- Item 3: Advance all options to the Environmental Document phase.
- Item 4: Advance none.

DDE Comments: _____


Deputy Director for Engineering

4/13/15
Date