

Project No.  
**SS-HEU-1-006(023)066**

PCN  
**21039**

**Intersection of ND 6 and 19<sup>th</sup> St. SW - Mandan  
Safety Project**



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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:** Bismarck

**Location:** Intersection of ND 6 and 19<sup>th</sup> St. SW - Mandan

**Reference Point:** RP 66.190

**Counties:** Morton

**Legal Description:** T138N, R81W, Sec 4

**Functional and Funding Roadway Classification:** District 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 is currently no recovery approach for traffic going westbound on 19<sup>th</sup> St. SW crossing ND 6. The speed limit on ND 6 at this intersection is 65mph. With an increase in the residential development to the north of 19<sup>th</sup> St. and east of ND 6, turning lanes on ND 6 are desired.

### Proposed Improvement

The turn lane criteria was 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 #131402). From this memo it is recommended to install a SB to EB left turn lane. The Traffic Operations section of Programming Division also did a Turn Lane and Recovery Approach Study (HSIP #131402) dated May of 2013 and found it was feasible to install a recovery approach at the intersection of ND 6 and 19<sup>th</sup> St. SW. It is recommended to install the recovery approach.

A safety project is proposed to improve the safety of the roadway by adding a SB to EB left turn lane on ND 6 and a recovery approach for westbound traffic on 19<sup>th</sup> St. SW crossing ND 6.

### District Requests:

#### Right Turning Lane:

The district has requested that a NB to EB right turn lane be added to the project due to increased traffic and residential development on 19<sup>th</sup> St. SW. A decision item and cost estimate is included to address this request.

#### Recovery Approach:

The district has also requested that the recovery approach proposed be added as a decision item as they do not feel that it is necessary. The speed limit posted on 19<sup>th</sup> St. SW is 35 mph and at this speed it is thought that a recovery approach is not warranted. The recovery approach has been included as a decision item.

**Map of Proposed Improvements:**



**C. TRAFFIC AND CRASH ANALYSIS**

**Traffic:**

**Mainline North of 19<sup>th</sup> St. SW**

	Year	AADT	Flexible ESALs
Current Traffic	2014	3,375	165
Forecast Traffic	2034	4,560	220

**Mainline South of 19<sup>th</sup> St. SW**

	Year	AADT	Flexible ESALs
Current Traffic	2014	2,220	120
Forecast Traffic	2034	3,000	160

**Mainline 19<sup>th</sup> St. SW**

	Year	AADT	Flexible ESALs
Current Traffic	2014	1,410	60
Forecast Traffic	2034	1,950	80

**Speed Limit:**

Hwy.	Speed Limit
ND 6	65 mph
19 <sup>th</sup> St. SW	35 mph

**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.

SB to EB left turn lane

Criteria 1.A (Volume Criteria) is met.

NB to EB right turn lane

No criteria are met.

**Recommendations:**

It is recommended to install a SB to EB left turning lane and also to install a recovery approach.

**Crash Analysis:**

Five year crash study period found no reported crashes. Predicted crashes for the intersection of ND 6 and 19<sup>th</sup> St. SW are 0.4 crashes/yr.

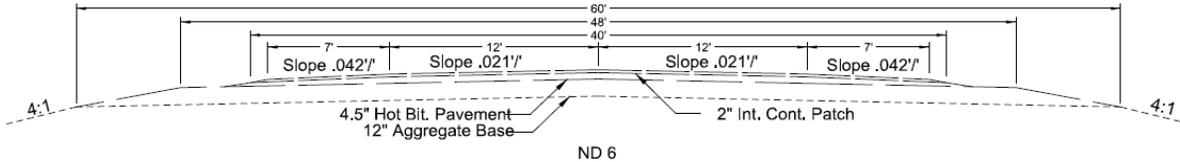
**D. EXISTING ROADWAY CHARACTERISTICS**

	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
18	76	Good	12	N/A
Effective Age	Distress	Distress Score	Rutting	Rutting Score
11	76	Poor	0.08"	Excellent
Load Restrictions	8-ton			

CONSTRUCTION HISTORY				
Year	Construction	Depth (in)	Width (ft)	Oil
1994	GRADE		60.0	
1994	AGGREGATE BASE	12.0	48.0	
1995	HOT BIT PAVEMENT	4.5	40.0	120-150
1997	CONTRACT CHIP SEAL		8.0-24.0-8.0	MC-3000P
2005	INT CONT PATCH-1.25"		24.0	PG 58-28
2011	INT CONT PATCH-1.25"		24.0	PG 58-28
2012	INT CONT PATCH-2.0"	2.0	7.0-24.0-7.0	PG 58-28

## Existing Typical Section:



Existing Foreslopes: 4:1

## E. LAND INTERESTS

### Communities:

Corporate Limits of Mandan, RP 65.186 to RP 67.413; Population 18,978

### Adjacent Land Usage:

Residential and Agricultural

## F. PROJECT CONCERNS/ISSUES

### Right of Way:

Additional right of way may be needed to accommodate the construction of the turning lanes and to shape the ditch bottom. The length from centerline to the proposed ditch bottom for the proposed right and left turning lanes is approximately 50'. Current right of way is 100' from centerline.

### Power Lines:

There is an overhead power line that crosses the intersection of ND 6 and 19<sup>th</sup> Str. SW.

## G. LOAD RESTRICTIONS

Travel Information Map Proposed Load Restriction: Legal Weight

HPCS Load Restriction: 8-ton

Projected load restrictions after project is completed: Legal Weight

## H. PERFORMANCE GUIDELINES

Design Speed: 65mph

**Clear Zone (from edge of driving lane):** 42'. It is noted that the AASHTO Roadside Design guide states that "the clear zone can be limited to 30' for practicality and to provide a consistent roadway template if previous experience with similar projects or design indicates satisfactory performance."

**Shoulder Surface:** Paved

**Ride/Distress Goal:** Good

**Operational Reliability:** Moderate

**Foreslope:** 4:1

**I. PROPOSED IMPROVEMENTS**

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**J. ADDITIONAL COMMENTS**

**District Engineer:** The District recommends that a SB to EB left turn lane on ND 6 and a NB to EB right turn lane on ND 6 be added. Because of the 35 mph speed limit on 19<sup>th</sup> Street a recovery approach is not recommended.

**Safety Division Director:** No Comments

**K. COST ESTIMATE**

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

ITEM	ESTIMATED COST
Contract Bond	\$2,000
Mobilization	\$11,000
Hot Bit Pavement (6" HBP, Includes AC, Tack, Prime and cores)	\$115,000
Aggregate Base	\$33,000
Borrow and Water	\$63,000
Topsoil	\$11,000
Saw and Remove Pavement	\$18,000
Seeding, Mulching, and Erosion Control	\$8,000
Traffic Control	\$22,000
Pavement Markings (Short Term and Permanent)	\$1,000
Subtotal	\$284,000
20% Engineering	\$57,000
Construction and CE Total Cost	\$341,000
Decision Items: (Cost includes 20% Engineering)	
Proposed Right Turning Lane	\$110,000
Proposed Recovery Approach	\$26,000
Total Cost Including Decision Items	\$477,000

**L. DECISIONS**

1. Should this project advance as a Left Turn Lane installation as proposed for an Estimated Cost of \$341,000?

X Yes

       No

The following items should be considered for advancement at additional cost:

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

X Item 1: Install NB right turning lane. **Estimated Cost: \$110,000**

\*        Item 2: Install recovery approach. **Estimated Cost: \$26,000**

       Item 3: Advance none.

DDE Comments: \* A recovery approach, signing or a combination as allowed by state law should be looked at.

The NB right is being installed because of the amount of work caused by the left turn lane.

  
Deputy Director for Engineering

3/19/13  
Date