

Project No.

PCN

Bismarck N to Wilton - SB



Prepared by

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

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

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SCOPING REPORT

Report Completed By: Logan Beise

A. GENERAL INFORMATION

Project Number:

District: Bismarck

Location: Bismarck N to Wilton - SB

Reference Point: RP 91.460 to RP 111.328 – 19.850 miles

Counties: Burleigh

Legal Description: T139N, R80W, Sec 22 to T142N, R80W, Sec 31

Functional and Funding Roadway Classification: Interregional Corridor

National Highway System: Yes

Freight Level: 1

Speed Limit:

RP 88.9880 to RP 91.3736 = 40 MPH

RP 91.3736 to RP 93.1030 = 55 MPH

RP 93.1030 to RP 111.2000 = 70 MPH

RP 111.2000 to RP 112.2000 = 55 MPH

Project Schedule: Proposed to be added to the STIP for 2021.

dTIMS Recommendations:

Constrained: PM Asphalt 2022

Unconstrained: PM Asphalt 2017

B. PURPOSE, NEED, AND IMPROVEMENT

Purpose and Need of Project:

The IRI score is in the good range. The distress score is in the good to fair range. There are alligator, longitudinal and transverse cracks along with rutting on the roadway. The 2015 Interregional review recommended a structural overlay on these segments. During the scoping review the District requested a Minor Rehabilitation Mill and HBP overlay. The Concrete Overlay and FDR were not carried forward.

Proposed Improvement:

A Minor Rehabilitation Mill and HBP overlay is proposed to extend the useful life of the roadway by restoring the pavement structure. The safety items that will be addressed are safety hardware that does not meet NCHRP 230 standards or better. All other safety items will be addressed as part of the Statewide Safety Program. It is proposed to pave the median crossovers with this NB project.

A decision item is included to address adding the urban segment from RP 88.9880 to RP 91.460 to this project. The typical section is the same as the proposed project. This work would have to be coordinated through the urban prioritization system.

Decision items are included to address a district request to install left and right turn lanes at 201st Ave NE (Baldwin). This work would be out of the scope of a minor rehabilitation. There

are current turn lanes at this location that were created by striping the shoulders. The existing turn lanes are narrow and short.

C. Traffic and Crash Analysis

Traffic:

RP 89.832 to RP 89.955

	Year	Truck AADT	Total AADT	Flexible ESALs	Rigid ESALs
Current Traffic	2015	590	13,355	425	675
Forecast Traffic	2035	800	18,035	580	915

RP 89.955 to RP 90.450

	Year	Truck AADT	Total AADT	Flexible ESALs	Rigid ESALs
Current Traffic	2015	530	12,105	385	605
Forecast Traffic	2035	720	16,350	520	825

RP 90.450 to RP 92.463

	Year	Truck AADT	Total AADT	Flexible ESALs	Rigid ESALs
Current Traffic	2015	515	10,505	375	590
Forecast Traffic	2035	695	14,185	500	795

RP 92.463 to RP 100.627

	Year	Truck AADT	Total AADT	Flexible ESALs	Rigid ESALs
Current Traffic	2015	840	5,300	605	960
Forecast Traffic	2035	1,135	7,160	820	1,295

RP 100.627 to RP 111.328

	Year	Truck AADT	Total AADT	Flexible ESALs	Rigid ESALs
Current Traffic	2015	840	3,800	605	960
Forecast Traffic	2035	1,135	5,135	820	1,295

Speed Limit:

RP 88.9880 to RP 91.3736 = 40 MPH

RP 91.3736 to RP 93.1030 = 55 MPH

RP 93.1030 to RP 111.2000 = 70 MPH

RP 111.2000 to RP 112.2000 = 55 MPH

Crash Analysis: There were a total of 71 crashes from 1/1/2011 to 12/31/2015. Animal crashes were not included. The crash rate per 1 million vehicles is 0.4715.

Notes/Trends:

- There was 1 fatal crash: The crash involved two SB motorcycles, one of the cycles clipped the other.
- 26 crashes (37%) occurred with ice/snow roadway surface conditions.
- There were 28 rear end crashes and 31 single vehicle crashes.

Recommendation: None at this time.

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"

Segment 1: RP 89.832 to RP 105.328

Actual Age	IRI	IRI Rating	SI or SCI	Faulting
26	72	Good	6	N/A
Effective Age	Distress	Distress Score	Rutting	Rutting Score
16	89	Good	0.17	Excellent

CONSTRUCTION HISTORY				
Year	Construction	Depth (in)	Width (ft)	Oil
1979	GRADE	-	48.0	-
1980	AGGREGATE BASE	8.0	37.0	-
1980	HOT BIT PAVEMENT	4.5	27.0	120-150
1990	DRIVE SLOPE FLATTENIN	-	-	-
1990	MILLING	-1.3	27.0	-
1990	HOT BIT PAVEMENT	3.0	27.0	120-150
1990	SALVAGED AGGR BASE	3.0	7.0, 0, 3.0	-
1993	CONTRACT CHIP SEAL	-	27.0	-
1993	CONTRACT CHIP SEAL	-	10.0, 0, 3.0	-
1997	INT CONT PATCH-1.5"	-	27.0	85-100
2002	HOT BIT PAVEMENT	1.5	27.0	PG 58-28
2010	HBP-SUPERPAVE-FAA 45	2.0	35.0	PG 58-28
2011	FEDERAL AID SAND SEAL	-	8.5, 0, 1.5	CRS2P
2011	MICROSURFACING	-	25.0	-

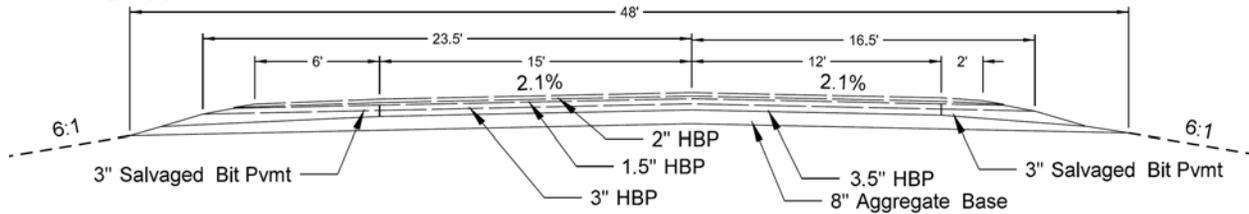
Segment 2: RP 105.328 to RP 111.328

Actual Age	IRI	IRI Rating	SI or SCI	Faulting
26	67	Good	8	N/A
Effective Age	Distress	Distress Score	Rutting	Rutting Score
16	86	Fair	0.20	Excellent

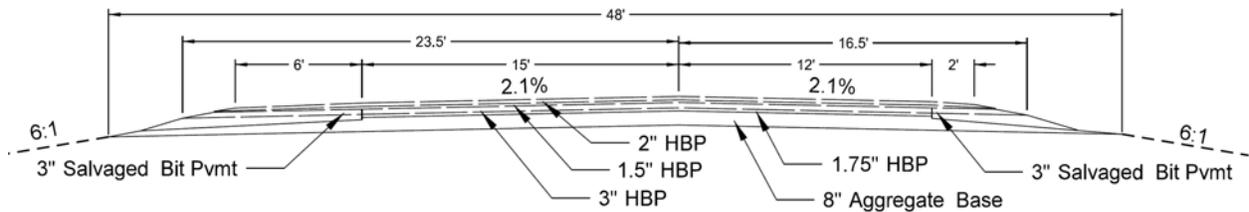
CONSTRUCTION HISTORY				
Year	Construction	Depth (in)	Width (ft)	Oil
1979	GRADE	-	48.0	-
1980	POZ-O-PAC	6.0	27.0	-
1980	AGGREGATE BASE	2.0	46.0	-
1980	HOT BIT PAVEMENT	3.0	27.0	-
1990	DRIVE SLOPE FLATTENIN	-	-	-
1990	MILLING	-1.3	27.0	-
1990	HOT BIT PAVEMENT	3.0	27.0	120-150
1990	SALVAGED AGGR BASE	3.0	7.0, 0, 3.0	-

CONSTRUCTION HISTORY				
Year	Construction	Depth (in)	Width (ft)	Oil
1993	CONTRACT CHIP SEAL	-	27.0	-
1993	CONTRACT CHIP SEAL	-	10.0, 0, 3.0	-
1997	INT CONT PATCH-1.5"	-	27.0	85-100
2002	HOT BIT PAVEMENT	1.5	27.0	PG 58-28
2010	HBP-SUPERPAVE-FAA 45	2.0	35.0	PG 58-28
2011	FEDERAL AID SAND SEAL	-	8.5, 0, 1.5	CRS2P
2011	MICROSURFACING	-	25.0	-

Existing Typical Section:



RP 89.980 to RP 109.020



RP 109.020 to RP 111.328

Existing Foreslopes: 6:1

E. EXISTING GEOMETRY

Horizontal Curves: Use existing.

Vertical Curves: Use existing.

F. EXISTING STRUCTURES

Bridges:

Bridge No	Description	Feature	Length (ft)	Width (ft)	Rating
0083-091.080	Single, 8-6X8X271 SPP	Creek	8	-	72.3
Recommended Improvement: Do nothing					
0083-096.944	Triple, 10X12X191 RCB	Burnt Creek	32	-	77.1
Recommended Improvement: Do nothing					
0083-099.833	Single, 9-6X10-3X322 SPP	Creek	10	-	69.3
Recommended Improvement: Do nothing					
0083-102.431	Double, 8X10X240 RCB	Creek	20	-	77.8
Recommended Improvement: Do nothing					

Centerline Pipes:

Minor Rehabilitation: Use existing.

G. LAND INTERESTS

Communities:

Limits of Bismarck: RP 89.832 to RP 90.459, Pop. 67,034

Project ends near the limits of Wilton, RP 111.660 to RP 111.840, Pop. 732.

Reservation:

None

Adjacent Land Usage:

Commercial, Agricultural, and Residential

H. ISSUES AND APPURTENANCES CHECKLIST

- 1. Curb and Gutter? Yes No
- 2. Sidewalk? Yes No
- 3. Multi-Use Path? Yes No
- 4. ADA Ramps? Yes No
- 5. Detectable Warning Panels? Yes No
- 6. Lighting? Yes No
There is overhead lighting at the Intersection of ND 1804. No proposed improvements.
- 7. Signals? Yes No
There are existing signals and a flashing "Be Prepared to Stop" sign at the Intersection of ND 1804. No proposed improvements.
- 8. Storm Sewer? Yes No
- 9. Manholes? Yes No
- 10. Other Underground Work? Yes No
- 11. Parking Facilities? Yes No
- 12. Frontage Roads? Yes No
- 13. Utility Issues? Yes No
- 14. Landscaping? Yes No
- 15. Approach or Ditch Block Flattening? Yes No
- 16. T Intersection Recovery Approaches? Yes No
- 17. Fence? Yes No

18. Railroad Crossings? Yes No
19. Detours? Yes No
20. Automatic Traffic Recorder Locations? Yes No
21. Weigh-In-Motion Sites? Yes No
22. ITS (Deicing, Snow Gates, VMS, RWIS, etc.)? Yes No
23. Highway Patrol/Truck Pullouts or Rest Areas? Yes No
24. Additional Right of Way? Yes No
25. Drainage Issues? Yes No
26. Snow Impact Areas? Yes No
27. Subgrade Issues? Yes No
28. Noise Analysis: Type I Project? Yes No Maybe
29. Maintenance Issues? Yes No
30. Guardrail? Yes No
31. Milling? Yes No
It is proposed to mill 1" to 2" to increase the ride and utilize the millings in RAP.
32. Local Road Safety Program Yes No
The LRSP recommends improvements at the intersection of US 83 and 201st Ave NE (Baldwin). The recommendations include closing median, installing street lights, upgrading stop sign, upgrading junction sign, upgrading stop ahead sign, upgrading stop ahead marking, upgrading stop bar, and review signs and CST. These recommendations will be addressed through the HSIP Process.

I. Load Restrictions

Travel Information Map Proposed Load Restriction: Legal weight

HPCS Load Restriction: Legal weight

Projected load restrictions after project is completed: Legal weight

J. Roadway Widths

Required Minimum Roadway Width: 32'

Surrounding Roadway Widths:

Wilton North: 35'

Jct I-94 North: 36' (Urban)

K. PERFORMANCE GUIDELINES

Design Speed: 70 mph
Clear Zone: Use existing.

Shoulder Surface: Paved
Ride/Distress Goal: Excellent
Operational Reliability: High

L. PROPOSED IMPROVEMENTS

Proposed Improvement:

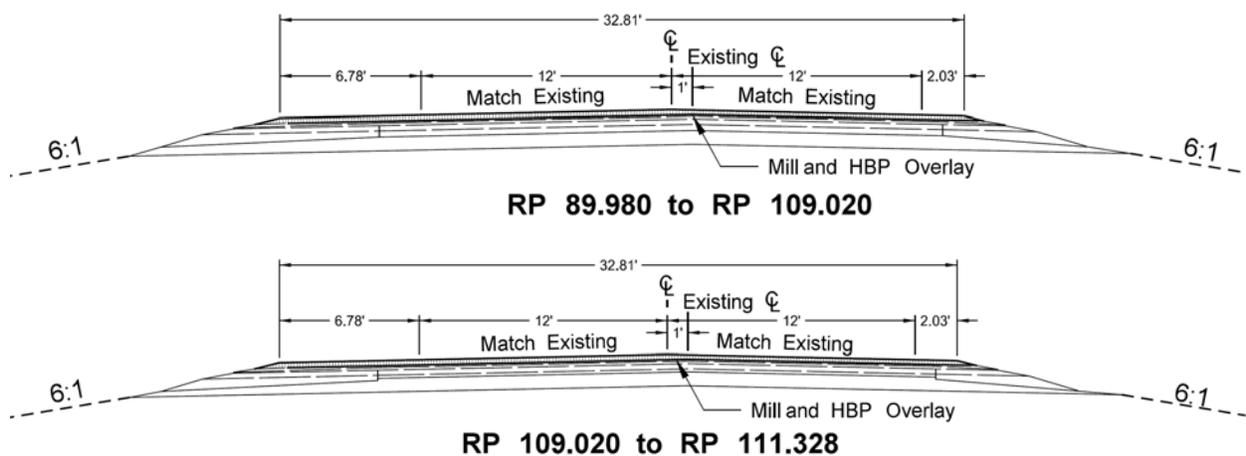
A Minor Rehabilitation Mill and HBP Overlay is proposed to extend the useful life of the highway by restoring the structural integrity of the roadway. The safety items that will be addressed are safety hardware that does not meet NCHRP 230 standards or better. All other safety items will be addressed as part of the Statewide Safety Program. It is proposed to pave the median crossovers with this NB project.

Decision Items:

A decision item is included to address RP 88.9880 to RP 91.460. This segment is Urban. The decision item addresses including this segment. The typical section is the same as the proposed project. This work would have to be coordinated through the urban prioritization system.

Decision items are included to address a district request to install left and right turn lanes at 201st Ave NE (Baldwin). This work would be out of the scope of a minor rehabilitation. There are current turn lanes at this location that were created by striping the shoulders. The existing turn lanes are narrow and short. This location was identified in the LRSP and low cost improvements were recommended. The Traffic Operations Section found the Southbound left to be warranted.

Proposed Typical Sections: Typical Sections shown are for estimating purposes only. Final typical section dimensions should be determined in the design phase. The typical sections below show a 1-foot shift in centerline to obtain a final 2-foot inside shoulder.



M. ADDITIONAL COMMENTS

District Engineer:

