SCOPING REPORT

Project No. **PCN**

N Edge Maddock to Jct. ND 19

Prepared by

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION
BISMARCK, NORTH DAKOTA

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

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November 2015

23 USC § 409
NDDOT Reserves All Objections

SCOPING REPORT

Report Completed By: Scott Clausen

A. GENERAL INFORMATION

Project Number:
District: Devils Lake
Location: N Edge Maddock to Jct. ND 19
Reference Point: RP 128.690 to RP 135.822 – 7.132 miles
Counties: Benson
Legal Description: T152N, R69W, Sec 19 to T153N, R69W, Sec 21

Functional and Funding Roadway Classification: District Corridor
National Highway System: No

Project Schedule: Proposed to be added to the STIP for a 2019 Minor Rehabilitation.

dTIMS Recommendations:
Constrained: Minor Asphalt 2015 Unconstrained: Minor Asphalt 2015

B. PURPOSE, NEED, AND IMPROVEMENT

Purpose and Need of Project:
The IRI score is in the fair range. The distress score is in the fair range. There are alligator, longitudinal, and transverse cracks along with patching on the roadway.

The District has noted that recently grain elevators in the area have been consolidated to one location south of Maddock near Hamburg. Seasonal truck traffic is expected to rise on highway 30. As a result the District would like a 1" mill to smooth the ride quality and a 3" HBP overlay Minor Rehabilitation with sliver grading to provide for a minimum of 2' shoulders.

Highway 30, north of junction 19, is wider than this segment. A project has been bid for 2016 for highway 30 south of this project which includes sliver grading to widen the roadway.

Proposed Improvements:
A Minor Rehabilitation HBP Overlay with sliver grading is proposed to extend the useful life of the roadway by restoring the pavement structure and to provide 12' driving lanes with 2' shoulders. The only 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.

C. TRAFFIC AND CRASH ANALYSIS

Traffic:
RP 128.690 to RP 135.822

	Year	AADT	Truck AADT	Total AADT	Flexible ESALs
Current Traffic	2015	520	215	735	160
Forecast Traffic	2035	705	320	1,025	240

Speed Limit:

From RP	To RP	Speed Limit
128.690	128.865	25
128.865	129.000	45
129.000	135.822	65

Crash Analysis: There were a total of 4 crashes from 10/1/2010 to 9/30/2015. Animal crashes were not included. The crash rate per 1 million vehicles is .5363.

Notes/Trends:

- No crash trends

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 128.690 to 129.573

Actual Age	IRI	IRI Rating	SI or SCI	Faulting
56	119	Fair	9	N/A
Effective Age	Distress	Distress Score	Rutting	Rutting Score
42	83	Fair	.08	Excellent

CONSTRUCTION HISTORY				
Year	Construction	Depth (in)	Width (ft)	Oil
1959	Grade	-	32	-
1959	Aggregate Base	3.5	30	-
1959	Emulsified Base	3.5	28	SS-1
1959	Hot Bituminous Pavement	1.5	22	120-150
1983	Hot Bituminous Pavement	3.5	24	120-150
1984	Contract Chip Seal	-	24	MC-3000
1999	District Chip Seal	-	24	MC-3000
2005	Intermittent Contract Patch – 1.5”	-	3 – 24 – 3	PG 58-28
2008	Federal Aid Chip Seal	-	25	CRS2P

Segment 2, RP 129.573 to 135.822

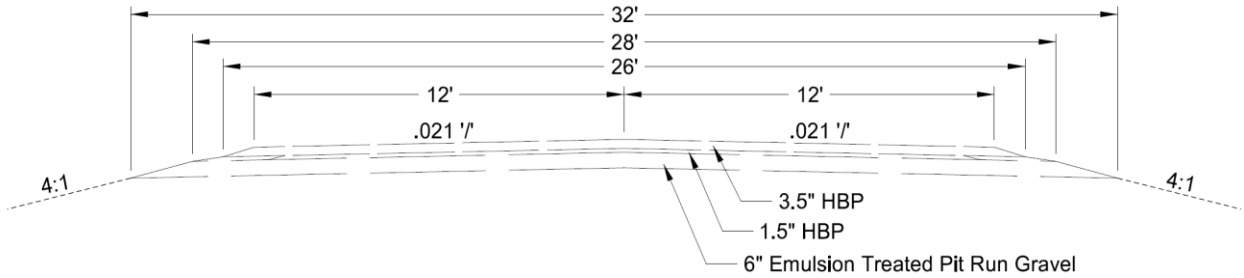
Actual Age	IRI	IRI Rating	SI or SCI	Faulting
56	122	Fair	9	N/A
Effective Age	Distress	Distress Score	Rutting	Rutting Score
42	83	Fair	.09	Excellent

CONSTRUCTION HISTORY				
Year	Construction	Depth (in)	Width (ft)	Oil
1959	Grade	-	32	-

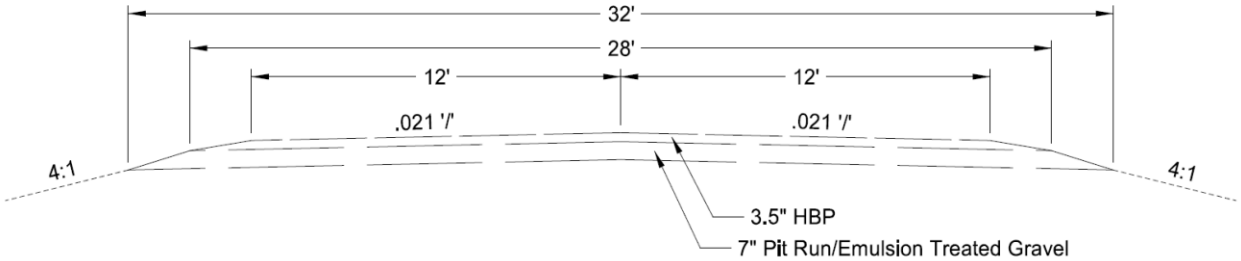
CONSTRUCTION HISTORY				
Year	Construction	Depth (in)	Width (ft)	Oil
1959	Widening	-	32	-
1959	Aggregate Base	3.5	30	-
1959	Emulsified Base	3.5	28	SS-1
1983	Hot Bituminous Pavement	3.5	24	120-150
1984	Contract Chip Seal	-	24	MC-3000
1999	District Chip Seal	-	24	MC-3000
2005	Intermittent Contract Patch – 1.5”	-	3 – 24 – 3	PG 58-28
2008	Federal Aid Chip Seal	-	25	CRS2P

Existing Foreslopes: 4:1

Existing Typical Sections:
Section 1, RP 128.690 to RP 129.600



Section 2, RP 129.600 to RP 135.822



E. EXISTING GEOMETRY

Horizontal Curves: Use existing
Vertical Curves: Use existing

F. EXISTING STRUCTURES

Bridges: None
Centerline Pipes: 22 centerline pipes will need to be extended for sliver grading.

- 7 – CMP
- 6 – DCMP
- 5 – CSP
- 1 – DCSP
- 3 – RCP

The district has noted that many of the centerline pipes along this segment are close to failure. A decision item has been added to investigate pipe rehabilitation strategies.

G. LAND INTERESTS

Small Communities: Maddock RP 128.690 to RP129.100. Population: 391
Reservation: None
Surface Trust Lands: There are surface trust lands from RP 129.35 to RP129.51
National Wildlife Refuge: None
Adjacent Land Usage: Residential and Agricultural

H. ISSUES AND APPURTENANCES CHECKLIST

1. Curb and Gutter? Yes ____ No __X__
2. Sidewalk? Yes ____ No __X__
3. Multi-Use Path? Yes ____ No __X__
4. ADA Ramps? Yes ____ No __X__
5. Detectable Warning Panels? Yes ____ No __X__
6. Lighting? Yes __X__ No _____
   There is lighting at the start of the project at RP 128.71. No proposed improvements.
7. Flashing Beacons? Yes ____ No __X__
8. Storm Sewer? Yes ____ No __X__
9. Manholes? Yes ____ No __X__
10. Other Underground Work? Yes ____ No __X__
11. Parking Facilities? Yes ____ No __X__
12. Frontage Roads? Yes ____ No __X__
13. Utility Issues? Yes __X__ No _____
    Possible utility issues associated with Sliver Grading.
14. Landscaping? Yes ____ No __X__
15. Approach or Ditch Block Flattening? Yes ____ No __X__
16. Radial T Intersections? Yes ____ No __X__
17. Fence? Yes ____ No __X__
18. Railroad Crossings? Yes ____ No __X__
19. Detours? Yes ____ No __X__
20. Automatic Traffic Recorder Locations? Yes ____ No __X__

21. Weigh-In-Motion Sites? Yes ____ No __X__

22. ITS (Deicing, Snow Gates, VMS, RWIS, etc.)? Yes ____ No __X__

23. Highway Patrol/Truck Pullouts or Rest Areas? Yes ____ No __X__

24. Additional Right of Way? Yes ____ No __X__

25. Drainage Issues? Yes ____ No __X__

26. Snow Impact Areas? Yes ____ No __X__

27. Subgrade Issues? Yes __X__ No _____
The district has noted a subcut area on the project, located at approximately RP 134.85. A cost is included. The cost for the subcut repair was based off of a 200 ft. long section excavated to a depth of 48" below the top of the existing pavement.

28. Noise Analysis: Type I Project? Yes ____ No __X__ Maybe _____

29. Maintenance Issues? Yes ____ No __X__

30. Guard Rail? Yes ____ No __X__

31. Milling? Yes __X__ No _____
A cost is included to mill approximately 1" off the roadway to re-establish the crown of the roadway and to improve the ride performance.

I. Load Restrictions

Travel Information Map Proposed Load Restriction: 8-ton
HPCS Load Restriction: 7-ton
Projected load restrictions after project is completed: Legal weight

J. PERFORMANCE GUIDELINES

Design Speed: 25, 45, 65
Clear Zone (from edge of driving lane): Use existing
Shoulder Surface: Paved
Ride/Distress Goal: Good
Operational Reliability: Moderate
Foreslope: 4:1

K. Roadway Widths

Required Minimum Roadway Width: 24'. The ADT for this roadway is 15 vehicles from the next class which is 26'. Where re-establishing the original traveled-way-plus-shoulders width is triggered to accommodate an overlay, Minor Rehabilitation may include: up to 2' of widening on each side of the roadway or widening to provide 12' driving lanes with 2' shoulders on each side of narrow roadways, even if the total resulting width exceeds the original roadway width.

Surrounding Corridor Widths:
ND 30 RP 105.773 to RP 128.690: Existing: 24', scheduled for sliver grading to 28' for 2016.

L. PROPOSED IMPROVEMENTS

A Minor Rehabilitation HBP Overlay with sliver grading is proposed to extend the useful life of the roadway by restoring the pavement structure and to provide 12' driving lanes with 2' shoulders. The only 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.

Proposed Typical Sections:
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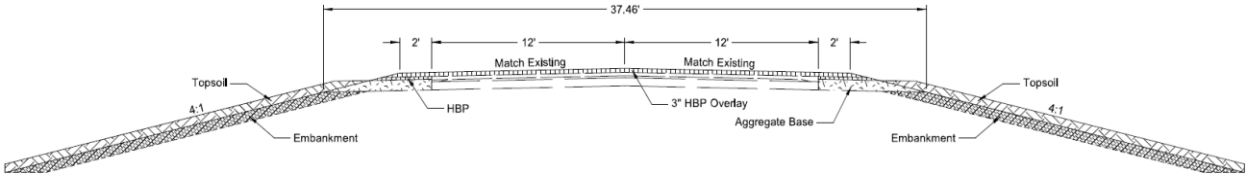
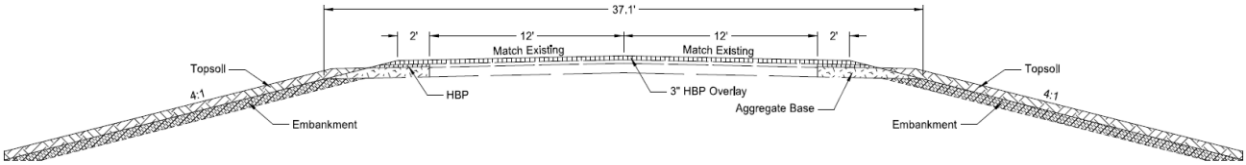


Section 2, RP 129.600 to RP 135.822



M. ADDITIONAL COMMENTS

District Engineer:
The Maddock Maintenance Section spent time this fall cleaning culvert ends on this stretch of road. What they found was that the metal culverts are corroded and thin. Some of the culverts are collapsing in the center. Some are so thin that trying to find good metal to attach an extension to will be a challenge. Knowing that the pipes were put in during the original grading and that they are thin, the pipe should be looked at for replacement. Based on significant section loss due to corrosion and also deformation this work could be completed under a Minor Rehabilitation strategy.

L. Proposed Improvements:

- Subcut should be added at 134.85. This area has been patched over several years and continues to distort.
- Pipe replacement should be added.

O. Decisions:

- No. Should add subcut and pipe replacement, then advance the project.

Safety Division Director:
None.

N. COST ESTIMATE

(Inflation factor of 4% was used to estimate costs for bid year 2019)

ITEM	ESTIMATED COST
Contract Bond	$30,000
Mobilization	$158,000
Hot Bit Pavement (Based on 3")	$2,015,000

ITEM	ESTIMATED COST
Milling (Based on 1")	$69,000
Aggregate	$315,000
Topsoil	$212,000
Borrow and Water	$435,000
Erosion and Sediment Control	$76,000
Removal of Pavement	$101,000
Pipe Extensions	$91,000
Field Lab and Office	$30,000
Traffic Control	$25,000
Pavement Markings and Rumble Strips	$30,000
Saw Pavement	$252,000
Subcut Repair	$110,000
Subtotal	$3,949,000
20% Engineering	$790,000
Total Cost	$4,739,000

O. DECISIONS

1. Should this project advance as a Minor Rehabilitation mill and HBP Overlay with sliver grading for an estimated cost of **$4,739,000**?
   ✓ Yes _____ No

2. Should rehabilitation strategies for centerline pipes be investigated?
   ✓ Yes _____ No

DDE Comments: We should follow the design guidelines to address the pipes.

Donald [illegible]
Deputy Director for Engineering

2/24/16
Date