

Project No.

PCN

**Selfridge N to Jct ND 21**



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

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

**DIRECTOR**  
Thomas K. Sorel

**OFFICE OF TRANSPORTATION PROGRAMS**  
Steve Salwei, P.E.

Principal Author:  
Logan Beise, P.E.  
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# SCOPING REPORT

## A. GENERAL INFORMATION

**Project Number:**

**District:** Bismarck

**Highway:** 6

**Location:** Selfridge N to Jct ND 21

**Reference Point:** RP 11.500 to RP 42.149 – 30.5818 miles

**Counties:** Sioux and Morton

**Legal Description:** T130N, R82W, Sec 26 to T135N, R82W, Sec 36

**Functional and Funding Roadway Classification:** District Collector

**National Highway System:** Yes (JCT ND 24 to JCT ND 21, RP 34.894 to RP 42.149)

**Speed Limit:** 65 mph

**Freight Level:** 3

**Project Schedule:** Proposed to be added to the STIP for a 2021/2022 Minor Rehabilitation.

**dTIMS Recommendations:**

Constrained: Do Nothing      Unconstrained: Minor Sliver Grade 2017

## B. PURPOSE, NEED, AND IMPROVEMENT

**Purpose and Need of Project:**

The IRI score is in the fair to poor range. The distress score is in the fair range. There is alligator, longitudinal and transverse cracking, along with bituminous patching. This segment has reached its geometric limitations for overlays. Adding thickness will require that the roadway be sliver graded to maintain 4:1 slopes and minimum roadway width.

Elevator and railroad facility expansion in McLaughlin has increased agricultural traffic in the area. The roadway has springtime load restrictions of 6-ton from Selfridge north to Jct ND 24 and 7-ton from Jct ND 24 north to Jct ND 21. This segment is a freight level 3. The unrestricted load limit for a freight level 3 is 7-ton. It is proposed to increase the load limit with a minor rehabilitation overlay.

**Proposed Improvements:**

A Minor Rehabilitation HMA overlay with sliver grading is proposed to extend the useful life of the roadway by restoring the pavement structure. Safety features will remain unless a need is identified. Safety hardware that is not in compliance with NCHRP Report 350 performance criteria will be upgraded to be in compliance with MASH performance criteria. All other safety items will be addressed as part of the Statewide Safety Program.

## C. TRAFFIC AND CRASH ANALYSIS

RP 11.500 to RP 34.894

	Year	Pass	Trucks	Total AADT	Flex ESALs	Rigid ESALs
Current Traffic	2017	410	45	455	40	65
Forecast Traffic	2037	530	70	600	60	100

RP 34.894 to RP 42.149

	Year	Pass	Trucks	Total AADT	Flex ESALs	Rigid ESALs
Current Traffic	2017	600	110	710	95	155
Forecast Traffic	2037	735	145	880	120	200

### Crash Analysis:

There were a total of 25 crashes from 1/1/2013 to 12/31/2017. Animal crashes were not included. The crash rate per 1 million vehicles is 1.1185.

Notes/Trends:

- No trends identified.
- This segment is not on any high crash listing

Recommendation: None at this time.

## D. EXISTING ROADWAY CHARACTERISTICS

\*2015 data displayed, 2016 data not available

	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"

RP 11.500 to RP 22.000

Actual Age	IRI	IRI Rating	SI or SCI	Faulting
59	120*	Fair	9*	N/A
Effective Age	Distress	Distress Score	Rutting	Rutting Score
25	81*	Fair	0.10*	Excellent

CONSTRUCTION HISTORY				
Year	Construction	Depth (in)	Width (ft)	Oil
1959	SELECTIVE GRADING	-	28.0	-
1959	AGGREGATE BASE	3.0	27.0	-
1959	BITUMINOUS BASE	2.0	26.0	MC-2
1959	HOT BIT PAVEMENT	1.5	24.0	150-200
1993	INT MTCE PATCH-1.25"	-	24.0	120-150
1994	INT CONT PATCH-1.25"	-	24.0	120-150
1994	INT MTCE PATCH-1.25"	-	24.0	120-150
1994	CONTRACT CHIP SEAL	-	24.0	MC-3000
2003	HOT BIT PAVEMENT	1.5	24.0	PG 58-28

CONSTRUCTION HISTORY				
Year	Construction	Depth (in)	Width (ft)	Oil
2007	FEDERAL AID CHIP SEAL	-	24.0	CRS2P

**RP 22.000 to RP 26.797**

Actual Age	IRI	IRI Rating	SI or SCI	Faulting
60	146	Poor	9	N/A
Effective Age	Distress	Distress Score	Rutting	Rutting Score
25	81	Fair	0.11	Excellent

CONSTRUCTION HISTORY				
Year	Construction	Depth (in)	Width (ft)	Oil
1958	SELECTIVE GRADING	-	30.0	-
1958	STABILIZED BASE	5.0	26.0	-
1958	HOT BIT PAVEMENT	1.5	24.0	120-150
1993	INT MTCE PATCH-1.25"	-	24.0	120-150
1994	INT CONT PATCH-1.25"	-	24.0	120-150
1994	INT MTCE PATCH-1.25"	-	24.0	120-150
1994	CONTRACT CHIP SEAL	-	24.0	MC-3000
2003	HOT BIT PAVEMENT	1.5	24.0	PG 58-28
2007	FEDERAL AID CHIP SEAL	-	24.0	CRS2P

**RP 26.797 to RP 28.051**

Actual Age	IRI	IRI Rating	SI or SCI	Faulting
31	109*	Fair	9*	N/A
Effective Age	Distress	Distress Score	Rutting	Rutting Score
25	82*	Fair	0.14*	Excellent

CONSTRUCTION HISTORY				
Year	Construction	Depth (in)	Width (ft)	Oil
1987	GRADE	-	44.0	-
1987	AGGREGATE BASE	6.0	40.0	-
1987	HOT BIT PAVEMENT	3.0	38.0	120-150
1994	CONTRACT CHIP SEAL	-	38.0	MC-3000
2003	HOT BIT PAVEMENT	1.5	30.0	PG 58-28
2007	FEDERAL AID CHIP SEAL	-	30.0	CRS2P

**RP 28.051 to RP 35.000**

Actual Age	IRI	IRI Rating	SI or SCI	Faulting
60	136*	Fair	9*	N/A
Effective Age	Distress	Distress Score	Rutting	Rutting Score
25	82*	Fair	0.10*	Excellent

CONSTRUCTION HISTORY				
Year	Construction	Depth (in)	Width (ft)	Oil
1958	SELECTIVE GRADING	-	30.0	-
1958	STABILIZED BASE	5.0	20.0	-
1958	HOT BIT PAVEMENT	1.5	24.0	120-150
1993	INT MTCE PATCH-1.25"	-	24.0	120-150

CONSTRUCTION HISTORY				
Year	Construction	Depth (in)	Width (ft)	Oil
1994	INT CONT PATCH-1.25"	-	24.0	120-150
1994	INT MTCE PATCH-1.25"	-	24.0	120-150
1994	CONTRACT CHIP SEAL	-	24.0	MC-3000
2003	HOT BIT PAVEMENT	1.5	24.0	PG 58-28
2007	FEDERAL AID CHIP SEAL	-	24.0	CRS2P

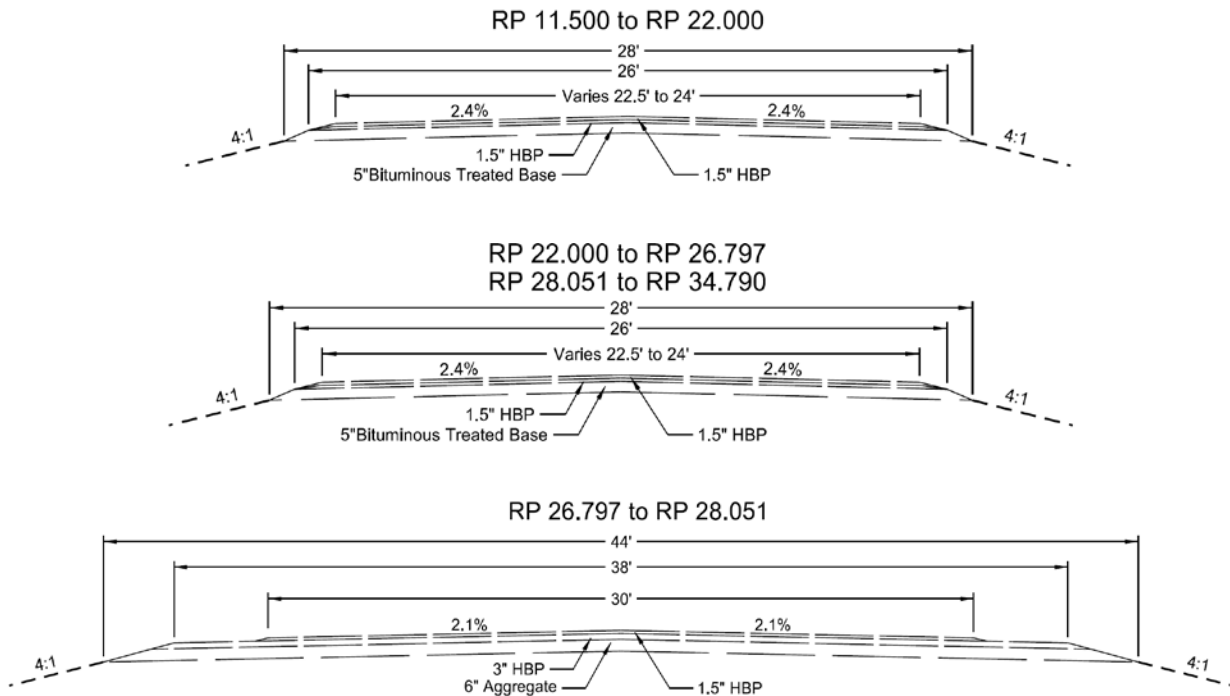
**RP 35.000 to RP 42.149**

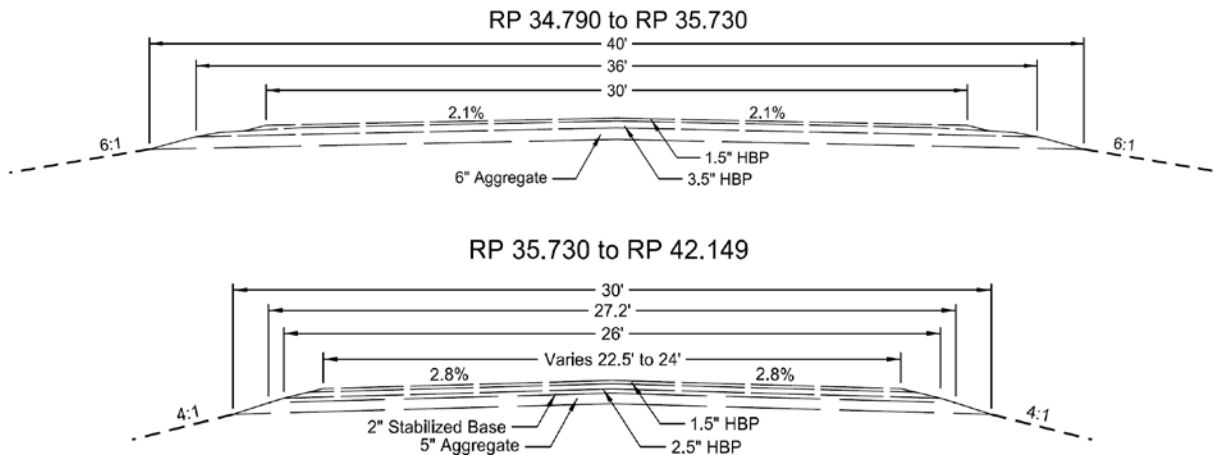
Actual Age	IRI	IRI Rating	SI or SCI	Faulting
62	116	Fair	N/A	N/A
Effective Age	Distress	Distress Score	Rutting	Rutting Score
25	84	Fair	.07	Excellent

CONSTRUCTION HISTORY				
Year	Construction	Depth (in)	Width (ft)	Oil
1956	GRADE	-	28.0	-
1956	AGGREGATE BASE	5.0	27.0	-
1956	STABILIZED BASE	2.0	26.0	-
1956	HOT BIT PAVEMENT	2.5	24.0	150-200
1993	INT CONT PATCH-1.5"	-	24.0	120-150
1994	CONTRACT CHIP SEAL	-	24.0	MC-3000
2003	HOT BIT PAVEMENT	1.5	24.0	PG 58-28
2007	FEDERAL AID CHIP SEAL	-	24.0	CRS2P

**Existing Foreslopes: 4:1**

**Existing Typical Section:**





**E. EXISTING GEOMETRY**

**Curves:**

Horizontal Curves: Use Existing

Vertical Curves: Use Existing

**F. EXISTING STRUCTURES**

**Bridges:**

Bridge No	Description	Feature	Length (ft)	Width (ft)	Rating
<b>6-012.402</b>	Single, 9x9x64' RCB	Creek	9		96.4
Recommended Improvement: Do Nothing					
<b>6-014.296</b>	Single, 10x10x32' RCB	Trib Porcupine Cr	10		96.1
Recommended Improvement: Extend Box \$250,000					
<b>6-016.029</b>	Tripe, 9x9x44' RCB	Creek	29		98.1
Recommended Improvement: Extend Box \$300,000 Joint Repair \$15,000					
<b>6-016.916</b>	Single, 7x7x54' RCB	Creek	7		96.1
Recommended Improvement: Ok to extend if needed. \$200,000					
<b>6-017.115</b>	Single, 7x7x49' RCB	Creek	7		96.1
Recommended Improvement: Extend Box \$210,000					
<b>6-019.524</b>	Single, 8x8x77' RCB	Creek	8		96.1
Recommended Improvement: Joint Repair \$ 5,000					
<b>6-021.901</b>	Double, 8x8x94' RCB	Creek	24		9.1
Recommended Improvement: Do Nothing					
<b>6-023.520</b>	Single, 7x7x35' RCB	Creek	8		96
Recommended Improvement: Extend Box \$240,000					
<b>6-027.176</b>	Bridge - Spread Box Bm	Porcupine Creek	126	32	93
Recommended Improvement: Barrier End Modification \$20,000					
<b>6-030.729</b>	Single, 7x7x60' RCB	Creek	7		96.1
Recommended Improvement: Joint Repair \$5,000 Ok to extend if needed. \$200,000					
<b>6-032.338</b>	Single, 10x10x47' RCB	Creek	10		96.1
Recommended Improvement: Joint Repair \$5,000 Extend Box \$230,000					
<b>6-034.413</b>	Triple, 7x5x58' RCB	Creek	23		98.1

Recommended Improvement: Ok to Extend if needed. \$200,000					
<b>6-035.187</b>	Bridge Prestressed Stringer	Cannonball River	445	32	93.1
Recommended Improvement: Barrier End Modification and Seal Joint \$30,000					
<b>6-036.198</b>	Double 9x9x80' RCB	Creek	19		97.1
Recommended Improvement: Do Nothing					
<b>6-037.557</b>	Double, 9x9x82' RCB	Snake Creek	19		97
Recommended Improvement: Do Nothing					

**Centerline Pipes:** Use Existing. Pipes or end sections affected by the sliver grading should be extended and end sections re-laid. There are approximately 102 centerline pipes.

## G. LAND INTERESTS

**Small Community:** Selfridge, Population: 176  
**Reservation:** Standing Rock: RP 11.5 to RP 35.27  
**Surface Trust Lands:** From RP 20.02 to RP 20.06  
**Adjacent Land Usage:** Agricultural

## 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
7. Signals? Yes  No
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   
 There is existing buried telephone, overhead electric, Tribal sewer, and water co-op. Utilities might be affected by the sliver grading.
14. Landscaping? Yes  No

15. Approach or Ditch Block Flattening? Yes  X  No  \_\_\_\_\_   
Approaches will require flattening due to sliver grading.
16. T Intersection Recovery Approaches? Yes  \_\_\_\_\_  No  X
17. Fence? Yes  \_\_\_\_\_  No  X
18. Railroad Crossings? Yes  \_\_\_\_\_  No  X
19. Detours/Bypasses? 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  X  No  \_\_\_\_\_   
Approach work and sliver grading might require additional right of way in the segments both on and off of the Standing Rock Reservation.
25. Drainage Issues? Yes  \_\_\_\_\_  No  X
26. Snow Impact Areas? Yes  \_\_\_\_\_  No  X
27. Subgrade Issues? Yes  \_\_\_\_\_  No  X
28. Noise Analysis: Type I Project? Yes  \_\_\_\_\_  No  X  Maybe  \_\_\_\_\_
29. Maintenance Issues? Yes  X  No  \_\_\_\_\_   
Ditch cleanout areas where ditches have silted in were noted by the district. RP 24 to RP 24.5.
30. Guardrail? Yes  X  No  \_\_\_\_\_   
There is existing box beam guardrail on the Cannonball River structure (0006-035.187) and the Porcupine Creek structure. (0006-027.176).
31. Milling? Yes  X  No  \_\_\_\_\_   
Proposed to mill 1".

District requests to include a mandatory borrow site at the intersection of BIA 6 at RP 22.210. The back slope in the SE quadrant affects sight distance and the district has received complaints from Tribal officials. This work will affect overhead utilities.

## I. Load Restrictions

### Travel Information Map Proposed Load Restriction:

6-Ton from Selfridge to JCT ND 24, 11.500 to RP 34.894

7-Ton from JCT ND 24 to JCT ND 21, RP 34.894 to RP 42.149

**HPCS Load Restrictions:** 6-Ton

**Freight Level Required Minimum Load Restriction:** Level 3 = 7-Ton  
**Projected Load Restrictions after project is complete:** 8-Ton

## J. Roadway Widths

**Required Minimum Roadway Width:** 22'

**Freight Level Required Minimum Width:** Level 3 = 24'

### Surrounding Corridor Widths:

ND 6 (North): 45'

ND 6 (South): 30'

ND 21 (West): 31'

ND 24 (East): 30'

## K. PERFORMANCE GUIDELINES

**Design Speed:** 65 mph

**Clear Zone:** Use Existing

**Ride/Distress Goal:** Good

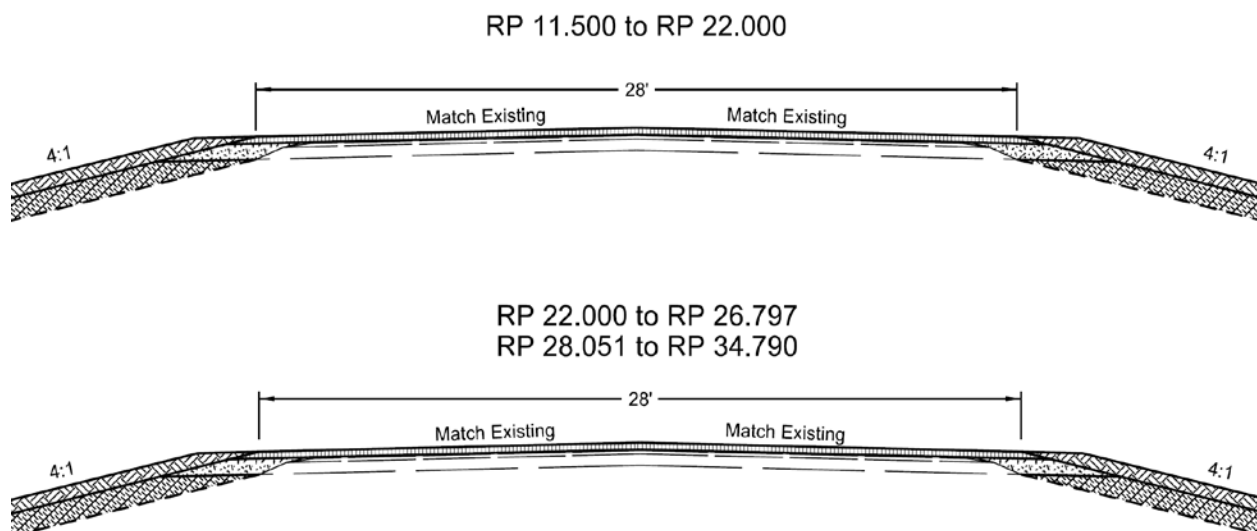
**Operational Reliability:** Moderate

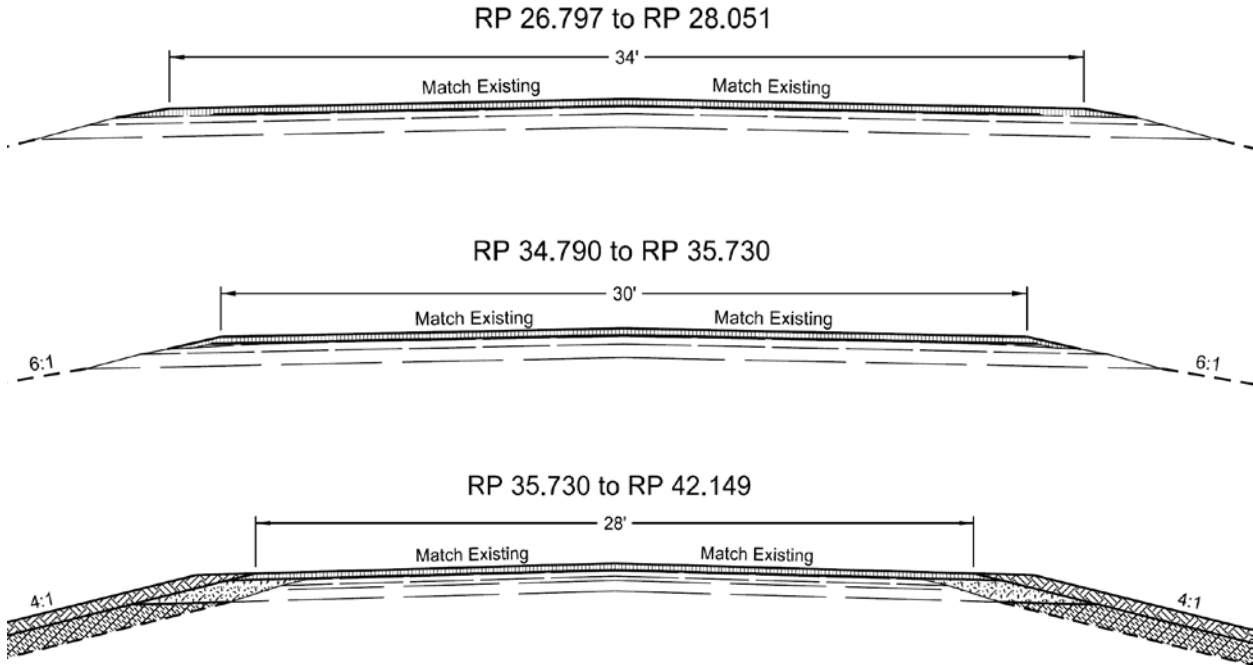
**Foreslopes:** 4:1

## L. PROPOSED IMPROVEMENTS

A Minor Rehabilitation HMA overlay with sliver grading is proposed to extend the useful life of the roadway by restoring the pavement structure. Safety features will remain unless a need is identified. Safety hardware that is not in compliance with NCHRP Report 350 performance criteria will be upgraded to be in compliance with MASH performance criteria. All other safety items will be addressed as part of the Statewide Safety Program.

**Proposed Typical Sections:** Proposed typical sections shown are for estimating purposes only. Actual typical section dimensions should be determined in the design phase.





**M. ADDITIONAL COMMENTS**

District: No comments

**N. COST ESTIMATE**

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

ITEM	ESTIMATED COST
Contract Bond	\$104,000
Mobilization	\$552,000
Hot Mix Asphalt (based on 3")	\$6,400,000
Milling (based on 1")	\$325,000
Aggregate	\$815,000
Embankment and Water	\$1,800,000
Topsoil	\$900,000
Seeding and Erosion Control	\$350,000
Centerline and Approach Pipes	\$300,000
Bridge Recommendations	\$1,910,000
Pavement Markings and Rumble Strips	\$155,000
Guardrail	\$65,000
Field Lab and Office	\$25,000
Permanent Signing	\$55,000
Traffic Control	\$120,000
Subtotal	\$13,876,000
20% Engineering	\$2,775,000
Construction and CE Total Cost	\$16,651,000

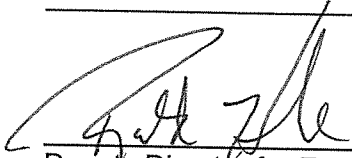
**O. DECISIONS**

1. Should this project advance as a minor rehabilitation sliver grading for an **Estimated Cost of \$16,651,000?**

Yes

No

DDE Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

  
\_\_\_\_\_  
Deputy Director for Engineering

2/15/18  
Date