

Project No.
SOIB-7-073(013)000

PCN
22329

Jct. ND 23 E to Jct. ND 22



Prepared by
NORTH DAKOTA DEPARTMENT OF TRANSPORTATION
BISMARCK, NORTH DAKOTA

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

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SCOPING REPORT

A. GENERAL INFORMATION

Project Number: SOIB-7-073(013)000

District: Williston

Highway: 73

Location: Jct ND 23 E to Jct ND 22

Reference Point: RP 0.157 to RP 11.332 – 11.175 miles

Counties: McKenzie

Legal Description: T150N, R96W, Secs 15 and 22 to T150N, R94W, Sec 28

Functional and Funding Roadway Classification: State Corridor

National Highway System: No

Freight Level: 1

Speed Limit:

45 mph (RP 0.000 to RP 0.2595)

65 mph (RP 0.2595 to RP 11.332)

Freight Constraints: There is a roadway load restriction and a roadway width restriction.

Project Schedule: Proposed to be added to the STIP as a Major Rehabilitation.

dTIMS Recommendations:

RP 0.000 to RP 7.576

Constrained: PM Asphalt 2018

Unconstrained: PM Asphalt 2018

RP 7.576 to RP 11.332

Constrained: Struc Overlay 2019

Unconstrained: Struc Overlay 2018

B. PURPOSE, NEED, AND IMPROVEMENT

Purpose and Need of Project:

There is a year round 8-ton load restriction on the roadway. Pavement condition is deteriorating due to the increased oil activity. The roadway is narrow and width does not meet the freight requirements. The IRI score is in the fair range. The distress score is in the fair range. There is alligator, longitudinal and transverse cracking, along with bituminous patching and rutting.

Proposed Improvements:

Five Advancement options are proposed:

Option 1:

A Major Rehabilitation mill and HMA overlay with widening is proposed to extend the service life and provide operational improvements to the roadway. The proposed work would eliminate the load restrictions

Option 2:

A Major Rehabilitation Full Depth Reclamation and HMA overlay with widening is proposed to extend the service life and provide operational improvements to the roadway. The proposed work would eliminate the load restrictions.

Option 3:

A Major Rehabilitation Treated Full Depth Reclamation and HMA overlay with widening is proposed to extend the service life and provide operational improvements to the roadway. The proposed work would eliminate the load restrictions.

Option 4:

A Reconstruction is proposed. The proposed work would eliminate the load restrictions.

Option 5:

Major Rehabilitation FDR with HMA overlay without widening. The proposed work would eliminate the load restrictions. This option will require a design exception for width requirements. The purpose of this option is be to keep the work within the existing right of way. Design exceptions would be needed for any work that that might require right of way.

Additional decision items are included.

Item A: 2-way traffic

Item B: Passing Lanes

Item C: Horizontal Curves

Item D: Vertical Curves

Item E: Replace or Line Structural Pipes

C. TRAFFIC AND CRASH ANALYSIS

Traffic:

	Year	Pass	Trucks	Total AADT	Flex ESALs	Rigid ESALs
Current Traffic	2018	1,850	1,740	3,590	1,255	2,020
Forecast Traffic	2038	2,035	1,915	3,950	1,380	2,225

Crash Analysis:

There were a total of 26 crashes from 9/1/2013 to 8/31/2018. Animal crashes were not included. The crash rate per 1 million vehicles is 0.45.

Notes/Trends:

- There were three fatal crashes on this segment: Two were vehicles running through stop signs at intersections and striking cross traffic, one at the intersection of ND 73 and ND 22, and one at the intersection of ND 73 and 106th Ave NW. The third was a single vehicle that exited the roadway and overturned before hitting a tree.
- There were five crashes at the intersection of ND 73 and ND 22, all occurring during dark conditions, and all involving a driver failing to stop at the stop sign. This intersection has been identified as a high crash location based on the 2013-2017 Rural Intersection High Crash Location map. The cross-product of the major road ADT and minor road ADT is 3,404 x 2,054= 6,991,816, which is greater than the 2,000,000 that would be required for a destination light at the intersection with ND 22.
- There were three crashes at the intersection of ND 73 and 106th Ave NW involving SB traffic striking cross traffic.

- There were three crashes along the curve at RP 10.3. There is a chevron project scheduled for this curve with PCN 21863.

Recommendation: No recommendations. A traffic operations report will be completed with this project to consider improvements along the corridor.

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 0.000 to RP 7.576

Actual Age	IRI	IRI Rating	SI or SCI	Faulting
42	112	Fair	5	N/A
Effective Age	Distress	Distress Score	Rutting	Rutting Score
18	83	Fair	.17	Excellent

CONSTRUCTION HISTORY				
Year	Construction	Depth (in)	Width (ft)	Oil
1974	GRADE	-	38.0	-
1976	AGGREGATE BASE	6.0	33.0	-
1976	HOT BIT PAVEMENT	2.0	24.0	150-200
1987	HOT BIT PAVEMENT	2.0	28.0	-
1989	CONTRACT SAND SEAL	-	28.0	HFMS-2
1997	CONTRACT CHIP SEAL	-	24.0	HFMS-2
2005	DISTRICT CHIP SEAL	-	26.0	CRS2P
2010	HBP-SUPERPAVE-FAA 43	2.0	26.0	PG 58-28
2016	FEDERAL AID CHIP SEAL	-	26.0	CRS2P

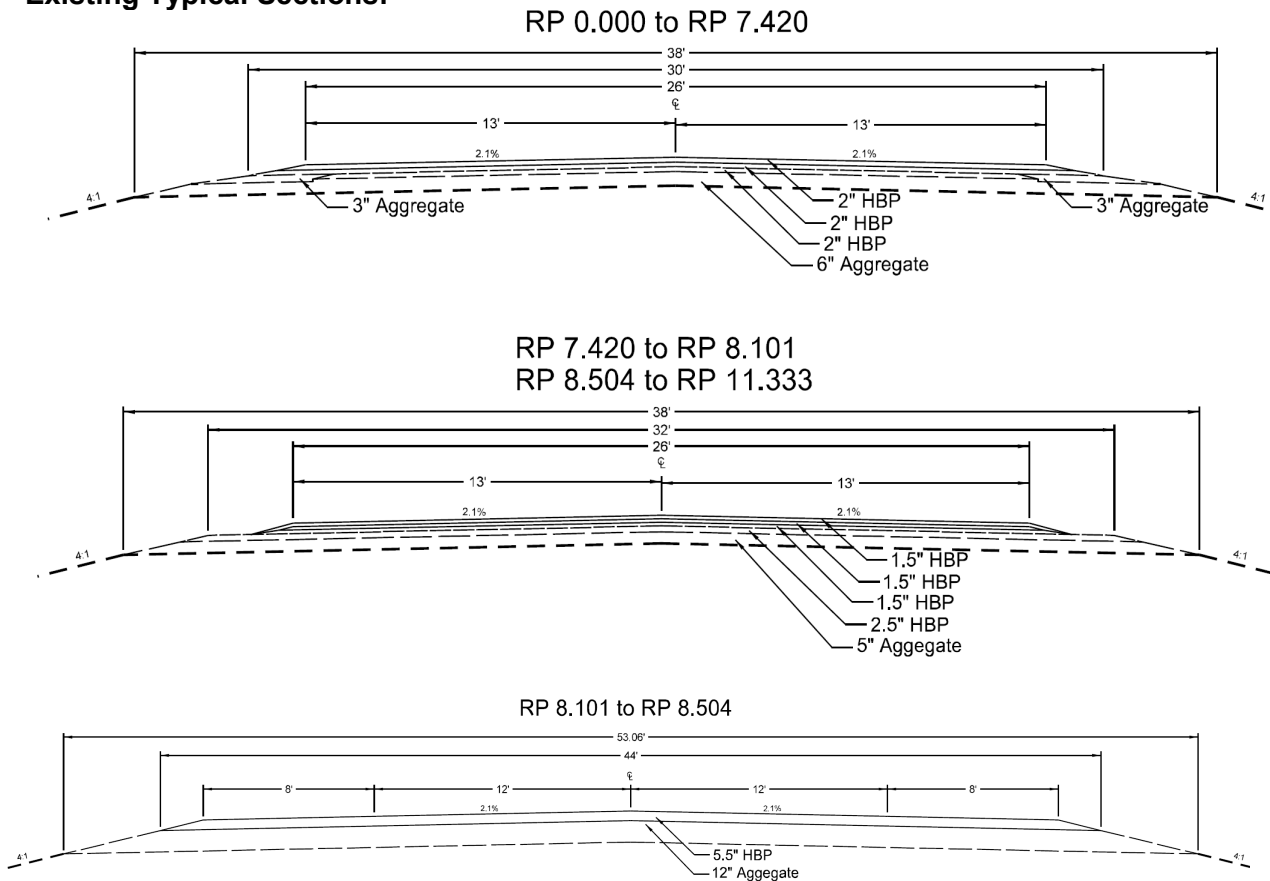
Segment 2: RP 7.576 to RP 11.332

Actual Age	IRI	IRI Rating	SI or SCI	Faulting
42	124	Fair	8	N/A
Effective Age	Distress	Distress Score	Rutting	Rutting Score
18	78	Fair	.18	Excellent

CONSTRUCTION HISTORY				
Year	Construction	Depth (in)	Width (ft)	Oil
1974	GRADE	-	38.0	-
1976	AGGREGATE BASE	6.0	33.0	-
1976	HOT BIT PAVEMENT	2.5	32.0	150-200
1976	HOT BIT PAVEMENT	1.5	24.0	150-200
1993	CONTRACT CHIP SEAL	-	26.0	-
1997	CONTRACT CHIP SEAL	-	24.0	HFMS-2
2005	DISTRICT CHIP SEAL	-	26.0	CRS2P
2010	HBP-SUPERPAVE-FAA 43	3.0	26.0	PG 58-28
2016	FEDERAL AID CHIP SEAL	-	26.0	CRS2P

Existing Foreslopes: 4:1

Existing Typical Sections:



E. EXISTING GEOMETRY

Curves:

Horizontal Curves:

Major Rehabilitation: On State Corridors with ADT >750, if existing horizontal curvature is designed for less than 15 mph less than the posted speed, make cost effective improvement or sign accordingly. The horizontal curves are shown in the table below.

Reconstruction: Use AASHTO Standards.

Curve Table:

Location and Ex. Curve Radius (ft)	Superelevation	Location and Ex. Curve Radius (ft)	Superelevation
RP 0.127 R = 2,864.93	Ex. Super = 4.3% Required Super = 4.9%	RP 0.378 R = 2,864.93	Ex. Super = 4.3% Required Super = 4.9%
RP 0.435 R = 2,864.93	Ex. Super = 4.3% Required Super = 4.9%	RP 1.626 R = 5,729.65	Ex. Super = 2.6% Required Super = 3.0%
RP 6.122 R = 2,864.93	Ex. Super = 4.0% Required Super = 4.9%	RP 6.630 R = 1,910.08	Ex. Super = 5.4% Required Super = 5.9%
RP 6.970	Ex. Super = 4.6%	RP 7.207	Ex. Super = 4.6%

Location and Ex. Curve Radius (ft)	Superelevation	Location and Ex. Curve Radius (ft)	Superelevation
R = 2,864.93	Required Super = 4.9%	R = 2,546.64	Required Super = 5.3%
RP 7.500	Ex. Super = 4.3%	RP 8.200	Ex. Super = 6.0%
R = 2,864.93	Required Super = 4.9%	R = 1,660	Required Super = 6.0%
RP 8.413	Ex. Super = 4.9%	RP 8.610*	Ex. Super = 6.0%
R = 2,291.01	Required Super = 5.7%	R = 1,146.28	Required Super = N/A
RP 8.964**	Ex. Super = 6.0%	RP 9.176	Ex. Super = 2.6%
R = 819.02	Required Super = N/A	R = 5,729.65	Required Super = 3.0%
RP 9.747*	Ex. Super = 6.0%	RP 10.035	Ex. Super = 4.3%
R = 1,432.69	Required Super = N/A	R = 2,864.93	Required Super = 4.9%
RP 10.355*	Ex. Super = 6.0%		
R = 1,146.28	Required Super = N/A		

**Major Rehabilitation: The curve at RP 8.964 does not meet the minimum radius for 15 MPH below the speed limit (833).

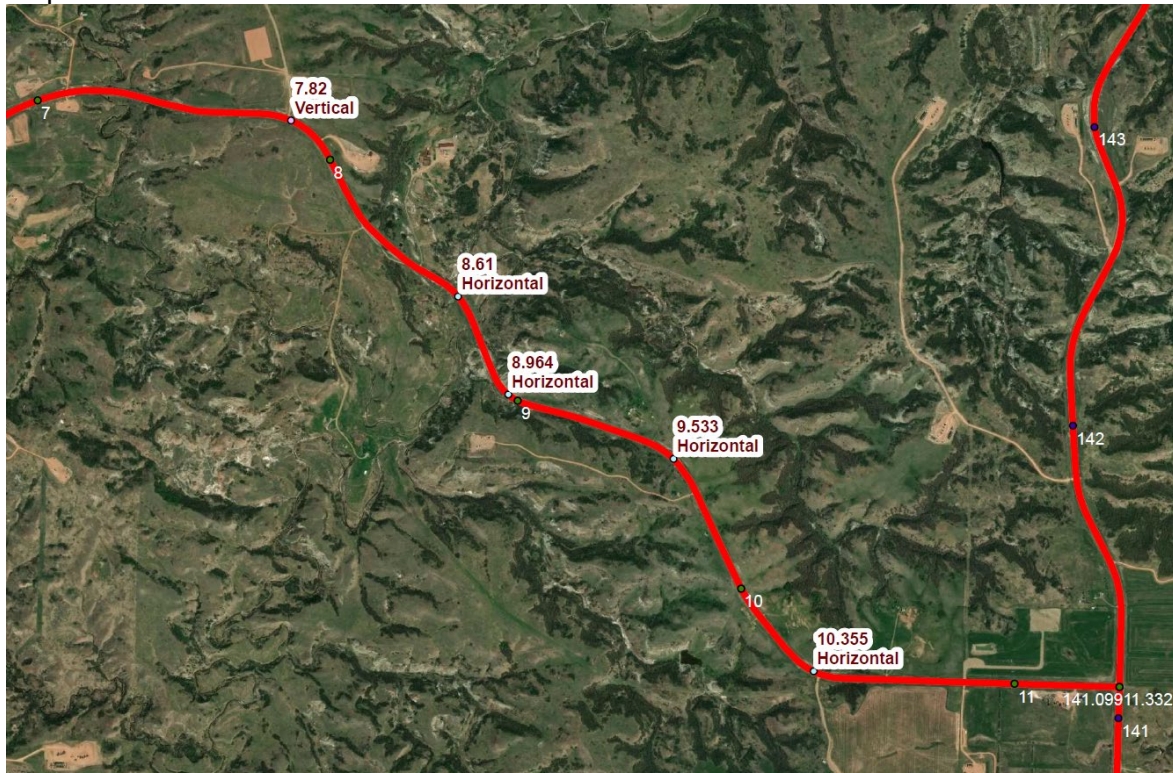
*Reconstruction: Curves at RP 8.610, RP 8.964, RP 9.747, and RP 10.355 due not meet the minimum radius for 65 MPH (1660).

Vertical Curves:

Major Rehabilitation for State Corridors with an ADT greater than 2000 and Reconstruction: use stopping sight distance for crest curve design and comfort curve design for sage curves.

All existing vertical curves meet the requirements except the crest vertical curve at RP 7.82. It has a K value of 183. The required K value for 65 MPH is 193.

Map of Deficient Curve Locations:



F. EXISTING STRUCTURES

Bridges:

Bridge No	Description	Feature	Length (ft)	Year	Rating
73-002.675	Single, 9x137' SPP Ellipse	Coulee	9	1974	99.4
Recommended Improvement: Ok to extend					
73-002.678	Single, 10x137' SPP Ellipse	Coulee	10	1974	99.4
Recommended Improvement: Ok to extend					
73-006.256	Single, 10x7x136' SPPA	Coulee	10	1974	99.4
Recommended Improvement: Replace					
73-007.231	Single, 14x17x153' SPP	Coulee	14	1974	99.4
Recommended Improvement: Replace					
73-008.711	Single, 12x13x187' SPP	Coulee	12	1974	88.3
Recommended Improvement: Replace					
73-008.717	Single, 12x13x175' SPP	Coulee	12	1960/1974	99.4
Recommended Improvement: Replace					

A decision item is included to address investigating lining the pipes that are recommended for replacement. These pipes are located in areas with slope stability concerns.

Centerline Pipes:

Extend pipes to the clear zone or limits of grading, whichever is greater. A design exception should be requested, for Option 5, for any pipe extension to the clear zone that requires right of way.

G. LAND INTERESTS

Communities: None

Reservation: Fort Berthold, RP 7.380 to RP 11.332

Surface Trust Lands: There are surface trust lands from RP 4.00 to RP 5.00.

Adjacent Land Usage: Residential and Agricultural

H. ISSUES AND APPURTENANCES CHECKLIST

- | | | |
|-------------------------------|------------------------------|--|
| 1. Curb and Gutter? | Yes <input type="checkbox"/> | No <input checked="" type="checkbox"/> |
| 2. Sidewalk? | Yes <input type="checkbox"/> | No <input checked="" type="checkbox"/> |
| 3. Multi-Use Path? | Yes <input type="checkbox"/> | No <input checked="" type="checkbox"/> |
| 4. ADA Ramps? | Yes <input type="checkbox"/> | No <input checked="" type="checkbox"/> |
| 5. Detectable Warning Panels? | Yes <input type="checkbox"/> | No <input checked="" type="checkbox"/> |
| 6. Lighting? | Yes <input type="checkbox"/> | No <input checked="" type="checkbox"/> |
| 7. Signals? | Yes <input type="checkbox"/> | No <input checked="" type="checkbox"/> |
| 8. Storm Sewer? | Yes <input type="checkbox"/> | No <input checked="" type="checkbox"/> |

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
 Approaches will be constructed according to design standards. A design exception should be requested, for Option 5, on any approach work that requires right of way.
16. T Intersection Recovery Approaches? Yes No
17. Fence? Yes No
18. Railroad Crossings? Yes No
19. Detours/Bypasses? Yes No
 Possible bypasses or detours for structural pipe work.
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
 Truck inspection site at RP 10.9.
24. Additional Right of Way? Yes No
 Possible additional right of way for widening work and structural pipe work. Right of way varies through corridor. Approximately 100ft for the majority.
25. Drainage Issues? Yes No
26. Snow Impact Areas? Yes No
27. Subgrade Issues? Yes No
 Frost heaves at approximately RP 2. Large patch and dip at RP 8.33.
28. Noise Analysis: Type I Project? Yes No Maybe
29. Maintenance Issues? Yes No
 W-Beam guardrail at RP 8.588 is currently close to the driving lane and makes it difficult to plow. It was requested that if the guardrail is replaced, to relocate it further from the driving lane.

30. Guardrail?

Yes X No

Type	RP	L/R	Length (ft)
Cable	7.189	R	852
Cable	7.189	L	1200
Cable	8.446	L	885
Cable	8.465	L	477
W-Beam	8.588	R	1154
Cable	8.576	L	1356

For a Major Rehabilitation and Reconstruction, guardrail is required to be in compliance with MASH design guidelines.

31. Milling?

Yes X No

Milling can be included with the overlay option.

I. Load Restrictions

Travel Information Map Proposed Load Restriction: 8-Ton

HPCS Load Restrictions: Legal Weight

Freight Level Required Minimum Load Restriction: Level 1 > 8-Ton

Projected Load Restrictions after project is complete: Legal Weight

J. Roadway Widths

Required Minimum Roadway Width:

Major Rehabilitation: 36'

Reconstruction: 40'

Freight Level Required Minimum Width: Level 1 ≥ 28'

K. PERFORMANCE GUIDELINES

Design Speed: 65 mph

Clear Zone: Use AASHTO

Ride/Distress Goal: Good to Excellent

Operational Reliability: Very Reliable

Foreslopes: 4:1

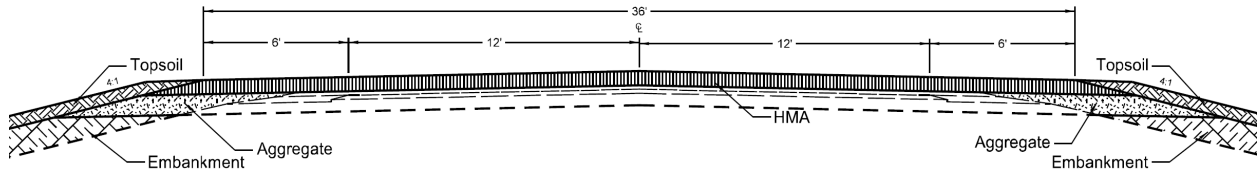
L. PROPOSED IMPROVEMENTS

Four Advancement options are proposed:

Option 1:

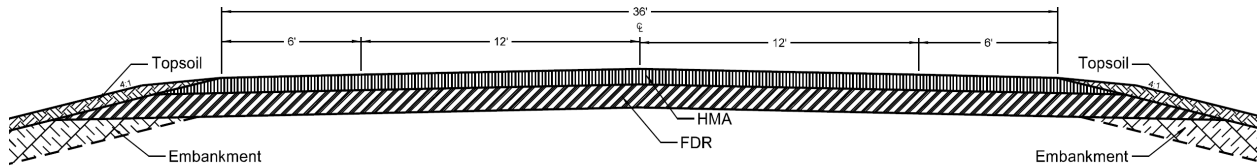
A Major Rehabilitation mill and HMA overlay with widening is proposed to extend the service life and provide operational improvements to the roadway. The proposed work would eliminate the load restrictions.

The preliminary pavement design recommends to Mill 2" and overlay with 6" of HMA from RP 0.000 to RP 7.576 and to Mill 2" and overlay with 7" from RP 7.576 to RP 11.332.



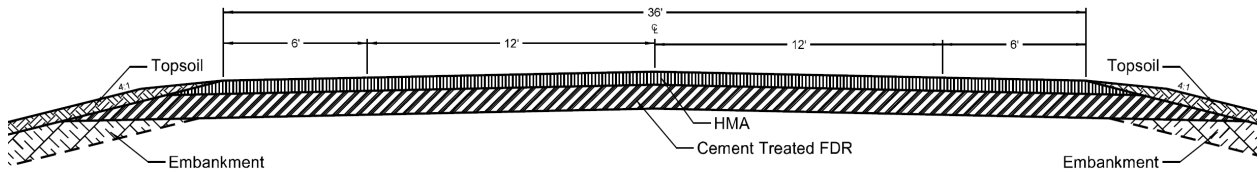
Option 2:

A Major Rehabilitation Full Depth Reclamation and HMA overlay with widening is proposed to extend the service life and provide operational improvements to the roadway. The proposed work would eliminate the load restrictions. The preliminary pavement design recommends to blend 12" and overlay with 8" of HMA from RP 0.000 to RP 7.576 and to blend 13" and overlay with 8" from RP 7.576 to RP 11.332.



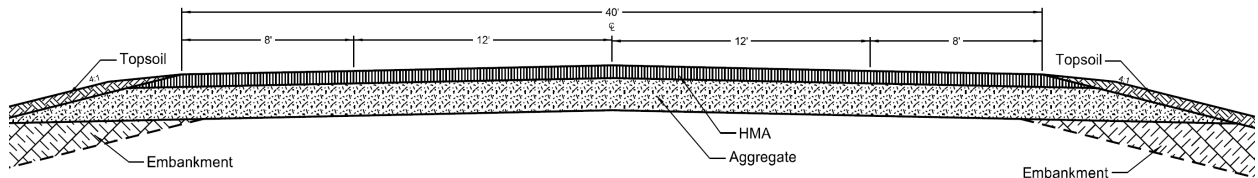
Option 3:

A Major Rehabilitation Treated Full Depth Reclamation and HMA overlay with widening is proposed to extend the service life and provide operational improvements to the roadway. The proposed work would eliminate the load restrictions. The preliminary pavement design recommends to blend 12" and treat 8" and overlay with 6.5" of HMA from RP 0.000 to RP 7.576 and to blend 13" and treat 8" and overlay with 6.5" from RP 7.576 to RP 11.332.



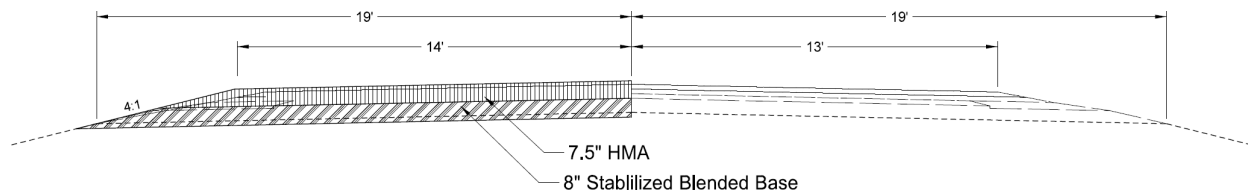
Option 4:

A Reconstruction is proposed. The proposed work would eliminate the load restrictions. The preliminary pavement design recommends 18" of base with 7" of HMA.



Option 5:

Major Rehabilitation FDR with HMA overlay without widening. The proposed work would eliminate the load restrictions. This option will require a design exception for width requirements. The purpose of this option is to keep the work within the existing right of way. Design exceptions would be needed for any work that that might require right of way. The preliminary pavement design recommends 8" treated FDR extending into subgrade with 7.5" of HMA.



Drawing only displays work on half of the roadway to show a comparison of proposed work and existing section.

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

Additional decision items are included.

Item A: 2-way traffic

A decision item is included to address 2-way construction traffic. If 2-way traffic is required to be maintained it will increase the amount of right of way and cost. Slope stability will also be a concern.

Item B: Passing lanes

A decision item is included to address passing lanes. Passing lanes are present on many of the oil corridors in the region. Both East and West passing lanes could be installed between reference points 4 through 7. Exact locations should be determined in the design phase.

Item C: Horizontal Curves

A decision item is included to address the deficient horizontal curves for both the major rehabilitation options and the reconstruction option.

For the major rehabilitation advancement options, one horizontal curve is deficient according to the design guidelines. The decision items are to either reconstruct the deficient horizontal curve or sign accordingly.

For the reconstruction advancement option, four horizontal curves are deficient. The decision items are to either reconstruct the horizontal curves or request design exceptions.

Item D: Vertical Curves

For both the reconstruction and the major rehabilitation advancement options, one vertical curve is deficient. The decision items are to either reconstruct the vertical curve or request a design exception.

Item E: Replace or Line Structural Pipes

Four structural plate pipes are recommended for replacement. Decision items are included to address either replacing or investigating the lining and boring of additional pipes. Possible cost saving with lining and boring. Only the estimated replacement cost is shown in the cost estimate tables.

M. ADDITIONAL COMMENTS

N. COST ESTIMATE

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

Option 1: Major Rehabilitation mill and HMA overlay with widening.

ITEM	ESTIMATED COST
Contract Bond	\$89,000
Mobilization	\$475,000
Hot Bituminous Pavement and Milling	\$6,600,000
Aggregate	\$585,000
Topsoil	\$250,000
Embankment and Water	\$1,500,000
Erosion and Sediment Control	\$300,000
Pavement Markings, Rumble Strips, and Permanent Signing	\$90,000
Field Lab and Office	\$40,000
Traffic Control	\$250,000
Guardrail	\$110,000
Centerline Pipes	\$290,000
Structures	
73-002.675 - Extensions	\$50,000
73-002.678 - Extensions	\$50,000
73-006.256 - Replace	\$225,000
73-007.231 - Replace	\$250,000
73-008.711 - Replace	\$350,000
73-008.717 - Replace	\$350,000
Subtotal	\$11,854,000
20% Engineering	\$2,371,000
Construction and CE Total Cost	\$14,225,000
Decision Items: (Cost Includes 20% Engineering)	
Maintain 2-Way Traffic	\$2,000,000
Passing Lane Installations (includes both directions)	\$2,600,000
Vertical Curve Reconstruction - RP 7.82	\$400,000
Horizontal Curve Reconstruction - RP 8.964	\$1,500,000
Total Cost Including Decision Items	\$20,725,000

Option 2: Major Rehabilitation Full Depth Reclamation and HMA overlay with widening.

ITEM	ESTIMATED COST
Contract Bond	\$93,000
Mobilization	\$492,000
Hot Bituminous Pavement	\$7,460,000
Full Depth Reclamation	\$650,000
Aggregate	\$840,000
Topsoil	\$250,000
Embankment and Water	\$1,700,000
Erosion and Sediment Control	\$300,000
Pavement Markings, Rumble Strips, and Permanent Signing	\$90,000
Field Lab and Office	\$40,000
Traffic Control	\$250,000
Guardrail	\$110,000
Centerline Pipes	\$290,000
Structures	

ITEM	ESTIMATED COST
73-002.675 - Extensions	\$50,000
73-002.678 - Extensions	\$50,000
73-006.256 - Replace	\$225,000
73-007.231 - Replace	\$250,000
73-008.711 - Replace	\$350,000
73-008.717 - Replace	\$350,000
Subtotal	\$13,840,000
20% Engineering	\$2,462,000
Construction and CE Total Cost	\$16,302,000
Decision Items: (Cost Includes 20% Engineering)	
Maintain 2-Way Traffic	\$2,000,000
Passing Lane Installations (includes both directions)	\$2,600,000
Vertical Curve Reconstruction - RP 7.82	\$400,000
Horizontal Curve Reconstruction - RP 8.964	\$1,500,000
Total Cost Including Decision Items	\$22,802,000

Option 3: Major Rehabilitation Treated Full Depth Reclamation and HMA overlay with widening.

ITEM	ESTIMATED COST
Contract Bond	\$91,000
Mobilization	\$484,000
Hot Bituminous Pavement	\$6,012,000
Full Depth Reclamation - Cement Treated	\$800,000
Aggregate	\$608,000
Topsoil	\$250,000
Embankment and Water	\$1,500,000
Erosion and Sediment Control	\$300,000
Pavement Markings, Rumble Strips, and Permanent Signing	\$90,000
Field Lab and Office	\$40,000
Traffic Control	\$250,000
Guardrail	\$110,000
Centerline Pipes	\$290,000
Structures	
73-002.675 - Extensions	\$50,000
73-002.678 - Extensions	\$50,000
73-006.256 - Replace	\$225,000
73-007.231 - Replace	\$250,000
73-008.711 - Replace	\$350,000
73-008.717 - Replace	\$350,000
Subtotal	\$12,100,000
20% Engineering	\$2,420,000
Construction and CE Total Cost	\$14,520,000
Decision Items: (Cost Includes 20% Engineering)	
Maintain 2-Way Traffic	\$2,000,000
Passing Lane Installations (includes both directions)	\$2,600,000
Vertical Curve Reconstruction - RP 7.82	\$400,000
Horizontal Curve Reconstruction - RP 8.964	\$1,500,000
Total Cost Including Decision Items	\$21,020,000

Option 4: Reconstruction

ITEM	ESTIMATED COST
Contract Bond	\$133,000
Mobilization	\$708,000
Hot Bituminous Pavement	\$7,200,000
Aggregate	\$4,710,000
Topsoil	\$250,000
Embankment and Water	\$2,300,000
Erosion and Sediment Control	\$300,000
Pavement Markings, Rumble Strips, and Permanent Signing	\$90,000
Field Lab and Office	\$40,000
Traffic Control	\$250,000
Guardrail	\$110,000
Centerline Pipes	\$362,000
Structures	
73-002.675 - Extensions	\$50,000
73-002.678 - Extensions	\$50,000
73-006.256 - Replace	\$225,000
73-007.231 - Replace	\$250,000
73-008.711 - Replace	\$350,000
73-008.717 - Replace	\$350,000
Subtotal	\$17,728,000
20% Engineering	\$3,546,000
Construction and CE Total Cost	\$21,274,000
Decision Items: (Cost Includes 20% Engineering)	
Maintain 2-Way Traffic	\$2,000,000
Passing Lane Installations (includes both directions)	\$2,600,000
Vertical Curve Reconstruction - RP 7.82	\$400,000
Horizontal Curve Reconstruction - RP 8.610	\$1,500,000
Horizontal Curve Reconstruction - RP 8.964	\$1,000,000
Horizontal Curve Reconstruction - RP 9.747	\$600,000
Horizontal Curve Reconstruction - RP 10.355	\$600,000
Total Cost Including Decision Items	\$29,974,000

Option 5: Major Rehabilitation Treated Full Depth Reclamation and HMA overlay without widening.

ITEM	ESTIMATED COST
Contract Bond	\$70,000
Mobilization	\$374,000
Hot Bituminous Pavement	\$5,625,000
Full Depth Reclamation	\$455,000
Pavement Removal	\$635,000
Aggregate	\$120,000
Topsoil and Reshaping Roadway	\$200,000
Erosion and Sediment Control	\$200,000
Pavement Markings, Rumble Strips, and Permanent Signing	\$90,000
Field Lab and Office	\$40,000
Traffic Control	\$250,000
Guardrail	\$110,000
Structures	
73-006.256 - Replace	\$225,000
73-007.231 - Replace	\$250,000

ITEM	ESTIMATED COST
73-008.711 - Replace	\$350,000
73-008.717 - Replace	\$350,000
Subtotal	\$9,344,000
20% Engineering	\$1,869,000
Construction and CE Total Cost	\$11,213,000
Decision Items: (Cost Includes 20% Engineering)	
Maintain 2-Way Traffic	\$2,000,000
Passing Lane Installations (includes both directions)	\$2,600,000
Vertical Curve Reconstruction - RP 7.82	\$400,000
Horizontal Curve Reconstruction - RP 8.964	\$1,500,000
Total Cost Including Decision Items	\$17,713,000

O. DECISIONS

1. Which advancement option(s) should be chosen for the project?

- Option 1: Major Rehabilitation, Mill and HMA Overlay with Widening.
Estimated Cost: \$14,225,000
- Option 2: Major Rehabilitation, FDR and HMA Overlay with Widening
Estimated Cost: \$16,302,000
- Option 3: Major Rehabilitation, Treated FDR and HMA Overlay with Widening
Estimated Cost: \$14,520,000
- Option 4: Reconstruction
Estimated Cost: \$21,274,000
- Option 5: Major Rehabilitation, Treated FDR and HMA Overlay without Widening
Estimated Cost: \$11,213,000
- Option 6: Do nothing.
- Option 7: Advance all options to the Environmental Document Phase.

2. Which decision items should be chosen for the project?

Item A: Should it be required to maintain 2-Way traffic?

- Yes. **Estimated Cost: \$2,000,000**
- No.
- Advance to Environmental Document.

Item B: Should passing lanes be installed?

- Yes. **Estimated Cost: \$2,600,000**
- No.
- Advance to Environmental Document.

Item C: Horizontal Curves:

For the Major Rehabilitation Options, should the horizontal curve at RP 8.964 be reconstructed to meet 65 MPH?

- Yes. **Estimated Cost: \$1,500,000**
- No. (Design Guidelines: make cost effective improvement or sign accordingly)
- Advance to Environmental Document.

For the Reconstruction option, should the horizontal curves at RP 8.610, RP 8.964, RP 9.747, and RP 10.355 be reconstructed to meet 65 MPH?

- Yes. **Estimated Cost: \$3,700,000**
- No. (Requires design exceptions)
- Advance to Environmental Document.

Item D: Should the vertical curve at RP 7.82 be reconstructed to meet 65 MPH?

- Yes. **Estimated Cost: \$400,000**
- No. (Requires a design exception)
- Advance to Environmental Document.

* Item E: Should lining and boring options be investigated for structures 73-006.256, 73-007.231, 73-008.711, and 73-008.717?

- Yes.
- No.

DDE Comments: We should apply Reconstruction standards to this corridor. We should split the project and move forward with the west end first. We would like a project in 2020 if possible

* Look @ all options for these locations


Deputy Director for Engineering

11/1/18
Date