

Project No.

PCN

State Line to Jct ND 21



SCOPING REPORT

Prepared by

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION
BISMARCK, NORTH DAKOTA

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

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23 USC § 409
NDDOT Reserves All Objections

SCOPING REPORT

A. GENERAL INFORMATION

Project Number:

District: Dickinson

Highway: 49

Location: State Line to Jct ND 21

Reference Point: RP 0.000 to RP 29.762 – 29.762 Miles

Counties: Sioux and Grant

Legal Description: T135N R90W Sec 34, 35

T133N R90W Sec 2, 3, 10, 11, 14, 15, 22, 23, 26, 27, 34, 35

T132N R90W Sec 4, 5, 8, 9, 16, 17, 20, 21, 28, 29, 32, 33

T131N R90W Sec 4, 5, 8, 9, 16, 17, 20, 21, 28, 29, 32, 33

T130N R90W Sec 4, 5, 8, 9, 16, 17, 20, 21, 28, 29, 32, 33

T129N R90W Sec 4, 5, 8, 9, 16, 17, 20, 21, 28, 29, 32, 33

Functional and Funding Roadway Classification: District Collector

National Highway System: No

Speed Limit: 65 mph

Freight Level: 3

Freight Constraints: Load Restriction

Project Schedule: Proposed to be developed if additional funding becomes available.

dTIMS Recommendations:

RP 0.000 to RP 15.000 – Constrained: PM Asphalt 2020

Unconstrained: PM Asphalt 2020

RP 15.000 to RP 29.762 – Constrained: PM Asphalt 2023

Unconstrained: PM Asphalt 2023

B. PURPOSE, NEED, AND IMPROVEMENT

Purpose and Need of Project:

This roadway was initially constructed in 1976 with 6” of base and 2” of HMA. A thin lift overlay was placed in 2007-2009 and has a consistent thermal cracking pattern that is affecting the ride. There is currently a 6 – Ton load restriction on this corridor. A freight level 3 requires a minimum 7 – Ton load restriction. The closest unrestricted roadway into South Dakota to the east is ND 1806 to ND 24 to ND 6, which is ~44 miles east, with the more typical truck route being US 83S, which is ~72 miles east of ND 49. The closest entrance into South Dakota to the west is ND 22 to ND 12, which is ~48 miles west, with the more typical truck route being US 85, which is ~68 miles west of ND 49.

It is assumed that this roadway will see more traffic if the load restriction is removed due to the lack of unrestricted roadways into South Dakota. The adjacent South Dakota segment meets up with US 12 0.66 miles from the state border, which is part of the Non-Interstate National Highway System and Preferential Truck Network in South Dakota.

There are subgrade issues throughout the corridor. The main area where issues are seen is the south 7 miles (RP 0 to RP 7.4) including the bridge ends along the structure at RP 7.354. There have been numerous breakups with patching this past year.

Proposed Improvements:

There are two scenarios that apply in removing load restrictions, the first would involve just meeting the freight level requirement of a 7 – Ton limit. The second scenario would go further, taking the roadway to a legal weight requirement. In discussions with the district who is responsible for setting load restrictions, it was determined that a structural improvement is needed for either scenario.

Option 1: Structural Overlay

A 4" structural overlay will extend the useful life of the roadway by restoring the pavement structure. This would remove the freight constraint and increase the load carrying capacity to 7 – Ton to meet freight expectation. This option is reliant on the existing roadway and will reflective crack early in its design life which may degrade ride and warrant a load restriction in the future.

Option 2: Full-Depth Reclamation:

An FDR will bring the highway up to an acceptable condition to extend the service life and provide operational improvements. This includes reclaiming the top 8" of the existing roadway, then placing 6" of dense graded base and overlaying with 4" of HMA. This will reestablish the crack pattern and provide a roadway platform for future rehabilitations past the 15-20-year mark. This would remove the freight constraint and increase the load carrying capacity to legal weight. The roadway will not be widened, but it is anticipated that the topsoil would need to be peeled back on each side of the roadway for construction.

Option 3: Cement Stabilized Full-Depth Reclamation:

A cement stabilized FDR will bring the highway up to an acceptable condition to extend the service life and provide operational improvements. This includes reclaiming the top 8" of the existing roadway with cement and overlaying with 4" of HMA. This will reestablish the crack pattern and provide a roadway platform for future rehabilitations past the 15-20-year mark. This would remove the freight constraint and increase the load carrying capacity to legal weight. Three options for roadway width are being proposed: 24', 26' and 28'. The roadway will not be widened, but it is anticipated that the topsoil would need to be peeled back on each side of the roadway for construction.

Common to All Options:

Subcuts are proposed throughout project limits. An estimated 3,000 LF will be subcut. Investigation of soils will take place in project development phase.

Northbound left and right turn lanes at Jct ND 21 along with eastbound right and westbound left turn lanes on ND 21 at Jct ND 49 should be evaluated in project development phase and included in environmental document if warranted.

C. TRAFFIC AND CRASH ANALYSIS

RP 0.000 to RP 29.762	Year	Pass	Trucks	Total AADT	30 th Max Hr	Flex ESALS	Rigid ESALS
Current Traffic	2020	210	65	275	30	45	70
Forecast Traffic	2040	275	95	370	45	65	100

Crash Analysis:

General Summary							
Year	Start Date	End Date	Intersection (or Alley/ Driveway)	Non-Intersection		Total	
				Single Veh	Mult. Veh		
1	12/1/2015	11/30/2016		2		2	
2	12/1/2016	11/30/2017					
3	12/1/2017	11/30/2018					
4	12/1/2018	11/30/2019		1		1	
5	12/1/2019	11/30/2020			1	1	
				0	3	1	4
				0%	75%	25%	

Notes/Trends:

- All crashes were PDO (property damage only)
- The 2017-2019 Rural Highway Segment Crash Map shows this segment is in the low range for weighted crashes per mile.

Recommendations: 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"

RP 0.000 to RP 15.000

Actual Age	IRI	IRI Rating	SI or SCI	Faulting
45	108	Fair	6	N/A
Effective Age	Distress	Distress Score	Rutting	Rutting Score
16	89	Good	0.19	Excellent

CONSTRUCTION HISTORY				
Year	Construction	Depth (in)	Width (ft)	Oil
1970	GRADE	-	38.0	-
1975	AGGREGATE BASE	6.0	34.0	-
1975	HOT BIT PAVEMENT	2.0	24.0	200 – 300
1987	CONTRACT CHIP SEAL	-	24.0	HFMS – 2
1991	INT CONT PATCH – 1.5"	-	24.0	120 – 150
1997	INT CONT PATCH – 1.5"	-	24.0	120 – 150
1998	CONTRACT CHIP SEAL	-	24.0	MC – 3000
1998	DISTRICT CHIP SEAL	-	24.0	MC – 3000
2007	HOT BIT PAVEMENT	1.5	24.0	PG 58 – 28
2009	FEDERAL AID CHIP SEAL	-	24.0	CRS – 2
2017	MICROMIL	-0.3	0.2, 24.0, 0.2	-
2017	MICROSURFACING	-	24.0	-

RP 15.000 to RP 17.000

Actual Age	IRI	IRI Rating	SI or SCI	Faulting
45	67	Good	3	N/A
Effective Age	Distress	Distress Score	Rutting	Rutting Score
16	93	Good	0.13	Excellent

CONSTRUCTION HISTORY				
Year	Construction	Depth (in)	Width (ft)	Oil
1970	GRADE	6.0	38.0	-
1975	AGGREGATE BASE	2.0	34.0	-
1975	HOT BIT PAVEMENT	-	24.0	200 – 300
1987	CONTRACT CHIP SEAL	-	24.0	HFMS – 2
1991	INT CONT PATCH – 1.5”	-	24.0	120 – 150
1997	INT CONT PATCH – 1.5”	-	24.0	120 – 150
1998	CONTRACT CHIP SEAL	-	24.0	MC – 3000
1998	DISTRICT CHIP SEAL	-	24.0	MC – 3000
2007	HOT BIT PAVEMENT	1.5	24.0	PG 58 – 28
2009	FEDERAL AID CHIP SEAL	-	24.0	CRS – 2
2017	MICROMILL	-0.3	0.2, 24.0, 0.2	-
2017	MICROSURFACING	-	24.0	-
2017	MICROSURFACING	-	24.0	-

RP 17.000 to RP 19.000

Actual Age	IRI	IRI Rating	SI or SCI	Faulting
45	80	Good	3	N/A
Effective Age	Distress	Distress Score	Rutting	Rutting Score
16	92	Good	0.20	Excellent

CONSTRUCTION HISTORY				
Year	Construction	Depth (in)	Width (ft)	Oil
1970	GRADE	6.0	38.0	-
1975	AGGREGATE BASE	2.0	34.0	-
1975	HOT BIT PAVEMENT	-	24.0	200 – 300
1987	CONTRACT CHIP SEAL	-	24.0	HFMS – 2
1991	INT CONT PATCH – 1.5”	-	24.0	120 – 150
1997	INT CONT PATCH – 1.5”	-	24.0	120 – 150
1998	CONTRACT CHIP SEAL	-	24.0	MC – 3000
1998	DISTRICT CHIP SEAL	-	24.0	MC – 3000
2007	HOT BIT PAVEMENT	1.5	24.0	PG 58 – 28
2009	FEDERAL AID CHIP SEAL	-	24.0	CRS – 2
2017	MICROSURFACING	-	24.0	-

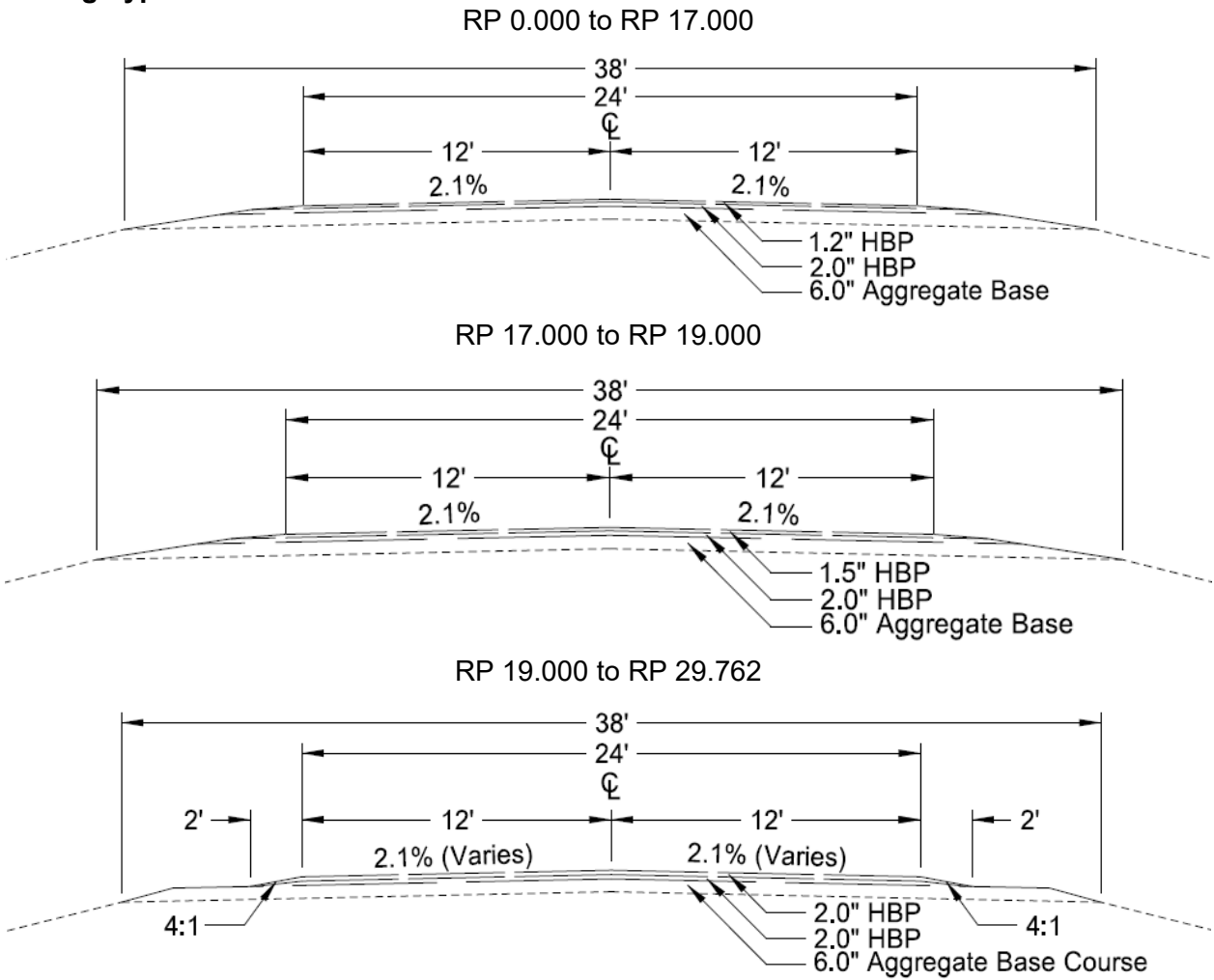
RP 19.000 to RP 29.762

Actual Age	IRI	IRI Rating	SI or SCI	Faulting
45	76	Good	5	N/A
Effective Age	Distress	Distress Score	Rutting	Rutting Score
16	91	Good	0.15	Excellent

CONSTRUCTION HISTORY				
Year	Construction	Depth (in)	Width (ft)	Oil
1970	GRADE	6.0	38.0	-
1975	AGGREGATE BASE	2.0	34.0	-
1975	HOT BIT PAVEMENT	-	24.0	200 – 300
1987	CONTRACT CHIP SEAL	-	24.0	HFMS – 2
1991	INT CONT PATCH – 1.5"	-	24.0	120 – 150
1997	INT CONT PATCH – 1.5"	-	24.0	120 – 150
1998	CONTRACT CHIP SEAL	-	24.0	MC – 3000
1998	DISTRICT CHIP SEAL	2.0	24.0	MC – 3000
2009	HOT BIT PAVEMENT	-	24.0	PG 58 – 28
2011	FEDERAL AID CHIP SEAL	-	24.0	CRS2P
2017	MICROSURFACING	-	24.0	-

Existing Foreslopes: 6:1

Existing Typical Sections:



E. EXISTING GEOMETRY**Horizontal Curves:** Use existing, sign when less than posted speed.**Vertical Curves:** Use existing.**F. EXISTING STRUCTURES****Bridges:**

Bridge No.	Name	Vertical Clearance	Length	Width	Rating			
			(ft)	(ft)	Deck	Super-Structure	Sub-Structure	Culvert
0049-007.354	Steel continuous – Girder - FB	-	230	32	6	7	8	N/A
Recommendations: Rail retrofit and spall repair. \$60,000								
0049-010.970	Prestressed Conc Cont–Spread Box Bm	-	140	32	7	8	8	N/A
Recommendations: Rail retrofit; possible deck overlay to be determined after asphalt is removed by the contractor. \$170,000								
0049-011.615	Double, 10X10X97 RCB	-	21	N/A	N/A	N/A	N/A	7
Recommendations: Do nothing.								
0049-018.362	Double, 8X7X90 RCB	-	17	N/A	N/A	N/A	N/A	7
Recommendations: Spall repair. \$500								
0049-021.533	Triple, 10X5X84 RCB	-	31	N/A	N/A	N/A	N/A	7
Recommendations: Spall repair. \$500								
0049-023.976	Double, 8X6X84 RCB	-	17	N/A	N/A	N/A	N/A	7
Recommendations: Spall repair. \$500								
0049-024.857	Triple, 8X5X83 RCB	-	25	N/A	N/A	N/A	N/A	7
Recommendations: Spall repair and fill scour hole. \$10,000								
0049-027.574	Steel continuous – Girder – FB	-	325	32	9	6	6	N/A
Recommendations: Repair concrete end post. \$1,000								

Centerline Pipes: All centerline pipes meet required clear zone of 20'. No suggested improvements.**G. LAND INTERESTS****Communities:** New Leipzig (Population = 221)**Reservation:** Standing Rock Reservation (RP 0.0 to RP 7.5)**Surface Trust Land:** RP 9.05 to RP 10.05

RP 15.05 to RP 15.5

RP 21.05 to RP 22.05

Waterfowl Production Area/Wildlife Management Areas:

Pretty Rock National Wildlife Refuge; Audubon Complex (RP 21.05 to RP 22.05)

Adjacent Land Usage: Agricultural, Residential

H. ISSUES AND APPURTENANCES CHECKLIST

- | | | |
|--|----------------|---------------|
| 1. Curb and Gutter? | Yes _____ | No <u> X </u> |
| 2. Sidewalk? | Yes _____ | No <u> X </u> |
| 3. Multi-Use Path? | Yes _____ | No <u> X </u> |
| 4. ADA Ramps? | Yes _____ | No <u> X </u> |
| 5. State Bicycling Network? | Yes _____ | No <u> X </u> |
| 6. Lighting? | Yes _____ | No <u> X </u> |
| 7. Signals? | Yes _____ | No <u> X </u> |
| 8. Storm Sewer? | Yes _____ | No <u> X </u> |
| 9. Manholes? | Yes _____ | No <u> X </u> |
| 10. Other Underground Work? | Yes _____ | No <u> X </u> |
| 11. Parking Facilities? | Yes _____ | No <u> X </u> |
| 12. Frontage Roads? | Yes _____ | No <u> X </u> |
| 13. Utility Issues?
There is buried telephone and water lines throughout the corridor. | Yes <u> X </u> | No _____ |
| 14. Landscaping? | Yes _____ | No <u> X </u> |
| 15. Approach or Ditch Block Flattening? | Yes _____ | No <u> X </u> |
| 16. T Intersection Recovery Approaches? | Yes _____ | No <u> X </u> |
| 17. Fence? | Yes _____ | No <u> X </u> |
| 18. Railroad Crossings?
Railroad tracks that ran parallel to ND 21 that are no longer in use and still in place an estimated 225' South of Jct 21. Snowplows tend to scrape the metal tracks on the inslopes of the ditch. Removal of the tracks should be investigated in the project development phase. | Yes <u> X </u> | No _____ |
| 19. Detours? | Yes _____ | No <u> X </u> |
| 20. Automatic Traffic Recorder Locations? | Yes _____ | No <u> X </u> |
| 21. Weigh-In-Motion Sites? | Yes _____ | No <u> X </u> |
| 22. ITS (Deicing, Snow Gates, VMS, RWIS, etc.)?
Camera Site at Timber Creek Bridge (RP 2.9). | Yes <u> X </u> | No _____ |

23. Highway Patrol/Truck Pullouts or Rest Areas? Yes No
24. Additional Right of Way?
Existing ROW is 100'. Yes No
25. Drainage Issues? Yes No
There are drainage issues at RP 2 when there is a large amount of rain or snow melt. Investigate in project development phase.
26. Snow Impact Areas? Yes No
Snow traps at RP 1.0, 15.6, 17.8, 19.0, and 22.1 to the west and RP 17.15 to the east. Investigate in project development phase.
27. Subgrade Issues? Yes No
There are subgrade issues throughout the corridor. See proposed improvements.
28. Noise Analysis: Type I Project? Yes No Maybe
29. Maintenance Issues? Yes No
The south 7 miles has received patching and there has been numerous breakups throughout it within the past year. Roadway and Subgrade improvements are proposed to mediate this issue.
30. Guardrail? Yes No

Type	RP	L/R	Length	Suggested Improvement
Blocked Out "W" Beam	7.3358	R	58'	Update
Blocked Out "W" Beam	7.3424	L	23'	Update
Blocked Out "W" Beam	7.3904	R	22'	Update
Blocked Out "W" Beam	7.3904	L	56'	Update
Blocked Out "W" Beam	10.9528	R	60'	Update
Blocked Out "W" Beam	10.9598	L	23'	Update
Blocked Out "W" Beam	10.9908	R	25'	Update
Blocked Out "W" Beam	10.9908	L	61'	Update
Blocked Out "W" Beam	27.5173	R	169'	No Suggested Improvements
Blocked Out "W" Beam	27.5313	L	95'	No Suggested Improvements
Blocked Out "W" Beam	27.6113	R	95'	No Suggested Improvements
Blocked Out "W" Beam	27.6113	L	169'	No Suggested Improvements

31. Milling? Yes No
32. Repeated ER Events? Yes No

I. Load Restrictions

Travel Information Map Proposed Load Restriction: 6 – Ton

HPCS Load Restrictions: 7 – Ton

Freight Level Required Minimum Load Restriction: 7 – Ton

Projected Load Restrictions after project is complete: Option 1: 7 – Ton
Options 2 & 3: Legal Weight

J. Roadway Widths

Required Minimum Roadway Width: 22'

Freight Level Required Minimum Width: 24'

Surrounding Corridors: ND 21 = 31'

K. PERFORMANCE GUIDELINES

Design Speed: 65 mph

Clear Zone: 20'

Foreslopes: 4:1

L. PROPOSED IMPROVEMENTS

There are two scenarios that apply in removing load restrictions, the first would involve just meeting the freight level requirement of a 7 – Ton limit. The second scenario would go further, taking the roadway to a legal weight requirement. In discussions with the district who is responsible for setting load restrictions, it was determined that a structural improvement is needed for either scenario.

Option 1: Structural Overlay

A 4" structural overlay will extend the useful life of the roadway by restoring the pavement structure. This would remove the freight constraint and increase the load carrying capacity to 7 – Ton to meet freight expectation. This option is reliant on the existing roadway and will reflective crack early in its design life which may degrade ride and warrant a load restriction in the future.

Option 2: Full-Depth Reclamation:

An FDR will bring the highway up to an acceptable condition to extend the service life and provide operational improvements. This includes reclaiming the top 8" of the existing roadway, then placing 6" of dense graded base and overlaying with 4" of HMA. This will reestablish the crack pattern and provide a roadway platform for future rehabilitations past the 15-20-year mark. This would remove the freight constraint and increase the load carrying capacity to legal weight. The roadway will not be widened, but it is anticipated that the topsoil would need to be peeled back on each side of the roadway for construction.

Option 3: Cement Stabilized Full-Depth Reclamation:

A cement stabilized FDR will bring the highway up to an acceptable condition to extend the service life and provide operational improvements. This includes reclaiming the top 8" of the existing roadway with cement and overlaying with 4" of HMA. This will reestablish the crack pattern and provide a roadway platform for future rehabilitations past the 15-20-year mark. This would remove the freight constraint and increase the load carrying capacity to legal weight. Three options for roadway width are being proposed: 24', 26' and 28'. The roadway will not be widened, but it is anticipated that the topsoil would need to be peeled back on each side of the roadway for construction.

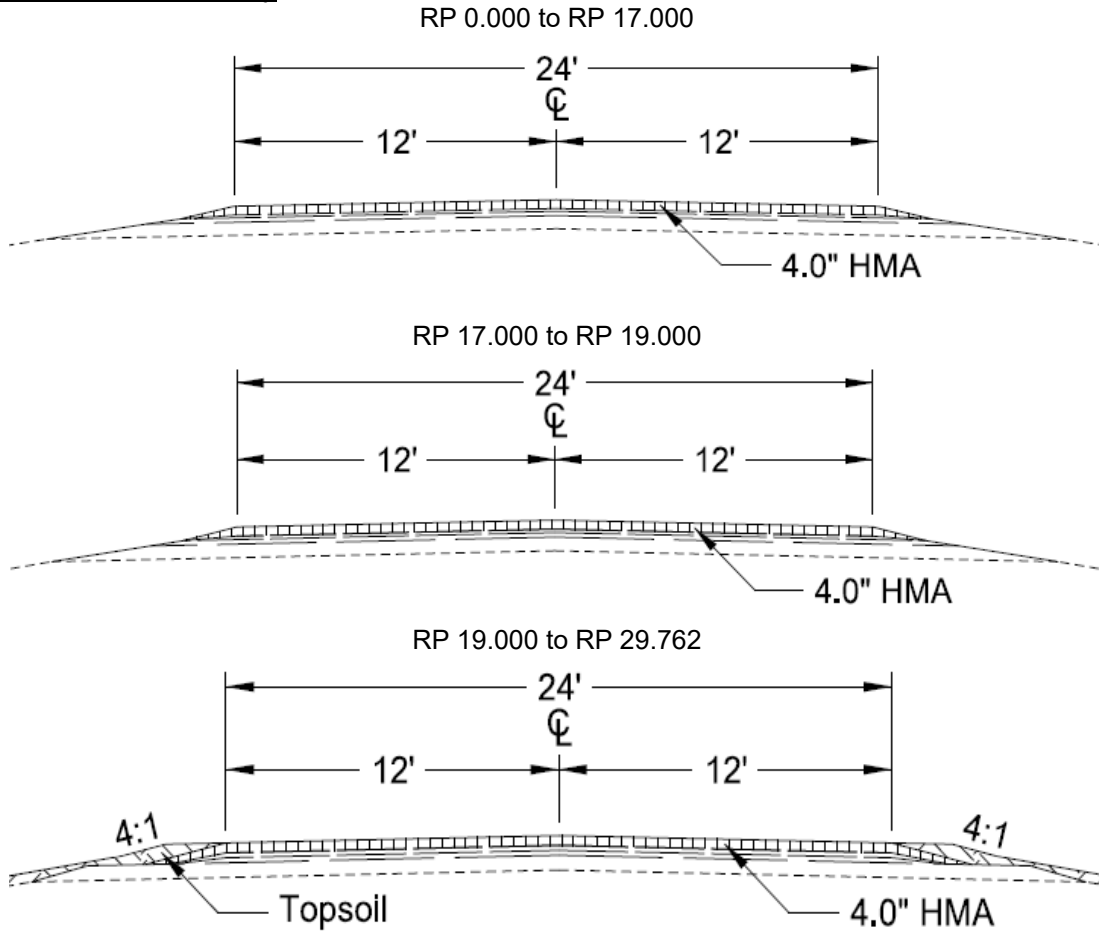
Common to All Options:

Subcuts are proposed throughout project limits. An estimated 3,000 LF will be subcut. Investigation of soils will take place in project development phase.

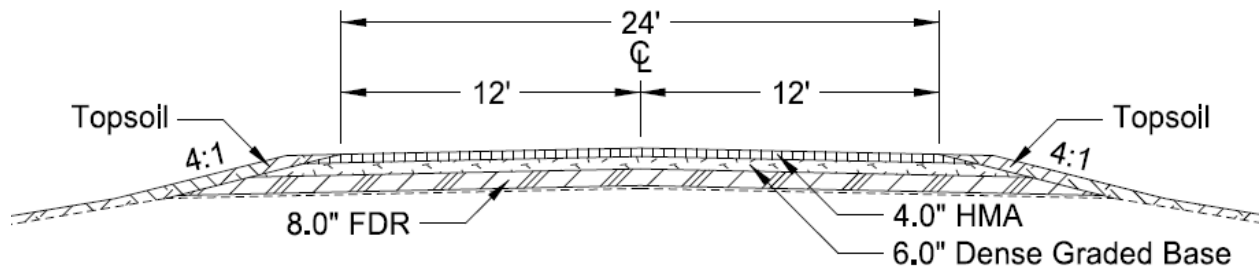
Northbound left and right turn lanes at Jct ND 21 along with eastbound right and westbound left turn lanes on ND 21 at Jct ND 49 should be evaluated in project development phase and included in environmental document if warranted.

Proposed Typical Sections

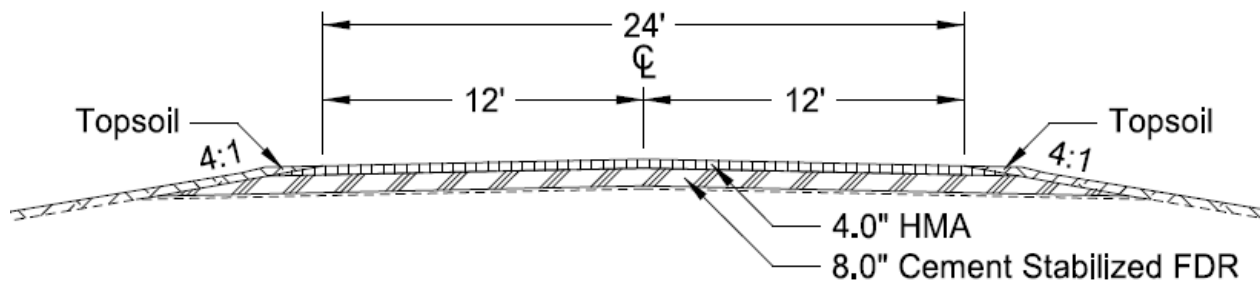
Option 1: Structural Overlay



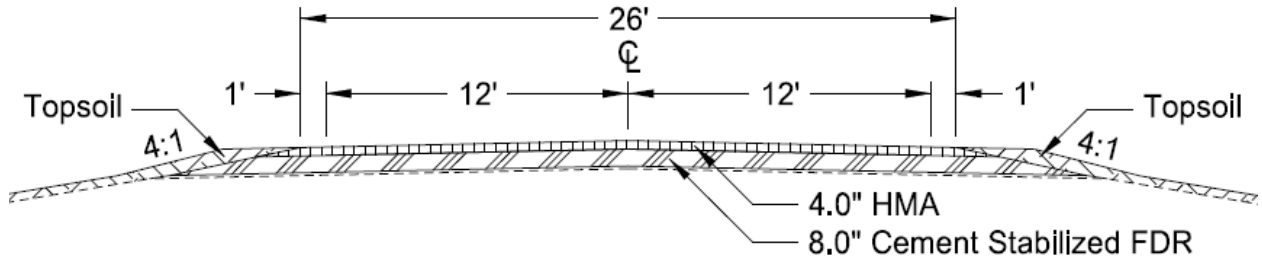
Option 2: Full-Depth Reclamation



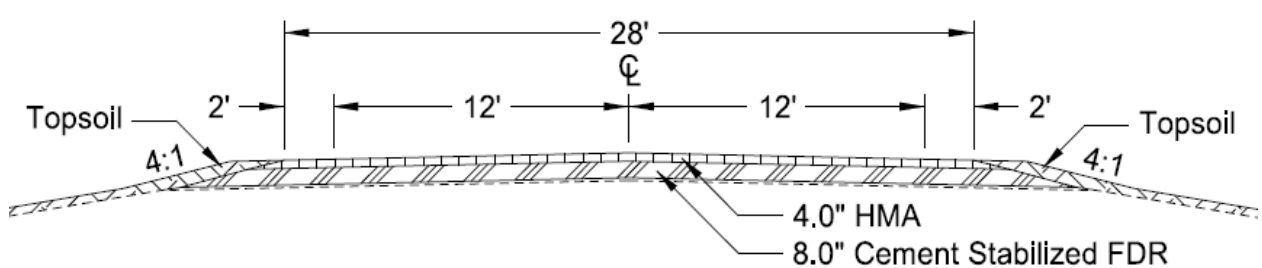
Option 3: Cement Stabilized Full-Depth Reclamation (24')



Option 3: Cement Stabilized Full-Depth Reclamation (26')



Option 3: Cement Stabilized Full-Depth Reclamation (28')



M. ADDITIONAL COMMENTS

District Engineer:

N. COST ESTIMATE

Option 1: Structural Overlay (24')

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

Item	Estimated Cost
Contract Bond & Mobilization	\$ 671,000.00
Dirt Work	\$ 67,000.00
HMA	\$ 9,022,000.00
Striping/Signing	\$ 713,000.00
Erosion Control	\$ 215,000.00
Work Zone Traffic Control	\$ 441,000.00
Subgrade Improvements	\$ 476,000.00
Structural Improvements	\$ 243,000.00
Subtotal=	\$ 11,848,000.00
Inflation=	\$ 967,000.00
Engineering=	\$ 2,563,000.00
Estimated Total Cost =	\$ 15,378,000.00
Estimated Total Cost / Mile =	\$ 517,000.00

Option 2: Full-Depth Reclamation (24')**(Inflation factor of 4% was used to estimate costs for bid year)**

Item	Estimated Cost
Contract Bond & Mobilization	\$ 1,045,000.00
Dirt Work	\$ 673,000.00
Aggregate / FDR	\$ 5,849,000.00
HMA	\$ 8,134,000.00
Striping/Signing	\$ 700,000.00
Erosion Control	\$ 595,000.00
Work Zone Traffic Control	\$ 744,000.00
Subgrade Improvements	\$ 476,000.00
Structural Improvements	\$ 243,000.00
Subtotal=	\$ 18,459,000.00
Inflation=	\$ 1,506,000.00
Engineering=	\$ 3,993,000.00
Estimated Total Cost =	\$ 23,958,000.00
Estimated Total Cost / Mile =	\$ 805,000.00

Option 3: Cement Stabilized Full-Depth Reclamation**(Inflation factor of 4% was used to estimate costs for bid year)**

Item	24' Roadway Estimated Cost	26' Roadway Estimated Cost	28' Roadway Estimated Cost
Contract Bond & Mobilization	\$ 874,000.00	\$ 922,000.00	\$ 966,000.00
Dirt Work	\$ 535,000.00	\$ 602,000.00	\$ 565,000.00
Aggregate / FDR	\$ 3,049,000.00	\$ 3,222,000.00	\$ 3,437,000.00
HMA	\$ 8,224,000.00	\$ 8,763,000.00	\$ 9,293,000.00
Striping/Signing	\$ 712,000.00	\$ 712,000.00	\$ 712,000.00
Erosion Control	\$ 588,000.00	\$ 588,000.00	\$ 588,000.00
Work Zone Traffic Control	\$ 735,000.00	\$ 735,000.00	\$ 735,000.00
Subgrade Improvements	\$ 476,000.00	\$ 503,000.00	\$ 531,000.00
Structural Improvements	\$ 243,000.00	\$ 243,000.00	\$ 243,000.00
Subtotal=	\$ 15,436,000.00	\$ 16,290,000.00	\$ 17,070,000.00
Inflation=	\$ 1,260,000.00	\$ 1,329,000.00	\$ 1,393,000.00
Engineering=	\$ 3,339,000.00	\$ 3,524,000.00	\$ 3,693,000.00
Estimated Total Cost =	\$ 20,035,000.00	\$ 21,143,000.00	\$ 22,156,000.00
Estimated Total Cost / Mile =	\$ 673,000.00	\$ 710,000.00	\$ 745,000.00

Cost Summary & Per Mile Comparison

Option	Per Mile Cost	Total Cost
Option 1: Structural Overlay (24')	\$ 517,000	\$ 15,378,000
Option 2: Full-Depth Reclamation (24')	\$ 805,000	\$ 23,958,000
Option 3: Cement Stabilized Full-Depth Reclamation (24')	\$ 673,000	\$ 20,035,000
Option 3: Cement Stabilized Full-Depth Reclamation (26')	\$ 710,000	\$ 21,143,000
Option 3: Cement Stabilized Full-Depth Reclamation (28')	\$ 745,000	\$ 22,156,000

Future Outlook

Pavement management philosophies change as new treatments/technology becomes available but as a preliminary forecast of future projects the Dickinson district anticipates the following work over the next 20 years:

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

Year	Option 1: Structural Overlay		Option 2: Full-Depth Reclamation		Option 3: Cement Stabilized Full-Depth Reclamation	
	Treatment	Estimated Cost	Treatment	Estimated Cost	Treatment	Estimated Cost
0	Structural Overlay	\$15,378,000	FDR	\$23,958,000	Cement Stabilized FDR	\$20,035,000 – \$22,156,000
2	Chip Seal	\$ 1,416,000	Chip Seal	\$ 1,416,000	Chip Seal	\$ 1,416,000
9	Chip Seal	\$ 1,864,000	Chip Seal	\$ 1,864,000	Chip Seal	\$ 1,864,000
13	Structural Overlay with Subcuts	\$27,256,000				
15	Chip Seal	\$ 2,358,000	*PM Overlay	\$ 9,648,000	PM Overlay	\$ 9,648,000
17			Chip Seal	\$ 2,551,000	Chip Seal	\$ 2,551,000
20-Year Total Cost		\$48,272,000		\$39,437,000		\$35,514,000 - \$37,635,000
20-Year Total Cost / Mile		\$ 1,622,000		\$ 1,325,000		\$ 1,193,000 - \$ 1,265,000

*Imposes width restriction.

The following table compares the variations in future overlay details based on current requirements of the NDDOT's Freight Plan and Design Guidelines.

Future Overlay Info			
	24' Roadway	26' Roadway	28' Roadway
Number of subsequent overlays before minimum width of 24' is reached*	0	1	2
Thickness of pavement when minimum width of 24' is reached	4.0"	~6.75"	~9.5"

*May vary with milling strategies

O. DECISIONS

1. Which option(s) should advance to project development phase?

- Structural Overlay
Estimated Cost: \$15,378,000

- Full-Depth Reclamation
Estimated Cost: \$23,958,000

- Cement Stabilized Full-Depth Reclamation
 - 24' Roadway Width
Estimated Cost: \$20,035,000
 - 26' Roadway Width
Estimated Cost: \$21,143,000
 - 28' Roadway Width
Estimated Cost: \$22,156,000

- None

DDE Comments: _____

DocuSigned by:


Deputy Director for Engineering

5/4/2021

Date

Certificate Of Completion

Envelope Id: FD21474C8EC644B09A98D01A3AE84FB3	Status: Completed
Subject: Please DocuSign: Scoping Report	
Contract Number:	
PCN:	
Source Envelope:	
Document Pages: 15	Signatures: 1
Certificate Pages: 2	Initials: 0
AutoNav: Enabled	Envelope Originator:
Envelopeld Stamping: Enabled	Michael Wilz
Time Zone: (UTC-06:00) Central Time (US & Canada)	608 E Boulevard Ave
	Bismarck, ND 58505
	mwilz@nd.gov
	IP Address: 165.234.252.245

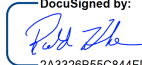
Record Tracking

Status: Original	Holder: Michael Wilz	Location: DocuSign
5/3/2021 3:22:46 PM	mwilz@nd.gov	
Security Appliance Status: Connected	Pool: StateLocal	
Storage Appliance Status: Connected	Pool: Carahsoft OBO North Dakota Department of Transportation CLOUD	Location: DocuSign

Signer Events

Ronald Henke
rhenke@nd.gov
ND Department of Transportation
Security Level: Email, Account Authentication (None), Authentication

Signature

DocuSigned by:

2A3326B55C844FD...

Signature Adoption: Uploaded Signature Image
Using IP Address: 165.234.92.2

Timestamp

Sent: 5/3/2021 3:30:09 PM
Viewed: 5/4/2021 2:14:40 PM
Signed: 5/4/2021 2:14:49 PM

Authentication Details

SMS Auth:
Transaction: 65E4E3363F400904919458ECCA4A4361
Result: passed
Vendor ID: TeleSign
Type: SMSAuth
Performed: 5/4/2021 2:14:35 PM
Phone: +1 701-400-8185

Electronic Record and Signature Disclosure:
Not Offered via DocuSign

In Person Signer Events	Signature	Timestamp
Editor Delivery Events	Status	Timestamp
Agent Delivery Events	Status	Timestamp
Intermediary Delivery Events	Status	Timestamp
Certified Delivery Events	Status	Timestamp
Carbon Copy Events	Status	Timestamp
Witness Events	Signature	Timestamp
Notary Events	Signature	Timestamp
Envelope Summary Events	Status	Timestamps

Envelope Summary Events	Status	Timestamps
Envelope Sent	Hashed/Encrypted	5/3/2021 3:30:09 PM
Certified Delivered	Security Checked	5/4/2021 2:14:40 PM
Signing Complete	Security Checked	5/4/2021 2:14:49 PM
Completed	Security Checked	5/4/2021 2:14:49 PM

Payment Events	Status	Timestamps
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