

Project No.

PCN

Jct. 12 at Scranton N Approx. 15 Miles



Prepared by

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

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

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SCOPING REPORT

Report Completed By: Scott Clausen

A. GENERAL INFORMATION

Project Number:

PCN:

District: Dickinson

Highway: ND-67

Location: Jct. 12 at Scranton N Approx. 15 Miles

Reference Point: RP 0.000 to RP 16.144 – 16.144 miles

Counties: Bowman and Slope

Legal Description: T131N, R100W, Sec 26 to T133N, R99W, Sec 3 and 4

Functional and Funding Roadway Classification: District Collector

National Highway System: No

Speed Limit: 25, 45, 65 MPH

Freight Level: 3

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

dTIMS Recommendations:

Constrained: Do Nothing

Unconstrained:

RP 0.000 to RP 0.400: Structural Overlay 2019

RP 0.400 to RP 16.144: Minor Sliver Grading 2024

B. PURPOSE, NEED, AND IMPROVEMENT

Purpose and Need of Project:

The IRI score is in the poor to good range. The distress score is in the fair to good range. There is alligator, longitudinal, and transverse cracking along with bituminous patching.

This segment currently is listed under the State Highway Freight Constraints as having a load weight limit constraint.

The District would like to remove the existing asphalt and replace it with concrete at the intersection of ND-67 and Brodie Street. There is a grain elevator at the intersection and heavy trucks damage the asphalt at this location. A cost and decision item are included.

Proposed Improvement:

Option 1: A Minor Rehabilitation HMA Mill and 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. The freight constraint would be removed with this option.

Option 2: A Preventive Maintenance HMA Mill and Overlay is proposed to protect the pavement structure, slow the rate of deterioration and/or correct pavement deficiencies. Safety issues will

be identified and addressed as part of the Statewide Safety Program. Safety features will remain as they exist unless a need is identified.

The project will begin 1500' south of the US-12 overpass structure.

C. TRAFFIC AND CRASH ANALYSIS

Traffic:

RP 0.000 to RP 13.450	Year	Pass	Trucks	Total AADT	Flex ESALS
Current Traffic	2016	565	155	720	145
Forecast Traffic	2036	655	180	835	170

RP 13.450 to RP 16.144	Year	Pass	Trucks	Total AADT	Flex ESALS
Current Traffic	2016	255	90	345	85
Forecast Traffic	2036	300	105	405	100

Crash Analysis:

There were a total of 4 crashes from 8/1/2011 to 7/31/2016. Animal crashes were not included. The crash rate per 1 million vehicles is 0.50.

Notes/Trends:

- No trends identified.

No recommendations 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 0.000 to RP 0.400

Actual Age	IRI	IRI Rating	SI or SCI	Faulting
8	160	Poor	5	N/A
Effective Age	Distress	Distress Score	Rutting	Rutting Score
8	83	Fair	.15	Excellent

CONSTRUCTION HISTORY				
Year	Construction	Depth (in)	Width (ft)	Oil
1962	WIDENING	-	34.0	-
1962	AGGREGATE BASE	8.0	30.0	-
1962	STABILIZED BASE	2.0	29.0	-
1962	HOT BIT PAVEMENT	2.0	29.0	-
1962	HOT BIT PAVEMENT	1.5	24.0	150-200
1983	HOT BIT PAVEMENT	1.5	29.0	120-150

CONSTRUCTION HISTORY				
Year	Construction	Depth (in)	Width (ft)	Oil
1993	DISTRICT CHIP SEAL	-	29.0	-
1999	CONTRACT CHIP SEAL	-	29.0	HFMS-2
2008	HOT BIT PAVEMENT	2.0	29.0	PG 58-28
2011	FEDERAL AID CHIP SEAL	-	29.0	CRS2P

Segment 2: RP 0.400 to RP 16.144

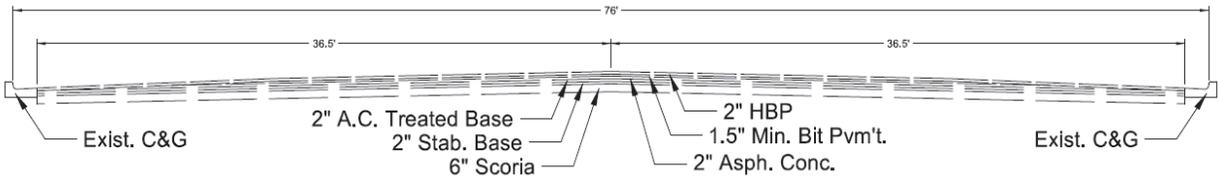
Actual Age	IRI	IRI Rating	SI or SCI	Faulting
33	98	Good	2	N/A
Effective Age	Distress	Distress Score	Rutting	Rutting Score
21	88	Good	.11	Excellent

CONSTRUCTION HISTORY				
Year	Construction	Depth (in)	Width (ft)	Oil
1966	GRADE	-	34.0	-
1966	TRAFFIC SERVICE GRAVE	2.0	33.0	-
1967	AGGREGATE BASE	3.5	32.0	-
1967	BITUMINOUS BASE	3.5	29.0	SM-K
1983	HOT BIT PAVEMENT	1.5	27.0	120-150
1994	DISTRICT CHIP SEAL	-	27.0	MC-3000
1999	CONTRACT CHIP SEAL	-	27.0	HFMS-2
2008	HOT BIT PAVEMENT	2.0	24.0	PG 58-28
2011	FEDERAL AID CHIP SEAL	-	24.0	CRS2P

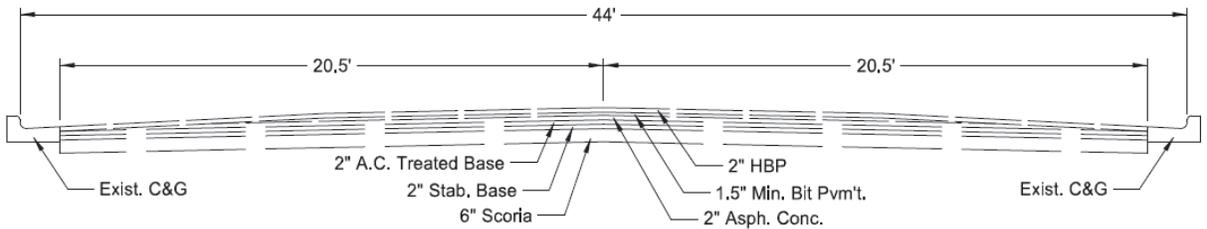
Existing Foreslopes: 4:1

Existing Typical Sections:

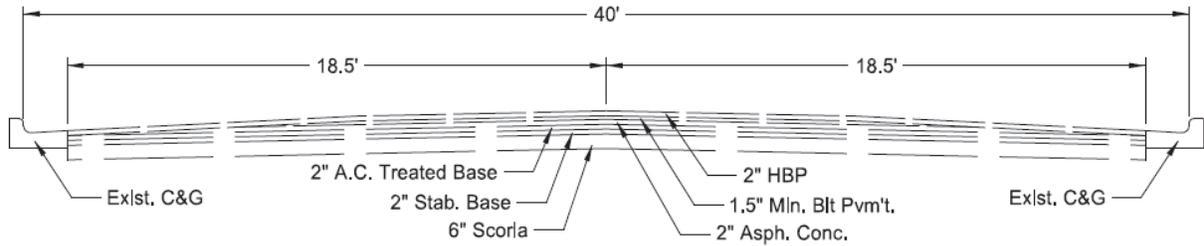
RP 0.179 to RP 0.217 (Width varies from RP 0.000 to RP 0.179)



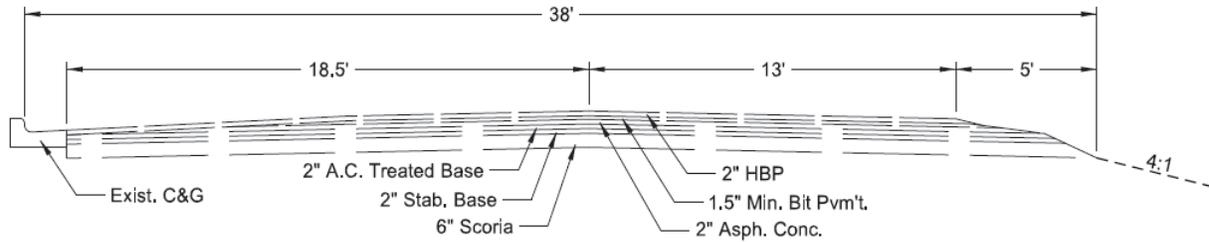
RP 0.217 to RP 0.281



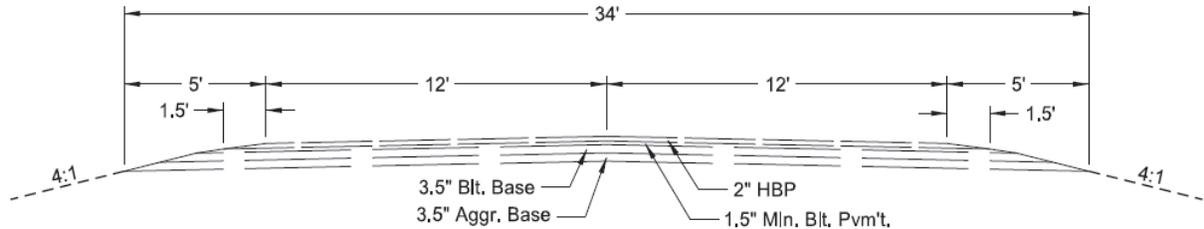
RP 0.281 to RP 0.438



RP 0.438 to RP 0.663



RP 0.663 to RP 16.144



E. EXISTING GEOMETRY

Horizontal Curves: Use existing.

Vertical Curves: Use existing.

F. EXISTING STRUCTURES

Bridges:

Bridge No	Description	Feature	Length (ft)	Width (ft)	Rating
0067-000.101	Double, 10'X6'X113' RCB	Overflow to Buffalo Creek	21	-	96.5
Recommended Improvement: Do Nothing					
0067-000.111	Triple, 10'X6'X115' RCB	Buffalo Creek	31	-	96.5
Recommended Improvement: Do Nothing					
0067-002.082	Single, 10X7X70' SPPA	Creek	10	-	86.0
Recommended Improvement: Do Nothing					
0067-002.083	Single, 10X7X70' SPPA	Creek	10	-	97.2
Recommended Improvement: Do Nothing					
0067-008.515	Quadruple, 10X9X76' RCB	Creek	42	-	97.6
Recommended Improvement: Fill Scour hole					
0067-011.018	Single, 10X7X74' SPP	Creek	10	-	97.8
Recommended Improvement: Do Nothing					
0067-013.446	Single, 10X7X76 SPPA	Creek	10	-	97.8
Recommended Improvement: Do Nothing					
0067-015.649	Single, 11X7X60' SPPA	Creek	11	-	97.9
Recommended Improvement: Do Nothing					

Bridge No	Description	Feature	Length (ft)	Width (ft)	Rating
0067-015.650	Single, 11X7X60' SPPA	Creek	11	-	97.9
Recommended Improvement: Do Nothing					
0067-015.651	Single, 11X7X60' SPPA	Creek	11	-	97.9
Recommended Improvement: Do Nothing					

Bridge Recommendations: In addition to bridge division's recommendation, the District would like to mudjack the approach slabs and chip seal the bridge deck for bridge #0012-046.415 which is an overpass for US-12 on ND-67.

Centerline Pipes: Use Existing. The District has noted that the double SPP at RP 11.615 is beginning to bow in the ceilings of the pipes. A decision item has been added to investigate rehabilitation strategies for the pipes.

G. LAND INTERESTS

Communities: Scranton RP 0.00 to RP 1.28, Pop.: 288

Reservation: None

Surface Trust Land: None

Adjacent Land Usage: Residential, Agricultural, and Commercial

H. ISSUES AND APPURTENANCES CHECKLIST

- Curb and Gutter? Yes No
 There is curb and gutter through Scranton from approximately RP 0.22 to RP 0.66. No suggested improvements.
- Sidewalk? Yes No
 There is sidewalk in Scranton from approximately RP 0.24 to RP 0.62. The District would like to extend the sidewalk in Scranton. There is a triangular asphalt median and a convenience store that currently are dead-ends to existing sidewalk. A cost and decision item are included.
- Multi-Use Path? Yes No
 There is a multi-use path in Scranton from approximately RP 0.63 to RP 0.98. No suggested improvements.
- ADA Ramps? Yes No
 There are ADA ramps for the sidewalk in Scranton. Any new sidewalk will be required to comply with current ADA standards.
- Detectable Warning Panels? Yes No
 There are detectable warning panels for the sidewalk in Scranton. Any new sidewalk will require detectable warning panels. Existing sidewalk with missing or damaged panels will be updated.
- Lighting? Yes No
 There is lighting in Scranton from approximately RP 0.23 to RP 0.63. No suggested improvements. The District would also like to investigate destination lighting for the US-12 ramp and ND-67 intersection near the beginning of the project. This will be considered through the Districtwide Improvement Project for the district.

7. Signals? Yes No
8. Storm Sewer? Yes No
There is storm sewer in Scranton. No suggested improvements.
9. Manholes? Yes No
There are manholes in Scranton. Risers will be required.
10. Other Underground Work? Yes No
11. Parking Facilities? Yes No
12. Frontage Roads? Yes No
13. Utility Issues? Yes No
There are utilities located along the roadway including city water and sewer and buried telephone. No suggested improvements.
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
Structure #0012-046.415 spans railroad tracks.
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 X No _____

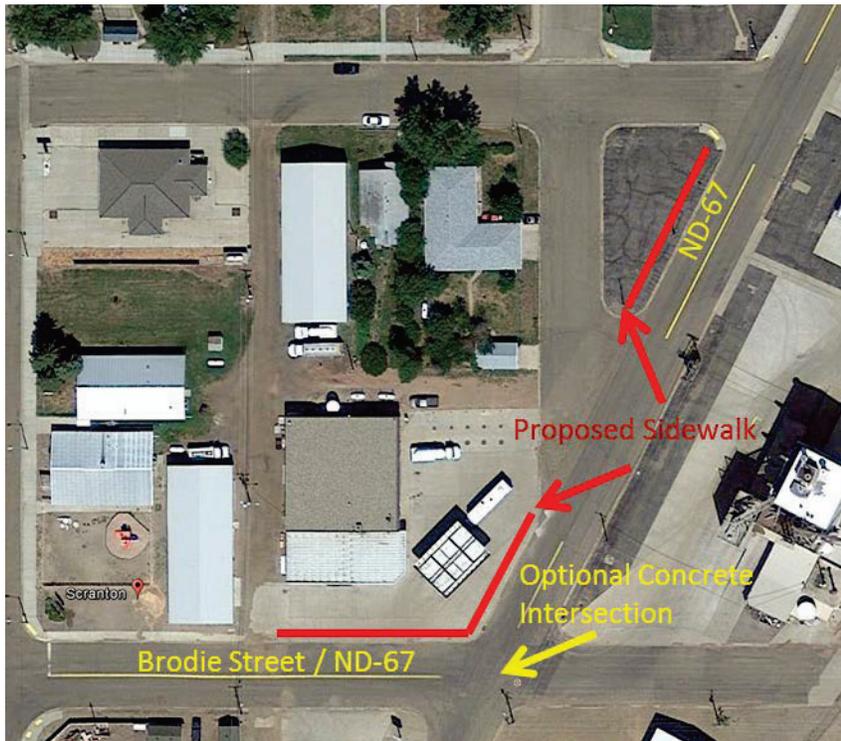
Type	RP	L/R	Length (ft)
Blocked Out "W" Beam	0.013	L	442
Blocked Out "W" Beam	0.013	R	438

A cost item to remove and reset guardrails is included in the cost estimate. Depending on NDDOT guidance on MASH requirements, the guardrail may need to be replaced. No cost has been provided for upgrading guardrails to MASH requirements.

31. Milling?

Yes X No _____

It is proposed to mill 1" for RAP and to improve ride. Milling is also required to tie into existing curb and gutter.



I. Load Restrictions

Travel Information Map Proposed Load Restriction: 6-ton

HCPS Load Restrictions: 6-ton

Freight Level Required Minimum Load Restriction: Freight Level 3 >= 7-Ton

Projected Load Restrictions after project is complete:

Minor Rehabilitation: 7-Ton

Preventive Maintenance: 6-Ton

J. Roadway Widths

Required Minimum Roadway Width:

RP 0.000 to RP 1.000: 24'

RP 1.000 to RP 16.144: 22'

Surrounding Corridor Widths:

US-12 (South end of Project): 36'
ND-67 (North end of Project): 24', proposed to be milled and overlaid on a separate project.

K. PERFORMANCE GUIDELINES

Design Speed: 25, 45, 65 mph
Clear Zone: Existing
Shoulder Surface: None
Ride/Distress Goal: Good
Operational Reliability: Moderate

Foreslopes: 4:1

L. PROPOSED IMPROVEMENTS

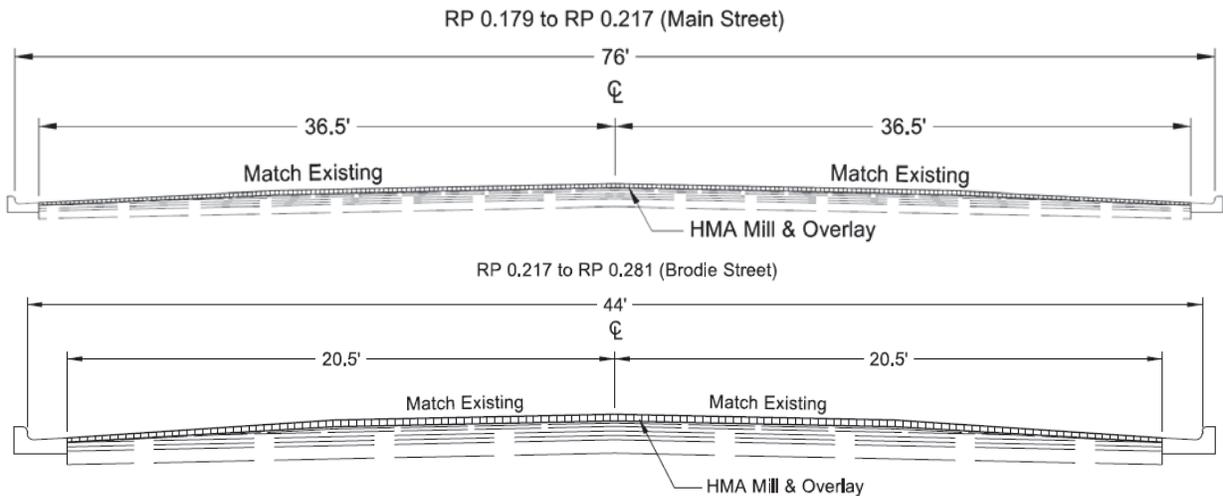
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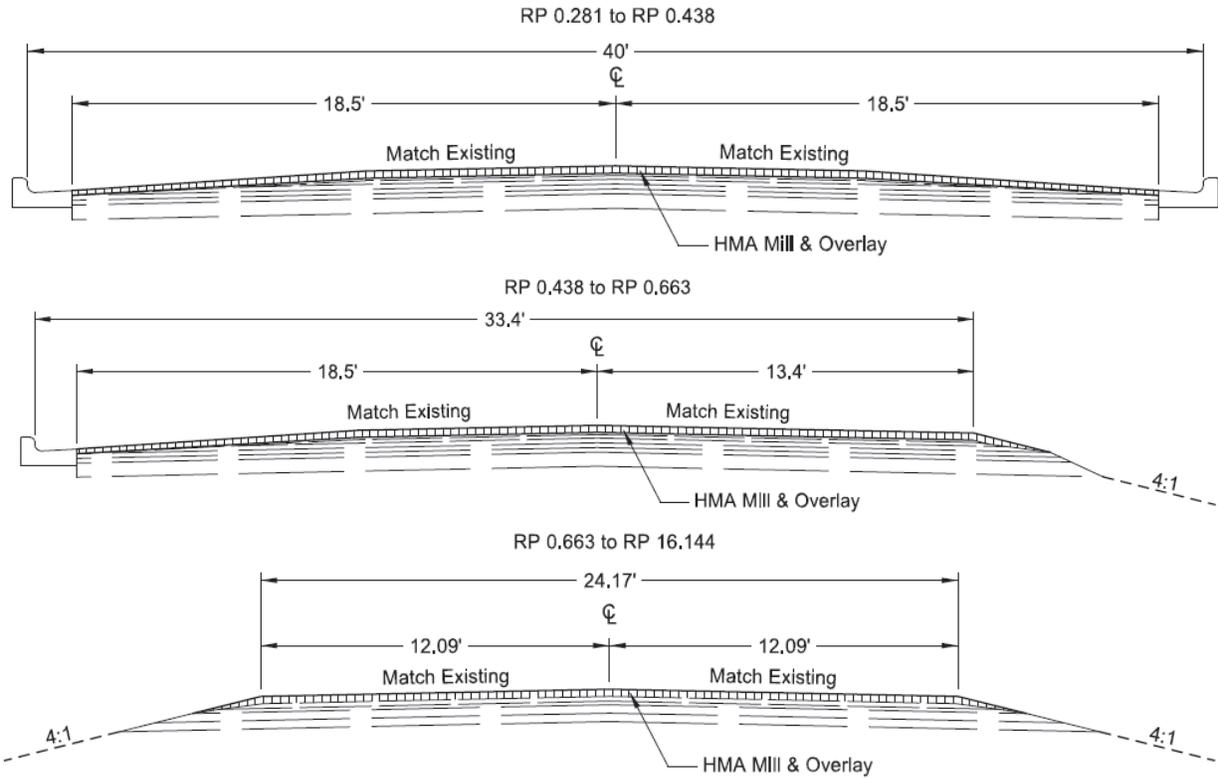
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The District would additionally like to investigate the installation of turn lanes at the junction of ND-67 and the ramp connection to US-12. A decision item is included.

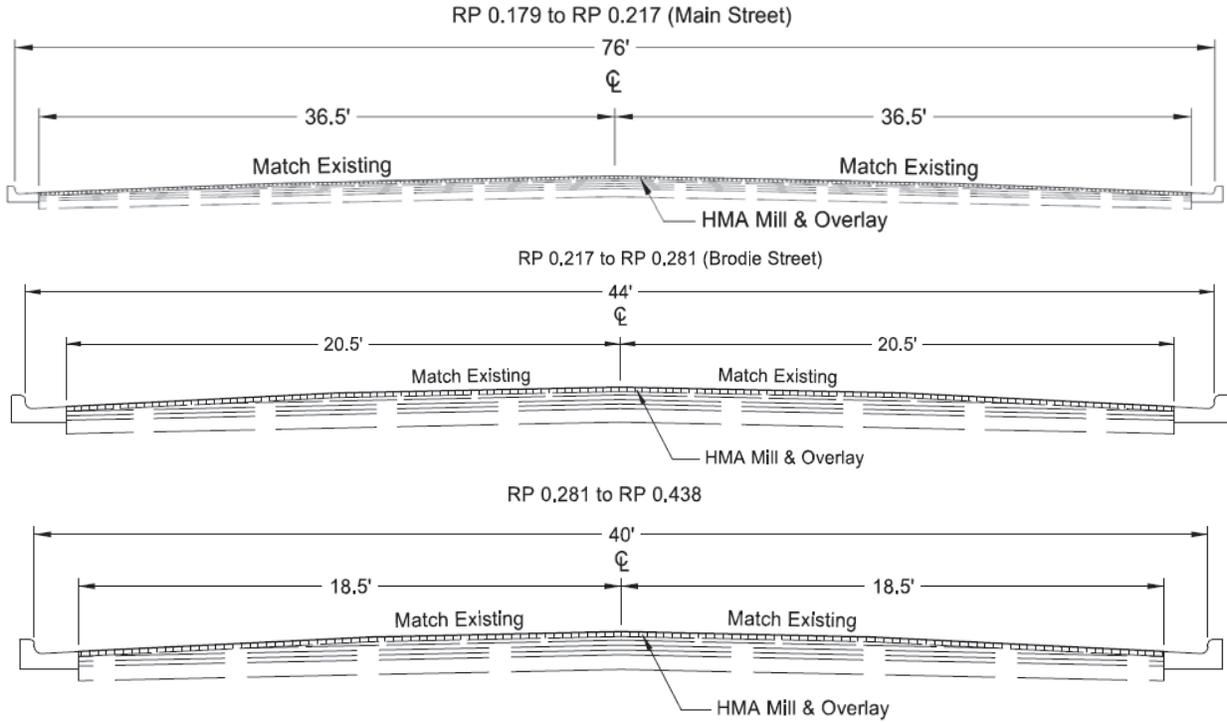
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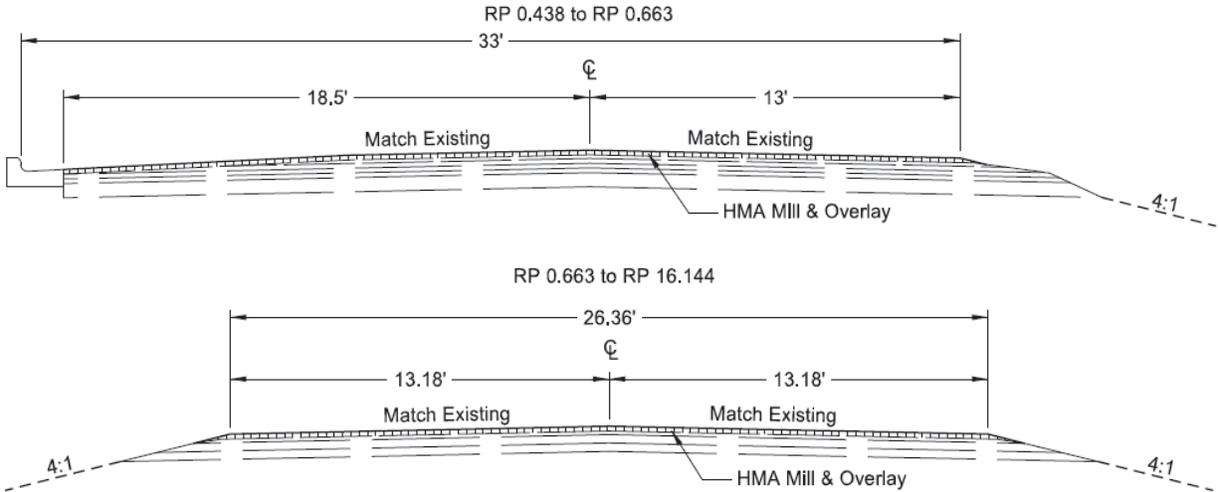
Minor Rehabilitation:





Preventive Maintenance:





M. ADDITIONAL COMMENTS

District Engineer:

1. Start the mill and overlay about 1500' south of the US 12 structure. That area is within the NDDOT right of way.
2. Traffic ops should review the traffic control at the intersection of ND 67 and Brodie St to determine which legs of the intersection require stop signs
3. Look at turn radius at Main St (ND 67 & Brodie) and Brodie to ND 67 near the elevator.
4. Jack approach slabs at the structure, they have settled

Safety Division Director:

No comments.

N. COST ESTIMATE

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

ITEM	ESTIMATED COST
Contract Bond	\$33,000
Mobilization	\$176,000
Hot Bit Pavement (based on 3")	\$3,730,000
Milling (based on 1")	\$168,000
Field Lab and Office	\$20,000
Traffic Control	\$100,000
Pavement Markings and Rumble Strips	\$83,000
Remove and Reset Guardrail	\$70,000
Bridge Recommendations	\$5,000
Manhole Adjustments	\$10,000
Subtotal	\$4,395,000
20% Engineering	\$879,000
Total Cost	\$5,274,000

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

ITEM	ESTIMATED COST
Contract Bond	\$26,000

ITEM	ESTIMATED COST
Mobilization	\$135,000
Hot Bit Pavement (based on 2")	\$2,644,000
Milling (based on 2")	\$344,000
Field Lab and Office	\$20,000
Traffic Control	\$100,000
Pavement Markings and Rumble Strips	\$83,000
Bridge Recommendations	\$5,000
Subtotal	\$3,357,000
20% Engineering	\$672,000
Total Cost	\$4,029,000

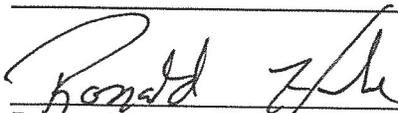
O. DECISIONS

- Which advancement option should be chosen for this project?
 Option 1: Minor Rehabilitation Mill and HBP Overlay
Estimated Cost: \$5,274,000
 Option 2: Preventive Maintenance Mill and HBP Overlay
Estimated Cost: \$4,029,000
 Option 3: Advance None
 Option 4: Advance all options to the Environmental Document phase
- Should rehabilitation strategies for the pipe at RP 11.62 be investigated?
 Yes No
- Should Sidewalk be added to the triangular median and convenience store for an
Estimated Cost: \$200,000?
 Yes No

The following are out of scope for a Minor Rehabilitation and Preventive Maintenance.

- Should the intersection of ND-67 and Brodie Street be replaced with concrete for an
Estimated Cost: \$210,000?
 Yes No
- Should turn lanes be investigated at the junction of ND-67 and the ramp for US-12?
 Yes No

DDE Comments: Minimum Milling as needed.


 Deputy Director for Engineering

3/13/17
 Date