

Project No.

PCN

RP 34 to Christine - NB



Prepared by

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

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

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August 2015

SCOPING REPORT

Report Completed By: Scott Clausen

Date: August 2015

A. GENERAL INFORMATION

Project Number:

District: Fargo

Location: RP 34 to Christine - NB

Reference Point: RP 34.000 to RP 44.126 – 10.126 miles

Counties: Richland County

Legal Description: T134N, R49W, Sec 15 to T136N, R49W, Sec 27

Functional and Funding Roadway Classification: Interstate

Speed Limit: 75 mph

Project Schedule: Proposed to be added to the STIP for a 2018 New/Reconstruction.

dTIMS Recommendations:

RP 34.000 to RP 39.07

Constrained: Minor Concrete 2019 Unconstrained: Minor Asphalt 2021

RP 39.07 to RP 44.126

Constrained: Minor Concrete 2017 Unconstrained: PM Asphalt 2017

B. PURPOSE, NEED, AND IMPROVEMENT

Purpose and Need of Project:

The IRI score is in the good range. The distress score is in the fair to good range. There is longitudinal cracking, transverse cracking, transverse joint separation, bituminous patching, concrete patching, and faulting. The original project limits were from RP 32.000 to RP 44.126. The District Engineer deemed that the segment from RP 32.000 to RP 34.000 was in satisfactory condition and not in need of improvement at this time.

Proposed Improvement:

A New/Reconstruction PCC is proposed. All safety hardware is to meet NCHRP 350 standards. All regulatory and warning signs and pavement markings will be verified to comply with current MUTCD standards or brought up to MUTCD standards if necessary.

C. TRAFFIC AND CRASH ANALYSIS

RP 34.000 to RP 42.189

	Year	Trucks	Total AADT	Flex ESALs	Rigid ESALs
Current Traffic	2015	2,010	3,495	1,590	2,555
Forecast Traffic	2035	2,995	5,210	2,370	3,805

RP 42.189 to RP 44.126

	Year	Trucks	Total AADT	Flex ESALs	Rigid ESALs
Current Traffic	2015	1,370	3,795	1,085	1,740
Forecast Traffic	2035	2,045	5,660	1,620	2,600

Crash Analysis: There were a total of 45 crashes from 7/1/2010 to 6/30/2015. Animal crashes were not included. The crash rate per 1 million vehicles is .5734.

Notes/Trends:

- 10 Multiple Vehicle crashes: 4 rear end, 4 sideswipe same direction, and 2 sideswipe opposite direction.
- 35 Single Vehicle crashes: 19 ran off roadway, 5 guardrail/bridge rail, 4 jackknife, 1 poles, and 6 other.

There are 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 34.000 to RP 39.070

Actual Age	IRI	IRI Rating	SI or SCI	Faulting
40	58	Excellent	7	.10
Effective Age	Distress	Distress Score	Rutting	Rutting Score
26	86	Fair	N/A	N/A
Load Restrictions	By Legal Weight			

CONSTRUCTION HISTORY				
Year	Construction	Depth (in)	Width (ft)	Oil
1974	GRADE	-	48.0	-
1974	C-C 104 FEET	-	-	-
1975	LIME TREATED SUBGRADE	6.0	48.0	-
1975	PLANT MIX BIT BASE	2.0	41.0	85-100
1975	NON-REINF PCC	9.0	27.0	-
1975	JOINT SPACE 16 FOOT	-	-	-
1975	NON-REIN PCC	9.0	10.0	-
1996	GRINDING	-	18.0	-
1996	CONCRETE PAVEMENT REPAIR	-	37.0	-
2009	CPR/DOWEL BAR RETROFIT	-	24.0	-
2009	GRINDING	-	15.0	-

Segment 2: RP 39.070 to RP 44.126

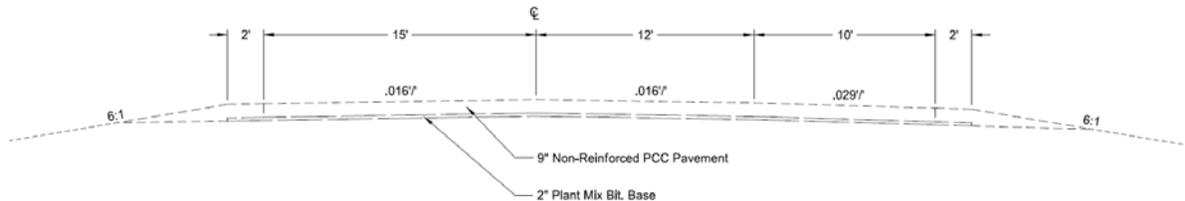
Actual Age	IRI	IRI Rating	SI or SCI	Faulting
40	70	Good	6	.14
Effective Age	Distress	Distress Score	Rutting	Rutting Score
14	87	Fair	.07	Excellent
Load Restrictions	By Legal Weight			

CONSTRUCTION HISTORY				
Year	Construction	Depth (in)	Width (ft)	Oil
1974	GRADE	-	48.0	-
1974	C-C 104 FEET	-	-	-
1975	LIME TREATED SUBGRADE	6.0	48.0	-
1975	PLANT MIX BIT BASE	2.0	41.0	85-100
1975	NON-REINF PCC	9.0	27.0	-
1975	JOINT SPACE 16 FOOT	-	-	-
1975	NON-REINF PCC	9.0	10.0	-
1996	GRINDING	-	18.0	-
1996	CONCRETE PAVEMENT REPAIR	-	37.0	-
2009	CPR/DOWEL BAR RETROFIT	-	24.0	-
2009	GRINDING	-	15.0	-
2014	CONCRETE PAVEMENT REPAIR	-	24.0	-
2014	HBP-SUPERPAVE-FAA 45	3.0	37.0	PG 58-28

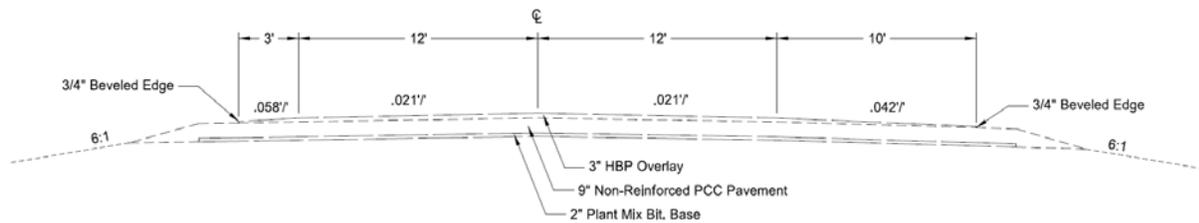
Existing Foreslopes: 6:1

Existing Typical Sections:

RP 34.000 to RP 39.070 and RP 43.000 to RP 44.126



RP 39.070 to RP 43.000



E. EXISTING GEOMETRY

Horizontal Curves: All curves meet requirements.

Vertical Curves: All curves meet requirements.

Major Intersections Needing Realignment: None

F. EXISTING STRUCTURES

Required Clearance = 16.5'

Bridge No	Name	Vertical Clearance	Length (ft)	Width (ft)	Rating
0029-034.040	Pitcairn Separation	16'8"	235	29.9	94.7
Recommendation: E-rail Retrofit. Estimated Cost: \$60,000					
0029-034.359R	Pitcairn Creek	-	70	40	97.0
Recommendation: E-rail Retrofit & Approach slab. Estimated Cost: \$98,000					
0029-037.043	Colfax Interchange	16'8"	235	36.1	95.9
Recommendation: Do Nothing					
0029-038.039	Triple, 10X7X188' RCB	-	33	-	80.4
Recommendation: Ok to extend if needed					
0029-039.047	Colfax Separation	16'6"	235	29.9	94.7
Recommendation: E-rail Retrofit. Estimated Cost: \$60,000					
0029-040.033	Double, 10X8X198' RCB	-	21	-	75.3
Recommendation: Ok to extend if needed					
0029-041.053	Mile 41 Separation	16'7"	245	22.0	89.7
Recommendation: E-rail Retrofit. Bridge deck should be chained. Estimated Cost: \$65,000					
0029-041.629R	Wild Rice River	-	245	40.0	94.8
Recommendation: Deck Spall repair. Estimated Cost: \$6,000					
0029-042.117	Walcott Interchange	16'8"	245	29.9	99.0
Recommendation: Do nothing					

Bridge Recommendations: All of the bridge decks should be chained.

Centerline Culverts:

Pipes should be surveyed and extended to meet clear zone. The District has requested that all centerline pipes be re-laid. A cost is included.

G. LAND INTERESTS

Small Community: None

Reservation: None

Public Land: None

Refuge: None

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. Curb Ramps? Yes No

- | | | | | | |
|--|-----|-------------------------------------|----|-------------------------------------|--------------------------------------|
| 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 | <input type="checkbox"/> | No | <input checked="" type="checkbox"/> | |
| 10. Other Underground Work? | Yes | <input type="checkbox"/> | No | <input checked="" type="checkbox"/> | |
| 11. Parking Facilities? | Yes | <input type="checkbox"/> | No | <input checked="" type="checkbox"/> | |
| 12. Frontage Roads? | Yes | <input type="checkbox"/> | No | <input checked="" type="checkbox"/> | |
| 13. Utility Issues? | Yes | <input type="checkbox"/> | No | <input checked="" type="checkbox"/> | |
| 14. Landscaping? | Yes | <input type="checkbox"/> | No | <input checked="" type="checkbox"/> | |
| 15. Approach or Ditch Block Flattening? | Yes | <input type="checkbox"/> | No | <input checked="" type="checkbox"/> | |
| 16. T Intersection Recovery Approaches? | Yes | <input type="checkbox"/> | No | <input checked="" type="checkbox"/> | |
| 17. Fence? | Yes | <input type="checkbox"/> | No | <input checked="" type="checkbox"/> | |
| 18. Railroad Crossings? | Yes | <input type="checkbox"/> | No | <input checked="" type="checkbox"/> | |
| 19. Detours? | Yes | <input type="checkbox"/> | No | <input checked="" type="checkbox"/> | |
| 20. Automatic Traffic Recorder Locations? | Yes | <input type="checkbox"/> | No | <input checked="" type="checkbox"/> | |
| 21. Weigh-In-Motion Sites? | Yes | <input type="checkbox"/> | No | <input checked="" type="checkbox"/> | |
| 22. ITS (Deicing, Snow Gates, VMS, RWIS, etc.)? | Yes | <input type="checkbox"/> | No | <input checked="" type="checkbox"/> | |
| 23. Highway Patrol/Truck Pullouts or Rest Areas?
There is an abandoned Rest Area at RP 40.50. | Yes | <input checked="" type="checkbox"/> | No | <input type="checkbox"/> | There are no suggested improvements. |
| 24. Additional Right of Way? | Yes | <input type="checkbox"/> | No | <input checked="" type="checkbox"/> | |
| 25. Drainage Issues? | Yes | <input type="checkbox"/> | No | <input checked="" type="checkbox"/> | |
| 26. Snow Impact Areas? | Yes | <input type="checkbox"/> | No | <input checked="" type="checkbox"/> | |
| 27. Subgrade Issues? | Yes | <input type="checkbox"/> | No | <input checked="" type="checkbox"/> | |
| 28. Noise Analysis: Type I Project? | Yes | <input type="checkbox"/> | No | <input checked="" type="checkbox"/> | Maybe <input type="checkbox"/> |
| 29. Maintenance Issues? | Yes | <input type="checkbox"/> | No | <input checked="" type="checkbox"/> | |

30. Guardrail?

Yes X No _____

Type	RP	L/R	Length (ft)	Suggested Improvement
Blocked Out "W" Beam	41.578	L	245	None at this time.
Blocked Out "W" Beam	41.585	R	208	None at this time.

A cost item to remove and reset guardrails is included in the cost estimate.

I. PERFORMANCE GUIDELINES

Design Speed: 75 mph

Clear Zone (from edge of driving lane): 32'

Shoulder Surface: Paved

Ride/Distress Goal: Excellent

Operational Reliability: High

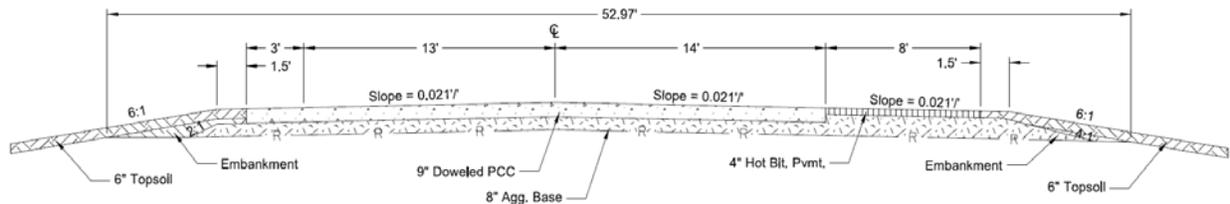
Minimum Roadway Width: 38'

Foreslopes: 6:1

J. PROPOSED IMPROVEMENTS

Proposed Typical Section:

Proposed typical section used for estimating purposes only.



Ramps, Crossroads, and Rest Areas:

Exit 37, Colfax Interchange

The district has requested that all 4 of the on/off-ramps be CPR'd and the shoulders be overlaid as part of this project. A cost and decision item is included.

Exit 42, Walcott Interchange

The district has requested that all 4 of the on/off-ramps be CPR'd and the shoulders be overlaid as part of this project. A cost and decision item is included.

K. ADDITIONAL COMMENTS

District Engineer:

Original concrete has not been overlaid under overhead bridges to maintain adequate vertical clearances. Actual thickness of the concrete is less than 9" due to the two grinding projects on this segment. This is the worst northbound pavement segment between Fargo and Hankinson. In reference to dTims, some segments need to be reconstructed so we don't face perpetual construction work zones south of Fargo as 50 miles of minor rehabs in both NB and SB require continuous maintenance, and bring short life spans. The NB pavement from RP 33.5 to 34 is in bad shape with significant joint deterioration and random mid panel cracks. Concrete powder can be seen on the surface in multiple locations with concrete chucks distributed on the shoulder. We would like consideration for extending the PCC recycle south a half mile.

Safety Division Director:
None

L. COST ESTIMATE

(Inflation factor of 4% was used to estimate costs for 2018 bid year)

ITEM	ESTIMATED COST
Contract Bond	\$133,000
Mobilization	\$706,000
Hot Bit Pavement	\$799,000
Doweled 9" PCC	\$11,194,000
Aggregate Base	\$2,105,000
Borrow and Water	\$152,000
Topsoil, Seeding and Erosion Control	\$219,000
Subgrade and Shaping	\$581,000
Median Crossovers	\$360,000
Field Lab and Office	\$75,000
Traffic Control and Signing	\$263,000
Reset Guardrails	\$33,000
Pavement Markings and Rumble Strips	\$100,000
Bridge Improvements	\$349,000
Re-Lay Existing Pipes	\$584,000
Subtotal	\$17,653,000
20% Engineering Construction and CE	\$3,531,000
Total Cost	\$21,184,000
Decision Items: (Includes 20% Engineering)	
CPR ramps and mill and overlay shoulders at Exit 37	\$346,000
CPR ramps and mill and overlay shoulders at Exit 42	\$349,000
Total Cost including Decision Items	\$21,879,000

M. DECISIONS

Should this project advance as a New/Reconstruction for an **Estimated Cost of \$21,879,000?**

Yes No

The following item(s) should be considered for advancement at additional cost

- 1. Which advancement item(s) should be chosen for this project?
 - Item 1: CPR ramps and mill and overlay shoulders at Exit 37. **Estimated Cost: \$346,000**
 - Item 2: Advance as an option to the Environmental Document phase.
 - Item 3: Do nothing.

- 2. Which advancement item(s) should be chosen for this project?
 - Item 1: CPR ramps and mill and overlay shoulders at Exit 42. **Estimated Cost: \$349,000**
 - Item 2: Advance as an option to the Environmental Document phase.
 - Item 3: Do nothing.

DDE Comments: _____



Deputy Director for Engineering

10/12/15
Date