SCOPING REPORT

Project No. **PCN**

N Jct 17 & 18, S Jct 17 & 18, Jct 17 & 32

Prepared by

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION
BISMARCK, NORTH DAKOTA

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

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23 USC § 407
NDDOT Reserves All Objections

SCOPING REPORT

A. GENERAL INFORMATION

Project Number:
District: 6
Highways: ND 17, ND 18, ND 32
Location: N Jct 17 & 18, S Jct 17 & 18, Jct 17 & 32
Reference Point:
ND 17 RP 118.119 & ND 18 RP 198.447
ND 17 RP 117.243 & ND 18 RP 197.571
ND 17 RP 106.314 & ND 32 RP 191.471
Counties: Walsh
Legal Description: T157N, R56W, Sec 21, 22, 27, 28
T157N, R54W, Sec 20, 21
Functional and Funding Roadway Classification:
ND 17 – District Corridor & State Corridor
ND 18 – District Corridor & State Corridor
ND 32 – District Corridor
National Highway System: No
Speed Limit: 65 mph
Freight Level: Freight Level 2
Freight Constraints: No
Project Schedule: Proposed to be added to the STIP as a safety project.
dTIMS Recommendations: N/A

B. PURPOSE, NEED, AND IMPROVEMENT

Purpose and Need of Project:

The intersections of ND 17 & ND 32, ND 18 & ND 17 N Jct, and ND 17 & ND 18 S Jct all have crash histories. Due to safety concerns, the district submitted an HSIP application.

The existing right turn lane at the south junction of ND 17 & 18 is about 300’ shorter than the NDDOT Design Guidelines’ recommendations.

The intersections of ND 17 & ND 18 (N Jct) and ND 17 & 32 were ranked as #1 and # 2 in the 2022 Potential Roundabout Table, respectively. The N Jct of ND 17 & 18 was also ranked #5 on the 2018-2022 Rural Spot High Crash Locations. These lists were put together by the Traffic Operations Section.

A 2017 Traffic Operations Study analyzed both intersections of ND 17 & 18 and recommended installing left turn lanes.

Proposed Improvement:

The following improvements are proposed to address the safety concerns at each intersection:

ND 17 & 18 (N Jct) – Install a single lane roundabout.

The existing superelevations are too great for construction of a roundabout, so reconstructing to remove the superelevation would be required. The curves would also need to be regraded and repaved along the south and east approaches to the intersection to remove the superelevation and accommodate a roundabout.

The field approach to the south would need to be removed or relocated. Another field approach exists at the start of the curve about 1000' east of the intersection. A driveway on the north leg may also need to be relocated, depending on how far north the roundabout sits. Existing stop ahead rumble strips on the north leg would have to be taken out.

Roundabout design details, such as diameter, approach geometrics, and center island treatment, would be determined in the design phase. Lighting would be installed around the roundabout legs. The district prefers to have colored concrete for visibility on the inner circle, and no decorative landscaping inside. With the curves and sight issues, advanced signing and speed limit drops could be considered to provide additional warning for the roundabout.

Traffic Operations recommended installing an LED stop sign on the north leg as an interim solution.

ND 17 & 18 (S Jct) – Two options are proposed for the northeast leg of the intersection.

Option 1 – Install a SB left turn lane on ND 18.

Option 2 – Install a SB left turn bypass lane on ND 18.

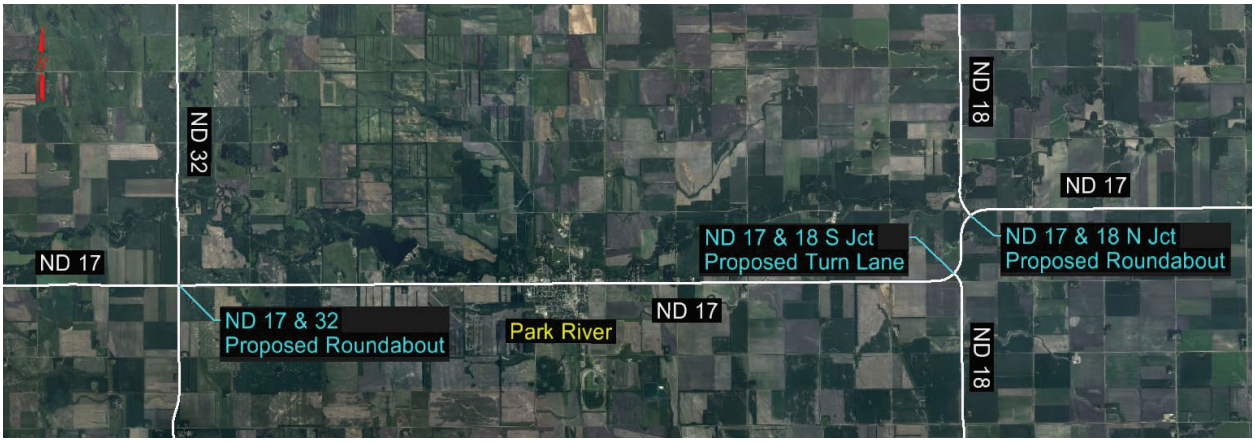
With both options, it's proposed to extend the existing right turn lane on ND 17 to meet requirements set in the Design Guidelines. Installing destination lighting is also recommended. It would be determined in project development if widening should be shifted to one side or centered, whichever best fits the existing alignment.

ND 17 & 32 – Install a single lane, retrofitted roundabout.

With the retrofit, the goal would be to preserve as much of the existing pavement and grade as possible, widening where the footprint of the roundabout exceeds the existing intersection.

Roundabout design details, such as diameter, approach geometrics, and center island treatment, would be determined in the design phase. Lighting would be installed around the roundabout legs. The district prefers to have colored concrete for visibility on the inner circle, and no decorative landscaping inside.

Project Location Map



C. TRAFFIC AND CRASH ANALYSIS

N Jct ND 17 & ND 18

N Leg – ND 18 RP 198.447 to 222.654	Year	Pass	Trucks	Total AADT	Flex ESALS	Rigid ESALS
Current Traffic	2023	780	120	900	90	145
Forecast Traffic	2043	955	180	1,135	135	220

E Leg – ND 17 RP 118.119 to 118.219	Year	Pass	Trucks	Total AADT	Flex ESALS	Rigid ESALS
Current Traffic	2024	2,180	325	2,505	185	300
Forecast Traffic	2044	2,660	420	3,080	240	385

S Leg – ND 18 RP 197.571 to 198.447	Year	Pass	Trucks	Total AADT	Flex ESALS	Rigid ESALS
Current Traffic	2023	1,870	310	2,180	235	375
Forecast Traffic	2043	2,285	400	2,685	300	480

S Jct ND 17 & ND 18

S Leg – ND 18 RP 169.00 to 197.571	Year	Pass	Trucks	Total AADT	Flex ESALS	Rigid ESALS
Current Traffic	2023	465	175	640	135	210
Forecast Traffic	2043	570	230	800	175	280

N Leg – ND 18 RP 197.571 to 198.447	Year	Pass	Trucks	Total AADT	Flex ESALS	Rigid ESALS
Current Traffic	2023	1,870	310	2,180	235	375
Forecast Traffic	2043	2,285	400	2,685	300	480

W Leg – ND 17 RP 112.878 to 117.243	Year	Pass	Trucks	Total AADT	Flex ESALS	Rigid ESALS
Current Traffic	2023	2,170	285	2,455	215	340
Forecast Traffic	2043	2,650	410	3,060	305	490

ND 17 & ND 32

N Leg – ND 32 RP 191.472 to 191.572	Year	Pass	Trucks	Total AADT	Flex ESALS	Rigid ESALS
Current Traffic	2024	620	155	775	125	200
Forecast Traffic	2044	760	225	985	180	290

S Leg – ND 32 RP 191.470	Year	Pass	Trucks	Total AADT	Flex ESALS	Rigid ESALS
Current Traffic	2024	500	430	930	345	550
Forecast Traffic	2044	610	615	1,225	495	790

E Leg – ND 17 RP 106.314 to 106.414	Year	Pass	Trucks	Total AADT	Flex ESALS	Rigid ESALS
Current Traffic	2024	1,290	235	1,525	175	280
Forecast Traffic	2044	1,575	290	1,865	215	345

W Leg – ND 17 RP 99.00 to 106.314	Year	Pass	Trucks	Total AADT	Flex ESALS	Rigid ESALS
Current Traffic	2023	585	160	745	120	190
Forecast Traffic	2043	715	210	925	155	250

Crash Analysis:
The 5-year study period used was from 2/1/2019 to 01/31/2024.

ND 17 (RP 117.243) & 18 (RP 198.571) – N Jct

			Manner of Collsion																							Severity					Surface Cond.		
			Angle					Rear End					Left Turn					Sideswipe Same Dir.																	
Year	Start Date	End Date	NB+EB	NB+WB	SB+EB	SB+WB	Subtotal	NB	SB	EB	WB	Subtotal	NB to WB	SB to EB	EB to NB	WB to SB	Subtotal	NB	SB	EB	WB	Subtotal	Backing	Ped/Bike	Single Veh.	Head-on/other	Total	K	A	B	C	O	Dry	Wet	Ice/Snow	Construction?
1	2/1/19	1/31/20																									0								
2	2/1/20	1/31/21																							1		1				1			1	
3	2/1/21	1/31/22																									0								
4	2/1/22	1/31/23																									0								
5	2/1/23	1/31/24																									0								
																									1		1				1			1	

Severity Codes: K = Fatal, A = Incapacitating Injury, B = Non-incapacitating Injury, C = Possible Injury, O = Property Damage Only

ND 17 (RP 118.119) & 18 (198.447) – S Jct

			Manner of Collsion																							Severity					Surface Cond.		
			Angle					Rear End					Left Turn					Sideswipe Same Dir.																	
Year	Start Date	End Date	NB+EB	NB+WB	SB+EB	SB+WB	Subtotal	NB	SB	EB	WB	Subtotal	NB to WB	SB to EB	EB to NB	WB to SB	Subtotal	NB	SB	EB	WB	Subtotal	Backing	Ped/Bike	Single Veh.	Head-on/other	Total	K	A	B	C	O	Dry	Wet	Ice/Snow	Construction?
1	2/1/19	1/31/20				2	2																		2		4	1	1	1		1	3		1	
2	2/1/20	1/31/21																							1		1		1				1			
3	2/1/21	1/31/22																									0								
4	2/1/22	1/31/23																							1		1			1			1			
5	2/1/23	1/31/24																									0								
						2	2																		4		6	1	2	2		1	5		1	

Severity Codes: K = Fatal, A = Incapacitating Injury, B = Non-incapacitating Injury, C = Possible Injury, O = Property Damage Only

ND 17 (RP 106.314) & 32 (RP 191.471)

			Manner of Collsion																				Severity					Surface Cond.			
			Angle					Rear End					Left Turn					Sideswipe Same Dir.														
			NB+EB	NB+WB	SB+EB	SB+WB	Subtotal	NB	SB	EB	WB	Subtotal	NB to WB	SB to EB	EB to NB	WB to SB	Subtotal	NB	SB	EB	WB	Subtotal	Backing	Ped/Bike	Single Veh.	Head-on/other	Total	K	A	B	C	O	Dry	Wet	Ice/Snow	Construction?
1	2/1/19	1/31/20																								*0*									
2	2/1/20	1/31/21	1				1																			*1*				1		1			
3	2/1/21	1/31/22																							1	*1*			1				1		
4	2/1/22	1/31/23																								*0*									
5	2/1/23	1/31/24																								*0*									
			1				1																		1	2			1	1		1		1	

Severity Codes: K = Fatal, A = Incapacitating Injury, B = Non-incapacitating Injury, C = Possible Injury, O = Property Damage Only

Notes:

- ND 17 RP 118.119 & ND 18 had one fatal and two incapacitating injuries in the 5-year period.
- ND 17 RP 118.119 & ND 18 was ranked #5 on the 2018-1029 Rural Spot High Crash Locations.

Recommendations:

- Consider installing a 24'x24' LED stop sign for SB traffic on ND 18, RP 198.447 as a short-term improvement.

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″

ND 17 & ND 18 (N Jct)

ND 17 RP 118.119 TO 127.030 (East Leg)

Actual Age	IRI	IRI Rating	SI or SCI	Faulting
9	85.56	Good	6	N/A
Effective Age	Distress	Distress Score	Rutting	Rutting Score
9	88	Good	0.12	Excellent

CONSTRUCTION HISTORY				
Year	Construction	Depth (in)	Width (ft)	Oil
1940	Grade		36.0	
1941	Stabilized Base	6.0	32.0	
1941	Cold Bit Pavement	1.5	22.0	
1956	Hot Bit Pavement	1.5	32.0	120 – 150
1956	Hot Bit Pavement	1.5	24.0	120 – 150
1974	Widening		58.0	
1975	Hot Bit Pavement	2.0	24.0	200 – 300
1975	Aggregate Base	8.0	9.0, 0, 9.0	
1975	Hot Bit Pavement	2.0	6.0, 0, 6.0	200 – 300
1994	Milling	-2.5	24.0	

CONSTRUCTION HISTORY				
Year	Construction	Depth (in)	Width (ft)	Oil
1994	Hot Bit Pavement	5.0	24.0	120 – 150
1994	Recycled Hot Bit Pavement	3.5	11.0, 0, 11.0	
1994	Drive Slope Flattening			
1996	Contract Chip Seal		24.0	HFMS – 2
2007	Microsurfacing		24.0	
2014	Milling	-2.0	30.0	
2014	HBP – Superpave FAA 43	2.0	3.0, 24.0, 3.0	PG 58 – 28
2017	Federal Aid Chip Seal		24.0	CRS2P

ND 18 RP 197.571 TO 198.447 (South Leg)

Actual Age	IRI	IRI Rating	SI or SCI	Faulting
29	134.00	Fair	11	N/A
Effective Age	Distress	Distress Score	Rutting	Rutting Score
29	82	Fair	0.18	Excellent

CONSTRUCTION HISTORY				
Year	Construction	Depth (in)	Width (ft)	Oil
1940	Grade		36.0	
1941	Stabilized Base	6.0	32.0	
1941	Cold Bit Pavement	1.5	22.0	
1956	Hot Bit Pavement	1.5	32.0	120 – 150
1956	Hot Bit Pavement	1.5	24.0	120 – 150
1974	Widening		58.0	
1975	Hot Bit Pavement	2.0	24.0	200 – 300
1975	Aggregate Base	8.0	9.0, 0, 9.0	
1975	Hot Bit Pavement	2.0	6.0, 0, 6.0	200 – 300
1994	Milling	-2.5	24.0	
1994	Hot Bit Pavement	5.0	24.0	120 – 150
1994	Recycled Hot Bit Pavement	3.5	11.0, 0, 11.0	
1994	Drive Slope Flattening			
1996	Contract Chip Seal		24.0	HFMS – 2

ND 18 RP 198.447 TO 202.571 (North Leg)

Actual Age	IRI	IRI Rating	SI or SCI	Faulting
20	94.25	Good	6	N/A
Effective Age	Distress	Distress Score	Rutting	Rutting Score
20	88	Good	0.17	Excellent

CONSTRUCTION HISTORY				
Year	Construction	Depth (in)	Width (ft)	Oil
1957	Widening		35.0	
1957	Emulsified Base	5.0	32.0	SS – 1
1973	Widening		46.0	
1973	Hot Bit Pavement	2.0	41.0	200 – 300
1973	Hot Bit Pavement	1.5	24.0	200 – 300
1973	Aggregate Base	3.0	5.5, 0, 5.5	
1973	Bituminous Base	2.0	2.5, 0, 2.5	SC – 3000
1993	Contract Chip Seal		24.0	HFMS – 2

CONSTRUCTION HISTORY				
Year	Construction	Depth (in)	Width (ft)	Oil
2003	Hot Bit Pavement	2.5	3.0, 24.0, 3.0	PG 58 – 28
2007	Federal Aid Chip Seal		24.0	HFMS – 2
2014	Milling	-1.5	30.0	
2014	HBP – Superpave – FAA 43	2.0	30.0	PG 58 – 28
2014	Aggregate Base	2.0	3.0, 0, 3.0	
2017	Federal Aid Chip Seal		24.0	CRS2P

ND 17 & ND 18 (S Jct)

ND 17 RP 112.848 TO 117.243 (West Leg)

Actual Age	IRI	IRI Rating	SI or SCI	Faulting
9	100.00	Fair	4	N/A
Effective Age	Distress	Distress Score	Rutting	Rutting Score
9	90	Good	0.11	Excellent

CONSTRUCTION HISTORY				
Year	Construction	Depth (in)	Width (ft)	Oil
1940	Grade		36.0	
1941	Stabilized Base	6.0	32.0	
1941	Cold Bit Pavement	1.5	22.0	
1956	Hot Bit Pavement	1.5	32.0	120 – 150
1956	Hot Bit Pavement	1.5	24.0	120 – 150
1974	Widening		58.0	
1975	Hot Bit Pavement	2.0	24.0	200 – 300
1975	Aggregate Base	8.0	9.0, 0, 9.0	
1975	Hot Bit Pavement	2.0	6.0, 0, 6.0	200 – 300
1994	Milling	-2.5	24.0	
1994	Hot Bit Pavement	5.0	24.0	120 – 150
1994	Recycled Hot Bit Pavement	3.5	11.0, 0, 11.0	
1994	Drive Slope Flattening			
1996	Contract Chip Seal		24.0	HFMS – 2
2007	Microsurfacing		24.0	
2014	Milling	-2.0	30.0	
2014	HBP – Superpave – FAA 43	2.0	3.0. 24.0, 3.0	PG 58 – 28
2017	Federal Aid Chip Seal		24.0	CRS2P

ND 18 RP 183.378 TO 197.571 (South Leg)

Actual Age	IRI	IRI Rating	SI or SCI	Faulting
25	111.36	Fair	4	N/A
Effective Age	Distress	Distress Score	Rutting	Rutting Score
22	88	Good	0.11	Excellent

CONSTRUCTION HISTORY				
Year	Construction	Depth (in)	Width (ft)	Oil
1958	Grade		36.0	
1998	Aggregate Base	3.0	32.0	
1998	Blended Base	10.0	32.0	
1998	Hot Bit Pavement	4.5	30.0	120 – 150
2000	Federal Aid Chip Seal		5.0, 24.0, 5.0	HFMS – 2

CONSTRUCTION HISTORY				
Year	Construction	Depth (in)	Width (ft)	Oil
2014	Milling	-1.5	30.0	
2014	HBP – Superpave – FAA 43	1.5	3.0, 24.0, 3.0	PG 58 – 28
2017	Federal Aid Chip Seal		24.0	CRS2P

ND 18 RP 197.571 TO 198.447 (North Leg)

Actual Age	IRI	IRI Rating	SI or SCI	Faulting
29	134.00	Fair	11	N/A
Effective Age	Distress	Distress Score	Rutting	Rutting Score
29	82	Fair	0.18	Excellent

CONSTRUCTION HISTORY				
Year	Construction	Depth (in)	Width (ft)	Oil
1940	Grade		36.0	
1941	Stabilized Base	6.0	32.0	
1941	Cold Bituminous Pavement	1.5	22.0	
1956	Hot Bit Pavement	1.5	32.0	120 – 150
1956	Hot Bit Pavement	1.5	24.0	120 – 150
1974	Widening		58.0	
1975	Hot Bit Pavement	2.0	24.0	200 – 300
1975	Aggregate Base	8.0	9.0, 0, 9.0	
1975	Hot Bit Pavement	2.0	6.0, 0, 6.0	200 – 300
1994	Milling	-2.5	24.0	
1994	Hot Bit Pavement	5.0	24.0	120 – 150
1994	Recycled Hot Bit Pavement	3.5	11.0, 0, 11.0	
1994	Drive Slope Flattening			
1996	Contract Chip Seal		24.0	HFMS – 2

ND 17 & ND 32

ND 17 RP 96.973 TO 106.314 (West Leg)

Actual Age	IRI	IRI Rating	SI or SCI	Faulting
56	101.20	Fair	2	N/A
Effective Age	Distress	Distress Score	Rutting	Rutting Score
17	92	Good	0.12	Excellent

CONSTRUCTION HISTORY				
Year	Construction	Depth (in)	Width (ft)	Oil
1966	Grade		42.0	
1966	Aggregate Base	5.0	39.0	
1967	Hot Bit Pavement	2.0	24.0	120 – 150
1972	Hot Bit Pavement	1.5	24.0	120 – 150
1995	Contract Chip Seal		24.0	HFMS – 2
2005	Hot Bit Pavement	1.5	27.0	PG 58 – 28
2005	Aggregate Base	4.5	2.0, 0, 2.0	
2008	Federal Aid Chip Seal		24.0	HFMS – 2
2014	Blended Base	3.5	4.0, 0, 4.0	
2016	Milling	-2.0	28.0	
2016	HBP – Superpave – FAA 43	2.0	27.0	PG 58 – 28
2019	Federal Aid Chip Seal		27.0	CRS2P

ND 17 RP 106.314 TO 111.310 (East Leg)

Actual Age	IRI	IRI Rating	SI or SCI	Faulting
31	62.00	Good	3	N/A
Effective Age	Distress	Distress Score	Rutting	Rutting Score
19	92	Good	0.07	Excellent

CONSTRUCTION HISTORY				
Year	Construction	Depth (in)	Width (ft)	Oil
1966	Grade		48.0	
1966	Aggregate Base	5.0	45.0	
1967	Hot Bit Pavement	2.0	24.0	120 – 150
1975	Hot Bit Pavement	2.0	24.0	200 – 300
1975	Hot Bit Pavement	2.0	4.5, 0, 4.5	200 – 300
1992	Hot Bit Pavement	3.0	24.0	120 – 150
1992	Safety Project			
1992	Hot Bit Pavement	2.0	8.0, 0, 8.0	120 – 150
1996	Contract Chip Seal		24.0	120 – 150
2008	Microsurfacing		24.0	
2017	Milling	-2.0	2.0, 24.0, 2.0	
2017	HBP – Superpave – FAA 43	2.0	2.0, 24.0, 2.0	PG 58 – 28
2020	Federal Aid Chip Seal		24.0	CRS2P

ND 32 RP 191.471 TO 191.962 (North Leg)

Actual Age	IRI	IRI Rating	SI or SCI	Faulting
31	N/A	N/A	N/A	N/A
Effective Age	Distress	Distress Score	Rutting	Rutting Score
17	N/A	N/A	N/A	N/A

CONSTRUCTION HISTORY				
Year	Construction	Depth (in)	Width (ft)	Oil
1956	Aggregate Base	5.0	29.0	
1956	Stabilized Base	2.0	28.0	
1956	Hot Bit Pavement	2.5	22.0	120 – 150
1976	Widening		54.0	
1977	Hot Bit Pavement	2.0	24.0	200 – 300
1977	Aggregate Base	9.5	11.5, 0, 11.5	
1992	Hot Bit Pavement	3.5	24.0	120 – 150
1992	Safety Project			
1992	Hot Bit Pavement	4.7	6.0, 0, 6.0	120 – 150
1997	Federal Aid Chip Seal		24.0	HFMS – 2
2009	Hot Bit Pavement	2.0	4.0, 24.0, 4.0	PG 58 – 28
2016	HBP – Superpave – FAA 43	2.0	4.0, 24.0, 4.0	PG 58 – 28
2019	Federal Aid Chip Seal		24.0	CRS2P

ND 32 RP 178.872 TO 191.471 (South Leg)

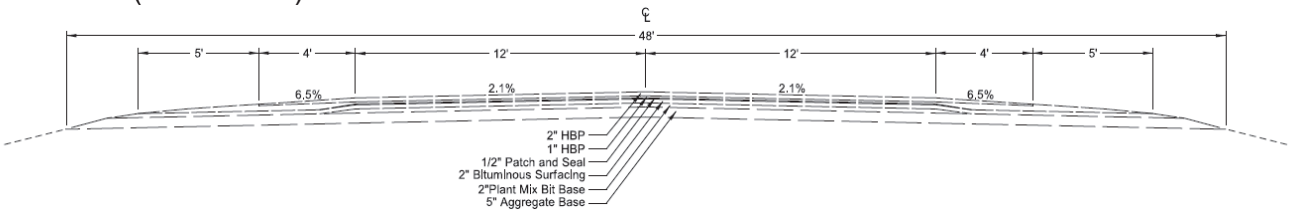
Actual Age	IRI	IRI Rating	SI or SCI	Faulting
15	51.23	Excellent	1	N/A
Effective Age	Distress	Distress Score	Rutting	Rutting Score
15	94	Good	0.07	Excellent

CONSTRUCTION HISTORY				
Year	Construction	Depth (in)	Width (ft)	Oil
1963	Grade		38.0	
1963	Aggregate Base	3.5	37.0	
1963	Emulsified Base	3.5	34.0	SS – 1
1972	Hot Bit Pavement	1.5	24.0	200 – 300
1990	Contract Chip Seal		24.0	MC – 3000
1995	Drive Slope Flattening			
2001	Int Cont Patch – 1.5”		30.0	PG 58 – 28
2003	Int Cont Patch – 1.5”		24.0	PG 58 – 28
2008	HBP – Superpave – FAA 42	2.5	24.0	PG 58 – 28
2008	Aggregate Base	2.5	3.0, 0, 3.0	
2011	Federal Aid Chip Seal		24.0	CRS2P
2019	Milling	-1.0	24.8	
2019	HBP – Superpave – FAA 43	2.0	3.6, 24.0, 3.6	PG 58 – 28
2022	Federal Aid Chip Seal		24.0	CRS2P

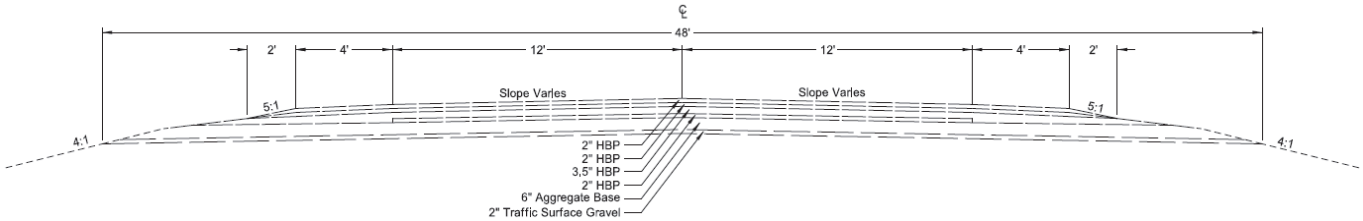
Existing Foreslopes: 4:1 (Varies)

Existing Typical Sections

ND 17 (ND 17 & 32)



ND 32 (ND 17 & 32, N Leg)



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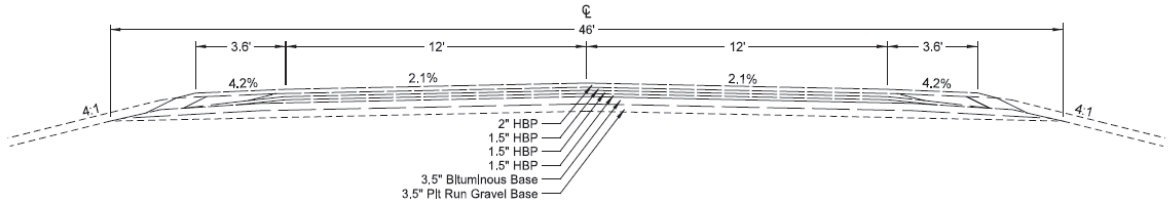
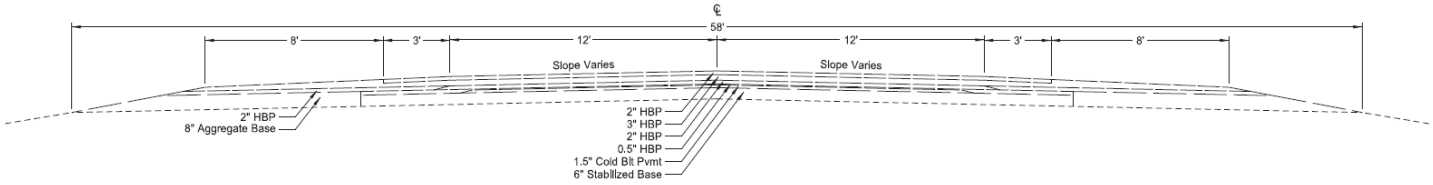
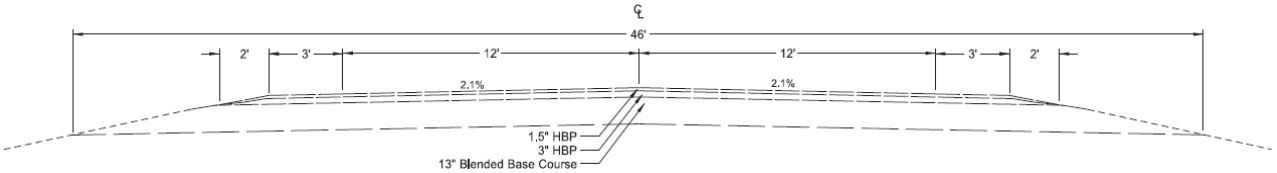


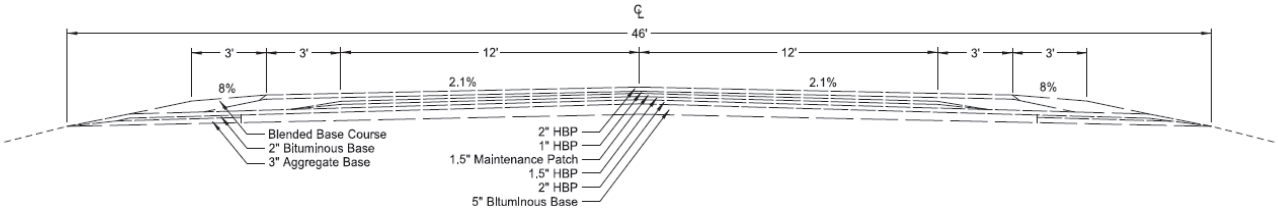
ND 17 (ND 17 & 18, N & S Jct)



ND 18 (ND 17 & 18, N Jct)



ND 18 (ND 17 & 18, S Jct)



E. EXISTING GEOMETRY

Horizontal Curves & Superelevations:

ND 17 & 18 (N Jct)

Location		Speed (mph)	Radius (ft)		Superelevation (%)	
			Existing	Required	Existing	Required
ND 18	RP 198.093	45	1910	643	6.0	3.8
ND 18	RP 198.540	45	2292	643	0.6	3.4

The existing superelevation at RP 198.093 is too great for construction of a roundabout. Regrading and repaving along the west and east approach curves to reduce the superelevation will be required. See “Proposed Improvements” section.

ND 17 & 18 (S Jct) – Use existing.

ND 17 & 32 – No horizontal curves near intersection.

Vertical Curves: Use existing.

Ramps: N/A

F. EXISTING STRUCTURES

Bridges: None

Centerline Pipes: ND 17 – None
ND 18 – None
ND 32 – Corrugated steel pipes under the north and south legs of ND 32 may need to be extended with construction of the roundabout. The district may determine they need to be replaced along with the project.

G. LAND INTERESTS

Communities: Park River (pop.: 1,407)
Reservation: None
Surface Trust Land: None
National Parks/Grasslands: None
State Parks/Forests: None
Waterfowl Production Area: None
Wildlife Management Area: None
Adjacent Land Usage: Agricultural

H. ISSUES AND APPURTENANCES CHECKLIST

1.	Curb and Gutter?	Yes ____	No X
2.	Sidewalk?	Yes ____	No X
3.	Multi-Use Path?	Yes ____	No X
4.	ADA Ramps?	Yes ____	No X
5.	State Bicycling Network?	Yes X	No ____

ND 18 between the N and S junctions with ND 17 is a proposed Tier 1 state bike corridor. The minimum infrastructure expectation is signage. There are no proposed improvements with this project.

6.	Lighting?	Yes X	No ____

The locations do not have existing lighting. Lighting is proposed to be installed with the roundabouts and turn lanes.

7.	Signals?	Yes ____	No X
8.	Storm Sewer?	Yes ____	No X
9.	Manholes?	Yes ____	No X
10.	Water, Sewer, or Other Underground Work?	Yes ____	No X
11.	Parking Facilities?	Yes ____	No X
12.	Frontage Roads?	Yes ____	No X
13.	Utility Issues?	Yes X	No ____

There are buried and overheard utility lines, including gas, telephone, fiber optic, electric, and water lines. There may be impacts due to widening for the roundabout footprints and turn lanes.

14.	Landscaping?	Yes X	No ____

Landscaping could be included with the installation of a roundabout, depending on the inner circle treatment selected.

15. Approach or Ditch Block Flattening? Yes ____ No X

16. T Intersection Recovery Approaches? Yes ____ No X

17. Fence? Yes ____ No X

18. Railroad Crossings? Yes ____ No X

19. Detours? Yes ____ No X

A detour may be required with construction of the roundabouts, depending on construction phasing.

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 ____ No X

Existing ROW:
N Jct ND 17 & 18 – 100' around all intersection legs. There appears to be some encroachment from a field to the south.

S Jct ND 17 & 18 – 40' to 70' around ND 17, 215' to 325' around ND 18 to the south, and 100' to 215' around ND 18 to the north.

ND 17 & 32 – 100' around all intersection legs.

Additional ROW may be required depending on the increased intersection footprints and construction phasing.

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 ____ No X

30. Guardrail? Yes ____ No X

31. Milling? Yes X No _____

See “Proposed Improvements” section.

32. Repeated ER Events? Yes ____ No X

33. Interstate Access Gates? Yes ____ No _____ N/A X

34. Steep Slopes? Yes ____ No _____ N/A X

I. LOAD RESTRICTIONS

Travel Information Map Proposed Load Restriction: N/A
Freight Level Required Minimum Load Restriction: N/A
Projected Load Restrictions after project is complete: N/A

J. ROADWAY WIDTHS

Required Minimum Roadway Width: Follow NDDOT practices for roundabouts.
Freight Level Required Minimum Width: 26’ (Freight Level 2)

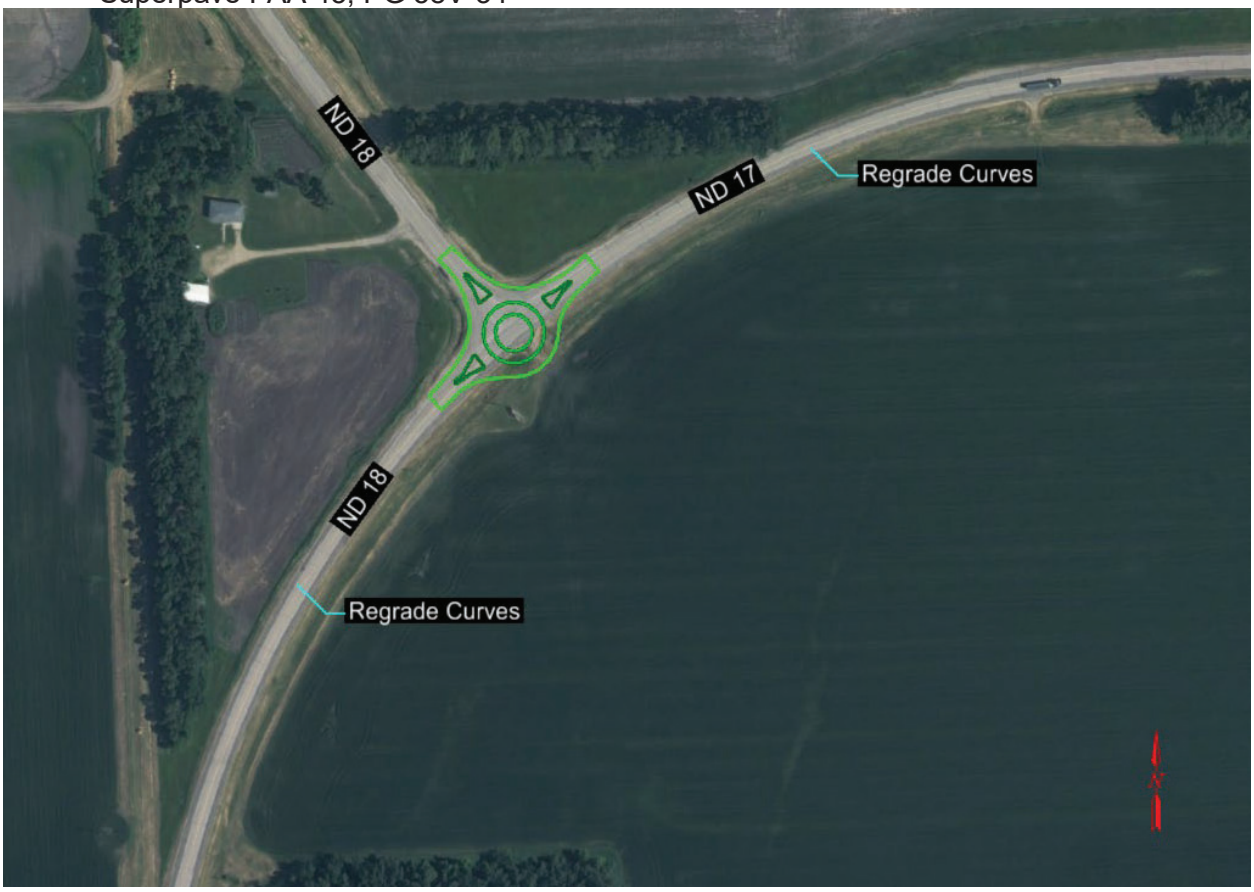
K. PERFORMANCE GUIDELINES

Design Speed: Roundabouts – 45mph approach speed, 25 mph roundabout advisory speed.
Turn Lane – Use existing.
Clear Zone: Use existing.
Foreslopes: Use existing.

L. PROPOSED IMPROVEMENTS

ND 17 & 18 (N Jct) – Roundabout (HMA)

- 6” of HMA Superpave on 18” of dense-graded base
- Superpave FAA 45, PG 58V-34

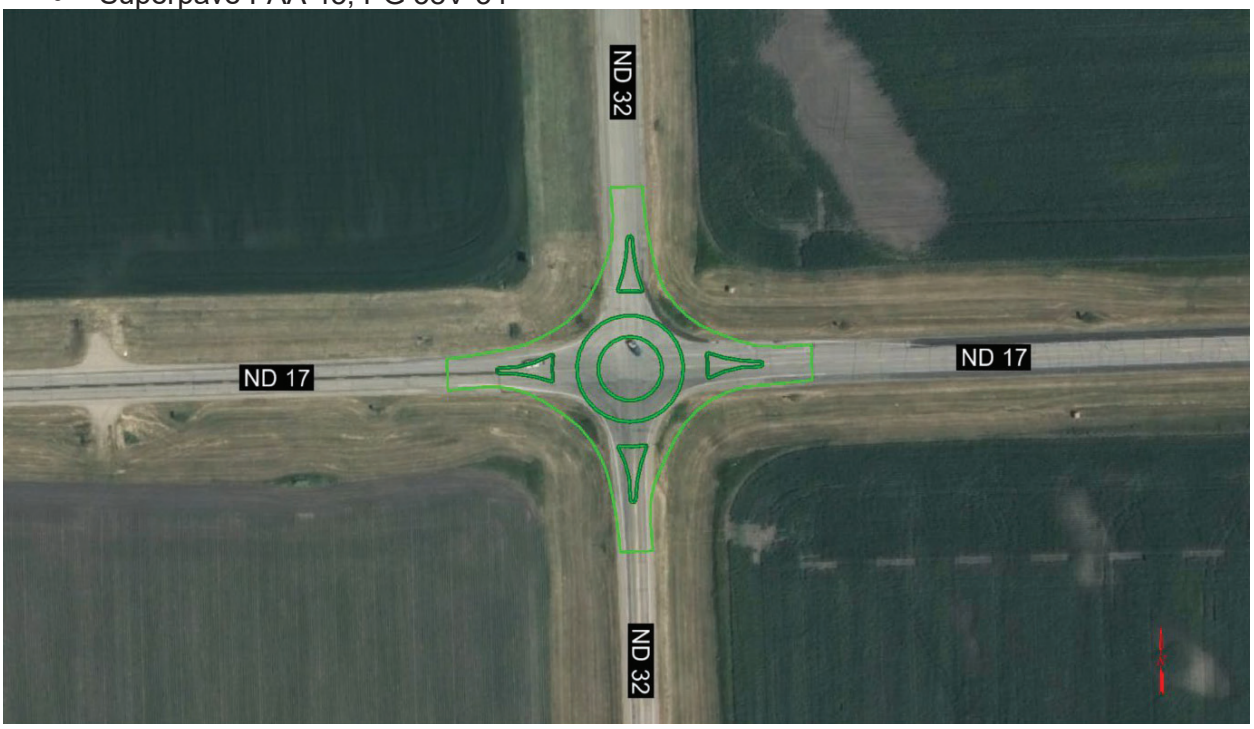


ND 17 & 18 (S Jct) – Option 1: Left Turn Lane

ND 17 & 18 (S Jct) – Option 2: Left Turn Bypass Lane

ND 17 & ND 32 – Roundabout (HMA)

- 6.5” of HMA Superpave on 18” of dense-graded base
- Superpave FAA 45, PG 58V-34



M. ADDITIONAL COMMENTS

District Engineer:

O. DECISIONS

1. ND 17 & 18 N Jct – Should this project to install a roundabout advance?

   X Yes ____ No

2. ND 17 & 18 S Jct – Which option should advance?

   X Option 1 – Left Turn Lane & Extend Existing Right Turn Lane

   ____ Option 2 – Left Turn Bypass Lane & Extend Existing Right Turn Lane

3. ND 17 & 32 – Should this project to install a roundabout retrofit advance?

   X Yes ____ No

NA
DDP Comments: _____