Scope Amendment

Amendment description
Added information regarding Pine Ridge Indian Reservation and Federal Lands
NH 0073(73)62 Jackson **PCN 05HV** SD73 - Fm S of the White River to Kadoka Grading, Interim Surfacing, Replace Str RCBC **NH 0073(78)62** Jackson **PCN 05U4** SD73 - Fm S of the White River to Kadoka AC Surfacing

Amendment Summary
Added information into the scoping document. The portion of the project south of the White River is located within the Pine Ridge Indian Reservation and Federal lands are located between Kadoka and the White River. This information was added into the Environmental and Agreement tabs within the Project Characteristics section and a map of the Federal Lands was added to the Appendix.

Approval					
Office #	**Approved**	**Office #**	**Approved**	**Office #**	**Approved**

I hereby certify the design meets or exceeds current minimum SDDOT 3R Design Standards.			
Name	**Office #**	**Action**	**Date**
Joe Feller	Materials & Surfacing	Approved	02/26/2021
Scott Rabern	Roadway Design	Approved	02/22/2021
Jason Humphrey	Pierre Region		
Doug Sherman	Winner Area		
Steve Johnson	Bridge Design		
Joanne Hight	Administration		

Scope Amendment

Amendment description

Changing Shoulder Widening segments to regrading.

NH 0073(73)62 Jackson **PCN 05HV**
SD73 - Fm S of the White River to Kadoka
Grading, Interim Surfacing, Replace Str RCBC

Amendment Summary

The shoulder widening segments (MRM 64.00 + 0.050 to 64.00 + 0.471 and MRM 64.00 + 0.569 to 66.00 + 0.349) will be changed to full regrading with the same design considerations as the rest of the reconstruction project. Reconstruction will include replacing all pipe culverts in these segments. The White River structure (36-309-168) will still be retained. The box culvert north of the White River structure (36-307-159) will still be retained as well, but there may be needs to extend this culvert when adjustments to the gradeline are made to meet design standards. This will be determined during design.

Justification:

- Shoulder widening from MRM 64.00+0.050 to 64.00+0.471 (old plans 341+18.6 to 359+50): This area has a 7% grade and 55 mph vertical curves, which do not meet design speed. This area had all new surfacing placed in 2013 (PCN 022X) but the subgrade was not undercut and reconstructed. This is along a landslide where geogrid reinforced base course was provided. This a relatively short stretch with total reconstruction happening on both ends.

- Shoulder widening from MRM 64.00+0.569 to 66.00+0.349 (old plans PCN 3612 & PCN 1979): These 2 projects had 60 mph design speeds in 1992 and 1995 and therefore do not meet 70 mph standards. The 5 horizontal curves are all under 70 mph ranging from 50 mph to 65 mph. One curve with 1910 radius would need to be regraded to 2040 minimum radius to meet 70 mph. The remaining curves could have superelevation changed to meet 70 mph. The PCN 3612 plans have a 6% grade and 65 mph vertical curve that do not meet 70 mph.

Approval

Office #	Approved	Office #	Approved	Office #	Approved

I hereby certify the design meets or exceeds current minimum SDDOT 3R Design Standards.			
Name	**Office #**	**Action**	**Date**
Scott Rabern	Roadway Design	Approved	01/31/2019
Doug Sherman	Winner Area	Approved	01/31/2019
John Forman	Pierre Region	Approved	01/31/2019
Steve Johnson	Bridge Design	Approved	12/07/2018
Joanne Hight	Administration	Approved	01/31/2019

Scope Amendment

Amendment description
Expand Lighting segments in Kadoka on SD73 and SD248.
NH 0073(73)62 Jackson **PCN 05HV** SD73 - Fm S of the White River to Kadoka Grading, Interim Surfacing, Replace Str RCBC **P 0248(17)162** Jackson **PCN 08EH** SD248 - Fm SD73 to 12th Ave in Kadoka Lighting

Amendment Summary
Lighting on SD73 will be added from the SD248 intersection to the interchange. The lighting of SD248 will be tied to this project with the PCN 08EH. Lighting will be added to SD248 from SD73 to 13th Ave in Kadoka. Agreements will need to be made with the city of Kadoka.

Approval					
Office #	**Approved**	**Office #**	**Approved**	**Office #**	**Approved**

I hereby certify the design meets or exceeds current minimum SDDOT 3R Design Standards.			
Name	**Office #**	**Action**	**Date**
Joe Feller	Materials & Surfacing	Approved	03/01/2021
Scott Rabern	Roadway Design	Approved	02/22/2021
Jason Humphrey	Pierre Region	Approved	03/04/2021
Doug Sherman	Winner Area	Approved	02/26/2021
Steve Johnson	Bridge Design	Approved	02/24/2021
Joanne Hight	Administration	Approved	03/01/2021

Amendment Scope

FROM: Brandon Soulek

Date: 11/4/2022

Re:

NH 0073(73)62 Jackson **PCN 05HV**
SD73 - Fm S of the White River to Kadoka.
Reconstruction

NH 0073(78)62 Jackson **PCN 05U4**
SD73 - Fm S of the White River to Kadoka.
AC Surfacing

P 0248(17)162 Jackson **PCN 08EH**
SD248 - Fm SD73 to 12th Ave in Kadoka
Lighting

CC:

Bridget Carnahan - Administration
Steve Johnson - Bridge Design
Kevin Marton - Bridge Design
Kathryn Johnson - Engineering/Planning
Tanner Fitzke - Materials & Surfacing
Scott Rabern - Materials & Surfacing
Jason Humphrey - Pierre Region
John Koch - Pierre Region
Mark Reiss - Planning & Programs
Travor Diegel - Project Development
Mark Leiferman - Project Development
Andy Vandel - Project Development
Stacy Bartlett - Rapid City Region
Sarah Gilkerson - Roadway Design
Brad Norrid - Winner Area
Joanne Hight - Administration
Dave Madden - Bridge Design
Todd Thompson - Bridge Design
Joe Feller - Materials & Surfacing
Kevin Griese - Materials & Surfacing
Darren Griese - Pierre Region
Jim Hyde - Pierre Region
Paul Nelson - Pierre Region
Phillip Clements - Project Development
Steve Gramm - Project Development
Brace Prouty - Project Development
Dustin Witt - Project Development
Joel Gengler - Right of Way
Mark Malone - Roadway Design
Doug Sherman - Winner Area

Amendment Scope

NH 0073(73)62 Jackson **PCN 05HV**
SD73 - Fm S of the White River to Kadoka.
Reconstruction

NH 0073(78)62 Jackson **PCN 05U4**
SD73 - Fm S of the White River to Kadoka.
AC Surfacing

P 0248(17)162 Jackson **PCN 08EH**
SD248 - Fm SD73 to 12th Ave in Kadoka
Lighting

Executive Summary of Project Amendment Scope

Please review the Amendment Tab for 3 Amendments to this scope.

The purpose of this 4R project (05HV) is to reconstruct SD73 from south of the White River to Kadoka and to just south of the I90 interchange's southern ramps where the existing AC pavement ends. (*MRM 62.00 + 0.495 to MRM 71.00 + 0.190*). The newly graded segment will require AC Surfacing (05U4) 1 year after the grading work has been completed. There will be 2 segments (*MRM 64.00 + 0.050 to MRM 64.00 + 0.471* and *MRM 64.00 + 0.569 to MRM 66.00 + 0.349*) that will not require full reconstruction, but shoulder widening as they were graded and full depth resurfaced with projects in 1992, 1996 and 2013.

This project (05HV) will consist of the following work types: Grading, Replace Structure (RCBC), & Interim Surfacing. The following year will be final surfacing with PCN 05U4.

The access management pre-design report will be located in the following directory, once it is completed: _____

SD73/SD248 Intersection

With reconstruction of this intersection, it is recommended to remove the right turn yield sign at the intersection in favor of a stop controlled intersection with a WB67 design vehicle.

Traffic on SD248 would be stop controlled. Lighting of this intersection is to be upgraded with this project. No other lighting will be included with this project.

Culverts and Structures

All pipe within the full reconstruction limits and 1 box culvert (36-301-184) will be replaced with this grading project. The remaining structures (36-309-168, 36-307-159) along with the pipe within the shoulder widening segments will not be replaced with this project. A pipe spreadsheet has been made for the shoulder widening segments with recommendations of work needed for each location (Inspected 8/10/17):

file:/U:\pd\Prj\Jack05HV\05HV%20Pipe%20Report.xls

Typical Section

According to SDDOT Road Design Manual, typical grading section will include 12' lane width and 6' shoulder width. Mainline final surfacing will be a 36' paved width due to a recommendation to avoid gravel shoulders due to the shale subgrade soils. Shoulder widening from MRM 64.00 + 0.569 to MRM 66.00 + 0.349 will retain the 4' of paved shoulders and add 2'. It shall be determined if the 2' of shoulder width can be gained by shaping the shoulders' inslopes rather than by true shoulder widening. If possible, that would be the prefered method for this section. Clear zone for design will be 30'.

ROW

The existing ROW is 150' and wider in areas of curve reconstruction in 1999 project. Areas of local ROW acquisition and temporary easements may be needed. The project limits that are south of the White River are located in the Pine Ridge Indian Reservation.

It is the responsibility of the **designer** to design the project to meet or exceed the current minimum SDDOT design standards and policies. The designer shall coordinate any improvements not included in the scope of work involving grading, ROW needs, inslope flattening, and/or pipe/drainage work with the Environmental Office and assigned PIC for any additional environmental clearances that may be required. The designer shall verify with the Pavement Engineer that the surfacing recommendation provided in the Approved Scope is the most current recommendation before proceeding with the project design.

Segments

Highway	Beg MRM	Beg Disp	End MRM	End Disp	Length	County
073	62.00	0.495	71.00	0.190	8.487	Jackson
248	162.44		163.38		0.979	Jackson

Fund Source Summary

PCN	FY	Cost	STIP Category
05HV	2024	17.516	MajArt
05U4	2025	6.936	MajArt
08EH	2024	0.364	SHSMunic

Preferred Letting Date: Unknown

COORDINATORS:

Scope Coordinator - Brandon Soulek
Grading Squad - Mark Malone
Surfacing Plans - Chad Howard
Grading Squad - Mark Malone

OVERALL PROJECT NEEDS

Type	Description
Public Involvement (Public Mtg, Public Hearing, Landowner Mtg)	Landowner Meetings and public meeting

ENVIRONMENTAL NEEDS

Type	Description
4f(Parks, Historical Sites, Game Production Area)	Federal Lands map in Appendix
Cultural Resources Survey	
Storm Water Pollution Prevention Plan (SWPPP)	
Wetlands	Wetland impacts and mitigation shall be determined during design.

UTILITY NEEDS

Type	Facility	Company
Other		City of Kadoka
Other		Golden West Communications
Other		OST Water Maintenance & Conservation Program
Other		SDDOT
Power		West Central Electric Cooperative
Telephone		CenturyLink
Telephone		Kadoka Telephone Company
Water		Mni Wiconi Water Treatment Plant
Water		West River Lyman/Jones Rural Water

FOR 05HV: A utility notification and certification is required. Utility meetings to be determined.

FOR 05U4: No utility certification is necessary.

No utility impacts are expected if grading reconstruction is less than 18" depth and no easements or ROW acquisition is proposed.

Please add note shown below to the plans for contractor-to-utility coordination during construction.

UTILITIES

Per South Dakota Codified Law 49-7A and Administrative Rule Article 20:25, the Contractor shall contact the involved utility owners through the SD One Call system; 811 or 1-800-781-7474; prior to commencing construction. It shall be the responsibility of the Contractor to coordinate work with the utility owners to avoid service outages, roadway project delays, or damages to facilities.

Utility **conflicts are not anticipated** on this project. If utilities are identified within the work limits through the SD One Call procedure; the Contractor shall contact the Project Engineer to determine modifications needed to avoid impacts.

Utility Notification Required	YES	**SUE Needed**	NO	**SUE (Modified Phase 2) Needed**	NO

AGREEMENT / RESOLUTION NEEDS and/or Other Agency Coordination

Org Type	Org Name	Need Type	Agree?	Description
Tribal		ROW		
Tribal		Section 106 consultation		
Tribal		TERO		
US Corp of Engineers (404 Permit)				

SURVEY NEEDS

Type	Description
Drainage	Box Culvert replacement, DA>1000 acres at MRM 63.14
Encroachment	
Reconstruction	
Wetlands Survey	

BenchMark	**Harn Point**

CONSTRUCTABILITY NEEDS	
Type	**Description**
Detour	
Lane Closure/Shifts	
Road Closure	

Approval					
Office	**Approved**	**Office**	**Approved**	**Office**	**Approved**
Administration	Yes	Bridge Design	Yes	Materials & Surfacing	Yes
Pierre Region	Yes	Roadway Design	Yes	Winner Area	Yes

Confirmation of Approval			
		Date Approved	

BACKGROUND INFORMATION

1921 Grading:

file:U:\rd\Misc\MicroFilm\Plans\36127.pdf

1955 Grading/Structures:

file:U:\rd\Misc\MicroFilm\Plans\36102.pdf

1955 Grading:

file:U:\rd\Misc\MicroFilm\Plans\36103.pdf

1955 Surfacing:

file:U:\rd\Misc\MicroFilm\Plans\36101.pdf

1969 Grading I90 Interchange:

file:U:\rd\Misc\MicroFilm\Plans\36007.pdf

1969 Surfacing:

file:U:\rd\Misc\MicroFilm\Plans\36124.pdf

1984 Resurfacing:

file:U:\rd\Misc\MicroFilm\Plans\1033.pdf

1986 PCC Surfacing I90 Interchange:

file:U:\rd\Misc\MicroFilm\Plans\0399.pdf

1989 Interchange Lighting:

file:U:\rd\Misc\MicroFilm\Plans\36339.pdf

1992 Structure and approach grading:

file:U:\rd\Misc\MicroFilm\Plans\3612.pdf

1995 Structure and approach grading:

file:U:\rd\Misc\MicroFilm\Plans\1979.pdf

1996 Resurfacing:

file:U:\rd\Misc\MicroFilm\Plans\4467.pdf

2011 Epoxy Chip Seal for Structure:

file:U:\rd\Misc\MicroFilm\Plans\029B.pdf

2013 Surfacing:

file:U:\rd\Misc\MicroFilm\Plans\022X.pdf

Grading for a slide repair was completed in 1996 under a maintenance project PCN 214P. Subsequent subgrade reinforcement and cutoff drain installation was completed with a surfacing project PCN#6955 in 2013. These recommendations were added during construction so they may not have been archived. Here is the reinforcement recommendations report from the project:

file:/U:\pd\Prj\Jack05HV\Jackson%20SD73%20S%20of%20Kadoka%20Grid%20Reinforcement.doc

Projects In Area

Fiscal Year	Status	PCN	Project #	Location	Improvement Desc
2019	Closed	04W1	IM 0903(110)132	I90 - Strs, Over Big Buffalo Crk 1.0 E of the SD240S Interchange; Over Fairview Rd and Over Co Rd 7.0 W and 4.0 W of the SD73N Interchange; SD73N Exit; Over a county road 3 E of the SD73 N Intch; Over White Willow Ck 1.3 W of the Kadoka Intch; SD73 S Intch	Polymer Chip Seal
2020	Closed	05V5	P 0248(11)145	SD248 - Str, 1.0 E of Cactus Flats Over Big Buffalo Creek & 1.4 W of Kadoka Over White Willow Creek	Strs (RCBC), Approach Grading
2020	Closed	04D9	IM-FP 0903(106)152	I90 - WBL, Fm E of the Belvidere Exit to W of the Jackson/Jones Co. Line; Strs	Grading, PCC Surfacing, Pipe Work; Approach Slabs, Remove Asphalt Membrane

				Over I90, 2.5 SW of the SD63 N Exit, Perault Road and 2.3 E of the SD63N Interchange	Overlay, Deck Overlay, Polymer Chip Seal, Rest Area Improvements
2020	Closed	04NH	IM 0901(181)0	I-90 - Rapid City Region	Crossroad Improvements
2021	Completed	04Q2	P 0063(48)75	SD63 - Fm Belvidere to N of I90 & Fm SD248 to 0.3 N (near 1880 Town)	Mill, AC Resurfacing
2021	Completed	04D7	IM-FP 0903 (108)163	I90 - EBL, Fm E of the Belvidere Exit to W of the Jackson/Jones Co Line; Str Over I90, 2.5 SW of the SD63 N Exit, Perault Rd	Grading, PCC Surfacing, Pipe Work, Approach Slabs, Remove Asphalt Membrane Overlay, Deck Overlay, Polymer Chip Seal, Modify Rest Area, Lighting
2021	Proposed			SD63 – From SD248 north 0.3 miles	Mill & AC Resurfacing
2022	Awarded	04TJ	IM 0903(109) 165	I90 - Fm W of the Jackson/Jones Co Line to 3 W of Exit 201 (Draper)	Pipe Work
2023	Programmed	04W7	IM-NH-P 0040(234)	I90 - Strs, 4.0 E of the Box Elder Intch over 154th Ave; 0.5 W of SD240 Over RR; 0.3 E of Wasta Over the Cheyenne River; 1.9 NW of the W Wall Intch Under Cedar Butte Road; 6.3 NW of the SD240 S Intch Over Whitewater Crk; On the US014 WB Off ramp at the I90 Intch; US14 – Str, US14 & I 90 Intch; SD240 – Str, At the W Wall Intch Over I90	Zone Painting, Paint Superstructure
2025	Cancelled	06DF	IM 0903(116) 141	I90 EBL & WBL - Fm 1.3 W of I90/SD73 Interchange to Kadoka	Mill & AC Resurfacing, Pipe Work
2025	Programmed	05U4	NH 0073(78) 62	SD73 - Fm S of the White River to Kadoka	AC Surfacing
2026	Programmed	04L6	PH 8036(05)	Various County, City, Tribal & Township Roads in Jackson County	Signing & Delineation - Gravel Roads ONLY

Traffic Data			
Project Length			
2016 ADT	802	**d:**	51.0%
2036 ADT	900	T DHV:	9.1%
DHV:	106	T ADT:	20.0%

Future Development	None Anticipated

Crash Data	
Period from 2012 to 2016	
Project Length	
Weighted Accident Rate	2.04
Number of Fatal	0
Number of Injury:	4
Number of Property Damage:	14

19 total crashes:

7 animal hits, 1 resulting in injury (1600033)

3 run off the road left, PDO (1400549, 1414763, 1517738)

1 high speed rear end that lead to rollover off road, injury (1407493)

1 tried to avoid debris in the roadway and struck guardrail, PDO (1408294)

1 sideswipe of farm machinery, PDO (1412393)

1 intersection crash, failure to yield at the yield sign at SD248/SD73, PDO (1501016)

1 winter driving conditions loss of control, PDO (1515393)

1 trailer coming unhitched, PDO (1603230)

1 run off the road left when attempting a pass, injury (1607803)

1 trailer began to sway pulling vehicle off the road to the left, injury (1614707)

Roadway			
Project length			
Posted Speed Limit	65, 45 to 30 in Kadoka	**% Passing**	
# of Lanes & Width	2-12'	**Shoulder Width**	1' to 6' existing
Typical Inslope		**Median Type**	NA
# & % Length of Grades		**Climbing Lanes, Turn Lanes, etc.**	NA
# of Horiz Curves at each DesignSpeed		**# of Vertical Curves at each Design Speed - Crest (Sag)**	

Structures (Bridges and Box Culverts over 20')			
Structure Number	36-301-184	**MRM Number**	073+63.14
Historical	Bridge is not eligible for the National Register of Historic Places		
Year Built	1954		
Location	IRR SD073 7.7 S OF KADOKA over CK		
Bridge Type & Size	2 - 10 x 8 x 66 ft Culvert Concrete continuous		
Structure Capacity	HS-61.2		
Eligible for BRF Funds	No		
Deficiency Classification	Not Deficient		

Structure Number	36-309-168	**MRM Number**	073+64.99
Historical	Bridge is not eligible for the National Register of Historic Places		
Year Built	1996		
Location	IRR SD073 6 S OF KADOKA over WHITE RV		

Bridge Type & Size	441.1 ft x 36 ft roadway,5 spans, Prestressed concrete continuous Stringer/Multi-beam or Girder Bridge, 15 degree L skew
Structure Capacity	HS-42.2
Eligible for BRF Funds	No
Deficiency Classification	Not Deficient

Structures Data (Box Culverts and Miscellaneous)		
Location	**Size**	**Length**
36-307-159	12x12 box culvert, MRM 65.763	223'
Historical	No	
Retaining Walls		
Other Structures		

Lighting	Yes
	Limited lighting near SD248 intersection in Kadoka.

Existing Signals	No

Pedestrian Flasher	No

Excluded

Retain existing structures:

36-309-168

36-307-159

There will be 2 segments (*MRM 64.00 + 0.050 to MRM 64.00 + 0.471* and *MRM 64.00 + 0.569 to MRM 66.00 + 0.349*) that will not require full reconstruction, but shoulder widening as they were graded with projects in 1992, 1996 and 2013.

Needs Book Year 2017

HIGHWAY 073
Beginning MRM = 53.00
Ending MRM = 64.00

RURAL

HIGHWAY 073
Beginning MRM = 53.00
Ending MRM = 64.00

IDENTIFICATION							
Federal Aid System	NHS-NI	NHS-NI	NHS-NI	NHS-NI	NHS-NI		
Funding Category	MAJA	MAJA	MAJA	MAJA	MAJA		
Functional Classification	R-P A	R-P A	R-P A	R-P A	R-P A		
Direction							
Beginning MRM	53.00	62.00	64.00	64.00	64.00		
MRM Displacement	0.122	0.495	0.050	0.471	0.569		
Segment Length	9.299	1.393	0.421	0.098	0.745		
Year Built	1985	1955	2013	1955	1996		
Year Last Improved	2013	2013	2013	2013	2013		
Year Last Sealed	2016						
ROADWAY CONDITIONS							
Surface Condition Index	4.55	4.64	4.65	4.61	4.72		
Roughness Index	4.83 (16)	4.80 (16)	4.68 (16)	4.77 (16)	4.81 (16)		
ASPHALT INDEX VALUES							
Transverse Cracking	4.87 (16)	4.90 (16)	5.00 (16)	4.80 (16)	4.92 (16)		
Fatigue Cracking	4.99 (16)	5.00 (16)	5.00 (16)	5.00 (16)	5.00 (16)		
Patching/Patch Deterioration	5.00 (16)	5.00 (16)	5.00 (16)	5.00 (16)	5.00 (16)		
Block Cracking	5.00 (16)	5.00 (16)	5.00 (16)	5.00 (16)	5.00 (16)		
Rut Index	4.39 (16)	4.52 (16)	4.60 (16)	4.52 (16)	4.65 (16)		
Rut Depth(Inches) AVG/MAX	0.20 / 0.40	0.10 / 0.20	0.10 / 0.20	0.10 / 0.20	0.10 / 0.20		
CONCRETE INDEX VALUES							
D-Cracking/ASR							
Joint Spalling							
Corner Cracking							
Faulting / CRCP Block Cracking							
Joint Seal Damage							
Punchouts							
STRUCTURAL DESCRIPTION							
Surface Type	THK	TONS	THK	TONS	TONS		
Shoulder Type - Primary/Secondary	AC/N/D	AC/NONE	AC/NONE	AC/NONE	AC/N/D		
Surface Width	24 (024)	24 (024)	24 (024)	24 (024)	24 (024)		
Left Shoulder Width-Prim/Sec	3 (03) / 0 (0)	2 (02) / 0 (0)	1 (01) / 0 (0)	2 (02) / 0 (0)	4 (04) / 0 (0)		
Right Shoulder Width-Prim/Sec	3 (03) / 0 (0)	2 (02) / 0 (0)	1 (01) / 0 (0)	2 (02) / 0 (0)	4 (04) / 0 (0)		
Widths-ROWY/ROW-Predom/Min	030/150/150	028/150/150	026/150/150	028/150/150	032/150/150		
Roadbed Layer 1	2016/TS3/0.4	2015/TC/0.0	2015/TC/0.0	2015/TC/0.0	2015/TC/0.0		
Roadbed Layer 2	2015/TC/0.0	2013/AS3/2.0	2013/AS3/2.0	2013/AS3/2.0	2013/AS3/2.0		
Roadbed Layer 3	2013/AS3/2.0	1997/AE3/0.5	2013/AS3/3.0	1997/AE3/0.5	1996/AE3/0.5		
Roadbed Layer 4	1997/AE3/1.0	1997/AE3/2.0	2013/BU4/17.3	1997/AE3/2.0	1996/AE3/1.5		
Roadbed Layer 5	1986/AD3/4.9	1997/BP4/9.7		1997/BP4/9.7	1996/BU4/5.0		
Roadbed Layer 6	1986/BU5/6.0	1955/BB5/3.0		1955/BB5/3.0	1996/BB4/9.0		
Roadbed Layer 7	1985/BU8/3.0	1955/BU8/3.0		1955/BU8/3.0			
Roadbed Layer 8							
Roadbed Layer 9							
Roadbed Layer 10							
Roadbed Layer 11							
Roadbed Layer 12							
Number Of Structures	0	0	0	0	1		
Number Of Box Culverts	0	1	0	0	0		
3 YR AVG MAINTENANCE COSTS							
Mainline	$12	$16	$0	$10	$13		
Shoulders	$0	$0	$0	$0	$0		
Structure	$0	$1	$0	$429	$430		
Other	$2535	$3398	$0	$2827	$2823		
Total	$2547	$3416	$0	$3265	$3266		
Total 3 Year Main Contract Amount	$430	$574	$0	$480	$474		
TRAFFIC							
Current ADT	843	841	800	800	800		
Projected 20 Year ADT	946	944	898	898	898		
Number Of Trucks	150	151	165	165	165		
CRASHES							
Weighted Crash Rate	1.61	2.34	0.00	0.00	2.06		
Number of Fatal	1	0	0	0	0		
Number Of Injury	2	1	0	0	0		
Number Of Property Damage	5	2	0	0	3		
MAINLINE IMPROVEMENTS							
Project Programmed		YES	YES	YES	YES		
PCN		05HV	05HV	05HV	05HV		
Improvement Type	MILL AC OVLY	RECON GRVL	RECON GRVL	RECON GRVL	RECON GRVL		
Estimated Improvement Cost	$2575	$1437	$434	$101	$768		
Improvement Year	2028	2023	2023	2023	2023		
PCN		05U4	05U4	05U4	05U4		
Improvement Type	ROUTE/SEAL	RECON AC	RECON AC	RECON AC	RECON AC		
Estimated Improvement Cost	$54	$639	$193	$45	$342		
Improvement Year	2030	2024	2024	2024	2024		

HIGHWAY 073
Beginning MRM = 65.00
Ending MRM = 71.00

RURAL

HIGHWAY 073
Beginning MRM = 65.00
Ending MRM = 71.00

IDENTIFICATION						
Federal Aid System	NHS-NI	NHS-NI	NHS-NI	NHS-NI	NHS-NI	NHS-NI
Funding Category	MAIA	MAIA	MUNI	MUNI	MUNI	MUNI
Functional Classification	R-P A	R-P A	R-P A	R-P A	R-P A	R-P A
Direction						
Beginning MRM	65.00	66.00	70.95	70.95	71.00	71.00
MRM Displacement	0.331	0.349	0.000	0.019	0.102	0.190
Segment Length	1.024	4.559	0.019	0.140	0.088	0.216
Year Built	1992	1955	1955	1968	1968	1968
Year Last Improved	2013	2013	2013	2013	2013	1986
Year Last Sealed						
ROADWAY CONDITIONS						
Surface Condition Index	4.69	4.60	4.51	4.55	4.72	2.90
Roughness Index	4.92 (16)	4.91 (16)	4.55 (16)	4.71 (16)	4.63 (16)	3.50 (16)
ASPHALT INDEX VALUES						
Transverse Cracking	4.93 (16)	4.88 (16)	4.90 (16)	4.83 (16)	4.83 (16)	
Fatigue Cracking	5.00 (16)	5.00 (16)	5.00 (16)	5.00 (16)	5.00 (16)	
Patching/Patch Deterioration	5.00 (16)	5.00 (16)	5.00 (16)	5.00 (16)	5.00 (16)	
Block Cracking	5.00 (16)	5.00 (16)	5.00 (16)	5.00 (16)	5.00 (16)	
Rut Index	4.57 (16)	4.44 (16)	4.37 (16)	4.44 (16)	4.68 (16)	
Rut Depth(Inches) AVG/MAX	0.10 / 0.20	0.20 / 0.40	0.20 / 0.20	0.20 / 0.20	0.10 / 0.30	
CONCRETE INDEX VALUES						
D-Cracking/ASR						5.00 (16)
Joint Spalling						2.90 (16)
Corner Cracking						4.60 (16)
Faulting / CRCP Block Cracking						3.84 (16)
Joint Seal Damage						2.00 (16)
Punchouts						5.00 (16)
STRUCTURAL DESCRIPTION						
Surface Type	THK	TONS	TONS	THK	THK	TKSJ
Shoulder Type - Primary/Secondary	AC/N/D	AC/NONE	AC/NONE	AC/NONE	PCCP/AC	AC/GRVL
Surface Width	24 (024)	24 (024)	24 (024)	24 (024)	24 (024)	24 (024)
Left Shoulder Width-Prim/Sec	4 (04) / 0 (0)	2 (02) / 0 (0)	2 (02) / 0 (0)	4 (04) / 0 (0)	4 (04) / 1 (1)	6 (06) / 3 (3)
Right Shoulder Width-Prim/Sec	4 (04) / 0 (0)	2 (02) / 0 (0)	2 (02) / 0 (0)	4 (04) / 0 (0)	4 (04) / 1 (1)	6 (06) / 3 (3)
Widths-ROWY/ROW-Predom/Min	032/225/150	028/150/150	028/200/200	032/200/200	034/200/200	042/200/200
Roadbed Layer 1	2015/TC/0.0	2015/TC/0.0	2015/TC/0.0	2015/TC/0.0	2015/TC/0.0	1986/CPI/9.0
Roadbed Layer 2	2013/AI3/2.0	2013/AI3/2.0	2013/AI3/2.0	2013/AI3/2.0	2013/AI3/2.0	1986/BUS/5.0
Roadbed Layer 3	1997/AE3/0.5	1997/AE3/0.5	1997/AE3/0.5	1997/AE3/0.5	1997/AE3/0.5	1968/BL3/3.0
Roadbed Layer 4	1992/AE3/1.5	1997/AE3/2.0	1997/AE3/2.0	1968/AI3/1.5	1968/AD3/3.0	
Roadbed Layer 5	1992/AE3/1.5	1997/BP4/9.7	1997/BP4/9.7	1968/AP3/1.5	1968/BU5/8.0	
Roadbed Layer 6	1992/BU4/14.0	1955/BB5/3.0	1955/BB5/3.0	1968/BU5/10.0		
Roadbed Layer 7		1955/BU8/3.0	1955/BU8/3.0			
Roadbed Layer 8						
Roadbed Layer 9						
Roadbed Layer 10						
Roadbed Layer 11						
Roadbed Layer 12						
Number Of Structures	0	0	0	0	0	1
Number Of Box Culverts	0	0	0	0	0	0
3 YR AVG MAINTENANCE COSTS						
Mainline	$3	$13	$0	$50	$45	$0
Shoulders	$0	$0	$0	$0	$0	$0
Structure	$0	$0	$0	$0	$0	$9
Other	$804	$2778	$2789	$10607	$10614	$301
Total	$807	$2791	$2789	$10657	$10659	$310
Total 3 Year Main Contract Amount	$135	$470	$474	$1757	$1750	$0
TRAFFIC						
Current ADT	800	790	765	765	765	765
Projected 20 Year ADT	898	886	858	858	858	858
Number Of Trucks	165	159	179	179	179	179
CRASHES						
Weighted Crash Rate	0.00	2.13	0.00	0.00	0.00	0.00
Number of Fatal	0	0	0	0	0	0
Number Of Injury	0	2	0	0	0	0
Number Of Property Damage	0	8	0	0	0	0
MAINLINE IMPROVEMENTS						
Project Programmed	YES	YES	YES	YES	YES	YES
PCN	05HV	05HV	05HV	05HV	05HV	05HV
Improvement Type	RECON GRVL	RECON GRVL	RECON GRVL	RECON GRVL	RECON GRVL	RECON GRVL
Estimated Improvement Cost	$1056	$4701	$20	$144	$91	$223
Improvement Year	2023	2023	2023	2023	2023	2023
PCN	05U4	05U4	05U4	05U4	05U4	05U4
Improvement Type	RECON AC	RECON AC	RECON AC	RECON AC	RECON AC	RECON AC
Estimated Improvement Cost	$470	$2092	$9	$64	$40	$99
Improvement Year	2024	2024	2024	2024	2024	2024

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Summary of Design Data, Needs and

Treatment Types per Scope Improvement Type

Scope Improvement Type	Yes	No
ADA		X
GRADING	X	
HYDRAULIC	X	
MAINTENANCE		X
RAILROAD		X
RESEARCH		X
REST AREA/BLDG SITES		X
RESURF/SURFACING	X	
ROW	X	
ROADSIDE DEVELOPMENT		X
SAFETY	X	
STRUCTURE	X	
TRAFFIC		X

GRADING			
Design Elements	Project Length		
Terrain	Rolling		
Design Speed	70mph and 35 mph within the speed zones set in Kadoka		
Typical Grading Section			
Lanes	2-12'	**Shoulder Width**	6'
Sidewalk	N/A		
Bike Trails	N/A		
Ditch Type	Rural (Standard or Sloped) **Inslope** 4:1 **Depth** 3.5' **Width** 20' **Backslope**		
Clear Zone	30'		
Median	**Median Type** None **Centerline to Centerline Inslope Depth Width**		
Comment			

Geometric Needs	Comments/Recommendations	
Horizontal Curves Below Design Speed	All shall meet design speed	
Vertical Curves Below Design Speed	All shall meet design speed	
Intersection Horizontal Sight Distance Problems	None Existing	
Intersection Vertical Sight Distance Problems	None Existing	
Grades Steeper than Design Speed	All shall meet design speed	
Parking	None	
Design Vehicle	WB-67	

Geotechnical Needs	Comments/Recommendations
Undercut Needed	

Material Availability		
Borrow or Waste	Project should balance	
Soils/Foundations	Muck	
	Unstable Material	

List of applicable GRADING Treatment types based on Identified needs are as follows:	
Need	**Treatment Type**
Shoulder Width	Medium Grading
Summary	

HYDRAULIC

Hydraulic Needs	Comments/Recommendations
Water Overtop Areas or Lake Elevations	None: White River structure will not be replaced with this project.
Storm Sewer	None
Basin (Sedimentation, Retention, Detention,Storage)	None
Special Outlets	None
Pipe Capacity or Condition	**RC Pipe Treatment** / **Comments/Recommendations**: Extend pipe and provide appropriate end sections — In the spot- shoulder widening segments, pipe recommendations are listed in the pipe spreadsheet linked in the Executive Summary.; Repair — In the spot- shoulder widening segments, pipe recommendations are listed in the pipe spreadsheet linked in the Executive Summary.; Replace — **CM Pipe Treatment** / **Comments/Recommendations**: Extend pipe and provide appropriate end sections — In the spot- shoulder widening segments, pipe recommendations are listed in the pipe spreadsheet linked in the Executive Summary.; Repair — In the spot- shoulder widening segments, pipe recommendations are listed in the pipe spreadsheet linked in the Executive Summary.; Replace —
Erosion (Ditch, Channel, Stream, or River)	None
Stream Relocation	None

FEMA Flood Plain	Yes	Designated NSFHA

List of applicable HYDRAULIC Treatment types based on Identified needs are as follows:	
Need	**Treatment Type**
Pipe Condition	Replace Pipe
Pipe Condition	Extend Pipe
Pipe Condition	Repair Pipe

Summary

All pipe within the regrading sections of this project will be replaced. Pipe within the shoulder widening segments have recommendations listed in the pipe spreadsheet linked in the Executive Summary.

Structure # 36-301-184 (2 - 10 x 8 x 66 ft Culvert Concrete continuous) will be replaced with this project.

The remaining structures are to be retained.

RESURF/SURFACING

Resurfacing (3R) Needs				
Location Description	2016 Traffic	2036 Traffic	**Terrain**	**Comment**
Project length	802	900	Rolling	

Criteria	Existing Data	Min Design Criteria	Scope and/or Comment
Speed	65, 45 to 30 in Kadoka	70 mph	
Lane Width	2-12'	12'	Reconstruct
Shoulder Width	1' to 6' existing	2' paved, 4' gravel	Reconstruct — 6' paved shoulders recommended because of shale subgrade soils.
Horizontal Alignment		70 mph design speed	Reconstruct
Vertical Alignment		70 mph design speed	Reconstruct
Grade		5% Is allowed if there Is less than a 500' tangent.	Reconstruct
Cross Slope		2%	Reconstruct
Super-elevation		7% Maximum	Reconstruct
Bridge Width	36'		Meets Policy Criteria
Structural Capacity	42.4	HS-15 <= 1500 ADT	Meets Policy Criteria
Lateral Offset			NA

Vertical Clearance			NA
Guardrail		review Road Design Manual	Upgrade to Policy
Clear Zone			Upgrade to Policy: Design to a 30' clear zone.
Typical Inslope		4:1	Upgrade to Policy
Approach Slope		review Road Design Manual	Upgrade to Policy
Drainage Structures		review Road Design Manual	Upgrade to Policy
ADA Req	NA	NA	NA
Mailboxes		review Road Design Manual & Std Plates	Install Mailbox supports per Standard
Interim Surfacing	Blotter		
Shoulders			
Final Surfacing			

List of applicable RESURF/SURFACING Treatment types based on Identified needs are as follows:	
Need	**Treatment Type**
Surfacing	Blotter Surfacing
Surfacing	AC Surfacing

Summary

05HV

Preliminary Surfacing Design Recommendations:

Grading Portion

•Salvage & stockpile of the existing surfacing

•Grading

•12 Base Course

•Interim surfacing with a Blotter

Shoulder Widening Portion

•15 Base Course

05U4

Preliminary Surfacing Design Recommendations:

Grading Portion

•5 Asphalt Concrete

•Asphalt surfaced shoulders

Shoulder Widening Portion

•1 Cold Milling

•2 Asphalt Concrete

ROW	
ROW Needs	**Comments/Recommendations**
Acquisition	
Parcels Impacted	
Displacement / Relocation	NA
Type(s) of ROW necessary	Permanent: Blockouts or strips as needed Temporary: As needed

List of applicable ROW Treatment types based on Identified needs are as follows:	
Need	**Treatment Type**

Summary

ROW impacts to be determined during design. Temporary impacts are anticipated and permanant easements may be nessesary.

SAFETY	
Safety Needs	**Comments/Recommendations**
Lighting	Standard Roadway lighting: SD248/SD73 intersection lighting

List of applicable SAFETY Treatment types based on Identified needs are as follows:	
Need	**Treatment Type**
Guardrail (includes bridge rail,crash cushion,etc)	
Rumble Strips	Shoulder Rumble Strips/Stripes
Pavement Marking	Pavement Marking (paint, epoxy, tape, durable)
Shoulder Improvement	Safety Upgrading
Summary	

STRUCTURE			
Structure Needs	**Comments/Recommendations**		
Structure Number	36-301-184	**MRM Number**	63.14
Location	IRR SD073 7.7 S OF KADOKA over CK		
Disposition of Existing Structures	Remove/Replace		
Structure Location	Drainage Crossing		
Vertical Clearance	NA		
Horizontal Clearance	NA		
Size of Structure	To be determined by the office of Bridge Design		
Sidewalk / Bike path	None		
Skew			
Horizontal Curve	No		
Bridge Rail	NA		
Erosion Protection			
Utilities on Structure	No		

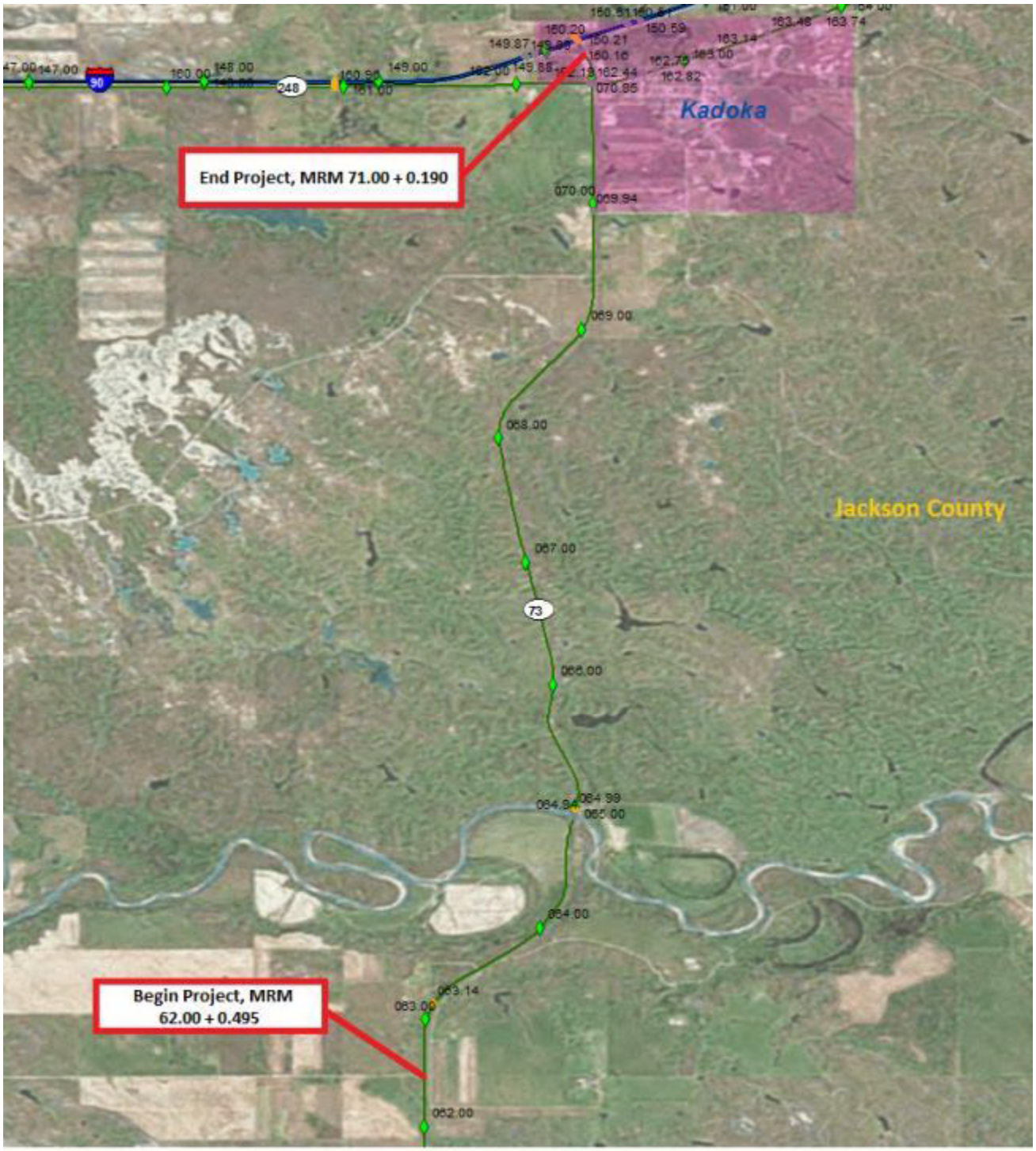
Retaining Walls and Miscellaneous	
Other Structures	

List of applicable STRUCTURE Treatment types based on Identified needs are as follows:	
Need	**Treatment Type**
Bridge	Replace Bridge
Culvert > than 20'	Replace Culvert
Culvert > than 20'	New Culvert

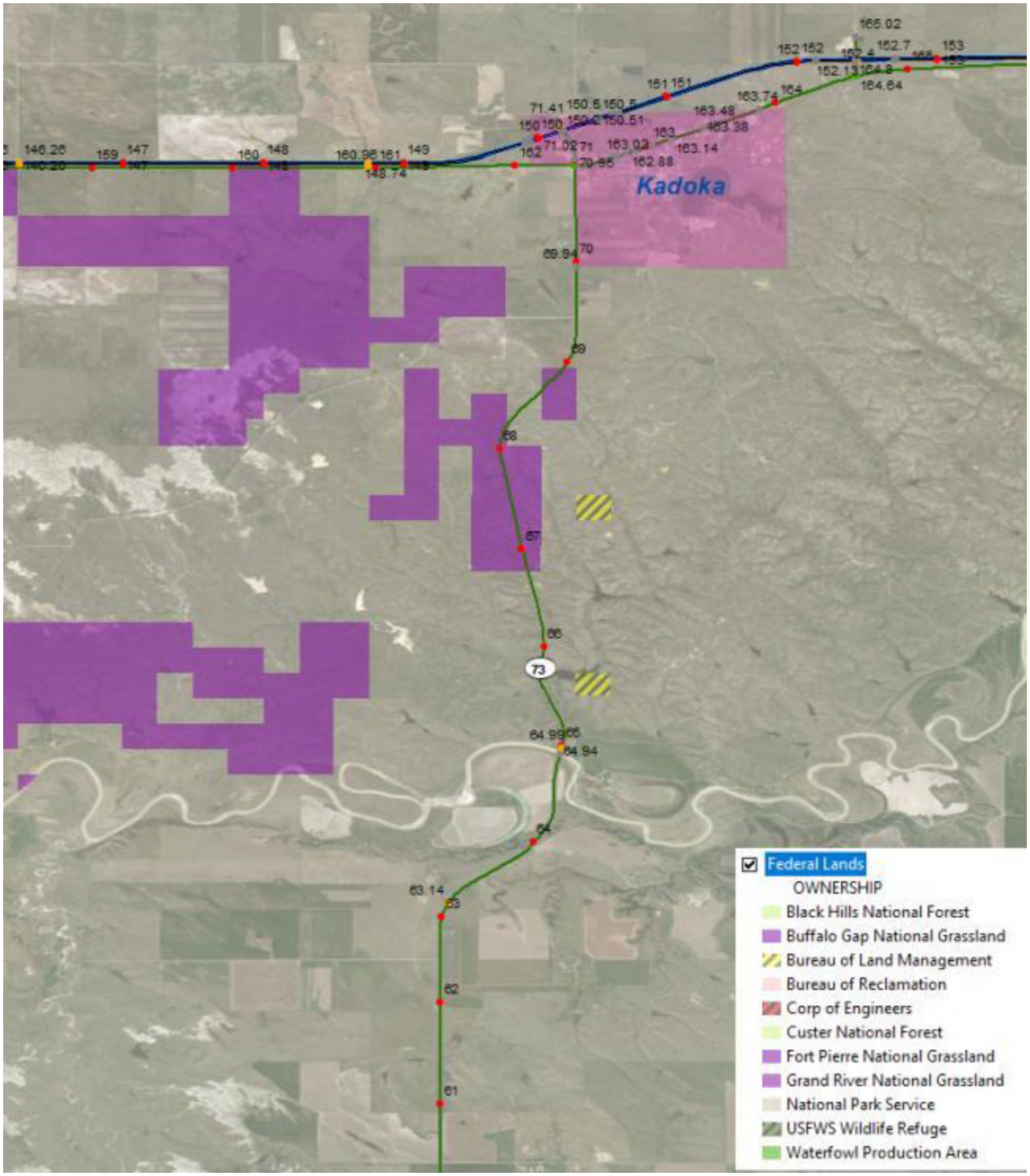
Summary

This structure length box culvert is to be replaced with this project. It's replacement shall meet a 30' clear zone. This work may require ROW easements.

Appendix


End Project, MRM 71.00 + 0.190
Kadoka
Jackson County
Begin Project, MRM 62.00 + 0.495
90
248
73


To Murdo
End Project MRM 71.00 + 0.190
To Wall
Kadoka
To Belvidere
Remove the Yield right turn and reconstruct as typical 2 way stop intersection.
To Cactus Flat
Intersection Lighting
To the White River


Kadoka
73
Federal Lands
OWNERSHIP
Black Hills National Forest
Buffalo Gap National Grassland
Bureau of Land Management
Bureau of Reclamation
Corp of Engineers
Custer National Forest
Fort Pierre National Grassland
Grand River National Grassland
National Park Service
USFWS Wildlife Refuge
Waterfowl Production Area