

STATE OF NORTH DAKOTA  
SHOWING COUNTIES

# PEMBINA COUNTY, NORTH DAKOTA PLANS FOR FEDERAL AID PROJECT BRP-0034(035) STRUCTURE REHABILITATION & INCIDENTALS

Project consists of seventeen Structure Rehabilitations & Incidentals.

STATE	PROJECT NO.	PCN	SECTION NO.	SHEET NO.
ND	BRP-0034(035)	23558	1	1

GOVERNING SPECIFICATIONS	Date Published and Adopted by the North Dakota Department of Transportation
Standard Specifications	7/1/2024
Supplemental Specifications	NONE

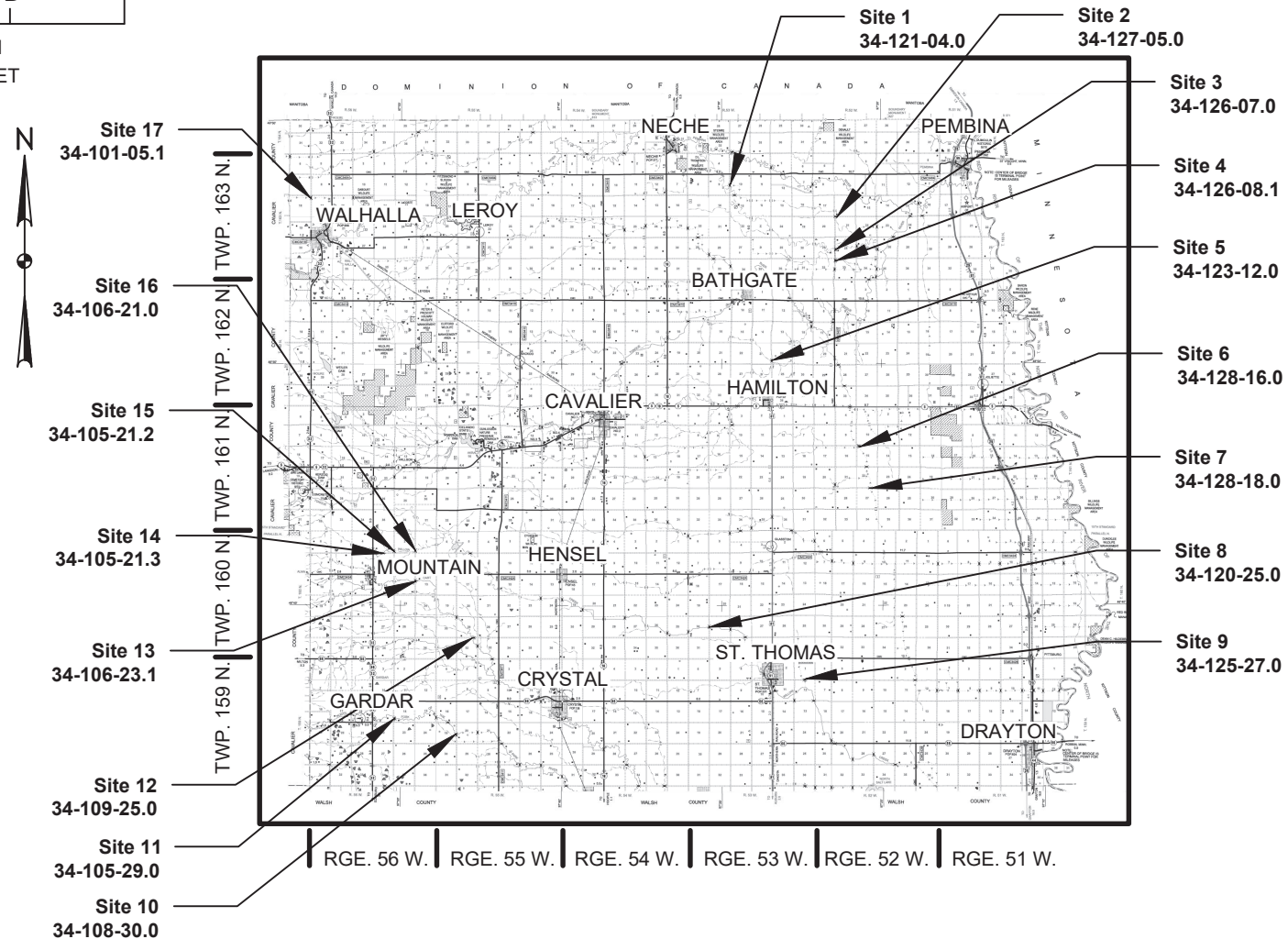
### DESIGN DATA

TRAFFIC	AVERAGE DAILY			EST. 30th MAX. HR.
	PASSENGER	TRUCKS	TOTAL	
CURRENT TRAFFIC 2022	LESS THAN 100 VPD			
TRAFFIC FORECAST 2042				

DESIGN SPEED: 55 MPH  
 MINIMUM SIGHT DISTANCE (STOPPING): 495 FEET  
 DESIGN LOADS FOR STRUCTURE: HL-93

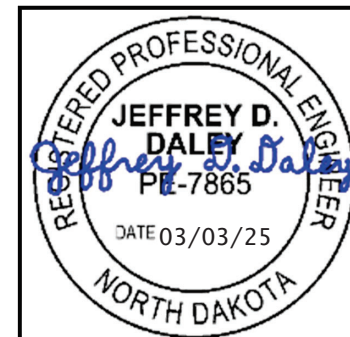
### PROJECT LENGTH

PROJECT	GROSS MILES	NET MILES
34-121-04.0	0.0047	0.0047
34-127-05.0	0.0110	0.0110
34-126-07.0	0.0058	0.0058
34-126-08.1	0.0058	0.0058
34-123-12.0	0.0042	0.0042
34-128-16.0	0.0051	0.0051
34-128-18.0	0.0044	0.0044
34-120-25.0	0.0049	0.0049
34-125-27.0	0.0046	0.0046
34-108-30.0	0.0076	0.0076
34-105-29.0	0.0081	0.0081
34-109-25.0	0.0068	0.0068
34-106-23.1	0.0047	0.0047
34-105-21.3	0.0043	0.0043
34-105-21.2	0.0057	0.0057
34-106-21.0	0.0046	0.0046
34-101-05.1	0.0045	0.0045
<b>TOTAL</b>	0.0968	0.0968



PS&E Corrections Made: March 2023  
 Surveyed & Designed Date: August 2022 - March 2023

DESIGNER	Wade Thompson, PE
DESIGNER	Jeff Daley, PE
DESIGNER	Zach Vlaminck
DESIGNER	-
DESIGNER	-



864 WEST 12TH ST  
 GRAFTON, ND 58237-2120  
 (701) 352-1555, FAX (855) 288-8055

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6	1	Plan Notes
6	2	Environmental Notes
8	1	Estimated Quantities
100	1	Traffic Control Devices List
100	2	Typical Construction Signing Layout
170	1	Bridge Layout
170	2-3	Details

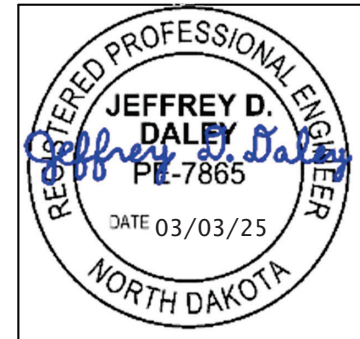
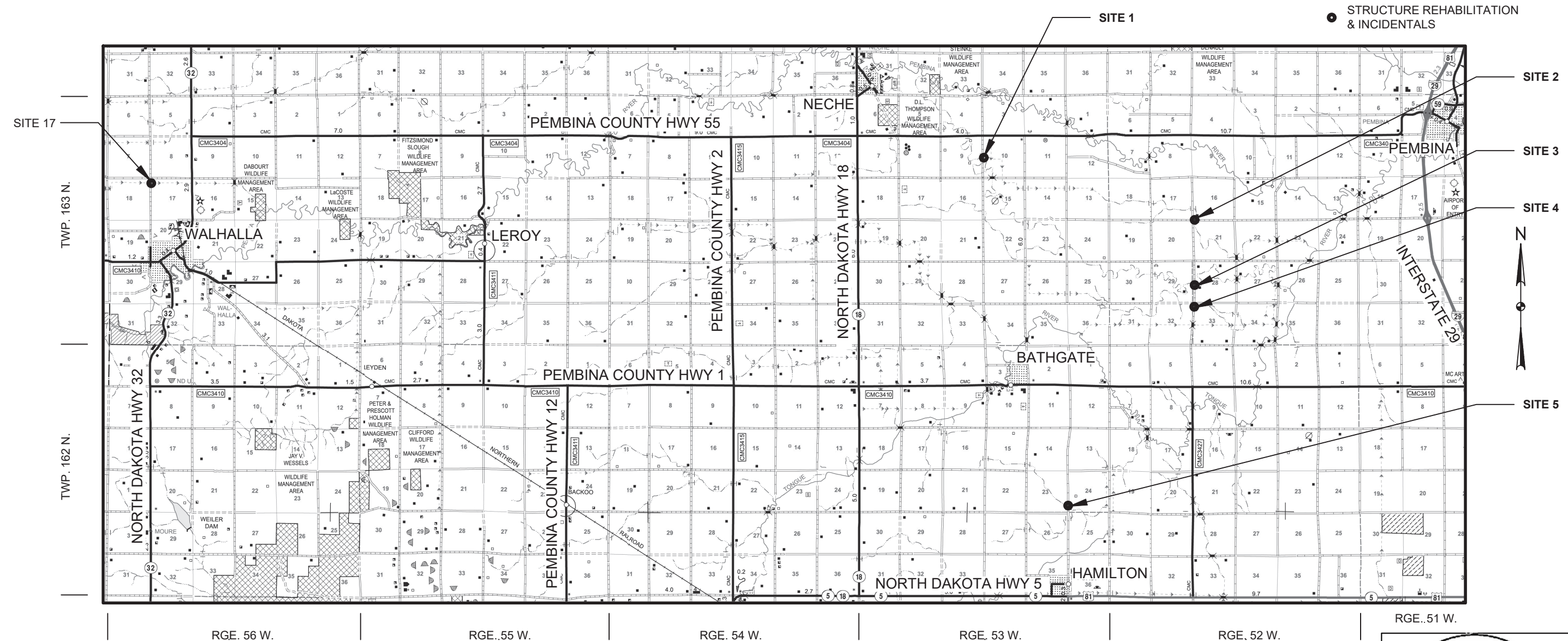
**LIST OF STANDARD DRAWINGS**

Number	Description
D-101-1, 2, 3, 4	NDDOT Abbreviations
D-101-10	NDDOT Utility Company and Organization Abbreviations
D-101-20, 21	Line Styles
D-101-30, 31, 32, 33	Symbols
D-704-7	Breakaway Systems For Construction Zone Signs - Perforated Tube
D-704-8	Breakaway Systems For Construction Zone Signs - U-Channel Post
D-704-9	Construction Sign Details - Terminal And Guide Signs
D-704-10	Construction Sign Details - Regulatory Signs
D-704-11, 11A	Construction Sign Details - Warning Signs
D-704-13	Barricade And Channelizing Device Details
D-704-14	Construction Sign Punching And Mounting Details
D-704-19	Road Closure And Lane Closure On A Two Way Road Layouts
D-704-21	Detour And Roadway Diversion Sign Layouts
D-704-50	Portable Sign Support Assembly


**SPECIAL PROVISIONS**

Number	Description
PSP 70(24)	Permits and Environmental Considerations

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**BRP-0034(035)**  
PEMBINA COUNTY, NORTH DAKOTA

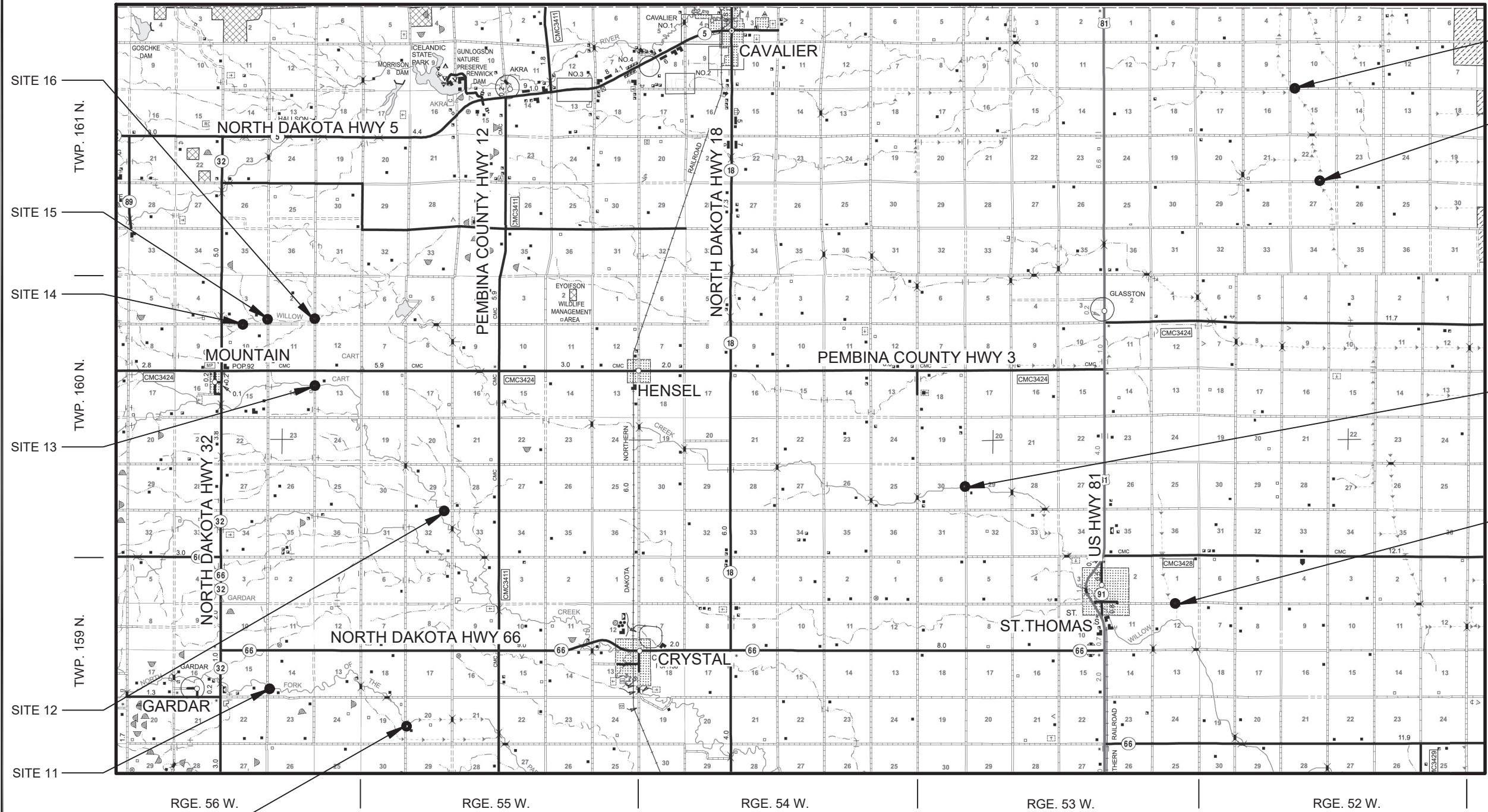


**SCOPE OF WORK**

DRAWN BY	CHKD BY	PROJECT NO.
CT	JD	2202-00406

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● STRUCTURE REHABILITATION & INCIDENTALS



- SITE 16
- SITE 15
- SITE 14
- SITE 13
- SITE 12
- SITE 11
- SITE 16
- SITE 7
- SITE 8
- SITE 9



**BRP-0034(035)**  
PEMBINA COUNTY, NORTH DAKOTA



**SCOPE OF WORK**

DRWN BY	CHKD BY	PROJECT NO.
CT	JD	2202-00406

## PLAN NOTES

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**100-P01**      **COORDINATION OF PROJECTS:** Provide Pembina County with two weeks notice before starting work on this project. Pembina County will remove the gravel surfacing per the Retrofit Detail Summary table on Sheet 1, Section 170.

**704-P01**      **TRAFFIC CONTROL FOR STRUCTURE REHABILITATION:** Use the construction signing layouts on Sheet 2, Section 100 as an example as to how the signs are to be set up for each site while work is in progress at the site. Sites 8, 10, and 11 are currently closed and the traffic control will remain in place until the bridge is inspected by the NDDOT. On all other sites, once work is completed at a site, the Contractor shall move the signs to the next site that work will take place. The bid item TRAFFIC CONTROL SIGNS includes the setting up and taking down of signs for all the site locations. There are 4 sign set ups included in the traffic control quantities. Provide additional signs at no cost to the Owner if needed for Contractor operations. The Contractor will be allowed to close the roadway for 14 calendar days at each site, excluding Sites 8, 10, and 11. Liquidated damages, in the amount of \$900/calendar day will be assessed for each day beyond the 14 calendar days.

The traffic control devices list has been developed using the following layouts on the Standard Drawings for traffic control:

- Standards D-704-19, Type E: For road closure to all traffic. Detour is not provided.
- Standards D-704-7, 8, 9, 10, 11, 11A, 13, 14, 19, 21 and 50 are applicable.



<b>BRP-0034(035)</b> <small>PEMBINA COUNTY, NORTH DAKOTA</small>		
	<b>PLAN NOTES</b>	
	<small>DRWN. BY</small> CT	<small>CHKD. BY</small> JD

## ENVIRONMENTAL NOTES

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**ENVIRONMENTAL NOTES (EN):** Pembina County, the North Dakota Department of Transportation, and the Federal Highway Administration have made environmental commitments to secure approval of this project. The following environmental notes are requirements to comply with these commitments:

**EN-1 AQUATIC NUISANCE SPECIES (ANS):** Equipment that was last used outside of North Dakota or within a Class I infested waterbody (identified on the North Dakota Game and Fish Department (NDGFD) website) requires an inspection by NDGFD. Notify the NDGFD at least 10 business days prior to pumps, watercraft, or any equipment entering a public water to allow the NDGFD sufficient time to inspect any and all such equipment for ANS. Contact the NDGFD ANS Coordinator, Ben Holen by e-mail - bholen@nd.gov for equipment inspections. Supply one of the following to the Engineer as proof of compliance prior to work taking place in the water: (1) the NDGFD inspection report, (2) documented NDGFD correspondence (email or signed letter).



<b>BRP-0034(035)</b> <small>PEMBINA COUNTY, NORTH DAKOTA</small>		
	<b>ENVIRONMENTAL NOTES</b>	
	DRWN. BY CT	CHKD. BY JD
PROJECT NO. 2202-00406		

**Estimated Quantities**

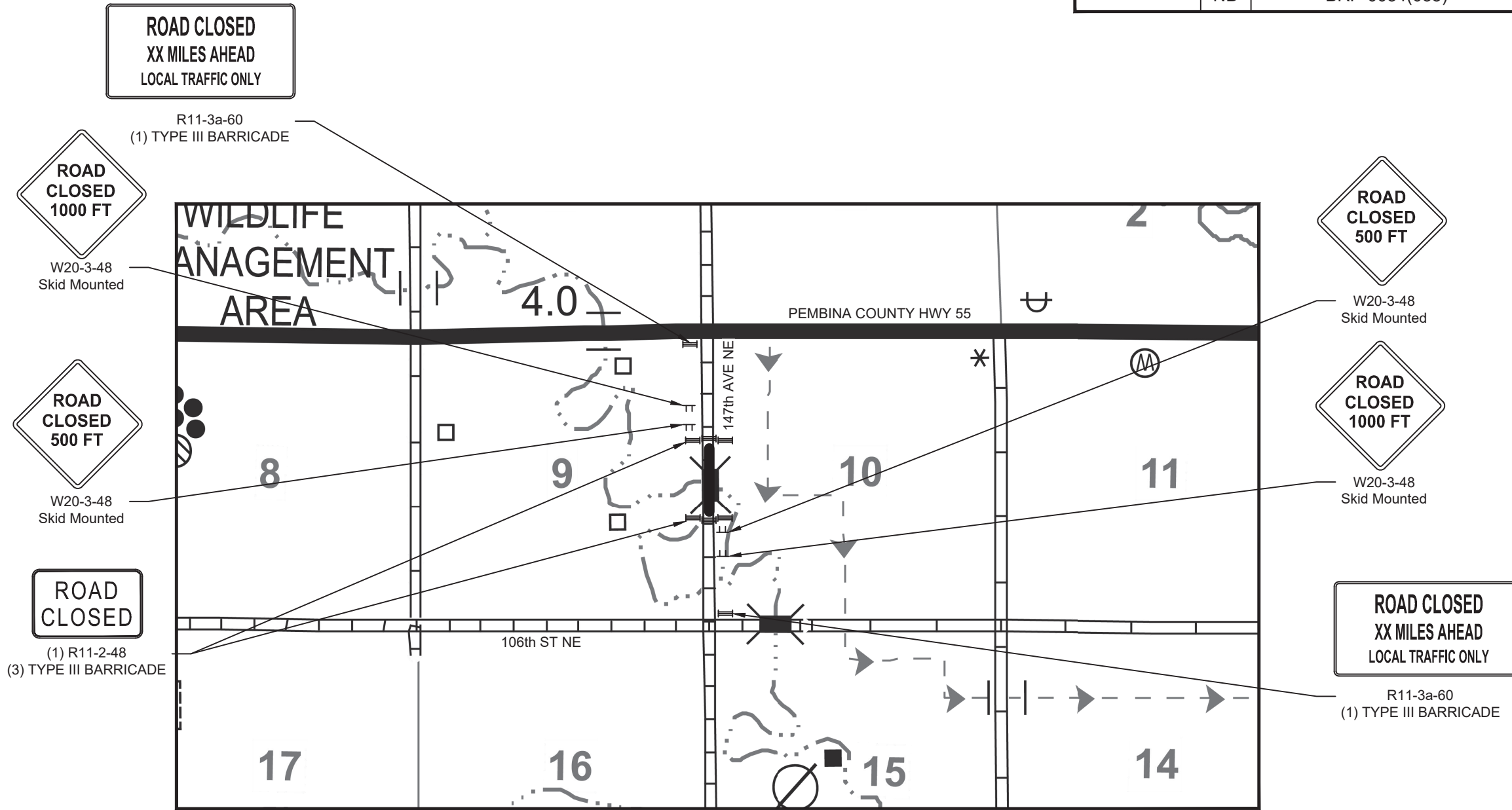
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SPEC	CODE	ITEM DESCRIPTION	UNIT		TOTAL
103	0100	CONTRACT BOND	L SUM	1	1
616	0360	STRUCTURAL STEEL	LBS	77739	77739
702	0100	MOBILIZATION	L SUM	1	1
704	1000	TRAFFIC CONTROL SIGNS	UNIT	776	776
704	1052	TYPE III BARRICADE	EA	32	32
930	9504	BRIDGE REPAIR	L SUM	1	1
930	9650	ABUTMENT REPAIR	SF	195	195






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PEMBINA COUNTY, NORTH DAKOTA



**TYPICAL CONSTRUCTION SIGNING LAYOUT**

DRWN BY CT	CHKD BY JD	PROJECT NO. 2202-00406
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The sign layout as shown is for general information purposes only. The Contractor will be required to conform to MUTCD and the Standard Drawings when installing the traffic control signing.

RETROFIT DETAIL SUMMARY							
BRIDGE	RETROFIT	SPAN LENGTH "L" (FT)	EXISTING NUMBER OF BEAMS (EA)	ADDITIONAL BEAMS REQUIRED (EA)	PROPOSED BEAM SPACING (IN)	MIDSPAN BRACE MEMBER SIZE	MAXIMUM GRAVEL DEPTH (IN)
34-101-05.1	Add midspan brace Replace steel pile caps	23.7'	15	N/A	22"	L2x2x1/4	5"
34-105-21.2	Add midspan brace Replace steel pile caps	28.9'	13	N/A	22"	L2x2x1/4	2"
34-105-21.3	Add midspan brace Replace steel pile caps Replace G3&G8 with new S12x31.8	21'	13	(2) S12x31.8	22"	L2x2x1/4	0"
34-105-29.0	Add midspan brace Replace G3&G12 with new W18x76 Replace steel pile caps Pile repairs	41'	13	(2) W18x76	27"	L2x2x1/4	4"
34-106-21.0	Add midspan brace Replace steel pile caps Add S12x31.8 beams Add timber curb Trim deck overhang	23'	13	(2) S12x31.8	20"	L2x2x1/4	7"
34-106-23.1	Add midspan brace Replace steel pile caps	23'	15	N/A	20"	L2x2x1/4	5"
34-108-30.0	Add midspan brace Replace steel pile caps Pile repairs Timber Pile Resistance Drilling	39'	13	N/A	22"	L2x2x1/4	4"
34-109-25.0	Add midspan brace Add S15x50 beams Replace steel pile caps Pile repairs	34.7'	13	(3) S15x50	18"	L2x2x1/4	2"
34-120-25.0	Add midspan brace Replace steel pile caps	23'	14	N/A	25"	L2x2x1/4	12"
34-121-04.0	Add midspan brace Add W12x26 beams Replace steel pile caps	25.8'	13	(4) W12x26	17"	L2x2x1/4	0"
34-123-12.0	Add midspan brace Replace steel pile caps Pile Repairs	20'	12	N/A	26"	L2x2x1/4	0"
34-125-27.0	Add midspan brace Replace steel pile caps Pile Repairs	23.2'	13	N/A	25"	L2x2x1/4	3"
34-126-07.0	Add midspan brace Replace steel pile caps	29.3'	15	N/A	23"	L2x2x1/4	0"
34-126-08.1	Add midspan brace Replace steel pile caps	30'	15	N/A	20"	L2x2x1/4	8"
34-127-05.0	Add midspan brace in Span 2 Add S12x31.8 beams in Span 2 Replace all steel pile caps	29'	13 (Span 1&3) 16 (Span 2)	(2) S12x31.8 Span 2	23" (Span 1&3) 16" (Span 2)	L2x2x1/4 (Span 2)	0"
34-128-16.0	Add midspan brace Replace steel pile caps	25'	15	N/A	20"	L2x2x1/4	0"
34-128-18.0	Add midspan brace Replace G4 with new S12x31.8 Replace steel pile caps	20.2'	13	(1) S12x31.8	23"	L2x2x1/4	0"

**BRIDGE BID ITEMS**

SPEC	CODE	ITEM DESCRIPTION	UNIT	QUANTITY
616	0360	STRUCTURAL STEEL	LBS	77,739
930	9504	BRIDGE REPAIR	L SUM	1
930	9650	ABUTMENT REPAIR	SF	195

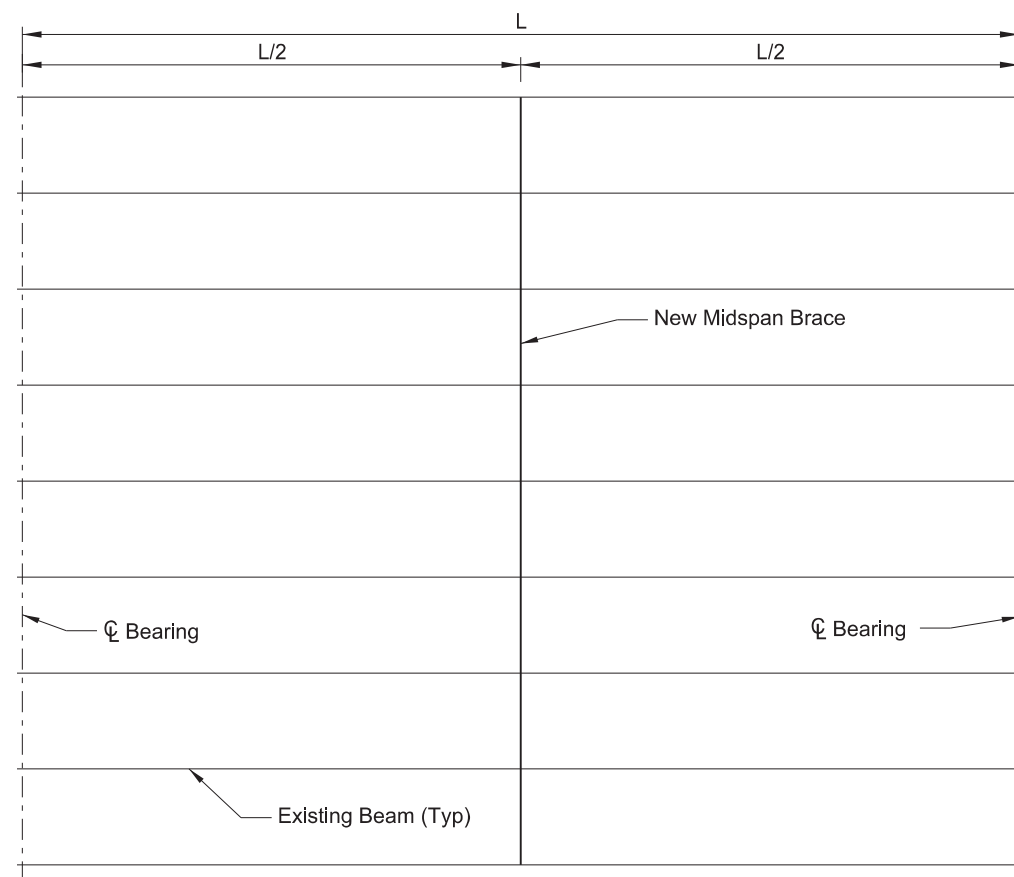
**NOTES:**

Use Structural Steel meeting the requirements of AASHTO M270 Grade 50W for all new steel. Include all costs associated with furnishing & installing the new steel caps, midspan braces and additional beams in the unit price bid for "Structural Steel". Approximately 1,324 lbs will be required for the new midspan braces. Approximately 18,758 lbs will be required for new beams. Approximately 57,657 lbs will be required for the new steel pile caps.

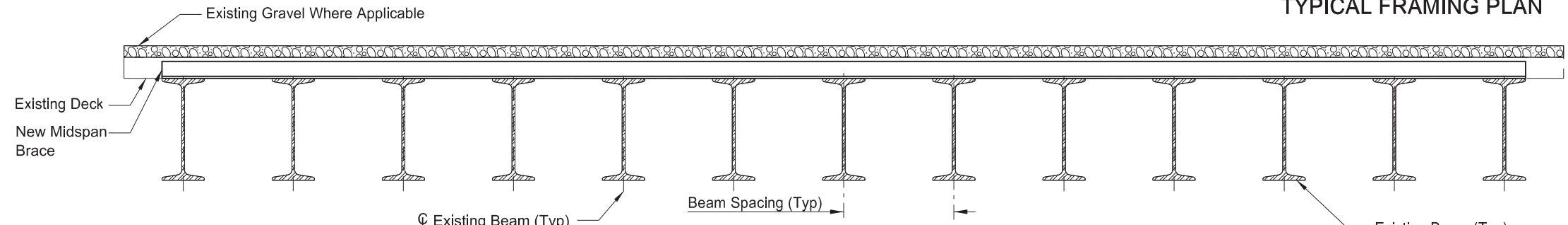
Use Type 3 F3125 Grade A325 7/8" dia. bolts.

Include all costs associated with repairing and performing resistance drilling on the piles identified on 170-3 in the unit price bid for "Abutment Repair". Additional pile repairs may be required as directed by the Engineer. Pay quantities will be measured in the field to determine actual SF used.

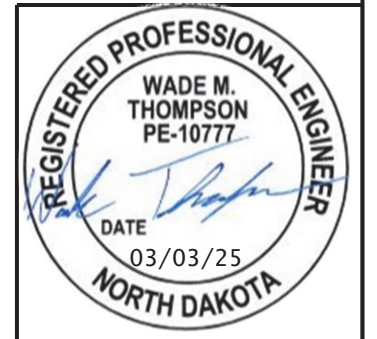
Include all costs associated with removing corrugated deck and furnishing and installing the curb on Bridge 34-106-21.0 in the unit price bid for "Bridge Repair".



**TYPICAL FRAMING PLAN**

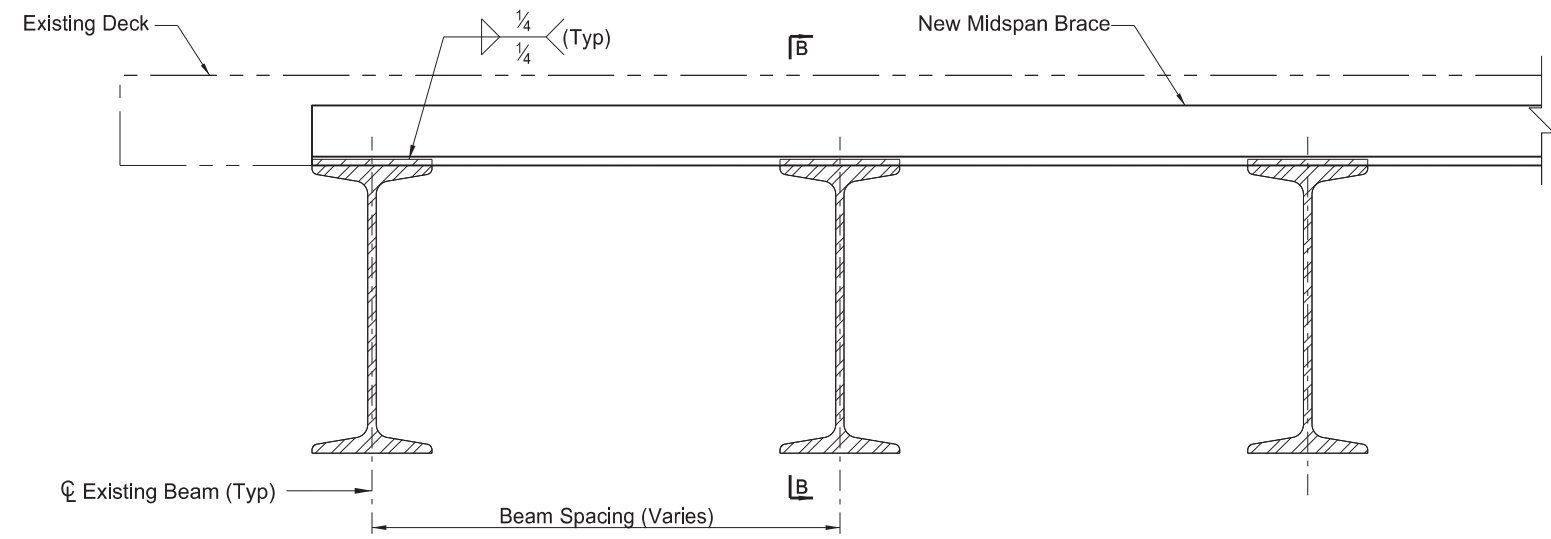


**TYPICAL SECTION AT MID-SPAN**

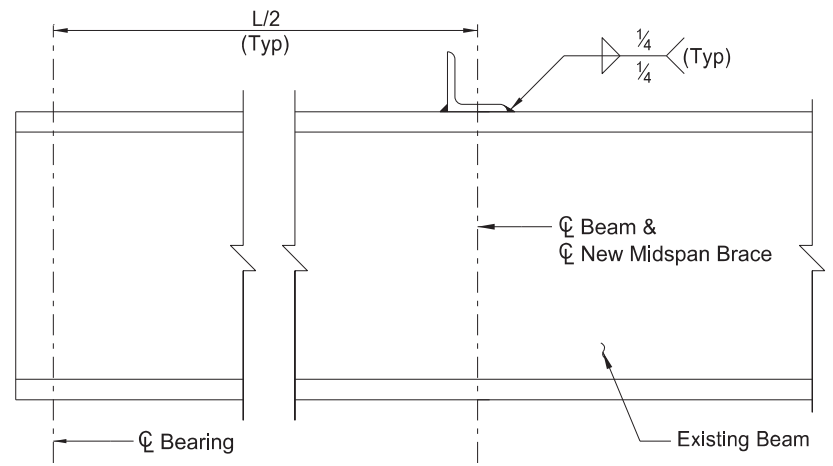


BRP-0034(035) PEMBINA COUNTY, NORTH DAKOTA		
	BRIDGE LAYOUT	
	DRAWN BY BJJ	CHCKD BY CCA
PROJECT NO. 2202-00406		

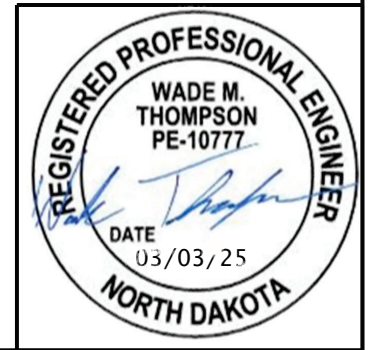
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NEW MIDSPAN BRACE DETAIL

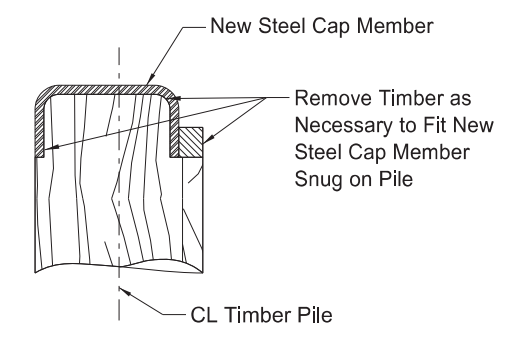
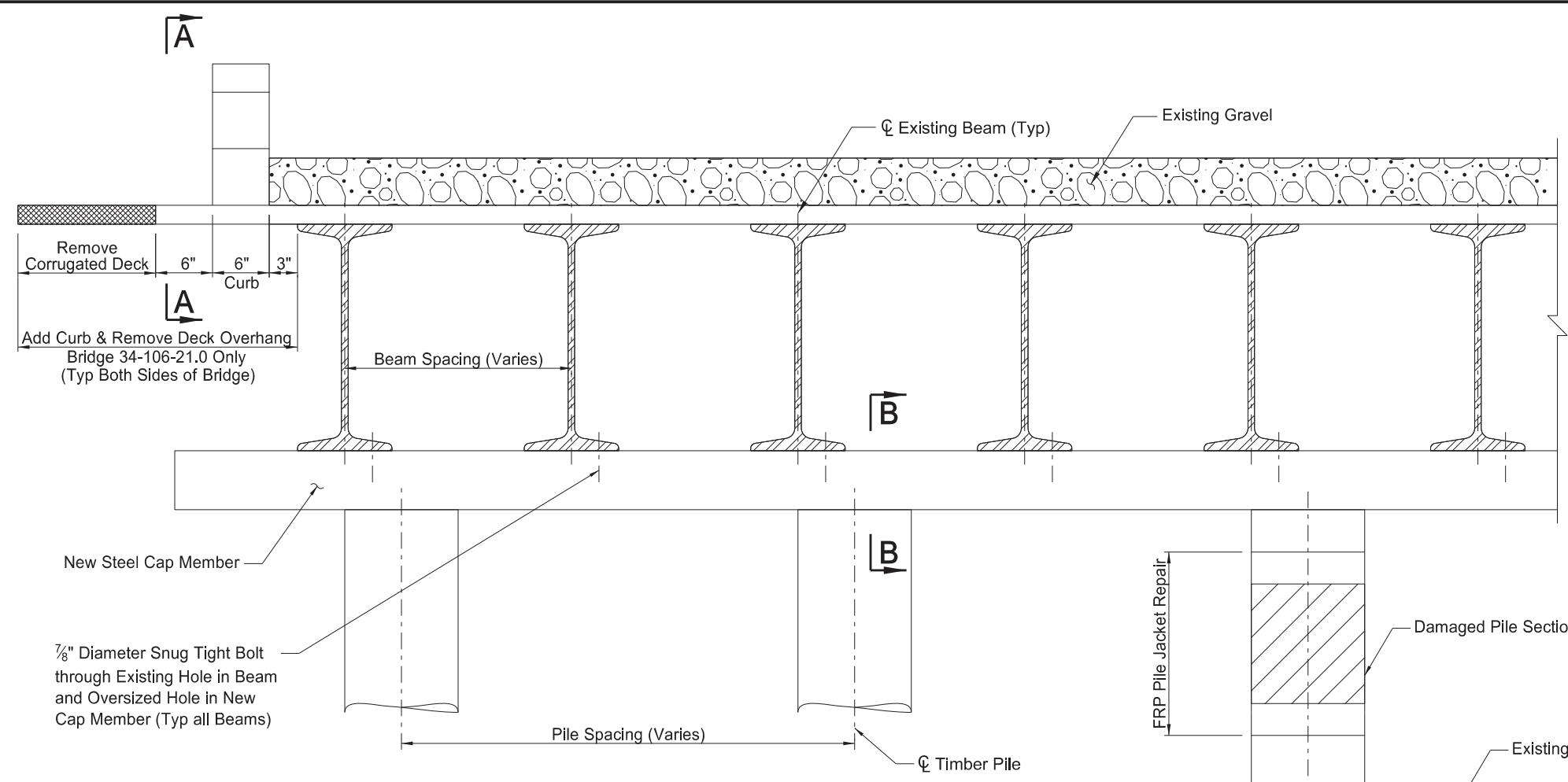


SECTION B-B  
(DECK NOT SHOWN)

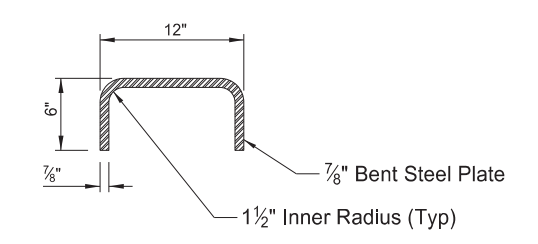


BRP-0034(035) PEMBINA COUNTY, NORTH DAKOTA	
	DETAILS
	<small>           DRAWN BY: BJJ    CHECKED BY: CCA    PROJECT NO.: 2202-00406         </small>

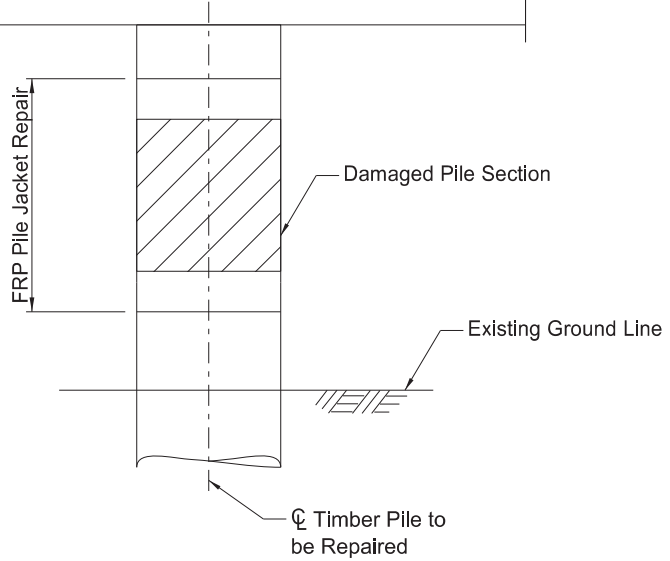
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**SECTION B**



**NEW STEEL CAP MEMBER**



**MISCELLANEOUS REPAIRS**

**NOTES:**

Repair the following timber piles along with any additional piles the Engineer deems necessary for repair:

- Bridge #34-105-29.0 - Abutment 1 Piles 1W & 7W  
Abutment 2 Piles 1W, 4W, & 7W
- Bridge #34-108-30.0 - Abutment 1 Piles 5W & 6W  
All piles to be resistance drilled to determine interior soundness
- Bridge #34-109-25.0 - Abutment 1 Pile 5N  
Abutment 2 Pile 3N
- Bridge #34-123-12.0 - Abutment 1 Pile 1W, 3W & 4W
- Bridge #34-125-27.0 - Abutment 1 Pile 1N

An estimated quantity of 15 SF per pile was used to determine quantity. Actual quantity will be measured in the field.

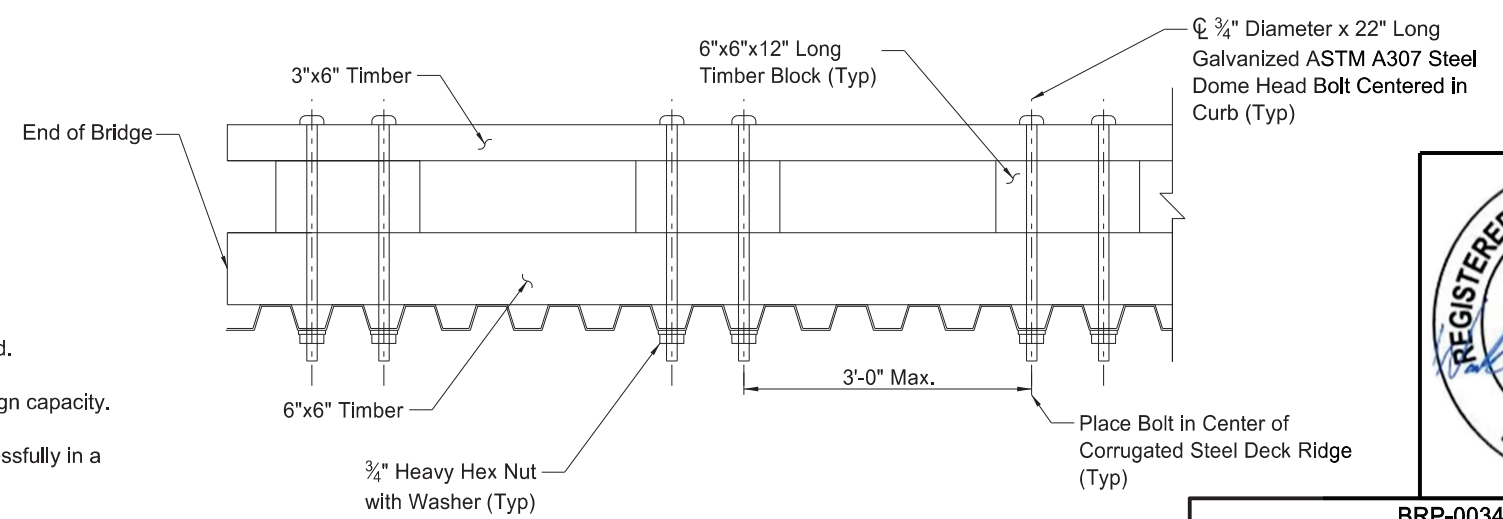
Repair piles using an FRP wrap filled with a high strength grout or epoxy to restore piles to greater than their original design capacity.

Use a repair system that can provide at least 3 example bridge projects where the system and materials were used successfully in a similar application. Follow the manufacturers material and installation guidance for the entire repair system.

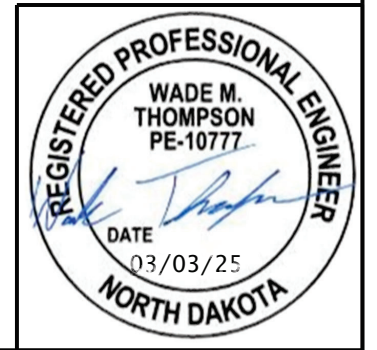
Use an FRP pile jacket repair system listed below or other similar system. Submit the proposed repair system to the Engineer for review and approval.

- PileMedic by Quakewrap
- PileForm by Five Star
- SeaShield Series FX-70 by Denso

Remove and replace steel pile cap member full length at all abutments and piers on bridges noted on Section 170, Sheet No. 1. See Section 170, Sheet No. 1 for steel, bolt, and nut materials.



**SECTION A**  
**(Bridge 34-106-21.0 Only ~ Typ Full Bridge Length)**



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	DETAILS	
	DRAWN BY BJJ	CHECKED BY CCA
PROJECT NO. 2202-00406		